

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 282**

**Responding Witness: Adrien M. McKenzie**

- Q-282. Provide copies of all source documents, articles, cited documents listed in footnotes, regulatory decisions, work papers, and other sources used in the development and preparation of the testimony of Mr. McKenzie.
- A-282. With the exception of citations to regulatory and court proceedings, which are publicly available from the respective agencies, copies of the requested information are attached.

# ADRIEN M. MCKENZIE WORKPAPERS

## INDEX

NO.	Title
WP-1	Moody's Investors Service, "Regulation Will Keep Cash Flow Stable As Major Tax Break Ends," <i>Industry Outlook</i> (Feb. 19, 2014)
WP-2	<i>Alternative Regulation for Emerging Utility Challenges: 2015 Update</i> , Edison Electric Institute (Nov. 11, 2015)
WP-3	Moody's Investors Service, "Credit Opinion: Louisville Gas & Electric Company," <i>Global Credit Research</i> (Dec. 11, 2015)
WP-4	Moody's Investors Service, "Credit Opinion: Kentucky Utilities Company," <i>Global Credit Research</i> (Dec. 11, 2015)
WP-5	Barnato, Katy, "Fed's Plosser: Low rates 'should make us nervous'," CNBC (Nov. 11, 2014)
WP-6	Press Release, Fed. Reserve Sys., Policy Normalization Principles and Plans, (Sept. 17, 2014)
WP-7	Federal Reserve Statistical Release, "Factors Affecting Reserve Balances of Depository Institutions and Condition Statement of Federal Reserve Banks," H.4.1, available at
WP-8	Poole, William, "Prospects for and Ramifications of the Great Central Banking Unwind," <i>Financial Analysts Journal</i> (November/December 2013)
WP-9	Morin, Roger A., "New Regulatory Finance," <i>Public Utilities Reports</i> at 71 (2006)
WP-10	Myron J. Gordon, "The Cost of Capital to a Public Utility," <i>MSU Public Utilities Studies</i> at 89 (1974)
WP-11	Morin, Roger A., "New Regulatory Finance," <i>Public Utilities Reports, Inc.</i> at 298 (2006)
WP-12	Morin, Roger A., "New Regulatory Finance," <i>Public Utilities Reports, Inc.</i> , at 307 (2006)
WP-13	Wolters Kluwer, <i>Blue Chip Financial Forecasts</i> , Vol. 35, No. 6 (Jun. 1, 2016)
WP-14	<i>Morningstar</i> , "Ibbotson SBBI 2015 Classic Yearbook," at pp. 99, 108.
WP-15	Morin, Roger A., "New Regulatory Finance," <i>Public Utilities Reports</i> at 189 (2006)
WP-16	Brigham, E.F., Shome, D.K., and Vinson, S.R., "The Risk Premium Approach to Measuring a Utility's Cost of Equity," <i>Financial Management</i> (Spring 1985)
WP-17	Harris, R.S., and Marston, F.C., "Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts," <i>Financial Management</i> (Summer 1992)
WP-18	Morin, Roger A., "New Regulatory Finance," <i>Public Utilities Reports</i> , at 128 (2006)
WP-19	Brigham, E.F., Aberwald, D.A., and Gapenski, L.C., "Common Equity Flotation Costs and Rate Making," <i>Public Utilities Fortnightly</i> , May, 2, 1985

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WP-20	Morin, Roger A., “New Regulatory Finance,” <i>Public Utilities Reports, Inc.</i> (2006) at 335
WP-21	Morin, Roger A., “New Regulatory Finance,” <i>Public Utilities Reports, Inc.</i> (2006) at 323
WP-22	<i>Application of Yankee Gas Services Company for a Rate Increase</i> , DPUC Docket No. 04-06-01, Direct Testimony of George J. Eckenroth (Jul. 2, 2004) at Exhibit GJE-11.1
WP-23	Value Line Investment Survey, <i>Forecast for the U.S. Economy</i> (Sep. 2, 2016)
WP-24	IHS Global Insight, <i>The U.S. Economy: The 30-Year Focus</i> (Apr. 6 & Jun. 27, 2016)
WP-25	Energy Information Administration, <i>Annual Energy Outlook 2016 Early Release</i> (May 17, 2016)
WP-26	Value Line <i>Summary &amp; Index</i> (Oct. 28, 2016)
WP-27	Value Line Source Documents – Electric Group
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WP-30	Value Line Source Documents – Non-Utility Group
WP-31	IBES Source Documents – Non-Utility Group
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WP-33	Duff & Phelps, “2016 Valuation Handbook – Guide to Cost of Capital,” John Wiley & Sons (2016) at Table 7.3
WP-34	Utility Risk Premium – Regulatory Research Assoc. data 1973-2015

## US Regulated Utilities

# Regulation Will Keep Cash Flow Stable As Major Tax Break Ends

Our outlook for the US regulated utility industry is stable. This outlook reflects our expectations for the fundamental business conditions in the industry.

- » **Cost-recovery mechanisms, coupled with annual base-rate increases, will keep the ratio of industry-wide cash flow to debt at about 18%, within our range for a stable outlook.** Favorable rate orders are part of what we view as a broader shift toward stronger regulatory support for the industry, all the more important this year given the end of bonus depreciation. Industry regulation is the most important driver of our outlook.
- » **Ratemaking mechanisms, such as revenue decoupling and riders, allow utilities to recover costs faster and improve the quality, predictability and stability of cash flow.** The ratio of cash flow to gross profit for a peer group of 122 US operating companies has been more stable on a year-over-year basis since 2009, as the use of riders in regulatory agreements has become more commonplace.
- » **We are also seeing signs of improved regulatory support in historically contentious states, such as Connecticut and Illinois.** Stronger recovery mechanisms put in place last year for [Connecticut Natural Gas Corp.](#) (A3 stable) and [Commonwealth Edison Co.](#) (Baa1 stable) in Illinois will likely make cash flow more predictable for utilities in each state. This marks a turnaround in both states, where regulatory support was lacking for certain cost-recovery provisions in the past.
- » **Stagnant customer demand is leading some utilities to pursue shareholder growth through financial engineering.** Some companies are restructuring their businesses by creating master limited partnerships and “yieldcos” to defend their historically high equity multiples. For now, credit risks are limited but so are any benefits for bondholders, and these structures may weaken sponsor credit quality over time.
- » **What could change our outlook.** We could shift our outlook to positive if the ratio of cash flow to debt rose toward 25% on a sustainable basis, which could happen if return on equity rises or utilities deleverage significantly. A more contentious regulatory environment that resulted in a material deterioration in cash flow, such that the ratio fell to 13%, could cause us to have a negative outlook.



## Supportive regulatory relationships drive our stable outlook

Regulatory support will help US electric and gas utilities maintain stable credit profiles in 2014, even with stagnant customer demand and without the cash-flow boost from bonus depreciation.

Fundamentally, the regulatory environment is the most important driver of our outlook because it sets the pace for cost-recovery. Favorable rate orders, even in states where utilities have had contentious regulatory relationships in the past, are part of what we view as a broader shift toward stronger regulatory support for the industry.

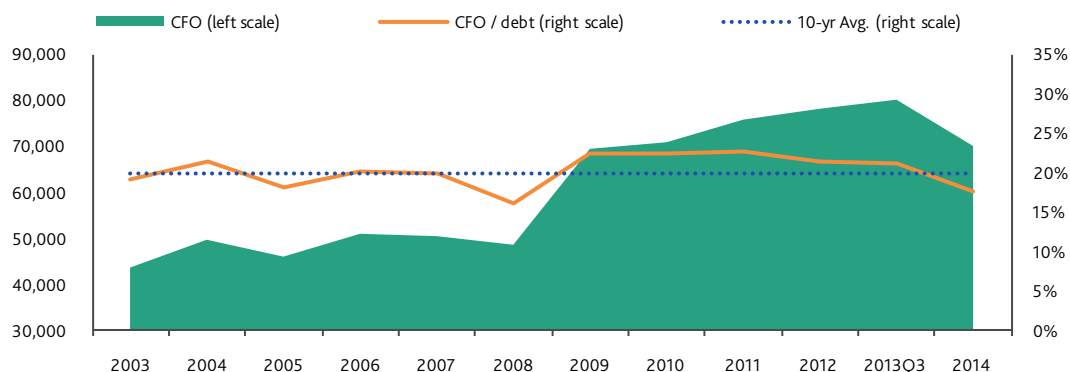
The improved regulatory framework, led by special cost-recovery mechanisms and annual base-rate increases, is all the more important this year for two reasons. First is the end of bonus depreciation, a temporary tax break that expired on December 31. We incorporate a view that bonus depreciation will not be extended; however, various corporate sectors are currently lobbying for the extension in 2014. Second is stagnant customer demand, which is also leading some utilities to pursue shareholder growth through financial engineering (please see page 6).

As Exhibit 1 shows, the ratio of cash flow to debt will decline this year to 18%, just below the 10-year trend line but within our range for a stable outlook. The decline is largely because of higher cash taxes, but utilities can still get some tax relief in 2014 by applying net operating loss carry-forwards (from factors unrelated to bonus depreciation) from past years to this year's tax payments—an option they didn't use when bonus depreciation was in effect.

We would likely shift our outlook to positive if the ratio of cash flow to debt rose to 25%, although that would take a marked increase in regulatory-allowed ROE levels or steps by utilities to scale back their dividend and stock-repurchase plans. A more contentious regulatory environment or a widespread adoption of more-aggressive financial strategies resulting in a material deterioration in cash flow, such that the ratio fell to 13%, would likely lead to a negative outlook.

EXHIBIT 1

### Cash Flow to Debt Will Hover Below the 10-Year Average



Notes: Figures are in thousands of US dollars. A list of the 122 utilities included in our analysis starts on page 7. Data for the third quarter of 2013 are the latest available. Data for 2014 are our estimates.

Source: Moody's Investors Service

## Improved regulatory environment means stable, more predictable cost-recovery

The US regulatory environment has improved significantly in the past year, providing for faster and more-certain cost-recovery in 2014.

[Puget Sound Energy Inc.](#)'s (PSE; Baa1 stable) June 2013 rate order is a good example. Its regulator, the Washington Utilities and Transportation Commission, approved the decoupling of electric and gas revenue from sales volume, and a property-tax tracker that provides more-efficient recovery of property-tax expense. The commission acknowledged a need to reduce regulatory lag times by expediting the utility's rate filings and offering more real-time true-up of costs during rate filings. The regulator also provided the company with forward-looking annual revenue adjustments (about 3% for electric and 2% for gas) over the next three years. As a result of these changes, we expect that Puget Sound's cash-flow-to-debt ratio will continue to surpass 20%, exceeding the industry average, even without the cash-flow benefit of bonus depreciation.

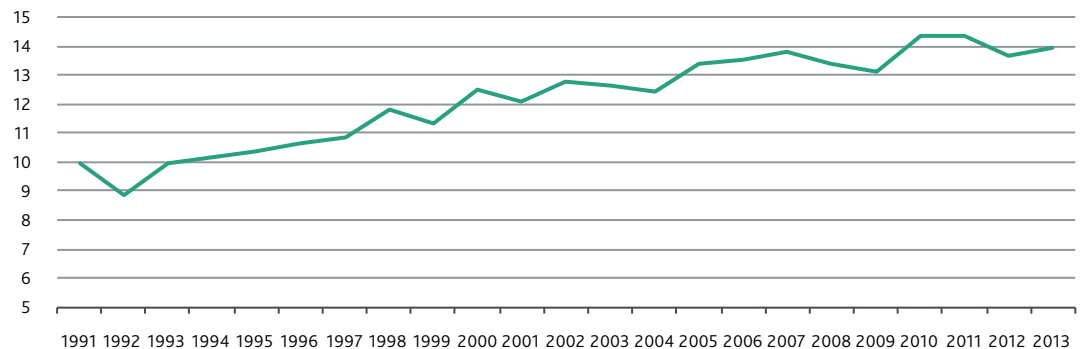
Another example is [Westar Energy Inc.](#)'s (Baa1 stable) 2013 abbreviated rate case with the Kansas Corporation Commission. In addition to providing incremental cost-recovery for environmental upgrades, the regulator allowed Westar to increase its monthly fixed charge on customer bills. This movement in rate design will allow Westar to recover a greater portion of its fixed costs through fixed rates, rather than volumetric rates, thereby reducing Westar's dependency on selling higher volumes to recover fixed costs. The shift to a \$12 residential monthly fixed charge from \$9 will be a benefit amid flat customer demand in Kansas over the past three years (see Exhibit 2).

### EXHIBIT 2

#### Demand for Electricity Has Been Stagnant in Kansas

Actual Consumption

Kansas Residential Electricity  
Consumption, TWh



Notes: TWh stands for terawatt hour. 2013 US Energy Information Administration (EIA) data are through October 2013. Our estimates for November and December 2013 are based on historical trends.

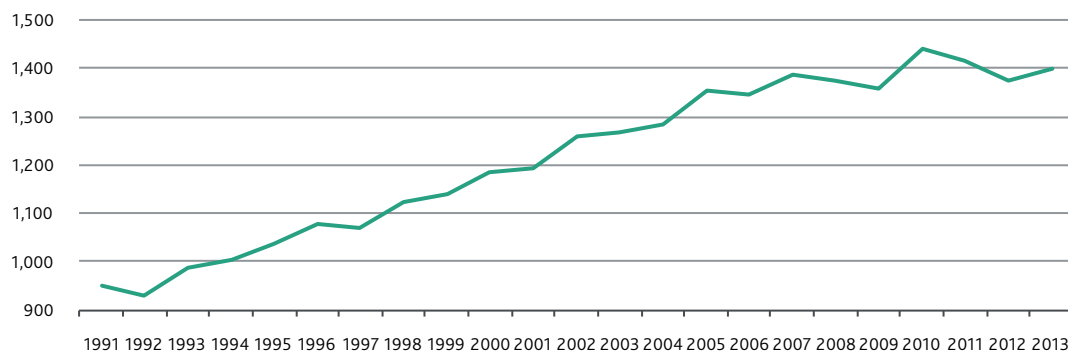
Source: US Energy Information Administration

As demand for electricity wanes, rate structures that are tied more closely to volumetric charges than to fixed charges will threaten the gross profits of most electric and gas utilities. Exhibit 3 below shows the drop-off in US electricity demand since 2010, largely attributable to weather and slow economic growth as well as conservation and efficiency measures.

EXHIBIT 3

**Demand for Electricity Is Slow to Rebound**

Actual Consumption

US Residential Electricity  
Consumption, TWh

Note: 2013 EIA data is through October 2013. Our estimates for November and December 2013 are based on historical trends.

Source: US Energy Information Administration

The industry's financial profile is becoming more predictable and steady because of these special recovery mechanisms that supplement cash recovery between general rate cases. As Exhibit 4 shows, the average ratio of cash flow from operations to gross profit had a standard deviation of 2.4% on a year-over-year basis between 2003 and 2008. This compares with a 1.1% standard deviation on average between 2009 and the third quarter of 2013, the latest data available, a period marked by a more pervasive use of cost-recovery mechanisms throughout the US.

EXHIBIT 4

**Cost-Recovery Mechanisms Make Cash Flow More Predictable**

Year	CFO / Gross Profit	Standard Deviation Rolling Two-Year Average	Average Standard Deviation
2003	30.9%		
2004	37.0%	4.3%	
2005	34.0%	2.1%	
2006	37.3%	2.4%	
2007	34.9%	1.7%	
2008	32.9%	1.4%	2.4%
2009	44.9%		
2010	42.5%	1.7%	
2011	44.8%	1.6%	
2012	44.3%	0.3%	
3Q13	43.0%	0.9%	1.1%

Note: The latest data available are for the third quarter of 2013.

Source: Moody's Investors Service

## Cost-recovery improves, but not without exceptions

Most regulated electric and gas utilities in the US have shown evidence of improved regulatory relationships. Apart from Puget Sound's and Westar's cost-recovery improvements, we have seen regulatory improvement in Illinois and Connecticut, states in which the relationships between regulators and utilities have been somewhat contentious.

Stronger recovery mechanisms put in place late last year in both Illinois and Connecticut will make utility cash flow more predictable. For example, in Illinois, **Commonwealth Edison's** (ComEd) cash flow to debt coverage will start improving in 2014, supported by the adoption of a version of formula ratemaking (i.e., the Energy Infrastructure Modernization Act, or "EIMA," which helps define various aspects of rate structure and cost-recovery in Illinois). The implementation of EIMA will make cost-recovery more tied to factors determined by a formula and less tied to rate-case negotiations (the results of which are less predictable).

Similarly, the Connecticut legislature in 2013 passed the Comprehensive Energy Strategy, which encourages the use of decoupling mechanisms and infrastructure replacement riders (i.e., the Distribution Integrity Management Program, or DIMP), while promoting growth of local distribution companies (LDCs) through customer conversions. These measures are subject to approval by the Public Utilities Regulatory Authority in rate-case proceedings, but were approved in **Connecticut Natural Gas's** (CNG; A3 stable) December 2013 rate case. We expect decoupling, DIMP and conversion incentives to be applied to all LDCs in the state going forward.

These moves mark a turnaround in both states from past years, when regulatory support was lacking for certain cost-recovery provisions and when general rate case outcomes were deemed less than favorable from an investor perspective. For example, the Illinois legislature passed the EIMA in 2011, but the Illinois Commerce Commission did not fully implement it, initially, which made future cost-recovery for ComEd uncertain. Likewise, Connecticut LDCs had few tracking mechanisms and were exposed to declining customer usage in rate design. Now, through the adoption of EIMA in ComEd's rate structure (clarified by Senate Bill 9 in 2013) and CNG's implementation of decoupling and the DIMP, the financial profiles of both companies will likely improve.

These cost-recovery improvements are part of the broader trend we are seeing in the industry, but there are a few high-profile exceptions. [Entergy Corp.](#) (Baa3 stable), which has a history of contentious regulatory relationships in Arkansas and Texas, is one example.

Last year, [Entergy Arkansas Inc.](#) (Baa2 stable) put forth a nearly \$145 million rate request but received about \$81 million (the Arkansas Public Service Commission did allow a new cost-recovery rider for certain regional transmission expenses, however). [Entergy Texas Inc.](#) (Baa3 stable) requested about \$53 million in rate increases for 2014, but the Texas Public Utilities Commission's (PUC) staff recommended a rate increase of a little more than \$3 million. The PUC has not issued a final decision.

Another high-profile exception is [Consolidated Edison of New York's](#) (A2 stable) pending rate settlement, which calls for a two-year freeze on electric rates and a three-year rate freeze on gas and steam rates. Although the rate freeze would curb Consolidated Edison of New York's earnings, the settlement is credit neutral because of the provision for reasonable recovery of deferred storm costs related to Hurricane Sandy and other investments.

This year, one utility that might also buck the positive trend is [Jersey Central Power & Light Co.](#) (JCP&L; Baa2 negative). JCP&L has been the target of public criticism over its handling of outages related to Hurricane Sandy, besides allegations of over-earning. The staff of the New Jersey Board of Public Utilities has proposed that base rates be cut by \$207 million (not considering recovery of storm costs, which will be addressed in a separate rate proceeding). This compares with the company's request for an increase of \$11 million (again, not considering storm costs).

JCP&L's financial flexibility and financial metrics have already been weakened by costs associated with Hurricane Sandy, so a material rate reduction could hurt JCP&L's rating. If JCP&L can bring its ratio of cash flow to debt to at least 14% despite a rate decrease, then our rating outlook could stabilize. JCP&L had 12% cash flow to debt through the 12 months ended the third quarter of 2013.

### More utilities are turning to financial engineering

Against a backdrop of stagnant demand, some utility holding companies are turning to forms of financial engineering, such as creating master limited partnerships (MLPs) and so-called yieldcos, to defend their historically high equity multiples. For the few companies that have proceeded with these strategies so far, the credit impact is neutral because the vehicles are small relative to the corporate sponsor's consolidated credit profile. But longer term, credit risks could increase if these companies eventually lose too much cash flow from their most stable assets and don't reduce debt enough to rebalance their capital structures.

We expect some more companies to go public with these financial-engineering vehicles this year. The joint venture among OGE, CenterPoint and ArcLight—the Enable Midstream Partners MLP—plans to complete an initial public offering in the first quarter. [Dominion Resources Inc.](#) (Baa2 stable) expects to publicly offer its MLP by mid-year. In addition, [NextEra Energy Inc.](#) (Baa1 stable) expects to make a decision whether to form a yieldco by then.

Meantime, several companies have pursued acquisitions outside of their core utility holdings and service territories, like [MidAmerican Energy Holdings Co.](#) (A3 stable), [TECO Energy Inc.](#) (Baa1 stable), and [Avista Corp.](#) (Baa1 stable). This trend is bound to continue as companies try to expand their regulated footprint and achieve regulatory diversity. We expect that most M&A activity in 2014 will be conservatively financed much like these transactions, which included equity financings.

#### EXHIBIT 5

#### Regulated Utilities: M&A Activity

Acquirer / Acquiree	Acquirer			Acquiree			Financing	Credit Implication
	Revenue	CFO	Debt	Revenue	CFO	Debt		
MidAmerican Energy Holdings Co. / NV Energy, Inc.	\$12,373	\$505	\$4,255	\$2,930	\$794	\$5,125	\$5.6 billion in debt & equity	Positive; no ratings actions
TECO Energy, Inc. / New Mexico Gas Company	\$2,851	\$680	\$3,156	\$332	\$65	\$250	\$950 million in debt, equity, & cash	Affirmed TECO Energy ratings
Avista Corp / Alaska Energy and Resources Company (AERC)	\$1,581	\$295	\$1,739	\$42	\$20	\$115	\$170 million in equity	Neutral for Avista
Fortis, Inc. / UNS Energy Corporation	\$3,654	\$976	\$5,783	\$1,483	\$400	\$1,937	\$4.3 billion in debt & equity	Slightly positive for UNS Energy Corporation; no ratings action

Notes: Financials are in millions, as of the 12 months ended September 30, 2013. AERC financials are based on Alaska Electric Light and Power Co. (AELP) 2012 FERC Form 1 data. Fortis and New Mexico Gas financials are as reported as of fiscal 2012. We expect TECO Energy will assume \$200 million of debt already existing at New Mexico Gas Company. We expect Fortis to assume approximately \$1.8 billion of debt already existing at UNS Energy Corporation. In addition, we expect Fortis to finance the UNS acquisition in a manner similar to historical precedent, with a balanced mix of debt and equity issued upstream from the utility (we expect Fortis to keep UNS's current capital structure in place).

Sources: Fortis Inc. Annual Report, AELP 2012 FERC Form 1, SNL, Moody's Financial Metrics

## Appendix: Peer Group

## Moody's Financial Metrics

	Entity Name	LT Rating	Outlook	CFO/Debt (3-Yr Avg) LTM 3Q11- LTM3Q13
Integrated	Alabama Power Company	A1	Stable	26%
	ALLETE, Inc.	A3	Stable	22%
	Appalachian Power Company	Baa1	Stable	17%
	Arizona Public Service Company	A3	Stable	28%
	Avista Corp.	Baa1	Stable	18%
	Black Hills Power, Inc.	A3	Stable	22%
	Cleco Power LLC	Baa1	Positive	19%
	Consumers Energy Company	(P)A3	Stable	27%
	Dayton Power & Light Company	Baa3	Stable	34%
	DTE Electric Company	A2	Stable	24%
	Duke Energy Carolinas, LLC	A1	Stable	23%
	Duke Energy Corporation	A3	Stable	15%
	Duke Energy Florida, Inc.	A3	Stable	21%
	Duke Energy Indiana, Inc.	A2	Stable	16%
	Duke Energy Kentucky, Inc.	Baa1	Stable	23%
	Duke Energy Ohio, Inc.	Baa1	Stable	25%
	Duke Energy Progress, Inc.	A1	Stable	23%
	El Paso Electric Company	Baa1	Stable	25%
	Empire District Electric Company (The)	Baa1	Stable	20%
	Entergy Arkansas, Inc.	Baa2	Stable	19%
	Entergy Louisiana, LLC	Baa1	Stable	17%
	Entergy Mississippi, Inc.	Baa2	Stable	16%
	Entergy New Orleans, Inc.	Ba2	Stable	20%
	Entergy Texas, Inc.	Baa3	Stable	14%
	Florida Power & Light Company	A1	Stable	32%
	Georgia Power Company	A3	Stable	25%
	Gulf Power Company	A2	Stable	26%
	Hawaiian Electric Company, Inc.	Baa1	Stable	17%
	Idaho Power Company	A3	Stable	16%
	Indiana Michigan Power Company	Baa1	Stable	21%
	Interstate Power and Light Company	A3	Stable	18%
	Kansas City Power & Light Company	Baa1	Stable	18%
	Kansas City Power & Light Company - Greater MO	Baa2	Stable	22%
	Madison Gas and Electric Company	A1	Stable	30%
MidAmerican Energy Company	A1	Stable	24%	
Mississippi Power Company	Baa1	Stable	14%	
Nevada Power Company	Baa1	Stable	18%	

	Entity Name	LT Rating	Outlook	CFO/Debt (3-Yr Avg) LTM 3Q11- LTM3Q13
	Northern States Power Company (Minnesota)	A2	Stable	25%
	Northern States Power Company (Wisconsin)	(P)A2	Stable	30%
	NorthWestern Corporation	A3	Stable	19%
	Ohio Power Company	Baa1	Stable	32%
	Oklahoma Gas & Electric Company	A1	Stable	27%
	Otter Tail Power Company	A3	Stable	24%
	Pacific Gas & Electric Company	A3	Stable	25%
	PacifiCorp	A3	Stable	23%
	Portland General Electric Company	A3	Stable	25%
	Public Service Co. of North Carolina, Inc.	A3	Stable	25%
	Public Service Company of Colorado	A3	Stable	23%
	Public Service Company of New Hampshire	Baa1	Stable	20%
	Public Service Company of New Mexico	Baa2	Positive	21%
	Public Service Company of Oklahoma	A3	Stable	27%
	Puget Sound Energy, Inc.	Baa1	Stable	21%
	San Diego Gas & Electric Company	A1	Stable	21%
	Sierra Pacific Power Company	Baa1	Stable	16%
	South Carolina Electric & Gas Company	Baa2	Stable	17%
	Southern California Edison Company	A2	Stable	30%
	Southern Indiana Gas & Electric Company	A2	Stable	28%
	Southwestern Electric Power Company	Baa2	Stable	18%
	Southwestern Public Service Company	Baa1	Stable	21%
	Tampa Electric Company	A2	Stable	32%
	Tucson Electric Power Company	Baa1	Stable	19%
	Union Electric Company	(P)Baa1	Stable	22%
	UNS Energy Corporation	Baa2	Stable	19%
	Virginia Electric and Power Company	A2	Stable	27%
	Westar Energy, Inc.	Baa1	Stable	16%
	Wisconsin Electric Power Company	A1	Stable	17%
	Wisconsin Power and Light Company	A1	Stable	31%
	Wisconsin Public Service Corporation	A1	Stable	26%
T&Ds	AEP Texas North Company	Baa1	Stable	22%
	Ameren Illinois Company	(P)Baa1	Stable	26%
	Atlantic City Electric Company	Baa2	Stable	15%
	Baltimore Gas and Electric Company	A3	Stable	19%
	CenterPoint Energy Houston Electric, LLC	A3	Stable	16%
	Central Hudson Gas & Electric Corporation	A2	Stable	29%
	Central Maine Power Company	A3	Stable	27%
	Cleveland Electric Illuminating Company (The)	Baa3	Stable	15%
	Commonwealth Edison Company	Baa1	Stable	21%

Entity Name	LT Rating	Outlook	CFO/Debt (3-Yr Avg) LTM 3Q11- LTM3Q13
Connecticut Light and Power Company	Baa1	Stable	13%
Consolidated Edison Company of New York, Inc.	A2	Stable	23%
Delmarva Power & Light Company	Baa1	Stable	17%
Duquesne Light Company	A3	Stable	26%
Jersey Central Power & Light Company	Baa2	Negative	18%
New York State Electric and Gas Corporation	A3	Stable	26%
Niagara Mohawk Power Corporation	A3	Stable	23%
NSTAR Electric Company	A2	Stable	29%
Ohio Edison Company	Baa2	Stable	25%
Oncor Electric Delivery Company LLC	Baa3	Stable	20%
Orange and Rockland Utilities, Inc.	A3	Stable	21%
PECO Energy Company	A2	Stable	30%
Pennsylvania Electric Company	Baa2	Stable	18%
Pennsylvania Power Company	Baa2	Stable	37%
Potomac Edison Company (The)	Baa3	Stable	19%
Potomac Electric Power Company	Baa1	Stable	16%
Public Service Electric and Gas Company	A2	Stable	25%
Rochester Gas & Electric Corporation	Baa1	Stable	26%
Texas-New Mexico Power Company	Baa1	Positive	26%
Toledo Edison Company	Baa3	Stable	8%
United Illuminating Company	Baa1	Stable	20%
West Penn Power Company	Baa2	Stable	25%
Western Massachusetts Electric Company	A3	Stable	23%
LDCs			
Atlanta Gas Light Company	A2	Stable	30%
Atmos Energy Corporation	A2	Stable	23%
Berkshire Gas Company	Baa1	Stable	29%
Connecticut Natural Gas Corporation	A3	Stable	26%
DTE Gas Company	Aa3	Stable	24%
Indiana Gas Company, Inc.	A2	Stable	27%
Laclede Gas Company	(P)A3	Stable	26%
New Jersey Natural Gas Company	(P)Aa2	Stable	19%
Northern Illinois Gas Company	A2	Stable	49%
Northwest Natural Gas Company	(P)A3	Stable	20%
Piedmont Natural Gas Company, Inc.	A2	Stable	23%
Questar Gas Company	A2	Stable	25%
SEMCO Energy, Inc.	Baa1	Stable	15%
SourceGas LLC	Baa2	Stable	14%
South Jersey Gas Company	A2	Stable	21%
Southern California Gas Company	A1	Stable	32%
Southern Connecticut Gas Company	Baa1	Stable	22%



Entity Name	LT Rating	Outlook	CFO/Debt (3-Yr Avg) LTM 3Q11- LTM3Q13
UGI Utilities, Inc.	A2	Stable	27%
UNS Gas, Inc.	Baa1	Stable	27%
Washington Gas Light Company	A1	Stable	35%
Wisconsin Gas LLC	A1	Stable	28%
Yankee Gas Services Company	Baa1	Stable	18%

Source: Moody's Investors Service

## Moody's Related Research

### Industry Outlooks:

- » [US Regulated Utilities: Regulation Provides Stability as Business Model Faces Challenges, July 2013 \(156754\)](#)
- » [US Regulated Utilities: Regulatory Support, Low Natural Gas Prices Maintains Stability, February 2013 \(149379\)](#)
- » [US Unregulated Power: Headwinds continue for the merchant power players, July 2013 \(156302\)](#)
- » [US Coal Industry Outlook Stabilizes as Business Conditions Hit Bottom, August 2013 \(157309\)](#)
- » [Global Oil & Gas: Persistent High Oil Prices Keep Industry Robust, but Global Supply Increasing \(Summary\), December 2013 \(160980\)](#)

### Special Comment:

- » [US utility sector upgrades driven by stable and transparent regulatory frameworks, January 2014 \(163726\)](#)
- » [YieldCos: Fantastic for Shareholders; Less So for Bondholders, November 2013 \(160121\)](#)
- » [Planned Capital Expenditures Set to Fall in 2015, And Modestly Decline Thereafter, October 2013 \(158945\)](#)
- » [US Telecommunications and Regulated Utilities: End of Bonus Depreciation Could Prompt Cuts in Capital Spending, Dividends, September 2013 \(157572\)](#)
- » [US Local Gas Distribution Companies: Lower risks and unique growth opportunities versus electric utility peers, May 2013 \(153018\)](#)
- » [The Prospect of US LNG Exports Influences Pricing and Gas Markets Worldwide, May 2013 \(151819\)](#)
- » [US Extends Tax Credit for Wind Power, a Credit Positive for Developers and Utilities, January 2013 \(148915\)](#)

### Rating Methodology:

- » [Regulated Electric and Gas Utilities, December 2013 \(157160\)](#)

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

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# Alternative Regulation for Emerging Utility Challenges: 2015 Update

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# I. Introduction

Investor-owned electric utilities in the United States are buffeted today by varied and rapid changes in the business conditions they face. For vertically integrated electric utilities (“VIEUs”) and utility distribution companies (“UDCs”) alike, the traditional cost of service approach to rate regulation is often not ideal for helping utilities cope with these changes. Alternative approaches to regulation (“Altreg”) can often help utilities secure better outcomes for their customers and shareholders.

The changing business climate stems primarily from three root causes. One is pressure, from policymakers and many customers, for the power industry to lighten its environmental footprint. In addition to evolving renewable portfolio standards at the state level, utilities must comply with an array of federal initiatives such as the Environmental Protection Agency’s Clean Power Plan. Demand-side management (“DSM”) programs and tightening building codes and appliance standards encourage energy efficiency. Some customers seek power from greener sources than the increasingly clean portfolios of utilities. Self generation from rooftop solar is one means to this end, and its cost is falling. Customer-sited distributed generation (“DG”) must be accommodated, and utilities must purchase power surpluses that these facilities generate at regulated rates.

A second force for change is technological progress in metering and distribution. Advanced metering infrastructure and other smart grid technologies can improve reliability and facilitate integration of intermittent renewables. Time-sensitive pricing can encourage customers to use the grid in less costly ways. New value-added optional products and services can be offered which benefit customers.

A third force for change is increased concern about the reliability and resiliency of grid service. Some facilities are approaching advanced age, and some need more protection from severe weather. Many customers seek better quality service.

These forces are having important practical effects on utilities. Growth in the demand for their traditional services has slowed, and utilities face competition from distributed energy resources (“DERs”). Nevertheless, some utilities need capital expenditures (“capex”) for cleaner generating capacity, smart grid facilities, increased resiliency, and replacement of aging assets. Many new facilities don’t automatically trigger revenue growth. Increased marketing flexibility is needed to meet competitive challenges and complex, changing customer needs.

Under traditional regulation, the base rates that compensate utilities for costs of non-energy inputs are reset only in general rate cases with historical test years. These lengthy proceedings require a detailed review of all costs and their allocation amongst the utility’s retail services. Revenue from secondary sources (e.g., off-system sales) is imputed against the revenue requirement.

Most base rate revenue is drawn from volumetric and other usage charges. Since the cost of base rate inputs is driven more by capacity than system use in the short run, a utility’s finances are sensitive between rate



cases to the gap between growth in system use and capacity. A convenient proxy for this gap is the growth in use per customer (aka “average use”). The need for rate cases increases when average use declines.

Traditional regulation is ill-suited for addressing many of today’s challenges. Growth in average use was once positive, and the resulting incremental revenues helped utilities finance rising cost without rate cases. Today, growth in the average use of residential and commercial customers is typically static and often negative. Utilities needing normal or high capital expenditures are then compelled to file rate cases more frequently. These involve high regulatory cost and are nonetheless frequently uncompensatory when they involve historical test years. Frequent rate cases also reduce utility opportunities to increase earnings from improved cost containment and marketing. Traditional regulation also does not allow for many value-added or optional rates and services. Improved utility performance is thus discouraged at a time when it is increasingly needed to respond to competitive pressures.

Increased financial attrition has been a factor in the long-term decline of average credit ratings among investor-owned electric utilities. This is illustrated in Figure 1. Higher risk raises financing costs and can discourage needed investments.

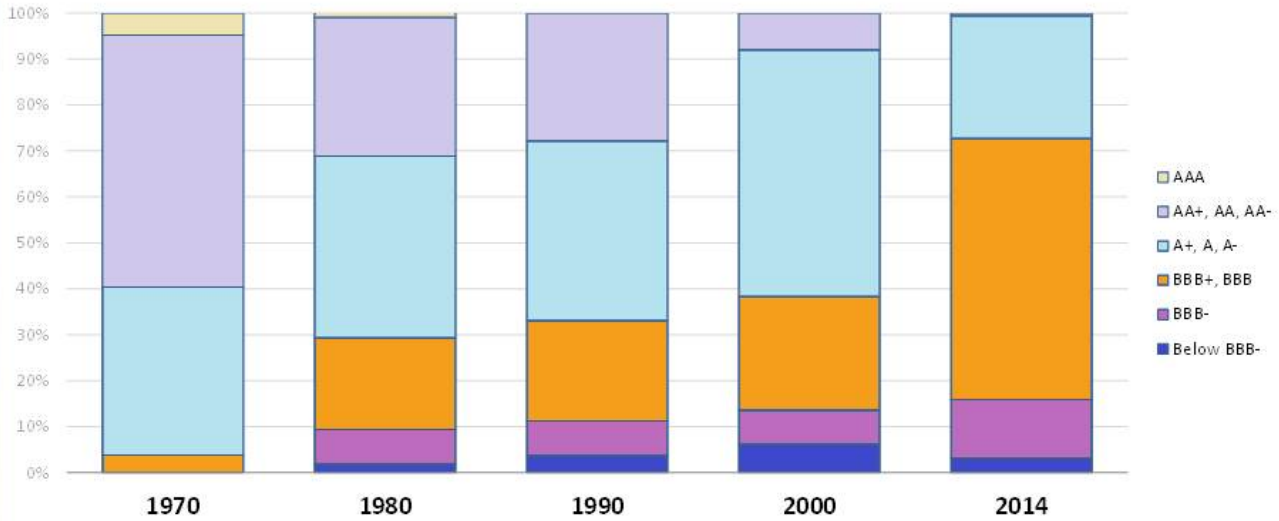
Alternative approaches to regulation have been developed which handle today’s business conditions better. Some, such as multiyear rate plans, formula rates, and fully-forecasted test years, can involve sweeping regulatory change. Others, like revenue decoupling and cost trackers, target specific challenges.

This survey, now updated to include precedents through mid-2015, explains Altreg options and details precedents in the regulation of retail electric utility rates. A summary of states that currently use these approaches is featured in Table 1. Information is also provided on precedents for gas and water distributors and for energy utilities in Australia, Canada, and Britain. This year’s survey also discusses marketing flexibility, a new Altreg area of growing interest to EEI members.

Figure 1

# U.S. Electric IOUs Rating History

1970 – 2014



The current average company rating is BBB+, improved from the BBB average rating in 2000



Source: EEI Finance Department, Standard & Poor's, Macquarie Capital, SNL Financial

Table 1

**Alternative Regulation Tools: An Overview of Current Precedents**

State	Capital Cost Trackers	Measures that Relax the Use/Revenue Link			Multiyear Rate Plans <sup>1</sup>	Retail Formula Rate Plans	Forward Test Years
		Decoupling True Up Plans	Lost Revenue Adjustment Mechanisms	Fixed Variable Retail Pricing			
Alabama	Electric & Gas					Electric & Gas	Yes
Alaska							
Arizona	Electric, Gas, & Water	Gas only	Electric & Gas		Electric only		
Arkansas	Electric & Gas	Gas only	Electric & Gas				
California	Electric & Gas	Electric & Gas			Electric & Gas		Yes
Colorado	Electric & Gas				Electric only		
Connecticut	Electric, Gas, & Water	Electric & Gas	Gas only	Electric & Gas			Yes
Delaware	Electric, Gas, & Water						
District of Columbia	Electric & Gas	Electric only					
Florida	Electric & Gas			Gas only	Electric only		Yes
Georgia	Electric & Gas	Gas only		Gas only	Electric only	Gas only	Yes
Hawaii	Electric only	Electric only			Electric only		Yes
Idaho	Electric only	Electric only					
Illinois	Gas & Water	Gas only		Electric & Gas		Electric only	Yes
Indiana	Electric, Gas, & Water	Gas only	Electric only		Gas only		
Iowa	Gas only			Gas only	Electric only		
Kansas	Gas only		Electric only	Gas only			
Kentucky	Electric & Gas		Electric & Gas	Gas only			Yes
Louisiana	Electric only		Electric only		Electric only	Electric & Gas	Yes
Maine	Electric, Gas, & Water	Electric only		Gas only	Gas only		Yes
Maryland	Electric & Gas	Electric & Gas					
Massachusetts	Electric & Gas	Electric & Gas	Electric & Gas		Gas only		
Michigan	Gas only	Gas only					Yes

Table 1 continued

State	Capital Cost Trackers	Measures that Relax the Use/Revenue Link			Multiyear Rate Plans <sup>1</sup>	Retail Formula Rate Plans	Forward Test Years
		Decoupling True Up Plans	Lost Revenue Adjustment Mechanisms	Fixed Variable Retail Pricing			
Minnesota	Electric & Gas	Electric & Gas					Yes
Mississippi	Electric & Gas		Electric & Gas	Electric only		Electric & Gas	Yes
Missouri	Gas & Water			Gas only			
Montana	Electric & Gas		Gas only				
Nebraska	Gas only			Gas only			
Nevada	Gas only	Gas only	Electric only				
New Hampshire	Electric, Gas, & Water			Gas only	Electric & Gas		
New Jersey	Electric, Gas, & Water	Gas only					
New Mexico							Yes
New York	Gas & Water	Electric & Gas	Gas only	Electric & Gas	Electric & Gas		Yes
North Carolina	Gas & Water	Gas only	Electric only				
North Dakota	Electric only			Gas only	Electric only		Yes
Ohio	Electric, Gas, & Water	Electric only	Electric only	Gas only	Electric only		
Oklahoma	Electric only		Electric only	Electric & Gas		Gas only	
Oregon	Electric & Gas	Electric & Gas	Electric & Gas				Yes
Pennsylvania	Electric, Gas, & Water			Gas only			Yes
Rhode Island	Electric & Gas	Electric & Gas					Yes
South Carolina	Electric only		Electric only			Gas only	
South Dakota	Electric only						
Tennessee	Gas only	Gas only		Gas only		Gas only	Yes
Texas	Electric & Gas			Gas only		Gas only	
Utah	Gas only	Gas only					Yes
Vermont				Gas only			
Virginia	Electric & Gas	Gas only		Gas only	Electric only		
Washington	Gas only	Electric & Gas			Electric & Gas		
West Virginia	Electric only						
Wisconsin				Gas only			Yes
Wyoming	Electric only	Gas only	Electric & Gas	Electric & Gas			Yes

<sup>1</sup> This column excludes plans involving rate freezes without extensive supplemental funding from trackers.

## II. Cost Trackers

A cost tracker is a mechanism for expedited recovery of specific utility cost (e.g., outside of a rate case). Balancing accounts are typically used to track unrecovered costs. Cost recovery is often implemented using tariff sheet provisions called riders.

Trackers are used in various situations where they are more practical than rate cases for addressing particular costs. Utilities usually recover fuel and purchased power costs via trackers because the volatility and substantial size of these costs would otherwise lead to frequent rate cases and materially impact utility risk. Other volatile expenses that are sometimes addressed with trackers include those for pensions, severe storms, and uncollectible bills.

A second use of trackers is for costs incurred due to policies of government agencies. Examples here include franchise fees and certain taxes. Tracking costs like these is fair to utilities and encourages government agencies to consider the impact of their policies on customer bills.

Trackers are also used to compensate utilities for costs that are rapidly rising and don't otherwise trigger new revenue, whether or not they are volatile or mandated. This encourages needed expenditures and reduces risk and the frequency of rate cases. Examples of operation and maintenance ("O&M") expenses that are sometimes tracked due in large measure to their rapid growth include those for health care.

Trackers for some costs have multiple rationales. DSM expenses, for example, are often sizable and sometimes grow rapidly.<sup>1</sup> Utility DSM programs are often mandated. Additionally, DSM can slow growth in the average use of power and reduce the need for plant additions, important sources of earnings growth for utilities. Tracking DSM expenses helps to balance utility incentives to embrace DSM.

Capital cost trackers typically address the accumulating depreciation, return on asset value, and taxes that result from the capex.<sup>2</sup> Capital costs can qualify for tracker treatment on several grounds. Major plant additions are volatile. Capex might be necessitated by highway construction or changes in government safety, reliability, or environmental standards. Capex is sometimes large enough to cause brisk cost growth that would otherwise occasion frequent rate cases.

An early use of capital cost trackers in the electric utility industry was to address construction costs of large power plants. These plants can take years to construct. An allowance in rates for a return on funds used during construction was traditionally not permitted until assets were used and useful and a rate case was filed. Deferred recovery of the allowance strains utility cash flow, increases financing expenses, and induces more rate "shock" when the value of the plant and construction financing is finally added to the rate base.

<sup>1</sup> This survey only documents capital cost trackers. Trackers for DSM expenses are ubiquitous so that there is less need for documentation.

<sup>2</sup> Recovery is sometimes achieved by keeping a rate case open beyond the date of a final decision for the limited purpose of adding assets to the revenue requirement.

Many commissions have addressed these problems by making a return on construction work in progress (“CWIP”) eligible for immediate recovery. Capital cost trackers have often been used in lieu of frequent rate cases to obtain CWIP recovery.

Capital costs of distribution system modernization are sometimes recovered using trackers for somewhat different reasons. The annual expenditure may not be as large as that for large generation units, and construction of specific assets usually takes less than a year. However, the capex can still be sizable and doesn’t automatically trigger new revenue when completed. A tracker for accelerated modernization costs can help a company modernize its grid and improve its services without frequent rate cases.

Capital costs of generation emissions controls are often accorded tracker treatment. These controls are occasioned by the emissions policies of state and federal agencies. Additionally, the facilities do not produce revenue and some facilities typically become used and useful each year over a series of years.

There are varied treatments of costs in approved capital trackers. Regulators often approve tracked capex budgets in advance, usually after considerable deliberation. Procedures for reviewing the need for generation plant additions are especially well established. Once a budget is set, the treatment of variances between actual and budgeted cost becomes an issue. Some trackers permit conventional prudence review treatment of cost overruns. In other cases, no adjustments are subsequently made if cost exceeds the budget. In between these extremes are mechanisms in which deviations, of prescribed magnitude, from budgeted amounts are shared formulaically (e.g., 50-50) between the utility and its customers. Utilities are also permitted sometimes to share in the benefits of capex underspends. The prudence of tracked capex is often subject to a final review when the cost is added to rate base, a step that usually occurs in the next rate case.

Recent precedents for capital cost trackers are listed in Table 2 and Figures 2 and 3. It can be seen that the precedents are numerous and continue to grow. This is the most widely used Altreg tool in the United States. For electric utilities, trackers for emissions controls, generation capacity, advanced metering infrastructure, and general system modernization have been especially common in recent years. Trackers for gas distributors typically address the cost of replacing old cast iron and bare steel mains. Trackers for water utilities, sometimes called distribution system improvement charges, are also common for accelerated modernization.



Table 2

# Recent Capital Cost Tracker Precedents

Jurisdiction	Company Name	Services Included	Tracker Name	Eligible Investments	Case Reference
AL	Alabama Power	Electric	Rate Certificated New Plant	Any approved by Commission through CPCN	Dockets 18117 and 18416 (November 1982)
AL	Mobile Gas Service	Gas	Cast Iron Replacement Factor	Replacement of cast iron mains	Docket 24794 (November 1995)
AR	Arkansas Oklahoma Gas	Gas	Act 310 Surcharge	Relocations of pipelines mandated by government agencies	Docket 12-088-U (July 2013)
AR	Arkansas Oklahoma Gas	Gas	System Safety Enhancement Rider	Replacement of bare steel mains, mains on low pressure systems, mains that are subject of an advisory notice by government that company deems to be unsatisfactory	Docket 13-078-U (July 2014)
AR	CenterPoint Energy Arkla	Gas	Main Replacement Rider	Replacement of cast iron and bare steel mains and services	Docket 06-161-U (October 2007)
AR	CenterPoint Energy Arkla	Gas	Government Mandated Expenditure Surcharge Rider	Replacements resulting from highway and street rebuilding	Docket 10-108-U (March 2011)
AR	Empire District Electric	Electric	Alternative Generation Environmental Recovery Rider	Environmental	Docket 15-010-U (August 2015)
AR	Oklahoma Gas & Electric	Electric	Smart Grid Rider	Systemwide smart grid implementation	Docket 10-109-U (August 2011)
AR	SourceGas Arkansas	Gas	At-Risk Meter Relocation Program Rider	Installation of new services for meters relocated due to motor vehicle collision risk	Docket 13-079-U (July 2014)
AR	SourceGas Arkansas	Gas	Main Replacement Program Rider	Replacement of bare steel and coated steel mains, mains that are subject of an advisory notice by government that company deems to be unsatisfactory, and associated services	Docket 13-079-U (July 2014)
AR	SourceGas Arkansas	Gas	Act 310 Surcharge	Bare steel and cast iron pipeline replacement, in-line inspection project, emissions controlling catalysts for compressor station engines, greenhouse gas monitoring of some regulator stations, highway relocation projects	Docket 13-072-U (April 2014)
AR	SWEPSCO	Electric	Alternative Generation Recovery Rider	New generation	Docket 09-008-U (November 2009)
AR	SWEPSCO	Electric	Rider Environmental Compliance Surcharge	Environmental	Docket 15-021-U (October 2015)
AZ	Arizona Public Service	Electric	Renewable Energy Standard Adjustment Schedule	Renewables not recovered in base rates	Docket E-01345A-08-0172
AZ	Arizona Public Service	Electric	Environmental Improvement Surcharge	Environmental improvement projects	Docket E-01345A-11-0224 (May 2012)
AZ	Arizona Public Service	Electric	Four Corners Rate Rider Surcharge	Generation	Docket E-01345A-11-0224 (December 2014)
AZ	Arizona Water Company	Water	Arsenic Cost Recovery Mechanism	Investments to reduce arsenic in water supply	Various (operating regions have separate decisions approving ACRMs)
AZ	Arizona Water Company - Eastern Group	Water	System Improvement Benefits Mechanism	Replacement of leak prone mains and related services, meters, and hydrants, replace meters that do not have lead free brass, other replacements for mains, services, meters, and hydrants that are at the end of their useful life	Decision 73938 (June 2013)
AZ	Southwest Gas	Gas	Customer Owned Yard Line Cost Recovery Mechanism	Replacement and ownership of customer-owned yard lines that have been shown to be leaking	Docket G-01551A-10-0458 (January 2012)
AZ	Tucson Electric Power	Electric	Environmental Compliance Adjustor	Miscellaneous environmental projects	Decision 73912 (June 2013)
CA	Pacific Gas & Electric	Electric	Smart Grid Memorandum Account	Smart grid projects that received DOE matching funds	Decision 09-09-029 (September 2009)
CA	Pacific Gas & Electric	Gas Transmission	Pipeline Safety Implementation Plan	Pipeline replacement, automated valve installation, and upgrades to pipeline	Decision 12-12-030 (December 2012)
CA	Pacific Gas & Electric	Electric	Smart Grid Pilot Deployment Project Balancing Account	Pilot programs for smart grid line sensors, volt/VAR optimization, detection and location of distribution line outages and faulted circuits, and information technology investments to improve short term demand forecasting for power procurement	Decision 13-03-032 (March 2013)
CA	San Diego Gas & Electric	Electric & Gas	Advanced Metering Infrastructure Balancing Account	AMI	Decision 07-04-043 (April 2007)
CA	San Diego Gas & Electric	Electric	Energy Storage Balancing Account	Projects to store solar energy	Decision 13-05-010 (May 2013)
CA	San Diego Gas & Electric	Gas	Post-2011 Distribution Integrity Management Program Balancing Account	DIMP related costs	Decision 13-05-010 (May 2013)
CA	San Diego Gas & Electric	Gas	Transmission Integrity Management Program Balancing Account	TIMP related costs	Decision 13-05-010 (May 2013)
CA	San Diego Gas & Electric	Gas Transmission	Safety Enhancement Capital Cost Balancing Account	Replacement of mains that fail pressure tests or that cannot be pressure tested	Decision 14-06-007 (June 2014)
CA	Southern California Edison	Electric	SmartConnect Balancing Account	Advanced metering infrastructure project	Decision 08-09-039 (September 2008)
CA	Southern California Edison	Electric	Solar PV Balancing Account	Solar generation	Decision 09-06-049 (June 2009)
CA	Southern California Gas	Gas	Advanced Metering Infrastructure Balancing Account	AMI	Decision 10-04-027 (April 2010)
CA	Southern California Gas	Gas	Post-2011 Distribution Integrity Management Program Balancing Account	DIMP related costs	Decision 13-05-010 (May 2013)
CA	Southern California Gas	Gas	Transmission Integrity Management Program Balancing Account	TIMP related costs	Decision 13-05-010 (May 2013)
CA	Southern California Gas	Gas Transmission	Safety Enhancement Capital Cost Balancing Account	Replacement of mains that fail pressure tests or that cannot be pressure tested	Decision 14-06-007 (June 2014)
CO	Black Hills Colorado Electric	Electric	Transmission Cost Adjustment Rider	Transmission projects	Docket 09-014E, Decision C09-0271 (March 2009)
CO	Black Hills Colorado Electric	Electric	Clean Air Clean Jobs Act Rider	Gas-fired generation	Docket 14AL-0393E, Decision C14-1504 (December 2014)
CO	Public Service Company of Colorado	Electric	Transmission Cost Adjustment	Transmission projects	Docket 07A-339E, Decision C07-1085 (December 2007)
CO	Public Service Company of Colorado	Gas	Pipeline Safety Integrity Adjustment	Gas distribution and transmission integrity management programs, main replacement, partial recovery of two large pipeline replacements	Docket 10-AL-963G (August 2011)



Table 2 continued

Jurisdiction	Company Name	Services Included	Tracker Name	Eligible Investments	Case Reference
CO	Public Service Company of Colorado	Electric	Clean Air Clean Jobs Act Rider	Miscellaneous environmental projects including gas-fired generation, scrubbers	Proceeding 14A-680E, Decision C15-0292 (March 2015)
CO	Rocky Mountain Gas	Gas Transmission	System Safety and Integrity Rider	TIMP, DIMP, and other safety regulatory compliance projects	Docket 13AL-0046G, Decision R14-0114 (February 2014)
CT	Aquarion Water Company of Connecticut	Water	Water Infrastructure and Conservation Adjustment	Replacement of infrastructure including mains, valves, services, meters, and hydrants that have reached the end of their useful life or are no longer able to function as intended	Docket 08-06-21W101 (December 2008)
CT	Connecticut Light & Power	Electric	System Resiliency Plan	Structural hardening	Docket 12-07-06 (January 2013)
CT	Connecticut Natural Gas	Gas	System Expansion Reconciliation Mechanism	System expansion	Docket 13-06-02 (November 2013)
CT	Connecticut Natural Gas	Gas	DIMP True-Up Mechanism	Cast iron and bare steel main replacement	Docket 13-06-08; (January 2014)
CT	Connecticut Water	Water	Water Infrastructure and Conservation Adjustment	Replacement of infrastructure including mains, valves, services, meters, and hydrants that have reached the end of their useful life or are no longer able to function as intended	Docket 08-10-15W101 (March 2009)
CT	Southern Connecticut Gas	Gas	System Expansion Reconciliation Mechanism	System expansion	Docket 13-06-02 (November 2013)
CT	Torrington Water	Water	Water Infrastructure and Conservation Adjustment	Replacement of infrastructure including mains, valves, services, meters, and hydrants that have reached the end of their useful life or are no longer able to function as intended	Docket 09-06-17W101 (December 2009)
CT	United Water Connecticut	Water	Water Infrastructure and Conservation Adjustment	Replacement of infrastructure including mains, valves, services, meters, and hydrants that have reached the end of their useful life or are no longer able to function as intended	Docket 09-06-17W101 (December 2009)
CT	Yankee Gas Services	Gas	System Expansion Reconciliation Mechanism	System expansion	Docket 13-06-02 (November 2013)
DC	Potomac Electric Power	Electric	Underground Project Charge	Undergrounding of specific feeders	Formal Case 1116 (November 2014)
DC	Washington Gas Light	Gas	Plant Recovery Adjustment	Remediation/replacement of mechanical couplings	Formal Case 1027 (December 2009)
DC	Washington Gas Light	Gas	Accelerated Pipe Replacement Plan Adjustment	Replacement of cast iron mains, bare steel mains and services and "black plastic" services	Formal Case 1115 (January 2015)
DE	Artesian Water	Water	Distribution System Improvement Charge	Replacement of infrastructure (e.g., existing mains, services, meters, and hydrants)	Docket 01-474 (December 2001)
DE	Delmarva Power & Light	Gas	Utility Facility Relocation Charge	Replacements due to mandated relocations that are not otherwise reimbursed	Docket 12-546 (October 2013)
DE	Delmarva Power & Light	Electric	Utility Facility Relocation Charge	Replacements due to mandated relocations that are not otherwise reimbursed	Docket 13-115 (August 2014)
DE	Sussex Shores Water	Water	Distribution System Improvement Charge	Replacement of infrastructure (e.g., existing mains, services, meters, and hydrants)	Docket 01-470 (December 2001)
DE	Tidewater Utilities	Water	Distribution System Improvement Charge	Replacement of infrastructure (e.g., existing mains, services, meters, and hydrants)	Docket 03-210 (May 2003)
DE	United Water Delaware	Water	Distribution System Improvement Charge	Replacement of infrastructure (e.g., existing mains, services, meters, and hydrants)	Docket 01-481 (December 2001)
FL	Chesapeake Utilities	Gas	Gas Reliability Infrastructure Program Tariff	Replacement of bare steel mains and services	Docket 120036-GU (September 2012)
FL	Florida City Gas	Gas	Safety and Access Verification Expedited Program	Replacement of unprotected steel mains, relocation of certain gas mains in rear lot easements	Docket 150116-GU (September 2015)
FL	Florida Power and Light	Electric	Environmental Cost Recovery Clause	Miscellaneous environmental projects	Docket 080281-EI (August 2008)
FL	Florida Power and Light	Electric	Capacity Cost Recovery Clause	Nuclear power	Docket 090009-EI (November 2009)
FL	Florida Power and Light	Electric	Generation Base Rate Adjustment	Generation	Docket 120015-EI (December 2012)
FL	Florida Public Utilities	Gas	Gas Reliability Infrastructure Program Tariff	Replacement of bare steel mains and services	Docket 120036-GU (September 2012)
FL	Gulf Power	Electric	Environmental Cost Recovery Clause	Miscellaneous environmental projects	Docket 930613-EI (January 1994)
FL	Peoples Gas System	Gas	Cast Iron/Bare Steel Replacement Rider	Replacement of bare steel and cast iron pipes	Docket 110320-GU (September 2012)
FL	Progress Energy Florida	Electric	Environmental Cost Recovery Clause	Miscellaneous environmental projects	Docket 050078-EI (September 2005)
FL	Progress Energy Florida	Electric	Capacity Cost Recovery Clause	Nuclear power	Docket 090009-EI (November 2009)
FL	Progress Energy Florida	Electric	Generation Base Rate Adjustment	Generation	Docket 130208 (November 2013)
FL	Tampa Electric	Electric	Environmental Cost Recovery Clause	Miscellaneous environmental projects	Docket 960688-EI (August 1996)
GA	Atlanta Gas Light	Gas	Pipeline Replacement Program Cost Recovery Rider	Replacement of cast iron and bare steel pipe	Docket 29950 as STRIDE tracker in 2009
GA	Atlanta Gas Light	Gas	Strategic Infrastructure Development and Enhancement Surcharge	Pre-1985 plastic mains and services replacement, planned customer expansions, and infrastructure improvements that sustain reliability and operational flexibility	Docket 8516-U and 29950 (October 2009 and August 2013)
GA	Atmos Energy (now Liberty Utilities)	Gas	Pipe Replacement Surcharge	Replace cast iron and bare steel pipe	Docket 12509-U (December 2000)
GA	Georgia Power Company	Electric	Environmental Compliance Cost Recovery	Miscellaneous environmental projects	Docket 25060-U (December 2007)
GA	Georgia Power Company	Electric	Nuclear Construction Cost Recovery	Nuclear generation	Docket 27800, Senate Bill 31
HI	Hawaii Electric Light	Electric	Renewable Energy Infrastructure Program Surcharge	Renewable energy infrastructure	Docket 2007-0416 (December 2009)
HI	Hawaiian Electric Company	Electric	Renewable Energy Infrastructure Program Surcharge	Renewable energy infrastructure	Docket 2007-0416 (December 2009)
HI	Maui Electric	Electric	Renewable Energy Infrastructure Program Surcharge	Renewable energy infrastructure	Docket 2007-0416 (December 2009)
IA	Black Hills Energy	Gas	System Safety Maintenance Adjustment	Replacement of steel and pvc pipe, relocations mandated by local governments	Docket RPU-2012-0004 (March 2013)
ID	PacifiCorp	Electric	Energy Cost Adjustment Mechanism	Lake Side II generation facility	Case PAC-E-13-04 (October 2013)

Table 2 continued

Jurisdiction	Company Name	Services Included	Tracker Name	Eligible Investments	Case Reference
IL	Ameren Illinois	Gas	Rider Qualifying Infrastructure Plant	Replacement of prone to leak distribution and transmission pipe, installation of AMI and communications infrastructure, replacing or installing transmission or distribution facilities to establish over-pressure protection, replacement of difficult to locate mains and services, replacement of high pressure transmission pipelines without a recorded maximum allowable operating pressure, replacements to facilitate an upgrade from a low pressure system to a high pressure system	Docket 14-0573 (January 2015)
IL	Consumers Illinois Water Company (Kankakee, Vermilion, Woodhaven Districts)	Water	Qualifying Infrastructure Plant Surcharge Rider	Replacement of non-revenue producing infrastructure (e.g., existing mains, services, meters, and hydrants)	Docket 01-0561 (December 2001)
IL	Illinois-American Water (Chicago Metro Division)	Water	Qualifying Infrastructure Plant Surcharge Rider	Replacement of non-revenue producing infrastructure (e.g., existing mains, services, meters, and hydrants)	Docket 09-0251 (March 2010)
IL	Illinois-American Water (Single Tariff Pricing Zone)	Water	Qualifying Infrastructure Plant Surcharge Rider	Replacement of non-revenue producing infrastructure (e.g., existing mains, services, meters, and hydrants)	Docket 04-0336 (December 2004)
IL	Northern Illinois Gas	Gas	Rider Qualifying Infrastructure Plant	Replacement of cast iron pipe, non-cast iron pipe, and copper services; relocation of meters from inside customers' premises; upgrading of system from low pressure to medium pressure; replacement or installation of regulator stations, regulators, valves and associated facilities to establish over-pressure protection	Docket 14-0292 (July 2014)
IL	Peoples Gas Light & Coke	Gas	Rider Qualifying Infrastructure Plant	Replacement of cast and ductile iron, relocation of meters from inside customers' premises, upgrading of system from low pressure to medium pressure, replacement of high pressure transmission pipelines at higher risk of failure or lacking records, installation of regulator stations to establish over-pressure protection	Docket 13-0534 (January 2014)
IN	Duke Energy Indiana	Electric	Qualified Pollution Control Property	Miscellaneous environmental projects	Cause 41744 (February 2001)
IN	Duke Energy Indiana	Electric	Integrated Coal Gasification Combined Cycle Generating Facility Revenue Recovery Adjustment	Integrated gasification combined cycle generating plant	Docket 43114 (November 2007)
IN	Indiana Michigan Power	Electric	Clean Coal Technology Rider	Miscellaneous environmental projects	Cause 43636 (June 2009)
IN	Indiana Water Service	Water	Distribution System Improvement Charge	Replacement of non-revenue producing infrastructure (e.g., existing mains, services, meters, and hydrants)	Cause 42743 DSIC-1 (December 2004)
IN	Indiana-American Water	Water	Distribution System Improvement Charge	Replacement of non-revenue producing infrastructure (e.g., existing mains, services, meters, and hydrants)	Cause 42351 DSIC-1 (February 2003)
IN	Indianapolis Power & Light	Electric	Environmental Compliance Cost Recovery	Miscellaneous environmental projects	Cause 42170 (November 2002)
IN	Northern Indiana Public Service	Electric	Environmental Cost Recovery Mechanism	Miscellaneous environmental projects	Cause 42150 (November 2002)
IN	Northern Indiana Public Service	Electric	Transmission, Distribution & Storage System Improvement Charge	Investments to maintain the capacity deliverability of system and replacement of aging infrastructure, economic development	Cause 44370 and 44371 (February 2014)
IN	Northern Indiana Public Service	Gas	Distribution System Improvement Charge	Gas system deliverability and system integrity projects, rural main extensions	Cause 44403 TDSIC 1 (January 2015)
IN	Utility Center Inc.	Water	Distribution System Improvement Charge	Replacement of non-revenue producing infrastructure (e.g., existing mains, services, meters, and hydrants)	Docket 42416 DSIC-1 (June 2003)
IN	Vectren Energy Delivery (Indiana Gas and Southern Indiana Gas & Electric)	Gas	Compliance and System Improvement Adjustment	System and pressure improvements, storage operations, instrumentation and communications equipment, public improvement projects, service replacements, and economic development	Cause 44429 (August 2014)
KS	Atmos Energy	Gas	Gas System Reliability Surcharge	Replacement of mains, valves, service lines, regulator stations, vaults, other pipeline components or relocations	Docket 10-ATMG-133-TAR (December 2009)
KS	Black Hills Energy (Aquila)	Gas	Gas System Reliability Surcharge	Replacement of mains, valves, service lines, regulator stations, vaults, other pipeline components or relocations	Docket 08-AQLG-852-TAR (July 2008)
KS	Kansas Gas Service	Gas	Gas System Reliability Surcharge	Replacement of mains, valves, service lines, regulator stations, vaults, other pipeline components or relocations	Docket 10-KGSG-155-TAR (December 2009)
KS	Midwest Energy	Gas	Gas System Reliability Surcharge	Replacement of mains, valves, service lines, regulator stations, vaults, other pipeline components or relocations	Docket 09-MDWE-722-TAR (May 2009)
KY	Atmos Energy	Gas	Pipe Replacement Program Rider	Replacement of bare steel service lines, curb valves, meter loops, and mandated relocations	Docket 2009-00354 (May 2010)
KY	Columbia Gas	Gas	Advanced Main Replacement Rider	Replacement of cast iron and bare steel mains and services	Docket 2009-00141 (September 2009)
KY	Delta Natural Gas	Gas	Pipe Replacement Program Surcharge	Replacement of bare steel pipe, service lines, curb valves, meter loops, and mandated pipe relocations	Case 2010-00116 (October 2010)
KY	Kentucky Power	Electric	Environmental Cost Recovery Surcharge	Miscellaneous environmental projects	Docket 2002-00169 (March 2003)
KY	Kentucky Utilities	Electric	Environmental Cost Recovery Surcharge	Miscellaneous environmental projects	Case 93-465 (July 1994)
KY	Louisville Gas & Electric	Electric	Environmental Cost Recovery Surcharge	Miscellaneous environmental projects	Case 94-332 (April 1995)
KY	Louisville Gas & Electric	Gas	Gas Line Tracker	Replacement and transfer of ownership of customer owned service risers	Case 2012-00222 (December 2012)
LA	Cleco Power	Electric	Infrastructure and Incremental Costs Recovery	Projects to be determined in subsequent filings to Commission	Docket U-30689 and U-32779 (October 2010 and June 2014)
LA	Entergy Gulf States Louisiana	Electric	Formula Rate Plan-3	Acquisition of generating facility, new generating facility or refurbishment of existing generating facility if the revenue requirement related to the project exceeds \$10 million	Docket U-32707 (December 2013)
LA	Entergy Louisiana	Electric	Formula Rate Plan 7	Cost of Ninemile 6 natural gas generating facility; New generating facility, acquisition of a generating facility, or refurbishment of existing generating facility if the revenue requirement related to the project exceeds \$10 million	Docket U-32708 and 31971 (January 2014 and April 2012)
MA	Bay State Gas	Gas	Targeted Infrastructure Recovery Factor	Replacement of bare steel mains and services	DPU 09-30
MA	Bay State Gas	Gas	Gas System Enhancement Adjustment Factor	Replacement of non-cathodically protected steel, cast iron, and wrought iron mains and associated services, service tie-ins, encroached pipe, and meters	DPU 14-134
MA	Berkshire Gas	Gas	Gas System Enhancement Adjustment Factor	Replacement of non-cathodically protected steel, cast iron mains and associated services, encroached pipe, and meter sets composed of non-cathodically protected steel, cast iron or copper	DPU 14-131
MA	Fitchburg Gas & Electric Light	Gas	Gas System Enhancement Adjustment Factor	Replacement of cast main and unprotected steel mains and services and encroached pipe	DPU 14-130

**Table 2 continued**

<b>Jurisdiction</b>	<b>Company Name</b>	<b>Services Included</b>	<b>Tracker Name</b>	<b>Eligible Investments</b>	<b>Case Reference</b>
MA	Massachusetts Electric	Electric	Net CapEx Factor	Potentially all distribution investments	DPU 09-39
MA	Massachusetts Electric	Electric	Solar Cost Adjustment Provision	Solar generation	DPU 09-38
MA	Massachusetts Electric	Electric	Smart Grid Adjustment Provision	Pilot smart grid investments including AMI, high speed communications network, in-home energy management devices, distribution automation, advanced capacitor control, advanced grid monitoring, remote fault indicators	DPU 11-129
MA	Nantucket Electric	Electric	Solar Cost Adjustment Provision	Solar generation	DPU 09-38
MA	Nantucket Electric	Electric	Smart Grid Adjustment Provision	Pilot smart grid investments including AMI, high speed communications network, in-home energy management devices, distribution automation, advanced capacitor control, advanced grid monitoring, remote fault indicators	DPU 11-129
MA	National Grid (Boston-Essex Gas and Colonial Gas)	Gas	Targeted Infrastructure Recovery Factor	Replacement of bare steel, cast iron, and wrought iron mains, services, meters, meter installations, and house regulators	DPU 10-55
MA	National Grid (Boston-Essex Gas and Colonial Gas)	Gas	Gas System Enhancement Adjustment Factor	Replacement of non-cathodically protected steel, cast iron, and wrought iron mains and associated services, inside services, service tie-ins, encroached pipe, and meters	DPU 14-132
MA	New England Gas	Gas	Targeted Infrastructure Recovery Factor	Replacement of non-cathodically protected steel mains and services and small diameter cast-iron and wrought iron	DPU 10-114
MA	New England Gas	Gas	Gas System Enhancement Adjustment Factor	Replacement of non-cathodically protected steel, cast iron, and wrought iron mains and associated services, inside services, service tie-ins, encroached pipe, and meters	DPU 14-133
MA	NSTAR Electric	Electric	Capital Projects Scheduling List	Stray voltage inspection survey and remediation program; double pole inspections, replacements, and restorations; and manhole inspection, repair, and upgrade	DTE 05-85 and DPU 10-70-B
MA	NSTAR Electric	Electric	Smart Grid Adjustment Factor	Smart grid pilot	DPU-09-33
MA	Western Massachusetts Electric	Electric	Solar Program Cost Adjustment	Solar generation	DPU 09-05
MD	Baltimore Gas & Electric	Electric	Electric Reliability Investment Surcharge	Upgrades to improve poorest performing feeders, selective undergrounding, expanded recloser development on 13kV and 34 kV lines, diverse routing of 34 kV supply circuits	Case 9326 (December 2013)
MD	Baltimore Gas & Electric	Gas	Strategic Infrastructure Development and Enhancement Program	Replacement of bare steel mains and services, cast iron mains, copper services, and pre-1982 plastic "Ski Bar" risers	Case 9331 (January 2014)
MD	Columbia Gas of Maryland	Gas	Strategic Infrastructure Development and Enhancement Program	Replacement of bare steel and cast iron mains and bare steel services	Case 9332 (August 2014)
MD	Delmarva Power & Light	Electric	Grid Resiliency Charge	Feeder hardening	Case 9317 (September 2013)
MD	Potomac Electric Power	Electric	Grid Resiliency Charge	Feeder hardening	Case 9311 (July 2013)
MD	Washington Gas Light	Gas	Strategic Infrastructure Development and Enhancement Program Rider	Replacement of bare and unprotected steel mains and services, targeted copper and pre-1975 plastic services, mechanically coupled pipe main and services, and cast iron mains	Case 9335 (May 2014)
ME	Central Maine Power	Electric	Customer Relationship Management & Billing Rate Adjustment	Customer relationship management & billing system replacement	Docket 2015-00040 (October 2015)
ME	Maine Water Company	Water	Water Infrastructure Charge	Replacement of stationary physical plant assets needed to operate a water system	Various orders separately issued for operating divisions
ME	Northern Utilities	Gas	Targeted Infrastructure Recovery Adjustment	Cast iron, bare steel, and unprotected coated steel mains and services replacements, replacement of farm tap regulators	Docket 2013-00133 (December 2013)
MI	Consumers Energy	Gas	Enhanced Infrastructure Replacement Program	Cast iron replacements	Case U-17643 (January 2015)
MI	Michigan Consolidated Gas (now DTE Gas)	Gas	Infrastructure Recovery Mechanism	Replacement of cast iron mains, replacement of indoor meters with outdoor meters, pipeline integrity projects designed to comply with federal and state safety standards	Case U-16999 (April 2013)
MI	SEMCO Gas	Gas	Main Replacement Rider	Replacement of cast iron and unprotected steel mains and service lines	Case U-16169 and U-17824 (January 2011 and June 2015)
MN	Interstate Power & Light	Electric	Renewable Energy Recovery Adjustment	Renewable generation	Docket M-10-312 (December 2013)
MN	Minnesota Power	Electric	Arrowhead Regional Emission Abatement Rider	Miscellaneous environmental projects	Docket M-05-1678 (June 2006)
MN	Minnesota Power	Electric	Transmission Cost Recovery Rider	Incremental transmission investment	Docket M-07-965 (December 2007)
MN	Minnesota Power	Electric	Renewable Resource Rider	Renewable generation	Docket M-10-273 (July 2010)
MN	Minnesota Power	Electric	Rider for Boswell Unit 4 Emission Reduction	Miscellaneous environmental projects	Docket M-12-920 (November 2013)
MN	Northern States Power (Xcel Energy)	Electric	Metropolitan Emissions Reduction Project (later called Environmental Improvement Rider)	Miscellaneous environmental projects	Docket M-02-633 (March 2004)
MN	Northern States Power (Xcel Energy)	Electric	Transmission Cost Recovery Rider	Incremental transmission investment	Docket M-06-1103 (November 2006)
MN	Northern States Power (Xcel Energy)	Electric	Renewable Energy Standard Cost Recovery Rider	Renewable generation	M-07-872 (March 2008)
MN	Northern States Power (Xcel Energy)	Gas	State Energy Policy Rider	Cast iron replacements	Docket M-08-261 (November 2008)
MN	Northern States Power (Xcel Energy)	Electric	Mercury Cost Recovery Rider	Miscellaneous environmental projects	Docket M-09-847 (November 2009)
MN	Otter Tail Power	Electric	Renewable Resource Cost Recovery Rider	Renewable generation	Docket M-08-119 (August 2008)
MN	Otter Tail Power	Electric	Transmission Cost Recovery Rider	Incremental transmission investment	Docket M-09-881 (January 2010)
MO	AmerenUE	Gas	Infrastructure System Replacement Surcharge	Replacement of mains, valves, service lines, regulator stations, vaults, other pipeline components or relocations	Case GT-2008-0184 (February 2008)
MO	Atmos Energy	Gas	Infrastructure System Replacement Surcharge	Replacement of mains, valves, service lines, regulator stations, vaults, other pipeline components or relocations	Docket GO-2009-0046 (October 2008)
MO	Laclede Gas	Gas	Infrastructure System Replacement Surcharge	Replacement of mains, valves, service lines, regulator stations, vaults, other pipeline components or relocations	Docket GR-2007-0208 (July 2007)
MO	Missouri American Water	Water	Infrastructure System Replacement Surcharge	Replacement of mains, associated valves and hydrants, main cleaning and refining projects	Case WO-2004-0116 (December 2003)
MO	Missouri Gas Energy	Gas	Infrastructure System Replacement Surcharge	Replacement of mains, valves, service lines, regulator stations, vaults, other pipeline components or relocations	Docket GR-2009-0355 (February 2010)

Table 2 continued

Jurisdiction	Company Name	Services Included	Tracker Name	Eligible Investments	Case Reference
MS	Atmos Energy	Gas	Supplemental Growth Rider	Extraordinary service expansions to new industrial customers for economic development	Docket 2013-UN-23 (July 2013)
MS	Centerpoint Energy	Gas	Supplemental Growth Rider	Extraordinary service expansions to new commercial and industrial customers for economic development	Docket 13-UN-214 (October 2013)
MS	Mississippi Power	Electric	Environmental Compliance Overview Plan Rate	Miscellaneous environmental projects	Docket 92-UA-0058 and 92-UN-0059 (July 1992)
MT	Northwestern Energy	Electric	NA - Amounts recovered through electric supply service rates	Generation	Docket D.2008.6.69 (November 2008)
MT	Northwestern Energy	Gas	Natural Gas Supply Tracker	Battle Creek natural gas production resources	Docket D2012.3.25 (November 2012)
NC	Aqua North Carolina	Water	Water System Improvement Charge	Replacement of distribution system mains, valves, services, meters, and hydrants, main extensions, projects to comply with primary drinking water standards, unreimbursed facility relocation costs due to highways	Docket W-218, Sub 363 (May 2014)
NC	Aqua North Carolina	Water	Sewer System Improvement Charge	Replacement of pumps, motors, blowers, and other mechanical equipment, collection main extensions designed to implement solutions to wastewater problems, improvements necessary to reduce inflow and infiltration to the collection systems as required by state and federal law and regulations, unreimbursed costs of highway relocations	Docket W-218, Sub 363 (May 2014)
NC	Carolina Water Service	Water	Water System Improvement Charge	Replacement of distribution system mains, valves, services, meters, and hydrants, main extensions, projects to comply with primary drinking water standards, unreimbursed facility relocation costs due to highways	Docket W-354, Sub 336 (March 2014)
NC	Carolina Water Service	Water	Sewer System Improvement Charge	Replacement of pumps, motors, blowers, and other mechanical equipment, collection main extensions designed to implement solutions to wastewater problems, improvements necessary to reduce inflow and infiltration to the collection systems as required by state and federal law and regulations, unreimbursed costs of highway relocations	Docket W-354, Sub 336 (March 2014)
NC	Piedmont Natural Gas	Gas	Integrity Management Rider	Investments driven by federal pipeline safety and integrity requirements	Docket G-9, Sub 631 (December 2013)
ND	Montana-Dakota Utilities	Electric	Environmental Cost Recovery Tariff	Miscellaneous environmental projects	Case PU-13-85 (December 2013)
ND	Montana-Dakota Utilities	Electric	Generation Resource Recovery Rider Tariff	New Generation	Case PU-14-108 (August 2014)
ND	Northern States Power- MN	Electric	Transmission Cost Rider	Transmission projects	Case PU-12-813 (February 2014)
ND	Northern States Power- MN	Electric	Renewable Energy Rider	North Dakota based renewable generation	Case PU-12-813 (February 2014)
ND	Otter Tail Power	Electric	Renewable Resource Rider	Renewables	Case PU-06-466 (May 2008)
ND	Otter Tail Power	Electric	Transmission Facility Cost Recovery Tariff	Transmission investments required to serve retail customers	Case PU-11-682 (April 2012)
ND	Otter Tail Power	Electric	Environmental Cost Recovery Tariff	Miscellaneous environmental projects	Case PU-13-84 (December 2013)
NE	Black Hills Nebraska Gas Utility	Gas	Infrastructure System Replacement Recovery Charge	Non-revenue increasing projects to replace existing assets	Application NG-0074
NE	SourceGas Distribution	Gas	Pipeline Replacement Charge	Projects entering service before May 2014 that are installed to comply with safety requirements as replacements for existing facilities, projects that will extend the useful life of existing assets or enhance pipeline integrity, facility relocations	Application NG-0072 (June 2013)
NE	SourceGas Distribution	Gas	System Safety and Integrity Rider	Projects entering service after April 2014 that comply with federal regulations including transmission and distribution integrity management plans or are facility relocations costing \$20,000 or more	Application NG-0078 (October 2014)
NH	Aquarion Water of New Hampshire	Water	Water Infrastructure and Conservation Adjustment Charge	Projects to upgrade or replace non-revenue producing assets including main, valve, and hydrant replacement, main cleaning and relining, and non-reimbursable relocations	Docket DW 08-098 (September 2009)
NH	Energy North	Gas	Cast Iron/Bare Steel Replacement Program	Replacement of cast iron and bare steel pipe	Docket DG-107 (June 2007)
NH	Granite State Electric	Electric	Reliability Enhancement Plan Capital Investment Allowance	Feeder hardening and asset replacement	Docket DG-107 (June 2007)
NH	Public Service Company of New Hampshire	Electric	Energy Service	Miscellaneous environmental projects	DE 11-250 (April 2012)
NH	Public Service Company of New Hampshire	Electric	Reliability Enhancement Plan	Reliability improvements	DE 09-035, DE 11-250, and DE 14-238 (June 2015)
NJ	Elizabethtown Gas	Gas	Elizabethtown Natural Gas Distribution Utility Reinforcement Effort	System hardening	Docket GO13090826 (July 2014)
NJ	New Jersey American Water	Water	Distribution System Improvement Charge	Incremental non-revenue water main replacement, rehabilitation, or mandated relocation projects, service line replacements, valve and hydrant replacement	Docket WR12070669 (October 2012)
NJ	New Jersey Natural Gas	Gas	New Jersey Reinvestment in System Enhancement	Storm hardening projects	Docket GR13090828 (July 2014)
NJ	Public Service Electric and Gas	Electric	Solar Generation Investment Program	Solar generation	Docket EO09020125 (August 2009)
NJ	Public Service Electric and Gas	Electric & Gas	Capital Infrastructure Investment Program	Electric: reliability upgrades & feeder replacement, Gas: replacement of cast iron & bare steel mains and services	Dockets GO09010050, EO11020088, GO10110862 (April 2009 and July 2011)
NJ	Public Service Electric and Gas	Electric & Gas	Energy Strong Adjustment Mechanism	Electric: substation flood mitigation, grid reconfiguration strategies, and smart grid; Gas: Metering and regulating station flood mitigation, replacement of utilization pressure cast iron in flood prone areas	Docket EO13020155, GO13020156 (May 2014)
NJ	South Jersey Gas	Gas	Storm Hardening and Reliability Program	Replacement of low pressure mains and services with high pressure mains and services, removal of regulator stations, installation of excess flow valves in coastal areas	Docket GO13090814 (August 2014)
NJ	United Water New Jersey	Water	Distribution System Improvement Charge	Repair, replace, and/or clean mains, replace valves, hydrants, and service lines	Docket WR12080724 (October 2012)
NV	Southwest Gas	Gas	Gas Infrastructure Replacement Mechanism	Early vintage pipe replacements, conversion of master metered customers to individual meters	Docket 14-10002 (December 2014)

Table 2 continued

Jurisdiction	Company Name	Services Included	Tracker Name	Eligible Investments	Case Reference
NY	Corning Natural Gas	Gas	Safety and Reliability Charge	Replacement of leak prone pipe and ancillary costs to maintain a safe and reliable system	Case 11-G-0280 (October 2015)
NY	Keyspan Energy Long Island	Gas	Leak Prone Pipe Surcharge	Accelerated leak prone pipe removal program	Case 12-G-0214 (December 2014 and March 2015)
NY	Long Island American Water	Water	System Improvement Charge	Iron removal, storage tank rehabilitation, suction well rehabilitation at selected plants, customer information system	Case 11-W-0200 (March 2012)
NY	United Water New Rochelle	Water	Long Term Main Renewal Project	Cleaning and relining of mains	Case 99-W-0948 (August 2000)
NY	United Water New York	Water	Underground Infrastructure Renewal Program	Replacement of infrastructure including mains, valves, services, meters, and hydrants	Case 06-W-0131 (December 2006)
NY	United Water New York	Water	New Water Supply Source Surcharge	Projects to provide new sources of water in the short and long term	Case 06-W-0131 (December 2006)
OH	Aqua Ohio	Water	System Infrastructure Improvement Surcharge	Replacement of service lines, mains, hydrants, valves, main extensions to resolve documented water supply problems	Case 04-1824-WW-SIC (March 2005)
OH	Cleveland Electric Illuminating	Electric	Rider AMI	Ohio Site Deployment	Cases 09-1820-EL-ATA and 12-1230-EL-SSO
OH	Cleveland Electric Illuminating	Electric	Delivery Capital Recovery Rider	Distribution, subtransmission, general, and intangible plant not included in most recent rate case	Case 10-388-EL-SSO (August 2010)
OH	Columbia Gas	Gas	Infrastructure Replacement Program Rider	Replacement of cast iron and bare steel mains & services, AMI	Cases 08-0072-GA-AIR, 08-0073-GA-ALT, 08-0074-GA-AAM, and 08-0075-GA-AAM (December 2008); Case 09-1036-GA-RDR (April 2010)
OH	Duke Energy Ohio	Gas	Accelerated Main Replacement Program Rider	Replacement of bare steel and cast iron mains and services and faulty risers	1478-GA-ALT, and 01-1539-GA-AAM (May 2002); 07-0589-GA-AIR 07-0590-GA-ALT 07-0591-GA-AAM (May 2008)
OH	Duke Energy Ohio	Gas	Advanced Utility Rider	Gas AMI	Cases 07-0589-GA-AIR, 07-0590-GA-ALT, and 07-0591-GA-AAM (May 2008)
OH	Duke Energy Ohio	Electric	Infrastructure Modernization Distribution Rider	Electric AMI	Cases 08-920-EL-SSO and 08-921-EL-AAM and 08-922-EL-UNC and 08-923-EL-ATA (December 2008)
OH	Duke Energy Ohio	Electric	Distribution Capital Investment Rider	Distribution capital investments not recovered through other trackers	Case 14-841-EL-SSO (April 2015)
OH	East Ohio Gas d/b/a Dominion East Ohio	Gas	Pipeline Infrastructure Replacement Rider	Bare steel and cast iron pipelines & faulty riser replacements	Case 08-169-GA-ALT (October 2008)
OH	East Ohio Gas d/b/a Dominion East Ohio	Gas	Automated Meter Reading Charge	AMR	Cases 07-0829-GA-AIR and 06-1453-GA-UNC (October 2008); Case 09-38-GA-UNC (May 2009); Case 09-1875-GA-RDR (May 2010)
OH	Ohio American Water	Water	System Improvement Charge	Non-revenue producing service lines, hydrants, mains, valves, main extensions that improve supply problems, main cleaning	Case 05-577-WW-SIC (August 2005)
OH	Ohio Edison	Electric	Rider AMI	Ohio Site Deployment	Cases 09-1820-EL-ATA and 12-1230-EL-SSO
OH	Ohio Edison	Electric	Delivery Capital Recovery Rider	Distribution, subtransmission, general, and intangible plant not included in most recent rate case (filed in 2007)	Case 10-388-EL-SSO (August 2010)
OH	Ohio Power	Electric	Distribution Investment Rider	Net distribution capital additions since the date certain of most recent rate case not recovered through other riders	Case 11-346-EL-SSO
OH	Ohio Power	Electric	GridSMART Rider (Phase I)	Smart grid	Case 08-917-EL-SSO and 08-918-EL-SSO (March 2009)
OH	Toledo Edison	Electric	Rider AMI	Ohio Site Deployment	Cases 09-1820-EL-ATA and 12-1230-EL-SSO
OH	Toledo Edison	Electric	Delivery Capital Recovery Rider	Power distribution, subtransmission, general, and intangible plant not included in most recent rate case (filed in 2007)	Case 10-388-EL-SSO (August 2010)
OH	Vectren Energy Delivery	Gas	Distribution Replacement Rider	Replacement of cast iron and bare steel mains and services	Cases 07-1081-GA-ALT, 07-1080-GA-AIR and 08-0632-GA-AAM (January 2009)
OK	Oklahoma Gas & Electric	Electric	System Hardening Recovery Rider	Undergrounding and other circuit hardening	Cause PUD 20080387, Order 567670 (May 2009)
OK	Oklahoma Gas & Electric	Electric	Smart Grid Rider	Smart grid	Cause PUD 201000029 (July 2010)
OK	Oklahoma Gas & Electric	Electric	Crossroads Rider	Crossroads Wind Farm	Cause PUD 201000037 (July 2010)
OK	Public Service Company of Oklahoma	Electric	System Reliability Rider	Grid resiliency projects	Cause PUD 201300202 (January 2014)
OK	Public Service Company of Oklahoma	Electric	Advanced Metering Infrastructure Tariff	Advanced metering infrastructure deployment	Cause PUD 201300217 (April 2015)
OR	Northwest Natural Gas	Gas	System Integrity Program	Bare steel replacement, transmission integrity management program, distribution integrity management program	Docket UM 1406, Order 09-067 (March 2009)
OR	PacifiCorp	Electric	Renewable Adjustment Clause	Renewable generation	Docket UM 1330 (December 2007)
OR	PacifiCorp	Electric	Lake Side 2 Tariff Rider	Generation	Docket UE 263, Order 13-474 (December 2013)
OR	PacifiCorp	Electric	M2O Transmission Rider	Mona to Oquirrh transmission line only if line is placed into service within 6 months of May 31, 2013	Docket UE 246, Orders 12-493 and 13-195 (December 2012 and May 2013)
OR	Portland General Electric	Electric	Renewable Adjustment Clause	Renewable generation	Docket UM 1330 (December 2007)
PA	Columbia Gas	Gas	Distribution System Improvement Charge	Replacement of cast iron, bare steel, and first generation plastic mains and services, install excess flow valves, install or relocate automated meters, and replace risers, meter bars, and service regulators	P-2012-2338282 (March 2013)
PA	Columbia Water Company	Water	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-00021979
PA	Duquesne Light	Electric	Smart Meter Charge Rider	AMI	Docket M-2009-2123948 (April 2010)
PA	Equitable Gas	Gas	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-2013-2342745 (July 2013)
PA	Metropolitan Edison	Electric	Smart Meters Technologies Charge	AMI	Docket M-2009-2123950 (April 2010)

Table 2 continued

Jurisdiction	Company Name	Services Included	Tracker Name	Eligible Investments	Case Reference
PA	PECO	Electric	Smart Meter Cost Recovery Rider	AMI	Docket M-2009-2123944 (April 2010)
PA	PECO	Electric	Distribution System Improvement Charge	Storm hardening and resiliency measures, underground cable replacement, substation retirements, and facility relocations	Docket P-2015-2471423 (October 2015)
PA	PECO	Gas	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-2013-2347340 (September 2015)
PA	Pennsylvania Electric	Electric	Smart Meters Technologies Charge	AMI	Docket M-2009-2123950 (April 2010)
PA	Pennsylvania Power	Electric	Smart Meters Technologies Charge	AMI	Docket M-2009-2123950 (April 2010)
PA	Pennsylvania-American Water	Water	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-000961031 (August 1996)
PA	Peoples Natural Gas	Gas	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-2013-2344596 (May 2013)
PA	Peoples TWP	Gas	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-2013-2344595 (May 2013)
PA	Philadelphia Gas Works	Gas	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-2012-2337737 (April 2013)
PA	Philadelphia Suburban Water	Water	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-00961035 (August 1996)
PA	PPL Electric Utilities	Electric	Act 129 Compliance Rider	AMI	Docket M-2009-2123945 (January 2010)
PA	PPL Electric Utilities	Electric	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., poles, wires)	Docket P-2012-2325034 (May 2013)
PA	UGI Central Penn Gas	Gas	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-2013-2398835 (September 2014)
PA	UGI Penn Natural Gas	Gas	Distribution System Improvement Charge	Non-expense reducing, non-revenue producing infrastructure replacement projects (e.g., mains, meters, services)	Docket P-2013-2397056 (September 2014)
PA	West Penn Power	Electric	Smart Meter Surcharge	AMI	Docket M-2009-2123951 (June 2011)
RI	Narragansett Electric (electric operations)	Electric	Electric Infrastructure, Safety, and Reliability Plan Factor	Replacements and load growth	Docket 4218 (December 2011)
RI	Narragansett Electric (gas operations)	Gas	Gas Infrastructure, Safety, and Reliability Plan Factor	Previous accelerated capital replacement program investments plus main and service replacements and reliability investments	Docket 4219 (September 2011)
SC	South Carolina Electric & Gas	Electric	NA	Nuclear generation	Docket 2008-196-E (March 2009)
SD	Black Hills Power	Electric	Environmental Improvement Adjustment tariff	Miscellaneous environmental projects	Docket EL11-001
SD	Black Hills Power	Electric	Phase in plan rate	Gas-fired generation	Docket EL12-062 (September 2013)
SD	Northern States Power- MN	Electric	Environmental Cost Recovery Tariff	Miscellaneous environmental projects	Docket EL07-026 (January 2009)
SD	Northern States Power- MN	Electric	Transmission Cost Recovery Tariff	Transmission	Docket EL07-007 (January 2009)
SD	Northern States Power- MN	Electric	Infrastructure Rider	Generation	Docket EL 12-046 (April 2013)
SD	Otter Tail Power	Electric	Transmission Cost Recovery Tariff	Retail sales portion of specific transmission projects	Docket EL 10-015 (November 2011)
SD	Otter Tail Power	Electric	Environmental Quality Cost Recovery Tariff	Miscellaneous environmental projects	Docket EL 14-082 (December 2014)
TN	Piedmont Natural Gas	Gas	Integrity Management Rider	Distribution and transmission integrity management planning as required by the US Department of Transportation	Docket 13-00118 (May 2014)
TX	AEP Texas Central	Electric	Advanced Metering System Surcharge	AMI	Docket 36928
TX	AEP Texas North	Electric	Advanced Metering System Surcharge	AMI	Docket 36928
TX	Atmos Energy Mid Tex	Gas	Gas Reliability Infrastructure Program	Incremental investment in new and replacement pipe, pipeline integrity including mains replacement	Texas Utilities Code 104.301 and Gas Utilities Docket 9615
TX	Atmos Energy Pipelines	Gas	Gas Reliability Infrastructure Program	Incremental investment in new and replacement pipe, pipeline integrity including mains replacement	Gas Utilities Dockets 9615 and 10640
TX	Atmos Energy West Texas Division	Gas	Gas Reliability Infrastructure Program	Incremental investment in new and replacement pipe, pipeline integrity including mains replacement	Texas Utilities Code 104.301 and Gas Utilities Docket 9608
TX	Centerpoint Energy Entex - Houston Division	Gas	Gas Reliability Infrastructure Program	Incremental investment in new and replacement pipe, pipeline integrity including mains replacement	Texas Utilities Code 104.301 and Gas Utilities Docket 10067
TX	Centerpoint Energy Houston Electric	Electric	Advanced Metering System Surcharge	AMI	Docket 35620 (August 2008)
TX	Centerpoint Energy Houston Electric	Electric	Distribution Cost Recovery Factor	Change in net distribution rate base since last rate case	Docket 44572 (August 2015)
TX	Oncor Electric Delivery	Electric	Advanced Metering System Surcharge	AMI	Docket 35718 (August 2008)
TX	Texas-New Mexico Power	Electric	Advanced Metering System Surcharge	AMI	Docket 38306 (July 2011)
UT	Questar Gas	Gas	Infrastructure Rate Adjustment Tracker	Replacement of aging high-pressure feeder lines	Docket 09-057-16 (June 2010)
VA	Appalachian Power	Electric	Environmental & Reliability Cost Recovery Surcharge	Miscellaneous environmental & reliability projects	Docket PUE-2007-00069 (December 2007)
VA	Appalachian Power	Electric	Environmental Rate Adjustment Clause	Miscellaneous environmental projects	Case PUE-2011-00035 (November 2011)
VA	Appalachian Power	Electric	Generation Rate Adjustment Clause	Dresden plant	Docket PUE-2011-00036 (January 2012)
VA	Atmos Energy	Gas	Infrastructure Reliability and Replacement Adjustment	Replacement of first generation plastic pipe and service lines and bare steel mains and services	Case PUE-2012-00049 (August 2012)
VA	Columbia Gas of Virginia	Gas	SAVE Rider	Replacement of bare steel and cast iron mains, some early plastic pipe, isolated bare steel services, and risers prone to failure	Case PUE-2011-00049 (November 2011)
VA	Roanoke Gas Company	Gas	SAVE Rider	Replacement of cast iron mains, bare steel mains and services and pre-1973 plastic pipe	Case PUE-2012-00030 (August 2012)
VA	Virginia Electric Power	Electric	Rider S	Virginia City Hybrid Energy Center	Case PUE-2007-00066 (March 2008)
VA	Virginia Electric Power	Electric	Rider R	Bear Garden Generating Station	Case PUE-2009-00017 (March 2010)
VA	Virginia Electric Power	Electric	Rider W	Warren County Power Station	Case PUE-2011-00042 (February 2012)
VA	Virginia Electric Power	Electric	Rider B	Biomass conversions	Case PUE-2011-00073 (March 2012)
VA	Virginia Electric Power	Electric	Rider BW	Brunswick County Power Station (natural gas combined cycle generating station)	Case PUE-2012-00128 (August 2013)

Table 2 continued

<b>Jurisdiction</b>	<b>Company Name</b>	<b>Services Included</b>	<b>Tracker Name</b>	<b>Eligible Investments</b>	<b>Case Reference</b>
VA	Virginia Natural Gas	Gas	SAVE Rider	Replacement of first generation plastic mains, cast and wrought iron mains, bare and ineffectively coated steel mains, and service lines installed prior to 1971	Case PUE-2012-00012 (June 2012)
VA	Washington Gas Light	Gas	SAVE Rider	Replacement of bare and unprotected steel services and mains, mechanically coupled pipe, copper services, cast iron main, and pre-1975 plastic services	Cases PUE-2010-00087 and PUE-2012-00096 (April 2011 and November 2012)
WA	Cascade Natural Gas	Gas	Pipeline Replacement Program Cost Recovery Mechanism	Replacement of bare steel and poorly coated pipelines and distribution systems	Docket PG-131838 (October 2013)
WV	Appalachian Power	Electric	Construction/765kW Surcharge	Generation, environmental	Case 11-0274-E-GI (June 2011)
WV	Monongahela Power	Electric	Vegetation Management Surcharge	Capitalized distribution vegetation management expenses	Case 14-0702-E-42T (February 2015)
WV	Potomac Edison	Electric	Vegetation Management Surcharge	Capitalized distribution vegetation management expenses	Case 14-0702-E-42T (February 2015)
WV	Wheeling Power	Electric	Construction/765kW Surcharge	Generation, environmental	Case 11-0274-E-GI (June 2011)
WY	Black Hills Power	Electric	Cheyenne Prairie Generating Station rate rider tariff	Construction of Cheyenne Prairie Generating Station	Docket 20002-84-ET-12 (November 2012)
WY	Cheyenne Light, Fuel, & Power	Electric	Cheyenne Prairie Generating Station rate rider tariff	Construction of Cheyenne Prairie Generating Station	Docket 20003-123-ET-12 (November 2012)

### III. Relaxing the Link Between Revenue and System Use

Policymakers are increasingly interested in relaxing the link between the revenues utilities realize, and the kWh and kW of system use by customers. This reduces the financial attrition that results from slowing growth in system use (given legacy rate designs) more efficiently than frequent rate cases. In addition, utilities have more incentive to embrace DSM. Three approaches to relaxing the revenue/usage link are well established: lost revenue adjustment mechanisms (“LRAMs”), revenue decoupling, and fixed/variable pricing.

#### A. Lost Revenue Adjustment Mechanisms

LRAMs keep utilities whole for short-term losses in base rate revenues that are due to their DSM programs (and potentially also DG). Recovery usually is effected through a special rate rider. Estimates of load losses are needed.

LRAMs encourage utilities to embrace DSM that is eligible for LRAM treatment. They do not provide recovery for the revenue impact of external forces, like DSM programs managed by independent agencies, which slow load growth. Estimates of load savings from utility DSM can be complex and are sometimes controversial. The scope of DSM initiatives addressed by LRAMs is therefore frequently limited to those for which load impacts are easier to measure. When usage charges are high, the utility remains at risk for revenue fluctuations in volumes and peak load due to weather, local economic activity, and other volatile demand drivers.

Precedents for LRAMs are detailed in Table 3 and Figure 4 below.<sup>3</sup> LRAMs are currently the most popular means of relaxing the link between revenue and system use in the US electric utility industry. Since our 2013 survey, LRAMs have been adopted for electric utilities in Arizona, Louisiana, and Mississippi. A few utilities have LRAMs that address DG. LRAMs are less popular for gas distributors since the declining average use they have typically experienced for many years is due chiefly to external forces that LRAMs don’t address. Some utilities have LRAMs for some services and revenue decoupling for others. In New York, for example, some natural gas distributors have decoupling for residential and commercial customers and LRAMs for some large load customers.

#### B. Revenue Decoupling

Revenue decoupling adjusts a utility’s rates periodically to help its actual revenue track its allowed revenue more closely. Most decoupling systems have two basic components: a revenue decoupling mechanism (“RDM”) and a revenue adjustment mechanism (“RAM”). The RDM tracks variances between actual and allowed revenue and adjusts rates to reduce them. The RAM escalates allowed revenue to provide relief for growing cost pressures.

<sup>3</sup> Some mechanisms similar to LRAMs are excluded from this survey.





Table 3

## Current LRAM Precedents<sup>1</sup>

State	Company	Services	Approval Date	Case Reference
AR	Arkansas Oklahoma Gas	Gas	June 2011	Docket 07-077-TF, Order Number 30
AR	Centerpoint Energy Arkla	Gas	June 2011	Docket 07-081-TF, Order Number 31
AR	Entergy Arkansas	Electric	June 2011	Docket 07-085-TF, Order Number 40
AR	Oklahoma Gas & Electric	Electric	June 2011	Docket 07-075-TF, Order 26
AR	SourceGas Arkansas	Gas	June 2011	Docket 07-078-TF, Order 26
AR	Southwestern Electric Power	Electric	June 2011	Docket 07-082-TF, Orders 35 and 36
AZ	Arizona Public Service	Electric	May 2012	Docket E-01345A-11-0224, Decision 73183
AZ	Tucson Electric Power	Electric	June 2013	Docket E-01933A-12-0291; Decision 73912
AZ	UNS Electric	Electric	September 2013	Docket E-04204A-12-0504; Decision 74235
AZ	UNS Gas	Gas	May 2012	Docket G-04204A-11-0158 Decision 73142
CT	Southern Connecticut Gas	Gas	August 1995	Docket 93-03-09
CT	Yankee Gas Service	Gas	January 2012	Docket 11-10-03
IN	Duke Energy Indiana (PSI)	Electric	February 2010	Cause 43374
IN	Indiana-Michigan Power	Electric	September 2010	Cause 43827
IN	Northern Indiana Public Service	Electric	May 2011	Cause 43618
IN	Southern Indiana Gas & Electric	Electric	August 2011 (large commercial and industrials), June 2012 (residential and small commercial)	Causes 43938 and 43405 DSMA 9 S1
KS	Kansas Gas & Electric	Electric	January 2011	Docket 10-WSEE-775-TAR
KS	Westar Energy	Electric	January 2011	Docket 10-WSEE-775-TAR
KY	Atmos Energy	Gas	September 2009	Case 2008-00499
KY	Columbia Gas of Kentucky	Gas	October 2009	Case 2009-00141
KY	Delta Natural Gas	Gas	July 2008	Docket 2008-00062
KY	Duke Energy Kentucky	Electric	December 1995 and February 2005	Cases 95-321 and 2004-00389
KY	Duke Energy Kentucky	Gas	February 2005	Case 2004-00389
KY	Kentucky Power	Electric	December 1995	Case 95-427
KY	Kentucky Utilities	Electric	May 2001	Case 2000-0459
KY	Louisville Gas & Electric	Electric & Gas	November 1993	Case 93-150
LA	Cleco Power	Electric	October 2014	Docket R-31106
LA	Entergy Gulf States Louisiana	Electric	October 2014	Docket R-31106
LA	Entergy Louisiana	Electric	October 2014	Docket R-31106
LA	Southwestern Electric Power	Electric	October 2014	Docket R-31106
MA	All Electric distributors	Electric	July 2012	D.P.U. 12-01A
MA	Berkshire Gas	Gas	October 1992	D.P.U. 91-154
MA	Commonwealth Gas d/b/a NSTAR Gas	Gas	November 1994	D.P.U. 94-128

Table 3 (cont'd)

State	Company	Services	Approval Date	Case Reference
MA	NSTAR Electric	Electric	April 1992, June 1994, and June 2010	D.P.U. 90-335, D.P.U. 94-2/3-CC, and D.P.U. 10-06
MS	Atmos Energy	Gas	August 2014	Docket 2014-UA-017
MS	Centerpoint Energy	Gas	August 2014	Docket 2014-UA-007
MS	Entergy Mississippi	Electric	September 2014	Docket 2009-UN-064
MS	Mississippi Power	Electric	March 2015	Docket 2014-UN-10
MT	Montana-Dakota Utilities	Gas	October 2006	Docket D2005.10.156; Order 6697c
NC	Duke Energy Carolinas	Electric	February 2010	Docket E-7, Sub 831
NC	Progress Energy Carolinas (Carolina Power & Light)	Electric	November 2009	Docket E-2, Sub 931
NC	Virginia Electric Power	Electric	October 2011	Docket E-22, Sub 464
NV	Nevada Energy	Electric	May 2011	Docket 10-10024
NV	Sierra Pacific Power	Electric	May 2011	Docket 10-10025
NY	Keyspan Long Island	Gas	December 2009	Case 06-G-1186; Currently effective for all customers not in RDM
NY	Keyspan New York	Gas	December 2009	Case 06-G-1185; Currently effective for all customers not in RDM
OH	American Electric Power (Ohio Power, Columbus Southern Power)	Electric	May 2010	Docket 09-1089-EL-POR; Effective for classes not included in RDM
OH	Dayton Power & Light	Electric	June 2009	Docket 08-1094-EL-SSO
OH	Duke Energy Ohio (Cincinnati Gas & Electric)	Electric	July 2007 and August 2012	Dockets 06-0091-EL-UNC and 11-4393-EL-RDR; Effective for classes not included in RDM
OH	First Energy Ohio (Cleveland Electric Illuminating, Toledo Edison, Ohio Edison)	Electric	March 2009	Docket 08-935-EL-SSO
OK	Empire District Electric	Electric	November 2009	Cause 200900146 Order 571326
OK	Oklahoma Gas & Electric	Electric	July 2008	Cause 200800059 Order 556179
OK	Public Service of Oklahoma	Electric	January 2010	Cause PUD 200900196; Order 572836
OR	Cascade Natural Gas	Gas	April 2006	Order 06-191; UG 167 Effective for classes not included in RDM
OR	Portland General Electric	Electric	September 2001	Order 01-836; UE 79 Effective for classes not included in RDM
OR	Avista Utilities	Gas	December 1993	Order 93-1881
SC	Duke Energy Carolinas	Electric	January 2010	Docket 2009-226-E Order 2010-79
SC	Progress Energy Carolinas	Electric	June 2009	Docket 2008-251-E Order 2009-373
SC	South Carolina Electric & Gas	Electric	July 2010	Docket 2009-261-E, Order 2010-472
WY	Cheyenne Light, Fuel, and Power	Electric & Gas	September 2011	Dockets 20003-108-EA-10 and 30005-140-GA-10
WY	Montana-Dakota Utilities	Electric	January 2007	Docket 20004-65-ET-06

<sup>1</sup> LRAMs listed here include only those mechanisms that compensate utilities for actual revenues lost due to DSM and DG.

The great majority of decoupling systems have a RAM since, if allowed revenue is static, the utility will experience financial attrition as its costs inevitably rise. Utilities that do not have RAMs in their decoupling systems often file frequent rate cases or are allowed to use capital cost trackers to address attrition. The more important issue in a proceeding to consider decoupling is therefore the design of the RAM rather than the need for one.

Most RAMs escalate allowed revenue only for customer growth. Escalation for customer growth is sensible because it is an important driver of cost and also highly correlated with other drivers such as peak demand. The need for rate cases is thereby reduced but is rarely eliminated since cost has other drivers such as input price inflation. When RAMs are escalated only for customer growth, utilities usually retain the freedom to file rate cases to address other cost factors and often do. Some RAMs are “broad-based” in the sense that they provide enough revenue growth to compensate the utility for several kinds of cost pressures. This can materially reduce the need for rate cases and provide a foundation for a multiyear rate plan.

Revenue decoupling compensates utilities for declining average use even if it is driven in part by external forces such as independently administered DSM programs. The lost revenue disincentive is removed for a wide array of utility initiatives to encourage DSM without requiring load impact calculations or rate designs that discourage DSM. To the extent that recovery of allowed revenue is ensured, utilities can use rate designs with usage charges more aggressively to foster DSM. This makes environmental intervenors strong supporters of decoupling. Controversy over billing determinants in rate cases with future test years is reduced.

Revenue decoupling is a popular means of relaxing the link between a utility’s revenue and customers’ kWh consumption. States that have tried gas and electric revenue decoupling are indicated on the maps below in Figures 5a and 5b, respectively. Revenue decoupling precedents in the United States and Canada are detailed in Table 4. In the electric utility industry, decoupling has been favored in states that strongly support DSM. Since our 2013 survey, decoupling has been adopted for electric utilities in Connecticut, Maine, Minnesota, and Washington state. Decoupling is the most widespread means of relaxing the revenue/usage link for gas distributors. This reflects the fact that gas distributors often experience declining average use and that this has been driven chiefly by external forces. Table 4 indicates the kinds of RAMs chosen in approved decoupling systems. Note that RAMs for electric utilities are frequently broad-based.

### **C. Fixed/Variable Pricing**

Fixed/variable pricing is an approach to rate design that uses fixed charges (charges that do not vary with the actual sales volume or peak demand) to compensate utilities for fixed costs of service. For residential and small commercial services, customer charges (a flat monthly fee per customer) are the most common fixed charge used. Base revenue thus tends to grow at the gradual pace of customer growth. A *straight* fixed/variable (“SFV”) rate design recovers *all* base revenue through fixed charges. A rate design that recovers a substantial but smaller share of fixed costs through fixed charges is sometimes called *modified* fixed/variable pricing.

Figure 5a: Electric Revenue Decoupling by State

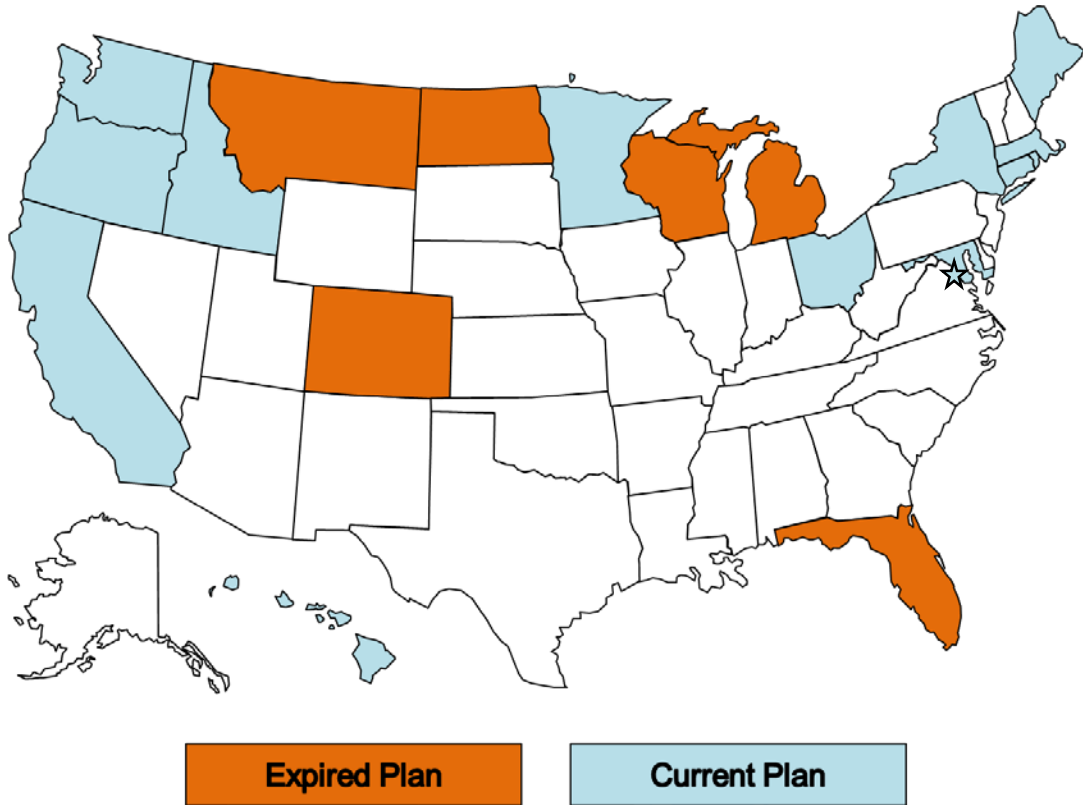


Figure 5b: Gas Revenue Decoupling by State

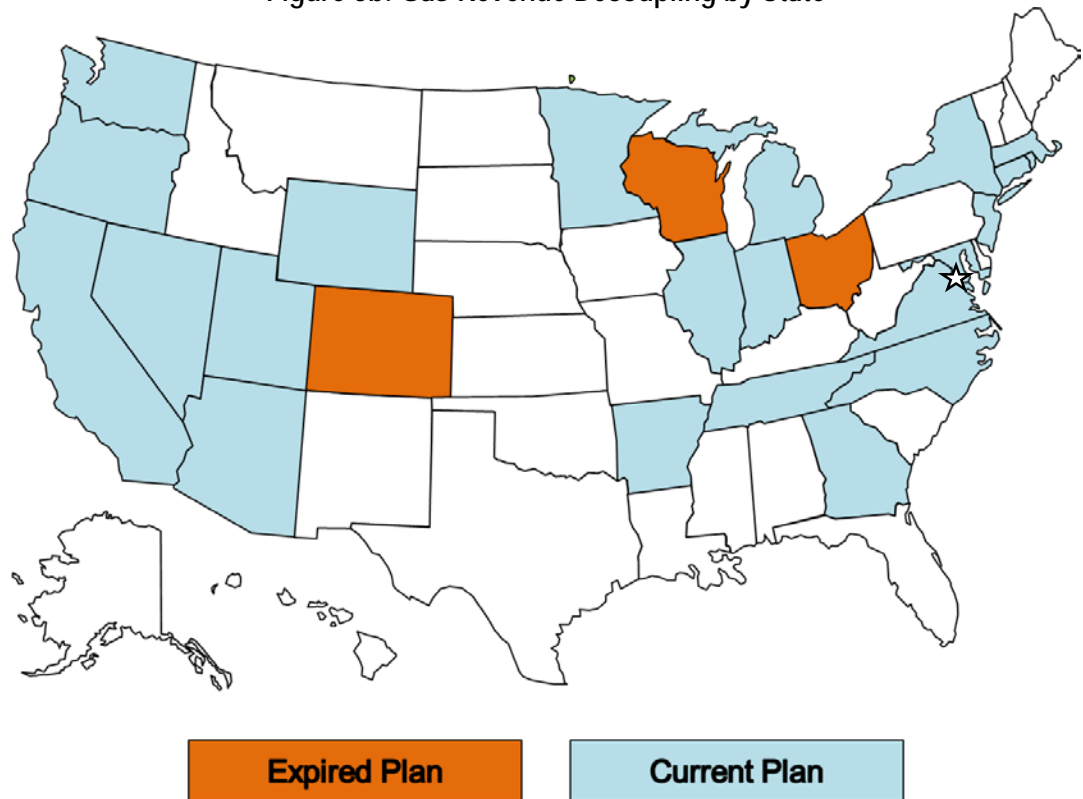


Table 4  
**Revenue Decoupling Precedents**

Jurisdiction	Company Name	Services	Plan Years	Revenue Adjustment Mechanism	Case Reference
<b>Current</b>					
<b>United States</b>					
AR	Arkansas Oklahoma Gas	Gas	2014-open	No RAM but multiple capital cost trackers	Docket 13-078-U
AR	CenterPoint Energy	Gas	2008-2016	No RAM but multiple capital cost trackers	Dockets 06-161-U, 11-088-U, 12-057-TF, and 13-114-TF
AR	SourceGas Arkansas (Arkansas Western)	Gas	2014-open	No RAM but multiple capital cost trackers	Docket 13-079-U
AZ	Southwest Gas	Gas	2012-open	Customers	Docket G-01551A-10-0458
CA	Bear Valley Electric Service	Electric	2013-2016	Stairstep	Decision 14-11-002
CA	California Pacific Electric	Electric	2013-2015	Indexing	Decision 12-11-030
CA	Pacific Gas & Electric	Gas & Electric	2014-2016	Stairstep	Decision 14-08-032
CA	San Diego Gas & Electric	Gas & Electric	2012-2015	Stairstep	Decision 13-05-010
CA	Southern California Edison	Electric	2012-2014	Hybrid	Decision 12-11-051
CA	Southern California Gas	Gas	2012-2015	Stairstep	Decision 13-05-010
CA	Southwest Gas	Gas	2014-2018	Stairstep	Decision 14-06-028
CT	Connecticut Light & Power	Electric	2014-open	No RAM	Docket 14-05-06
CT	Connecticut Natural Gas	Gas	2014-open	No RAM	Docket 13-06-08
CT	United Illuminating	Electric	2013-open	Stairstep until July 2015, No RAM thereafter	Docket 13-01-19
DC	Potomac Electric Power	Electric	2010-open	Customers	Order 15556
GA	Atmos Energy	Gas	2012-open	No RAM but FRP type mechanism also in effect	Docket 34734
HI	Hawaiian Electric Company	Electric	2011-open	Hybrid	Dockets 2008-0274, 2008-0083, 2013-0141
HI	Hawaiian Electric Light Company	Electric	2012-open	Hybrid	Dockets 2008-0274, 2009-0164, 2013-0141
HI	Maui Electric	Electric	2012-open	Hybrid	Dockets 2008-0274, 2009-0163, 2013-0141
ID	Idaho Power	Electric	2012-open	Customers	Cases IPC-E-11-19, IPC-E-14-17
IL	North Shore Gas	Gas	2012-open	No RAM	Case 11-0280
IL	Peoples Gas Light & Coke	Gas	2012-open	No RAM but broad-based capital cost tracker	Case 11-0281
IN	Citizens Gas	Gas	2007-open	Customers	Cause 42767
IN	Indiana Gas	Gas	2011-2015	Customers	Cause 44019
IN	Indiana Gas	Gas	2016-2019	Customers	Cause 44598
IN	Indiana Natural Gas	Gas	2014-open	Customers	Cause 44453
IN	Vectren Southern Indiana	Gas	2011-2015	Customers	Cause 44019
IN	Vectren Southern Indiana	Gas	2016-2019	Customers	Cause 44598
MA	Bay State Gas	Gas	2015-2018	Revenue per Customer Stairstep	DPU 15-50
MA	Boston-Essex Gas	Gas	2010-open	Customers	DPU 10-55
MA	Colonial Gas	Gas	2010-open	Customers	DPU 10-55
MA	Fitchburg Gas & Electric	Gas	2011-open	Customers	DPU 11-02
MA	Fitchburg Gas & Electric	Electric	2011-open	No RAM	DPU 11-01
MA	Massachusetts Electric	Electric	2010-open	No RAM but broad-based capital cost tracker	DPU 09-39
MA	New England Gas	Gas	2011-open	Customers	DPU 10-114
MA	Western Massachusetts Electric	Electric	2011-open	No RAM	DPU 10-70
MD	Baltimore Gas & Electric	Electric	2008-open	Customers	Letter Orders ML 108069, 108061
MD	Baltimore Gas & Electric	Gas	1998-open	Customers	Case 8780
MD	Chesapeake Utilities	Gas	2006-open	Customers	Order 81054
MD	Columbia Gas of Maryland	Gas	2013-open	Customers	Order 85858
MD	Delmarva Power & Light	Electric	2007-open	Customers	Order 81518
MD	Potomac Electric Power	Electric	2007-open	Customers	Order 81517
MD	Washington Gas Light	Gas	2005-open	Customers	Order 80130
ME	Central Maine Power	Electric	2014-open	Customers	Docket 2013-00168

Table 4 (cont'd)

Jurisdiction	Company Name	Services	Plan Years	Revenue Adjustment Mechanism	Case Reference
<b>Current (cont'd)</b>					
<b>United States (cont'd)</b>					
MI	Consumers Energy	Gas	2015-open	No RAM	Case U-17643
MI	Michigan Consolidated Gas	Gas	2013-open	No RAM	Case U-16999
MI	Michigan Gas Utilities	Gas	2015-open	No RAM	Case U-17273
MN	CenterPoint Energy	Gas	2015-2018	Customers	GR-13-316
MN	Minnesota Energy Resources	Gas	2013-2016	Customers	GR-10-977
MN	Northern States Power - MN	Electric	2016-2018	Customers	GR-13-868
NC	Piedmont Natural Gas	Gas	2008-open	Customers	Docket G-9, Sub 550
NC	Public Service Co of NC	Gas	2008-open	Customers	Docket G-5, Sub 495
NJ	New Jersey Natural Gas	Gas	2014-open	Customers	Docket GR13030185
NJ	South Jersey Gas	Gas	2014-open	Customers	Docket GR13030185
NV	Southwest Gas	Gas	2009-open	Customers	D-09-04003
NY	Central Hudson G&E	Gas & Electric	2015-2018	Revenue per Customer Stairstep for Gas, Stairstep for Electric	Cases 14-E-0318, 14-G-0319
NY	Consolidated Edison	Gas	2014-2016	Revenue per Customer Stairstep	Case 13-G-0031
NY	Consolidated Edison	Electric	2014-2016	Stairstep	Case 13-E-0030
NY	Corning Natural Gas	Gas	2015-2017	Customers	Case 11-G-0280
NY	Keyspan Energy Delivery - Long Island	Gas	2010-open	Revenue per Customer Stairstep through 2012, Customers After 2012	Case 06-G-1186
NY	Keyspan Energy Delivery New York	Gas	2013-2014	Revenue per Customer Stairstep through 2014, Customers After 2014	Case 12-G-0544
NY	National Fuel Gas	Gas	2013-2015	Customers	Case 13-G-0136
NY	New York State Electric & Gas	Gas	2010-2013	Revenue per Customer Stairstep through 2013, Customers thereafter	Case 09-E-0715
NY	New York State Electric & Gas	Electric	2010-2013	Stairstep through 2013, No RAM thereafter	Case 09-G-0716
NY	Niagara Mohawk	Gas	2013-2016	Optional Revenue per Customer Stairstep	Case 12-G-0202
NY	Niagara Mohawk	Electric	2013-2016	Optional Stairstep	Case 12-E-0201
NY	Orange & Rockland Utilities	Gas	2015-2018	Revenue per Customer Stairstep	Case 14-G-0494
NY	Orange & Rockland Utilities	Electric	2015-2017	Stairstep	Case 14-E-0493
NY	Rochester Gas & Electric	Gas	2010-2013	Revenue per Customer Stairstep through 2013, Customers thereafter	Case 09-E-0717
NY	Rochester Gas & Electric	Electric	2010-2013	Stairstep through 2013, No RAM thereafter	Case 09-G-0718
NY	St. Lawrence Gas	Gas	2010-open	Revenue per Customer Stairstep through 2012, Customers thereafter	Case 08-G-1392
OH	AEP Ohio	Electric	2012-2018	Customers	Cases 11-351-EL-AIR, 13-2385-EL-SSO
OH	Duke Energy Ohio	Electric	2015-open	Customers	Case 14-841-EL-SSO
OR	Cascade Natural Gas	Gas	2013-2015	Customers	Order 13-079
OR	Northwest Natural Gas	Gas	2012-open	Customers	Order 12-408
OR	Portland General Electric	Electric	2014-2016	Customers	Order 13-459
RI	Narragansett Electric	Electric	2012-open	No RAM but broad-based capital cost tracker	Docket 4206
RI	Narragansett Electric	Gas	2012-open	Customers	Docket 4206
TN	Chattanooga Gas	Gas	2013-open	Customers	Docket 09-0183
UT	Questar Gas	Gas	2010-open	Customers	Docket 09-057-16
VA	Columbia Gas of Virginia	Gas	2013-2015	Customers	Case PUE-2012-00013
VA	Virginia Natural Gas	Gas	2013-2016	Customers	Case PUE-2012-00118
VA	Washington Gas Light	Gas	2013-2016	Customers	Case PUE-2012-00138
WA	Avista	Gas & Electric	2015-2019	Customers	Dockets UE-140188 and UG-140189
WA	Puget Sound Energy	Gas & Electric	2013-2016	Revenue per Customer Stairstep	Dockets UE-121697 and UG-121705
WY	Questar Gas	Gas	2012-open	Customers	Docket 30010-113-GR-11
WY	SourceGas Distribution	Gas	2011-open	Customers	Docket 30022-148-GR-10

Table 4 (cont'd)

Jurisdiction	Company Name	Services	Plan Years	Revenue Adjustment Mechanism	Case Reference
<b>Current (cont'd)</b>					
<b>Canada</b>					
BC	BC Hydro	Electric	2015-2016	Stairstep	Order G-48-14
BC	FortisBC	Electric	2014-2019	Indexing	Order G-139-14
BC	FortisBC Energy	Gas	2014-2019	Indexing	Order G-138-14
BC	Pacific Northern Gas	Gas	2003-open	Customers	N/A
ON	Enbridge Gas Distribution	Gas	2014-2018	Stairstep	EB-2012-0459
ON	Union Gas	Gas	2014-2018	Indexing	EB-2013-0202
<b>Historic</b>					
<b>United States</b>					
AR	Arkansas Oklahoma Gas	Gas	2007-2013	No RAM	Dockets 07-026-U, 07-077-TF
AR	Arkansas Western	Gas	2008-2013	No RAM	Docket 07-078-TF
CA	Bear Valley Electric Service	Electric	2009-2012	Stairstep	Decision 09-10-028
CA	Pacific Gas & Electric	Gas & Electric	1982-1983	Hybrid	Decision 93887
CA	Pacific Gas & Electric	Electric	1984-1985	Hybrid	Decision 83-12-068
CA	Pacific Gas & Electric	Electric	1986-1989	Hybrid	Decision 85-12-076
CA	Pacific Gas & Electric	Electric	1990-1992	Hybrid	Decision 89-12-057
CA	Pacific Gas & Electric	Gas & Electric	1993-1995	Hybrid	Decision 92-12-057
CA	Pacific Gas & Electric	Gas & Electric	2004-2006	Indexing	Decision 04-05-055
CA	Pacific Gas & Electric	Gas & Electric	2007-2010	Stairstep	Decision 07-03-044
CA	Pacific Gas & Electric	Gas & Electric	2011-2013	Stairstep	Decision 11-05-018
CA	Pacific Gas & Electric	Gas	1978-1981	No RAM	Decisions 89316, 91107
CA	PacifiCorp	Electric	1984-1985	Stairstep	Decision 89-09-034
CA	San Diego Gas & Electric	Gas & Electric	1982-1983	Hybrid	Decision 93892
CA	San Diego Gas & Electric	Gas & Electric	1986-1988	Hybrid	Decision 85-12-108
CA	San Diego Gas & Electric	Electric	1989-1993	Hybrid	Decision 89-11-068
CA	San Diego Gas & Electric	Gas & Electric	1994-1999	Hybrid	Decision 94-08-023
CA	San Diego Gas & Electric	Gas & Electric	2005-2007	Indexing	Decision 05-03-025
CA	San Diego Gas & Electric	Gas & Electric	2008-2011	Stairstep	Decision 08-07-046
CA	Southern California Edison	Electric	1983-1984	Hybrid	Decision 82-12-055
CA	Southern California Edison	Electric	1986-1991	Hybrid	Decision 85-12-076
CA	Southern California Edison	Electric	2001-2003	Indexing	Decision 02-04-055
CA	Southern California Edison	Electric	2004-2006	Hybrid	Decision 04-07-022
CA	Southern California Edison	Electric	2006-2008	Hybrid	Decision 06-05-016
CA	Southern California Edison	Electric	2009-2011	Stairstep	Decision 09-03-025
CA	Southern California Gas	Gas	1979-1980	No RAM	Decision 89710
CA	Southern California Gas	Gas	1981-1982	Stairstep	Decision 92497
CA	Southern California Gas	Gas	1983-1984	Hybrid	Decision dated December 8, 1982
CA	Southern California Gas	Gas	1986-1989	Hybrid	Decision 85-12-076
CA	Southern California Gas	Gas	1990-1993	Hybrid	Decision 90-01-016
CA	Southern California Gas	Gas	1998-2002	Indexing	Decision 97-07-054
CA	Southern California Gas	Gas	2005-2007	Indexing	Decision 05-03-025
CA	Southern California Gas	Gas	2008-2011	Stairstep	Decision 08-07-046
CA	Southwest Gas	Gas	2009-2013	Stairstep	Decision 08-11-048
CO	Public Service Company of Colorado	Gas	2008-2011	Customers	Decision C07-0568
CO	Public Service Company of Colorado	Electric	2012-2014	Stairstep	Decision C12-0494
CT	United Illuminating	Electric	2009-2013	Stairstep until 2011/No RAM for 2011 onwards	Docket 08-07-04
FL	Florida Power Corporation	Electric	1995-1997	Customers	Docket 930444
ID	Idaho Power	Electric	2007-2009	Customers	Case IPC-E-04-15
ID	Idaho Power	Electric	2010-2012	Customers	Case IPC-E-09-28
IL	North Shore Gas	Gas	2008-2012	Customers	Case 07-0241
IL	Peoples Gas Light & Coke	Gas	2008-2012	Customers	Case 07-0242
IN	Citizens Gas	Gas	2007-2011	Customers	Cause 42767
IN	Vectren Energy	Gas	2007-2011	Customers	Cause 43046
IN	Vectren Southern Indiana	Gas	2007-2011	Customers	Cause 43046
MA	Bay State Gas	Gas	2009-open	Customers	DPU 09-30
ME	Central Maine Power	Electric	1991-1993	Customers	Docket 90-085
MI	Consumers Energy	Electric	2009-2011	Customers	Case U-15645
MI	Consumers Energy	Gas	2010-2012	Customers	Case U-15986
MI	Detroit Edison	Electric	2010-2011	Customers	Case U-15768
MI	Michigan Consolidated Gas	Gas	2010-2012	Customers	Case U-15985
MI	Michigan Gas Utilities	Gas	2010-2013	Customers	Case U-15990
MI	Upper Peninsula Power	Electric	2010-2011	Customers	Case U-15988
MN	CenterPoint Energy	Gas	2010-2013	Customers	Docket GR-08-1075
MT	Montana Power Company	Electric	1994-1998	Customers	Docket 93.6.24



Table 4 (cont'd)

Jurisdiction	Company Name	Services	Plan Years	Revenue Adjustment Mechanism	Case Reference
<b>Historic (cont'd)</b>					
<b>United States (cont'd)</b>					
NC	Piedmont Natural Gas	Gas	2005-2008	Customers	Docket G-44 Sub 15
ND	Northern States Power - MN	Electric	2012	Not Applicable, plan only 1 year in duration	Case PU-11-55
NJ	New Jersey Natural Gas	Gas	2007-2010	Customers	Docket GR05121020
NJ	New Jersey Natural Gas	Gas	2010-2013	Customers	Docket GR05121020
NJ	South Jersey Gas	Gas	2007-2010	Customers	Docket GR05121019
NJ	South Jersey Gas	Gas	2010-2013	Customers	Docket GR05121019
NY	Central Hudson G&E	Gas	2009-open	Customers	Case 08-E-0888
NY	Central Hudson G&E	Electric	2009	No RAM	Case 08-E-0887
NY	Central Hudson G&E	Gas & Electric	2010-2013	Revenue per Customer Stairstep for Gas, Stairstep for Electric	Case 09-E-0588
NY	Central Hudson G&E	Gas & Electric	2013-open	Customers for Gas, No RAM for Electric	Case 12-M-0192
NY	Consolidated Edison	Electric	1992-1995	Stairstep	Opinion 92-8
NY	Consolidated Edison	Gas	2007-2010	Stairstep	Case 06-G-1332
NY	Consolidated Edison	Electric	2008-open	No RAM	Case 07-E-0523
NY	Consolidated Edison	Gas	2010-2013	Revenue per Customer Stairstep	Case 09-G-0795
NY	Consolidated Edison	Electric	2010-2013	Stairstep	Case 09-E-0428
NY	Corning Natural Gas	Gas	2012-2015	Revenue per Customer Stairstep	Case 11-G-0280
NY	Keyspan Energy Delivery - New York	Gas	2010-open	Revenue per Customer Stairstep	Case 06-G-1185
NY	Long Island Lighting Company	Electric	1992-1994	Stairstep	Opinion 92-8
NY	National Fuel Gas	Gas	2008-open	Customers	Case 07-G-0141
NY	New York State Electric & Gas	Electric	1993-1995	Stairstep	Opinion 93-22
NY	Niagara Mohawk	Electric	1990-1992	Stairstep	Case 94-E-0098
NY	Niagara Mohawk	Gas	2009-open	Customers	Case 08-G-0609
NY	Niagara Mohawk	Electric	2011-open	No RAM	Case 10-E-0050
NY	Orange & Rockland Utilities	Electric	2012-2015	Stairstep	Case 11-E-0408
NY	Orange & Rockland Utilities	Electric	2011-2012	No RAM	Case 10-E-0362
NY	Orange & Rockland Utilities	Electric	2008-2011	Stairstep	Case 07-E-0949
NY	Orange & Rockland Utilities	Electric	1991-1993	Stairstep	Case 89-E-175
NY	Orange & Rockland Utilities	Gas	2012-2015	Customers	Case 08-G-1398
NY	Orange & Rockland Utilities	Gas	2009-2012	Revenue per Customer Stairstep	Case 08-G-1398
NY	Rochester Gas & Electric	Electric	1993-1996	Stairstep	Opinion 93-19
OH	Duke Energy Ohio	Electric	2012-2014	Customers	Case 11-5905-EL-RDR
OH	Vectren Energy	Gas	2007-2009	Customers	Case 05-1444-GA-UNC
OR	Cascade Natural Gas	Gas	2007-2012	Customers	Order 06-191
OR	Northwest Natural Gas	Gas	2002-2005	Customers	Order 02-634
OR	Northwest Natural Gas	Gas	2005-2009	Customers	Order 05-934
OR	Northwest Natural Gas	Gas	2009-2012	Customers	Order 07-426
OR	PacifiCorp	Electric	1998-2001	Indexing	Order 98-191
OR	Portland General Electric	Electric	1995-1996	Stairstep	Order 95-0322
OR	Portland General Electric	Electric	2009-2010	Customers	Order 09-020
OR	Portland General Electric	Electric	2011-2013	Customers	Order 10-478
TN	Chattanooga Gas	Gas	2010-2013	Customers	Docket 09-0183
UT	Questar Gas	Gas	2006-2010	Customers	Docket 05-057-T01
VA	Virginia Natural Gas	Gas	2009-2012	Customers	Case PUE-2008-00060
VA	Washington Gas Light	Gas	2010-2013	Customers	Case PUE-2009-00064
WA	Avista	Gas	2007-2009	Customers	Docket UG-060518
WA	Avista	Gas	2009-2012	Customers	Docket UG-060518
WA	Avista	Gas	2013-2014	Revenue per Customer Stairstep	Docket UG-120437
WA	Cascade Natural Gas	Gas	2005-2010	Customers	Docket UG-060256
WA	Puget Sound & Power	Electric	1991-1995	Customers	Docket UE-901184-P
WI	Wisconsin Public Service	Gas & Electric	2009-2012	Customers	D-6690-UR-119
WI	Wisconsin Public Service	Gas & Electric	2013	Not Applicable, plan only 1 year in duration	Docket 6690-UR-121
WY	Questar Gas	Gas	2009-2012	Customers	Docket 30010-94-GR-08

Table 4 (cont'd)

Jurisdiction	Company Name	Services	Plan Years	Revenue Adjustment Mechanism	Case Reference
<b>Historic (cont'd)</b>					
<b>Canada</b>					
BC	BC Gas	Gas	1994-1995	Hybrid	Order G-59-94
BC	BC Gas	Gas	1996-1997	Hybrid	N/A
BC	BC Gas	Gas	1998-2000	Hybrid	Order G-85-97
BC	BC Gas	Gas	2000-2001	Hybrid	Order G-48-00
BC	BC Hydro	Electric	2009-2010	Hybrid	Order G-16-09
BC	BC Hydro	Electric	2011	Not Applicable, plan only 1 year in duration	Order G-180-10
BC	BC Hydro	Electric	2012-2014	Stairstep	Order G-77-12A
BC	FortisBC	Electric	2012-2013	Stairstep	Order G 110-12
BC	Terasen Gas	Gas	2008-2009	Hybrid	Order G-33-07
BC	Terasen Gas	Gas	2004-2007	Hybrid	Order G-51-03
BC	Terasen Gas	Gas	2010-2011	Hybrid	Order G-141-09
BC	Terasen Gas	Gas	2012-2013	Stairstep	Order G-44-12
ON	Enbridge Gas Distribution	Gas	2008-2012	Revenue per Customer Indexing	Docket EB-2007-0615
ON	Union Gas	Gas	2008-2012	Indexing	Docket EB-2007-0606

Fixed/variable pricing relaxes the revenue/usage link with low administrative cost since it requires neither decoupling true ups nor load impact calculations. When average use is declining, base revenue will grow more rapidly with fixed/variable pricing so that rate cases tend to be less frequent even if the decline is largely driven by external forces. Base revenue grows more slowly than under conventional rate designs if average use is rising. The short term disincentive is removed to embrace various DSM initiatives. However, fixed/variable pricing reduces a utility's ability to use usage charges as a tool for promoting DSM. For example, it does not encourage customers with electric vehicles to charge these vehicles at night. Note also that the principle of rate design gradualism often discourages regulators from immediately adopting SFV pricing.

SFV pricing has been used on a large scale by interstate gas transmission companies since the early 1990s. Precedents for fixed/variable pricing in retail ratemaking are listed below on Table 5 and Figure 6. It can be seen that fixed/variable pricing has to date been considerably more common for gas distributors than electric utilities. This again reflects the greater problem of declining average use that gas distributors have faced, and the fact that the decline has been driven largely by external forces. Since our 2013 survey, fixed/variable pricing has been implemented for an electric utility in Oklahoma.

In addition to the precedents listed here, utilities in Wisconsin and several other states have in recent years made sizable steps in the direction of fixed/variable pricing by redesigning rates for small volume customers to raise customer charges and lower volumetric charges substantially. Investor-owned utilities in Canada are typically permitted to raise a much higher portion of their revenue through fixed charges than are utilities in the United States. Most fixed/variable rate designs feature uniform fixed charges within service classes, but gas utilities in Florida, Georgia, and Oklahoma have fixed charges that vary in some fashion with long term consumption patterns.

Figure 6: Fixed/Variable Pricing Precedents by State

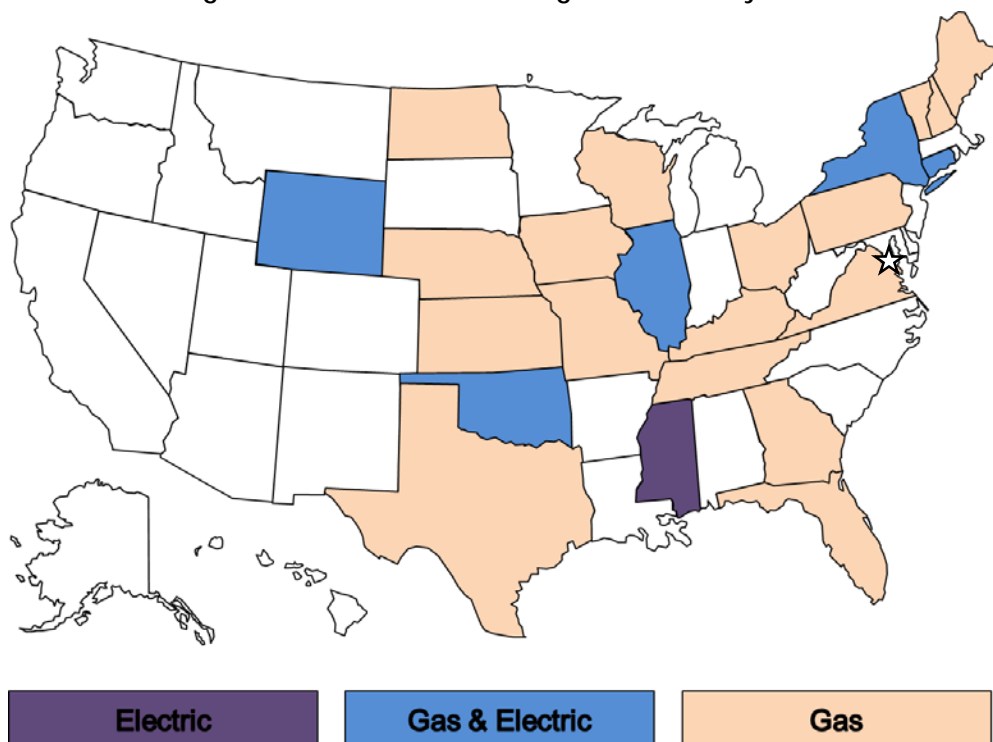


Table 5

## Fixed Variable Residential Pricing Precedents<sup>1</sup>

Jurisdiction	Company Name	Services	Years in Place	Case Reference
CT	Connecticut Light & Power	Electric	2007-open	Docket 07-07-01
CT	Connecticut Natural Gas	Gas	2014-open	Docket 13-06-08
CT	United Illuminating	Electric	Occurred over period of years	No specific case
CT	Yankee Gas System	Gas	2011-open	Docket 10-12-02
FL	Peoples Gas System	Gas	2009-open	Docket 080318-GU
GA	Liberty Utilities	Gas	2015-open	Docket 34734
IA	Black Hills Energy	Gas	2009-open	Docket RPU-08-3
IL	Ameren CILCO	Gas	2008-2012	Case 07-0588
IL	Ameren CIPS	Gas	2008-2012	Case 07-0589
IL	Ameren IP	Gas	2008-2012	Case 07-0590
IL	Ameren Illinois	Gas	2012-open	Case 11-0282
IL	Ameren Illinois	Electric	Occurred over period of years	No specific case
IL	Commonwealth Edison	Electric	2011-2013	Case 10-0467
IL	Mt. Carmel Public Utilities	Gas	2013-open	Case 13-0079
IL	North Shore Gas	Gas	2008-open	Case 07-0241
IL	Peoples Gas Light & Coke	Gas	2008-open	Case 07-0242
KS	Atmos Energy	Gas	2010-open	Docket 10-ATMG-495-RTS
KS	Black Hills Energy (formerly Aquila)	Gas	2007-open	Docket 07-AQLG-431-RTS
KS	Kansas Gas Service	Gas	2012-open	Docket 12-KGSG-835-RTS
KY	Atmos Energy	Gas	2014-open	Case 2013-00148
KY	Columbia Gas	Gas	2013-open	Case 2013-00167
KY	Delta Natural Gas	Gas	2007-open	Case 2007-00089
KY	Duke Energy Kentucky	Gas	2010-open	Case 2009-00202
ME	Maine Natural Gas	Gas	Occurred over period of years	Docket 2009-00067
ME	Northern Utilities	Gas	2014-open	Docket 2013-00133
MO	AmerenUE	Gas	2007-open	Case GR-2007-0003
MO	Atmos Energy	Gas	2007-2010	Case GR-2006-0387
MO	Atmos Energy	Gas	2010-open	Case GR-2010-0192
MO	Empire District Gas	Gas	2010-open	Case GR-2009-0434
MO	Laclede Gas	Gas	2002-open	Case GR-2002-356
MO	Missouri Gas Energy	Gas	2007-open	Case GR-2006-0422
MS	Mississippi Power	Electric	Occurred over period of years	No specific case
ND	Xcel Energy	Gas	2005-open	Case PU-04-578
NE	SourceGas Distribution	Gas	2012-open	Docket NG-0067
NH	Liberty Utilities (EnergyNorth Natural Gas)	Gas	Occurred over period of years	No specific case
NH	Northern Utilities	Gas	2014-open	DG 13-086
NY	Central Hudson Gas & Electric	Electric & Gas	Occurred over period of years	No specific case
NY	Consolidated Edison	Electric & Gas	Occurred over period of years	No specific case
NY	Corning Gas	Gas	Occurred over period of years	No specific case
NY	Keyspan Energy Delivery - Long Island	Gas	Occurred over period of years	No specific case
NY	Keyspan Energy Delivery - New York	Gas	Occurred over period of years	No specific case
NY	National Fuel Gas	Gas	Occurred over period of years	No specific case

Table 5 (cont'd)

<b>Jurisdiction</b>	<b>Company Name</b>	<b>Services</b>	<b>Years in Place</b>	<b>Case Reference</b>
<b>NY</b>	New York State Electric & Gas	Electric	Occurred over period of years	No specific case
<b>NY</b>	Niagara Mohawk	Electric & Gas	Occurred over period of years	No specific case
<b>NY</b>	Orange & Rockland	Electric & Gas	Occurred over period of years	No specific case
<b>NY</b>	Rochester Gas & Electric	Electric & Gas	Occurred over period of years	No specific case
<b>OH</b>	Columbia Gas	Gas	2008-open	Case 08-0072-GA-AIR
<b>OH</b>	Dominion East Ohio	Gas	2008-2010	Case 07-830-GA-ALT
<b>OH</b>	Duke Energy Ohio (CG&E)	Gas	2008-open	Case 07-590-GA-ALT
<b>OH</b>	Vectren Energy Delivery of Ohio	Gas	2009-open	Case 07-1080-GA-AIR
<b>OK</b>	Arkansas Oklahoma Gas	Gas	2013-open	Cause PUD 201200236
<b>OK</b>	Centerpoint Energy	Gas	2010-open	Cause PUD 201000030
<b>OK</b>	Oklahoma Natural Gas	Gas	2004-open	Causes PUD 200400610, PUD 201000048, PUD 200900110
<b>OK</b>	Public Service Company of Oklahoma	Electric	2015-open	Cause PUD 201300217
<b>PA</b>	Columbia Gas	Gas	2013-open	Docket R-2012-2321748
<b>TN</b>	Atmos Energy	Gas	2012-open	Docket 12-00064
<b>TN</b>	Piedmont Natural Gas	Gas	2012-open	Docket 11-00144
<b>TX</b>	Atmos Energy - Mid-Tex Division	Gas	Occurred over period of years	No specific case
<b>TX</b>	Atmos Energy - West Texas Division	Gas	Occurred over period of years	No specific case
<b>TX</b>	Centerpoint Energy Houston Division	Gas	Occurred over period of years	No specific case
<b>TX</b>	Centerpoint Energy Beaumont/East Texas Division	Gas	Occurred over period of years	No specific case
<b>VA</b>	Columbia Gas of Virginia	Gas	Occurred over period of years	No specific case
<b>VT</b>	Vermont Gas Systems	Gas	Occurred over period of years	No specific case
<b>WI</b>	Madison Gas & Electric	Gas	2015-open	Docket 3270-UR-120
<b>WI</b>	Wisconsin Public Service	Gas	2015-open	Docket 6690-UR-123
<b>WY</b>	SourceGas Distribution	Gas	2011-open	Docket 30022-148-GR-10
<b>WY</b>	PacifiCorp (d/b/a Rocky Mountain Power)	Electric	2009-open	Docket 20000-333-ER-08

<sup>1</sup> Fixed variable pricing precedents include power and gas distributors that have a customer charge equal to or in excess of \$15 (or \$20 for vertically integrated electric utilities).

## IV. Forward Test Years

General rate cases involve “test years” in which revenue requirements and billing determinants (e.g., the residential delivery volume) are jointly considered in ratesetting. A historical test year ends before the rate case is filed. A forward (a/k/a “fully forecasted”) test year (“FTY”) begins after the rate case is filed. An FTY typically begins about the time the rate case is expected to end and new rates take effect. Two-year forecasts may be required in this event which span both the year of the rate case and the rate effective year.<sup>4</sup> In between forward and historical test years is the option of a “partially forecasted” test year in which some months of historical data on utility operations are combined with some months of forecasted data. Under this approach, actual data for all months usually become available during the course of the rate case.

Historical test years tend to be uncompensatory when cost is growing faster than billing determinants. Annual rate cases with historical test years can alleviate but not eliminate underearning under these conditions. The effect on credit metrics can be material.<sup>5</sup> Where historical test years are used, there are thus added advantages to implementing other Altreg innovations discussed in this survey.

Forward test years can fully compensate utilities when cost growth exceeds growth in billing determinants. If this imbalance is chronic, however, FTYs do not eliminate the problem of frequent rate cases. It is therefore not unusual for regulators to combine FTYs with other Altreg remedies, such as cost trackers or multiyear rate plans.

Many approaches are used to forecast costs in FTY rate cases. Some companies rely on their budgeting process to make cost projections. Others normalize data for an historical reference period, adjusted for known and measurable changes, and then use indexing and other statistical methods to extend projections. A mixture of forecasting methods is common. For example, index-based forecasting may be used only for O&M expenses.

FTYs were adopted in many jurisdictions during the 1970s and 1980s, when rapid inflation and major plant additions coincided with oil shock-induced slowdowns in the growth of average use. Several additional states have recently moved in the direction of FTYs. Some of these states are in the West, where comparatively rapid economic growth has required more rapid buildout of utility infrastructure.

Current state policies concerning test years are summarized below in Figure 7 and Table 6. In many jurisdictions the use of partially or fully-forecasted test years is not standardized. For example, in some jurisdictions, including Illinois and North Dakota, utilities are allowed to select their type of rate case test year. Test year selection may also be made part of the rate case (e.g., Utah). A few jurisdictions allow forward test years to be used in rate cases or formula rate plans, but not both (e.g., Illinois and Arkansas).

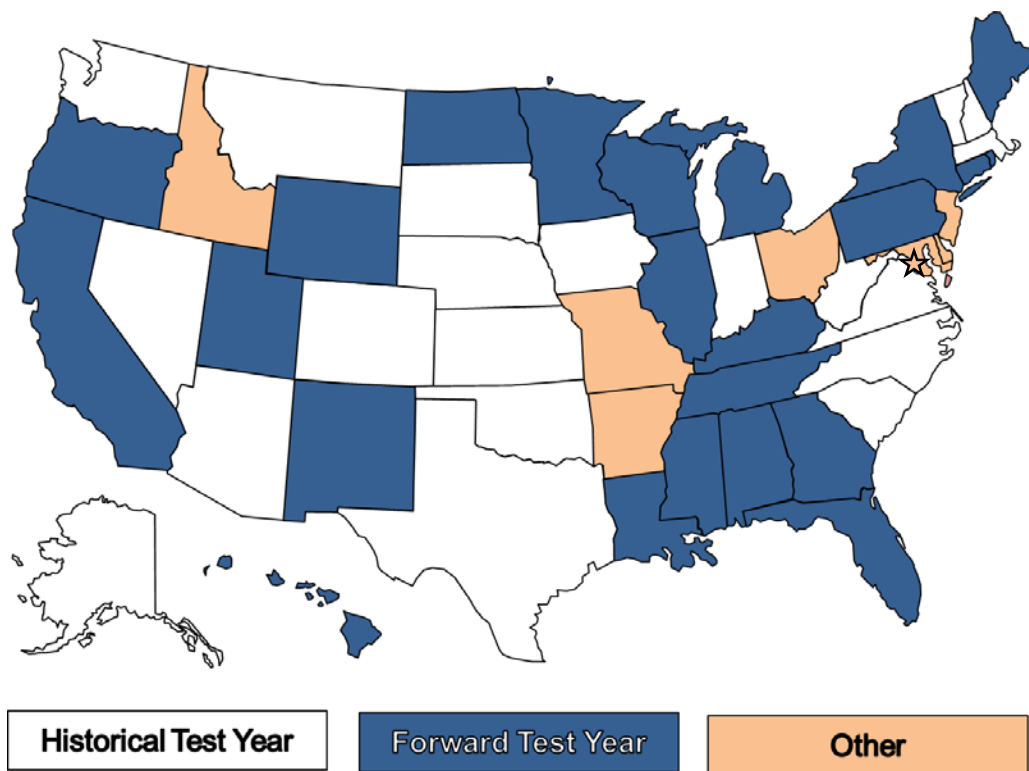
<sup>4</sup> A forward test year can in principle be the rate case year, and thereby not require two-year forecasts. Proposed rates can be established on an interim basis shortly after the filing.

<sup>5</sup> For evidence see “Forward Test Years for US Electric Utilities” by Mark Newton Lowry, David Hovde, Lullit Getachew, and Matt Makos, Edison Electric Institute, 2010.

Because of these complications, we have separated Table 6 into separate sections, specifying where FTYs are commonly used or occasionally used. Figure 7 shows jurisdictions where FTYs are commonly or occasionally used. Jurisdictions where partially-forecasted test years are commonly or occasionally used are in the category titled Other, with the remaining jurisdictions counted as historical test years.

The ranks of US jurisdictions that allow the use of forward test years have swollen and now encompass about half of the total. Since our 2013 survey, electric utilities in Pennsylvania have successfully used FTYs and utilities in Arkansas and Indiana have received legislative authorization for their use.<sup>67</sup> Forward test years are the norm in Canadian regulation.

Figure 7: Test Year Policy by State



<sup>6</sup> In addition, another electric utility in Mississippi was recently permitted to use a forward-looking formula rate plan.

<sup>7</sup> FTYs in Arkansas can only be used in formula rate plans.

Table 6

## Test Year Approaches of US Jurisdictions

Jurisdiction	Notes
<b>Fully-Forecasted Test Years Commonly Used (15)</b>	
Alabama	Utilities operate under forward-looking formula rate plans
California	
Connecticut	
FERC	Rate cases use forward test years but some formula rate plans use historical test years
Florida	
Georgia	
Hawaii	
Maine	
Michigan	
Minnesota	
New York	
Oregon	
Rhode Island	
Tennessee	
Wisconsin	
<b>Fully-Forecasted Test Years Occasionally Used (9)</b>	
Illinois	Utilities use various test years including forward test years ("FTYs")
Kentucky	Utilities use various test years including FTYs
Louisiana	Utilities use various test years including FTYs
Mississippi	Both electric utilities operate under forward-looking formula rate plans. Gas formula rate plans rely on historical test years ("HTYs").
New Mexico	A recently passed law allows for use of FTYs, and at least one rate increase based on FTY evidence has been approved
North Dakota	Utilities use various test years including FTYs
Pennsylvania	Partially-forecasted test years have traditionally been the norm. However, a law allowing fully-forecasted test years passed in 2012 and several electric utility rate increases based on FTY evidence have been approved.
Utah	Test year selection is part of the rate case and can be contested. Several recent rate cases have used FTYs.
Wyoming	Rocky Mountain Power has recently used FTYs
<b>Partially-Forecasted Test Years Commonly or Occasionally Used (8)</b>	
Arkansas	Utilities have typically used partially forecasted test years in rate cases. However, a recent bill authorized the use of formula rates with either historical or forecasted test periods.
Delaware	Before restructuring FTY filings were common, but companies have used a mix of HTYs and partially-forecasted test years in recent filings
District of Columbia	PEPCO has filed rate cases using both hybrid and historical test years recently
Idaho	
Maryland	Utilities use various test years excluding FTYs
Missouri	Utilities have the option to file partially-forecasted test years
New Jersey	
Ohio	
<b>Historical Test Years Commonly Used (20)</b>	
Alaska	
Arizona	
Colorado	Utilities have filed FTY evidence. However, no FTY rates have yet been approved but a recent case made extraordinary HTY adjustments.
Indiana	A recently passed law allows for use of FTYs, but no rate increase based on FTY evidence has been approved for an energy utility to date
Iowa	
Kansas	
Massachusetts	
Montana	
Nebraska	Nebraska has no electric IOUs. Gas companies are legally authorized to use FTYs but commonly use HTYs.
Nevada	
New Hampshire	
North Carolina	
Oklahoma	
South Carolina	
South Dakota	
Texas	
Vermont	
Virginia	
Washington	
West Virginia	



## V. Multiyear Rate Plans

Multiyear rate plans (“MRPs”) are designed to reduce regulatory cost, while increasing the utility incentive for efficient operation. Rate cases are held infrequently, most often at three to five year intervals. Between rate cases, rate escalations are based on a combination of automatic attrition relief mechanisms (“ARMs”) and cost trackers. The rate adjustments provided by ARMs are largely “external” in the sense that they give a utility an *allowance* for cost growth rather than reimbursement for its *actual* growth.

The “externalization” of ratemaking that ARMs and rate case moratoria achieve gives utilities more opportunity to profit from improved performance. Benefits of better performance can be shared between the utility and its customers. Performance incentives are strengthened despite streamlined regulation. Lower regulatory cost has special appeal in jurisdictions where numerous utilities must be regulated.

ARMs can cap growth in rates (e.g., customer charges and cents per kWh) or allowed revenue. Rate caps are favored when and where utilities are encouraged to bolster customer use of the grid. Revenue caps are usually combined with revenue decoupling mechanisms, and are often favored where utilities must cope with declining average use and/or policymakers strongly encourage DSM.

Several approaches to ARM design are well-established. These include multiyear cost forecasts, indexing, and hybrids. Indexing escalates rates (or revenue) automatically for inflation and sometimes also for growth in other cost drivers like the number of customers served. A hybrid approach to ARM design was developed in the US that involves indexing of revenue for O&M expenses and forecasts for capital cost revenue.

The indexing approach to ARM design has been more common for UDCs because their cost growth is relatively gradual and predictable. Hybrid and forecasted ARMs have historically been more common for vertically integrated electric utilities because occasional major plant additions have given their cost trajectories more of a “stairstep” pattern. However, this pattern is becoming less common in an era when demand growth is slower and fewer large power plants are under construction. Some VIEUs operating under MRPs have separate ARMs for generation and distribution.

Cost trackers are often used in MRPs to address changes in business conditions that are difficult to address using ARMs. A tracker that recovers a large portion of a utility’s capex cost can sometimes permit the company to operate under a multiyear freeze on rates for other non-energy costs. MRPs with “tracker/freeze” provisions for vertically integrated utilities often accord tracker treatment to costs of new or refurbished generating plants.<sup>8</sup> Trackers also address *force majeure* events like severe storms and changes in tax rates that affect costs.

Many MRPs feature earnings sharing mechanisms (“ESMs”) that automatically share earnings surpluses and/or deficits that result when the rate of return on equity (“ROE”) deviates from its regulated target. Some MRPs feature “off-ramps” that permit plan suspension when earnings are unusually high or low.

<sup>8</sup> A good example is the Generation Base Rate Adjustment in the current MRP of Florida Power & Light.

Plans often feature performance incentive mechanisms that are linked to the utility's service quality. With stronger cost containment incentives, there is a greater need for a link between revenue and service quality. Many MRPs combine revenue decoupling, the tracking of DSM expenses, and performance incentives for DSM. The stronger incentive to contain cost that MRPs provide then becomes a "fourth leg" for the DSM stool.

MRPs have long been used to regulate utilities where market-responsive rates and services are a priority. Infrequent rate cases reduce the regulatory cost of allocating the revenue requirement between a complex and changing mix of market offerings and lessen concerns about cross-subsidization. These benefits of MRPs can be enhanced by designing other plan provisions in ways that insulate core customers from potentially adverse consequences of marketing flexibility.

For example, in the early 1990s, Maine's electric utilities were still vertically integrated and needed flexibility in marketing power to paper and pulp customers, some of whom had cogeneration options. The commission, under the chairmanship of Thomas Welch (a former telecom industry lawyer) approved a succession of price cap plans for Central Maine Power which facilitated marketing flexibility. As a result, the company had more freedom to enter into special contracts. The stronger incentives the company had to offer the right discounts to customers at risk of bypass was acknowledged by the commission when costs were allocated in later rate cases.

MRPs were first widely used in the United States to regulate railroad, oil pipeline, and telecommunications companies. A major attraction was the ability of MRPs to afford utilities flexibility in serving markets with diverse competitive pressures and complex, changing customer needs. US and Canadian precedents for MRPs in the electricity and gas utility industries are indicated in Table 7 and Figures 8a and 8b.<sup>9</sup> In the US, MRPs have traditionally been most common in California and the Northeast. MRPs have been adopted by well-known VIEUs in Florida, North Dakota, and Virginia since our 2012 survey. A number of states have, additionally, experimented with "mini-MRPs" with terms of only two years. The forecast and tracker/freeze approaches to ARM design are most common currently in the US. The Federal Energy Regulatory Commission ("FERC") uses MRPs with index-based ARMs to regulate oil pipelines.

Canada is moving towards MRPs with index-based ARMs for gas and electric power distribution in all four populous provinces. In advanced economies overseas, MRPs are more the rule than the exception for utility regulation. Australia, Britain, and New Zealand are long time practitioners.

<sup>9</sup> Rate freezes without extensive supplemental funding from capital cost trackers are excluded from Table 7 and Figures 8a and 8b.

Figure 8a: Recent US Multiyear Rate Plan Precedents by State

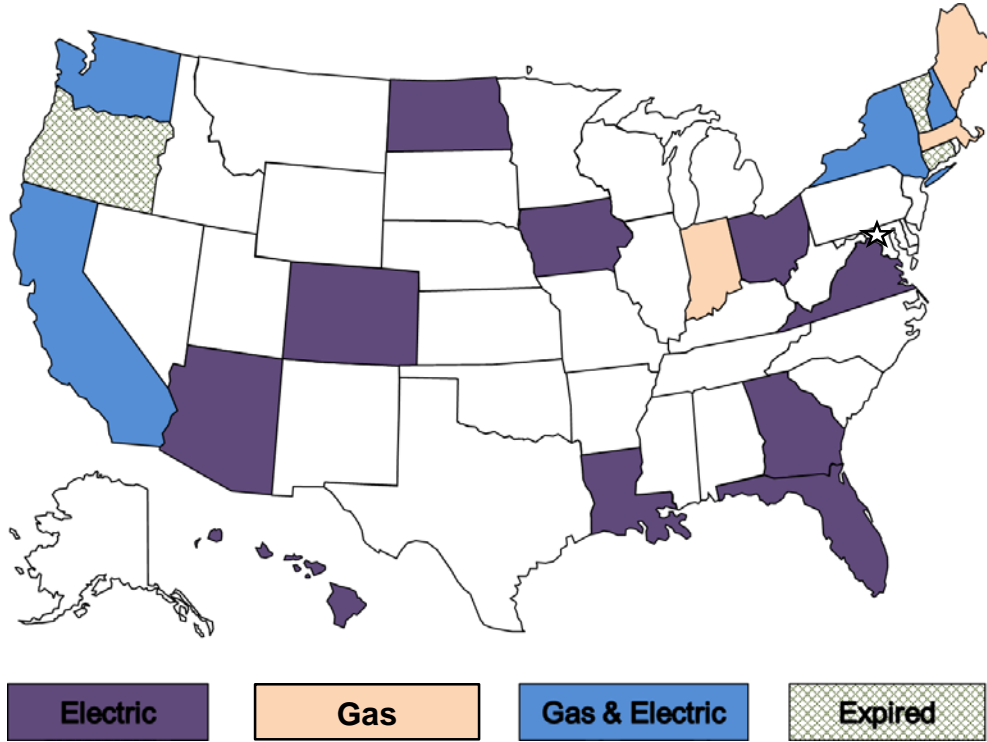


Figure 8b: Recent Canadian Multiyear Rate Plan Precedents by Province

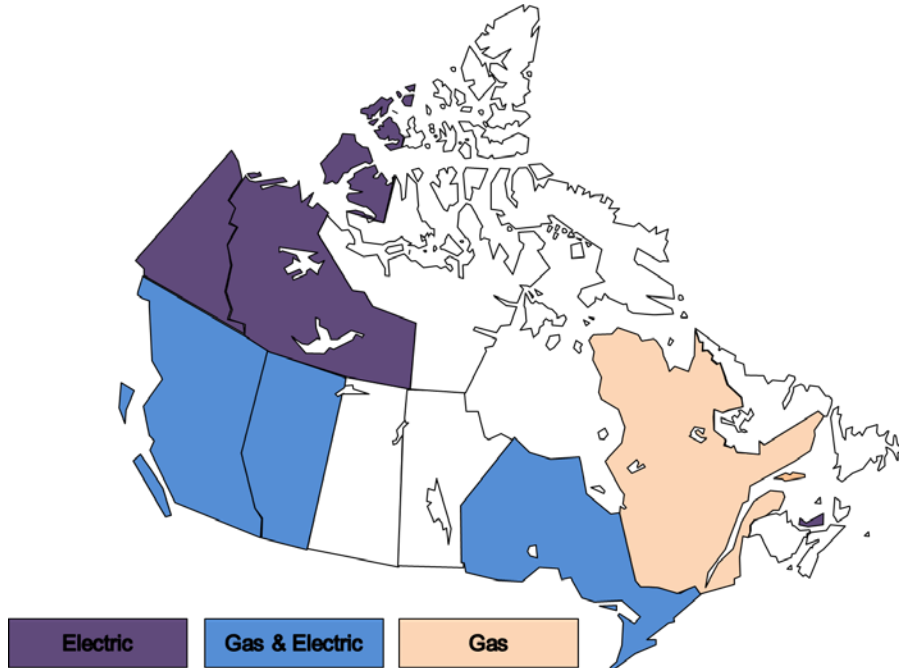


Table 7

# Multiyear Rate Plan Precedents <sup>1</sup>

Jurisdiction	Company	Plan Term	Services Covered	Rate Escalation Provisions	Earnings Sharing Provisions	Case Reference
<b>Current</b>						
<b>United States</b>						
AZ	Arizona Public Service	2012-2016	Bundled power service	Rate Freeze with an adjustment to account for purchase of SCE's share of Four Corners generating facility, additional capital and other cost trackers, LRAM	None	Decision 73183; May 2012
CA	Bear Valley Electric Service	2013-2016	Power distribution	Revenue Cap Stairstep	None	Decision 14-11-002; November 2014
CA	California Pacific Electric	2013-2015	Power distribution	Revenue Cap Index	None	Decision 12-11-030; November 2012
CA	Pacific Gas & Electric	2014-2016	Gas & bundled power service	Revenue Cap Stairstep	None	Decision 14-08-032; August 2014
CA	PacifiCorp	2011-2013, extended through 2016	Bundled power service	Price Cap Index: Rates escalated by Global Insight forecast of CPI, less 0.5% productivity factor; supplemental funding for major plant additions can be requested in annual filings	None	Decision 10-09-010; September 2010
CA	San Diego Gas & Electric	2012-2015	Gas & bundled power service	Revenue Cap Stairstep	None	Decision 13-05-010; May 2013
CA	Southern California Gas	2012-2015	Gas	Revenue Cap Stairstep	None	Decision 13-05-010; May 2013
CA	Southwest Gas	2014-2018	Gas	Revenue Cap Stairstep	None	Decision 14-06-028; June 2014
CO	Public Service of Colorado	2015-2017	Bundled power service	Rate Freeze with multiple capital cost trackers	Sharing of overearnings only up to earnings cap	Decision C15-0292; March 2014
FL	Florida Power & Light	2013-2016	Bundled power service	Rate Freeze with multiple capital and other cost trackers	None	Docket 120015-EI; December 2012
FL	Gulf Power	2014-June 2017	Bundled power service	Price Cap Stairstep through 2015, Rate Freeze beyond	None	Docket 130140-EI; December 2013
FL	Duke Energy Florida (formerly Progress Energy Florida)	2012-2016, extended through 2018	Bundled power service	Rate Freeze with one step plus capital and other cost trackers	None	Dockets 120022-EI and 130208-EI; 2012 and November 2013
FL	Tampa Electric	2013-2017	Bundled power service	Revenue Cap Stairstep	None	Docket 130040-EI
GA	Georgia Power	2014-2016	Bundled power service	Revenue Cap Stairstep	Sharing of overearnings only with deadband	Docket 36989; December 2013
HI	Hawaiian Electric Company	2012-open	Bundled power service	Revenue Cap Hybrid	Sharing of overearnings only without deadband, multiple sharing levels	Dockets 2008-0274 & 2008-0083
HI	Hawaiian Electric Light Company	2013-open	Bundled power service	Revenue Cap Hybrid	Sharing of overearnings only without deadband, multiple sharing levels	Dockets 2008-0274 & 2009-0164
HI	Maui Electric	2013-open	Bundled power service	Revenue Cap Hybrid	Sharing of overearnings only without deadband, multiple sharing levels	Dockets 2008-0274 & 2009-0163
IA	MidAmerican Energy	2014-2017	Bundled power service	Revenue Cap Stairstep for 2014-2016, Rate Freeze for 2017	Sharing of overearnings only with deadband up to earnings cap	RPU-2013-0004
IN	Northern Indiana Public Service Company	2015-2020	Gas	Rate Freeze with capital and other cost trackers, possible reopening in 2017	Earnings cap implemented if company overearns since last rate case or prior 59 months, whichever is less	Cause 43894 and 44403 TDSIC 1 (August 2013 and January 2015)
LA	Cleco Power	2014-2017	Bundled power service	Rate Freeze with capital and other cost trackers	Sharing of overearnings only with deadband up to earnings cap	Docket U-32779; June 2014
MA	Bay State Gas	2015-2018	Gas	Revenue Cap Stairstep for 2015, 2016, Revenue Freeze through October 2018	None	DPU 15-150; October 2015
ME	Summit Natural Gas of Maine	2013-2022	Gas	Price Cap Indexing: 75% of change in GDPPPI	None until company has 1,000 or more customers, then sharing of under/overearnings evenly with deadband	Docket 2012-258; January 2013
NH	Northern Utilities	May 2014 - April 2017	Gas	Revenue Cap Stairstep for 2014-2015, Rate Freeze in 2016	Sharing of overearnings only with deadband up to earning cap	DG 13-086; April 2014
NH	Public Service Company of New Hampshire	2010-2015	Power distribution (generation regulated separately)	Revenue Cap Stairstep: Rate increases allowed to account for distribution capital additions in 2010-2013	Sharing of overearnings only with deadband	DE 09-035
NH	Unitil Energy Systems	2011-2016	Power distribution	Revenue Cap Stairstep: Rate increases allowed to account for distribution capital additions in 2011-2013	Sharing of overearnings only with deadband	DE 10-055

Table 7 (cont'd)

Jurisdiction	Company	Plan Term	Services Covered	Rate Escalation Provisions	Earnings Sharing Provisions	Case Reference
<b>Current (cont'd)</b>						
<b>United States (cont'd)</b>						
NY	Central Hudson Gas & Electric	2015-2018	Gas & power distribution	Revenue Cap Stairstep	Sharing of overearnings with deadband and multiple sharing bands	Cases 14-E-0318, 14-G-0319
NY	Consolidated Edison	2014-2016	Gas	Revenue Cap Stairstep	Sharing of overearnings only with deadband and multiple bands	Case 13-G-0031
NY	Corning Natural Gas	2012-2015	Gas	Revenue Cap Stairstep	Sharing of overearnings only with deadband and multiple bands	Case 11-G-0280
NY	Orange & Rockland Utilities	November 2015-October 2018	Gas	Revenue Cap Stairstep	Sharing of overearnings only with deadband and multiple sharing bands	Case 14-G-0494
ND	Northern States Power - Minnesota	2013-2016	Bundled power service	Revenue Cap Stairstep for 2013-2015, Rate Freeze in 2016	Sharing of overearnings only without deadband, earnings adjusted for effects of weather	Case PU-12-813
OH	First Energy Ohio	2011-2014, later extended to 2016	Power distribution	Rate Freeze supplemented by capital and other cost trackers	Company subject to Significantly Excessive Earnings Test conducted annually	Cases 11-388-EL-SSO, 12-1230-EL-SSO
US	All	2011-2016	Oil pipelines	Price Cap Index: PPI-Finished Goods + 2.65%	None	Docket RM10-25-000; December 2010
VA	Appalachian Power	2014-2017	Bundled power service	Rate Freeze supplemented by capital and other cost trackers	None	Senate Bill 1349
VA	Virginia Electric Power	2015-2019	Bundled power service	Rate Freeze supplemented by capital and other cost trackers	None	Senate Bill 1349
WA	Puget Sound Energy	2013-2016	Gas & bundled power service	Revenue Cap Stairstep	Sharing of overearnings only without deadband, equal sharing between company and customers	Dockets UE-121697 and UG-121705
<b>Canada</b>						
Alberta	Altgas Utilities and ATCO Gas	2013-2017	Gas	Revenue per Customer Indexing: Input price index - 1.16%, + capital cost trackers	None	Decision 2012-237
Alberta	ATCO Electric, EPCOR, Fortis Alberta	2013-2017	Power distribution	Price Cap Index: Input Price Index - 1.16%, + capital cost trackers	None	Decision 2012-237
British Columbia	FortisBC	2014-2018	Bundled power service	Revenue Cap Index: I-Factor - 1.03%, + capital cost tracker for CPCN projects	Symmetric without deadband	Project #3698719, Decision; September 2014
British Columbia	FortisBC Energy	2014-2018	Gas	Revenue Cap Index: I-Factor - 1.1%, + capital cost tracker for CPCN projects	Symmetric without deadband	Project #3698715, Decision; September 2014
Ontario	All unless company opts out	2014-2018	Power distribution	Price Cap Index: Input price index - (0%+stretch); stretch factor reassigned annually, + capital cost tracker option available	None	EB-2010-0379 Report of the Board; November 2013
Ontario	Horizon Utilities	2015-2019	Power distribution	Revenue Cap Stairstep	Sharing of overearnings only without deadband	EB-2014-0002; December 2014
Ontario	Hydro One Networks	2015-2017	Power distribution	Revenue Cap Stairstep	None	EB-2014-0247; March 2015
Ontario	Enbridge Gas Distribution	2014-2018	Gas	Revenue Cap Stairstep	Sharing of overearnings only without deadband	EB-2012-0459, Decision with Reasons; July 2014
Ontario	Union Gas Limited	2014-2018	Gas	Revenue Cap Index: 40% of growth in GDP-IPI	Sharing of overearnings only with deadband, multiple sharing ranges	EB 2013-0202 Decision; October 2013
Prince Edward Island	Maritime Electric	2013-2016	Bundled power service	Price Cap Stairstep: Bill defines rates for each year.	Earnings cap set at allowed ROE, no floor	Bill 26 (2012) Electric Power (Energy Accord Continuation) Amendment Act
Quebec	Gazifere	2011-2015	Gas distribution	Price Cap Index	Sharing of overearnings only without deadband and multiple sharing bands up to earnings cap	D-2010-112; August 2010
Yukon Territory	Yukon Electrical Company, Limited	2013-2015	Bundled power service	Revenue Cap Stairstep	None	Board Order 2014-06; April 2014

Table 7 (cont'd)

Jurisdiction	Company	Plan Term	Services Covered	Rate Escalation Provisions	Earnings Sharing Provisions	Case Reference
<b>Current (cont'd)</b>						
<b>Great Britain</b>						
Great Britain	All	2013-2021	Gas and power transmission	British-Style Hybrid	Not reviewed	RIIO-T1 Final Proposals, April and December 2012
Great Britain	All	2013-2021	Gas distribution	British-Style Hybrid	Not reviewed	RIIO-GD1 Final Proposals, December 2013
Great Britain	All	2015-2023	Power distribution	British-Style Hybrid	Variations of cost from budgets shared through Information Quality Incentive Mechanism	RIIO-ED1 Final Proposals, December 2014
<b>Australia/New Zealand</b>						
Australia	ActewAGL	2015-2019	Power transmission & distribution	Australian-Style Hybrid	Not reviewed	Final Decision ActewAGL distribution determination 2015-16 to 2018-19; April 2015
Australia	Ausgrid	2015-2019	Power distribution	Australian-Style Hybrid	Not reviewed	Final Decision Ausgrid distribution determination 2015-16 to 2018-19; April 2015
Australia	Directlink	2015-2020	Power transmission	Australian-Style Hybrid	Not reviewed	Final Decision Directlink transmission determination 2015-16 to 2019-20; April 2015
Australia	Endeavour Energy	2015-2019	Power distribution	Australian-Style Hybrid	Not reviewed	Final Decision Endeavour Energy distribution determination 2015-16 to 2018-19; April 2015
Australia	Energex	2015-2020	Power distribution	Australian-Style Hybrid	Not reviewed	Final Decision Energex determination 2015-16 to 2019-20
Australia	Ergon Energy	2015-2020	Power distribution	Australian-Style Hybrid	Not reviewed	Final Decision Ergon Energy determination 2015-16 to 2019-20
Australia	Essential Energy	2015-2019	Power distribution	Australian-Style Hybrid	Not reviewed	Final Decision Essential Energy distribution determination 2015-16 to 2018-19; April 2015
Australia	Jemena Gas Networks	2015-2020	Gas distribution	Australian-Style Hybrid	Not reviewed	Final Decision Jemena Gas Networks (NSW) Ltd Access Arrangement 2015-20; June 2015
Australia	SA Power Networks	2015-2020	Power distribution	Australian-Style Hybrid	Not reviewed	Final Decision SA Power Networks determination 2015-16 to 2019-20
Australia	TasNetworks	2015-2019	Power transmission	Australian-Style Hybrid	Not reviewed	Final Decision TasNetworks transmission determination 2015-16 to 2018-19; April 2015
Australia	TransGrid	2015-2018	Power transmission	Australian-Style Hybrid	Not reviewed	Final Decision TransGrid transmission determination 2015-16 to 2017-18; July 2015
Australia	Power & Water	2014-2019	Power transmission & distribution	Australian-Style Hybrid	Not reviewed	2014 Networks Price Determination Final Determination Part-A Statement of Reasons; April 2014
Australia	All Queensland Distributors	2011-2016	Gas distribution	Australian-Style Hybrid	Not reviewed	Access Arrangement Proposal for Qld Gas Network, Final Decision; June 2011
Australia	Energex and Ergon Energy	2010-2015	Power distribution	Australian-Style Hybrid	Not reviewed	Queensland Distribution Determination 2011-11 to 2014-15 (Final Decision)
Australia	Envestra	2011-2016	Gas distribution	Australian-Style Hybrid	Not reviewed	Access Arrangement Proposal for the SA Gas Network, Final Decision; June 2011
Australia	All Victorian Distributors	2013-2017	Gas distribution	Australian-Style Hybrid	Not reviewed	Access Arrangement Final Decision; March 2013

Table 7 (cont'd)

Jurisdiction	Company	Plan Term	Services Covered	Rate Escalation Provisions	Earnings Sharing Provisions	Case Reference
<b>Current (cont'd)</b>						
<b>Australia/New Zealand (cont'd)</b>						
Australia	CitiPower	2011-2015	Power distribution	Australian-Style Hybrid	Not reviewed	CitiPower Pty Distribution Determination 2011-2015; September 2012
Australia	Powercor	2011-2015	Power distribution	Australian-Style Hybrid	Not reviewed	Powercor Australia Ltd Distribution Determination 2011-2015; October 2012
Australia	Jemena Electricity Networks	2011-2015	Power distribution	Australian-Style Hybrid	Not reviewed	Jemena Electricity Networks (Victoria) Ltd Distribution Determination 2011-2015; September 2012
Australia	SP AusNet	2011-2015	Power distribution	Australian-Style Hybrid	Not reviewed	SPI Electricity Pty Ltd Distribution Determination 2011-2015; August 2013
Australia	United Energy Distribution	2011-2015	Power distribution	Australian-Style Hybrid	Not reviewed	United Energy Distribution Distribution Determination 2011-2015; September 2012
New Zealand	All but Orion Electric	2015-2020	Power distribution	Revenue Cap Index: CPI-0% for most companies	None	Project no. 14.07/14118; November 2014
New Zealand	All	2013-2017	Gas distribution	New Zealand-Style Hybrid	Not reviewed	Project no. 15.01/13199
New Zealand	All	2013-2017	Gas transmission	New Zealand-Style Hybrid	Not reviewed	Project no. 15.01/13199
<b>Historic</b>						
<b>United States</b>						
CA	Bear Valley Electric Service	2009-2012	Power distribution	Revenue Cap Stairstep	None	Decision 09-10-028; October 2009
CA	Pacific Gas & Electric	2011-2013	Gas & bundled power service	Revenue Cap Stairstep	None	Decision 11-05-018; May 2011
CA	Pacific Gas & Electric	2007-2010	Gas & bundled power service	Revenue Cap Stairstep	None	Decision 07-03-044; March 2007
CA	Pacific Gas & Electric	2004-2006	Gas & bundled power service	Revenue Cap Index	None	Decision 04-05-055; May 2004
CA	Pacific Gas & Electric	1993-1995	Gas & bundled power service	Revenue Cap Hybrid	None	Decision 92-12-057; December 1992
CA	Pacific Gas & Electric	1990-1992	Gas & bundled power service	Revenue Cap Hybrid	None	Decision 89-12-057; December 1989
CA	Pacific Gas & Electric	1987-1989	Gas & bundled power service	Revenue Cap Hybrid	None	Decision 86-12-092; December 1986
CA	Pacific Gas & Electric	1984-1986	Gas & bundled power service	Revenue Cap Hybrid	None	Decisions 83-12-068; December 1983 and 85-12-076; December 1985
CA	PacifiCorp	2007-2009, extended to 2010	Bundled power service	Price Cap Index	None	Decisions 06-12-011; December 2006 and 09-04-017; April 2009
CA	PacifiCorp	1994-1996	Bundled power service	Price Cap Index	None	Decision 93-12-106; December 1993
CA	PacifiCorp	1984-1987	Bundled power service	Revenue Cap Hybrid	None	Decisions 84-07-150; July 1984 and 85-12-076; December 1985
CA	San Diego Gas & Electric	2008-2011	Gas & bundled power service	Revenue Cap Stairstep	None	Decision 08-07-046; July 2008
CA	San Diego Gas & Electric	2005-2007	Gas & bundled power service	Revenue Cap Index	Sharing of overearnings only with deadband and multiple sharing bands	Decision 05-03-025; March 2005
CA	San Diego Gas and Electric	1999-2002	Gas & power distribution	Price Cap Index	Sharing of overearnings only above deadband with multiple sharing bands	Decision 99-05-030; May 1999

Table 7 (cont'd)

Jurisdiction	Company	Plan Term	Services Covered	Rate Escalation Provisions	Earnings Sharing Provisions	Case Reference
<b>Historic (cont'd)</b>						
<b>United States (cont'd)</b>						
CA	San Diego Gas & Electric	1994-1999	Gas & bundled power service	Revenue Cap Hybrid	Sharing of overearnings only with deadband and multiple sharing bands up to an earnings cap	Decision 94-08-023; August 1984
CA	San Diego Gas & Electric	1989-1993	Gas & bundled power service	Revenue Cap Hybrid	None	Decision 88-12-085; December 1988
CA	San Diego Gas & Electric	1986-1988	Gas & bundled power service	Revenue Cap Hybrid	None	Decision 85-12-108; December 1985
CA	Sierra Pacific Power	2009-2011, extended to 2012	Bundled power service	Price Cap Index	None	Decision 09-10-041; October 2009
CA	Sierra Pacific Power	1990-1992	Bundled power service	Revenue Cap Hybrid	None	Decision 90-07-060; July 1990
CA	Southern California Edison	2012-2014	Bundled power service	Revenue Cap Hybrid	None	Decision 12-11-051; November 2012
CA	Southern California Edison	2009-2011	Bundled power service	Revenue Cap Stairstep	None	Decision 09-03-025; March 2009
CA	Southern California Edison	2006-2008	Bundled power service	Revenue Cap Hybrid	None	Decision 06-05-016; May 2006
CA	Southern California Edison	2004-2006	Bundled power service	Revenue Cap Hybrid	None	Decision 04-07-022; July 2004
CA	Southern California Edison	1997-2001	Power distribution	Price Cap Index	Sharing of over/underearnings outside deadband with multiple sharing bands	Decision 96-09-092; September 1996
CA	Southern California Edison	1986-1991	Bundled power service	Revenue Cap Hybrid	None	Decision 85-12-076; December 1985
CA	Southern California Gas	2008-2011	Gas	Revenue Cap Stairstep	None	Decision 08-07-046; July 2008
CA	Southern California Gas	2005-2007	Gas	Revenue Cap Index	Sharing of overearnings only with deadband and multiple sharing bands	Decision 05-03-025; March 2005
CA	Southern California Gas	1998-2003	Gas	Revenue Cap Index	Sharing of over/underearnings outside deadband with multiple sharing bands	Decision 97-07-054; July 1997
CA	Southern California Gas	1990-1993	Gas	Revenue Cap Hybrid	None	Decision 90-01-016; January 1990
CA	Southern California Gas	1985-1989	Gas	Revenue Cap Hybrid	None	1984, 85-12-076; December 1985, and 87-05-027; May 1987
CA	Southwest Gas	2009-2013	Gas	Revenue Cap Stairstep	None	Decision 08-11-048; November 2008
CO	Public Service Company of Colorado	2012-2014	Bundled power service	Revenue Cap Stairstep	Sharing of overearnings only without deadband, multiple sharing bands up to earnings cap	Decision C12-0494
CT	Connecticut Light & Power	2004-2007	Power distribution	Revenue Cap Stairstep	Even sharing of overearning without deadband	Docket 03-07-02
CT	United Illuminating	2006-2008	Power distribution	Revenue Cap Stairstep	Even sharing of overearning without deadband	Docket 05-06-04
FL	Florida Power & Light	2006-2009	Bundled power service	Rate Freeze with exception for new generating facilities after they are in service and multiple capital and other cost trackers	None	Docket 050045-EI
FL	Progress Energy Florida	2006-2009	Bundled power service	Rate Freeze with 1 step to reflect generation brought in-service and multiple capital and other cost trackers	None	Docket 050078-EI
GA	Georgia Power	2011-2013	Bundled power service	Revenue Cap Stairstep; Rate increases permitted for DSM and major generation plant additions	Sharing of overearnings only with deadband	Docket 31958
IA	MidAmerican Energy	2001-2005, extended to 2013	Bundled power service	Rate Freeze with nuclear capital and other cost trackers	Sharing of overearnings only in multiple sharing bands, deadband not applicable due to no allowed ROE	Dockets RPU-01-3 and RPU-2012-0001
LA	Cleco Power	2009-2014	Bundled power service	Rate Freeze with capital cost tracker	Sharing of overearnings only with deadband up to earnings cap	Order U-30689
MA	Bay State Gas	2006-2015, terminated in 2009	Gas distribution	Price Cap Index	75-25 shareholders-ratepayers sharing around deadband	Docket DTE 05-27
MA	Berkshire Gas	February 2002-January 2012	Gas distribution	No adjustment until September 2004, then Price Cap Index	None	Docket D.T.E. 01-56



Table 7 (cont'd)

Jurisdiction	Company	Plan Term	Services Covered	Attrition Relief Mechanism	Earnings Sharing Provisions	Case Reference
<b>Historic (cont'd)</b>						
<b>United States (cont'd)</b>						
MA	Boston Gas (I)	1997-2001	Gas distribution	Price Cap Index	75-25 shareholders-ratepayers sharing around deadband	Docket D.P.U. 96-50-C (Phase I); May 1997
MA	Boston Gas (II)	2004-2013, Terminated in 2010	Gas distribution	Price Cap Index	75-25 shareholders-ratepayers sharing around deadband	Docket DTE 03-40
MA	Blackstone Gas	November 1, 2004 - October 31, 2009	Gas distribution	Price Cap Index	Even sharing of earnings above/below deadband	Docket D.T.E. 04-79
MA	Nstar	2006-2012	Power distribution	Price Cap Index	Deadband with 50-50 sharing of over and underearnings	Docket D.T.E. 05-85
ME	Bangor Gas	2000-2009, extended to 2012	Gas distribution	Price Cap Index	Even sharing of overearnings only. No allowed ROE established for company and no determination of a deadband.	Docket 970795; June 1998
ME	Bangor Hydro Electric (I)	1998-2000	Power distribution	Price Cap Index	50/50 sharing around deadband	Docket 97-116; March 1998
ME	Central Maine Power (I)	1995-1999	Bundled power service	Price Cap Index	Even sharing of earnings above/below deadband	Docket 92-345 Phase II; January 1995
ME	Central Maine Power (II)	2001-2007	Power distribution	Price Cap Index	50-50 sharing below deadband	Docket 99-666; November 2000
ME	Central Maine Power (III)	2009-2013	Power distribution	Price Cap Index: GDPPI - 1%, separate capital cost tracker for AMI	50-50 sharing above 11% ROE	Docket 2007-215
ME	Maine Natural Gas	2010-2012	Gas	Revenue Cap Stairstep with steps conditioned on company earnings	None	Docket 2009-67
NY	Brooklyn Union Gas	October 1, 1991 - September 30, 1994	Gas	Revenue Cap Stairstep	Sharing of overearnings only without deadband	Case 90-G-0981, Opinion 91-21; October 1991
NY	Brooklyn Union Gas	October 1, 1994 - September 30, 1997	Gas	Revenue Cap Stairstep	Sharing of overearnings only without deadband and multiple sharing bands	Case 93-G-0941, Opinion 94-22; October 1994
NY	Central Hudson Gas & Electric	2010-2013	Gas & power distribution	Revenue Cap Stairstep	Sharing of overearnings with deadband and multiple sharing bands	Case 09-E-0588
NY	Central Hudson Gas & Electric	July 1, 2006 - June 30, 2009	Gas & power distribution	Price Cap Stairstep	Sharing of overearnings only with deadband, multiple sharing bands up to earnings cap	Case 05-E-0934 & Case 05-G-0935; July 2006
NY	Consolidated Edison	2010-2013	Gas	Revenue Cap Stairstep	Sharing of overearnings only with deadband that varies annually and multiple sharing bands	Case 09-G-0795
NY	Consolidated Edison	2007-2010	Gas	Revenue Cap Stairstep	Even sharing of overearnings only above deadband, sharing threshold adjustable depending on work with DSM program administrator for first year only	Case 06-G-1332
NY	Consolidated Edison	October 1, 1994 - September 30, 1997	Gas	Revenue Cap Stairstep	Even sharing of overearnings only above deadband	Case 93-G-0996, Opinion 94-2; October 1994
NY	Consolidated Edison	2010-2013	Power distribution	Revenue Cap Stairstep	Sharing of overearnings only above deadband with multiple sharing bands	Case 09-E-0428
NY	Consolidated Edison	April 1, 2005 - March 31, 2008	Power distribution	Price Cap Stairstep	Sharing of overearnings only with multiple bands. No allowed ROE approved.	Case 04-E-0572; March 2005
NY	Consolidated Edison	1992-1995	Bundled power service	Revenue Cap Stairstep	Even sharing of overearnings with varying allowed ROE and no deadband	Opinion 92-8
NY	Keyspan Energy Delivery - Long Island	2010-2012	Gas	Revenue Cap Stairstep	Sharing of overearnings only above deadband with multiple sharing bands, sharing threshold adjustable for good DSM performance	Case 06-G-1185
NY	Keyspan Energy Delivery - New York	2010-2012	Gas	Revenue Cap Stairstep	Sharing of overearnings only above deadband with multiple sharing bands, sharing threshold adjustable for good DSM performance	Case 06-G-1186
NY	Long Island Lighting Company	December 1, 1993 - November 30, 1996	Gas	Revenue Cap Stairstep	Even sharing of overearnings only with deadband	Case 93-G-002, Opinion 93-23; December 1993
NY	Long Island Lighting Company	1992-1994	Bundled power service	Revenue Cap Stairstep	Even sharing of overearnings only without deadband	Opinion 92-8

Table 7 (cont'd)

Jurisdiction	Company	Plan Term	Services Covered	Attrition Relief Mechanism	Earnings Sharing Provisions	Case Reference
<b>Historic (cont'd)</b>						
<b>United States (cont'd)</b>						
NY	New York State Electric & Gas	2010-2013	Gas & power distribution	Revenue Cap Stairstep	Sharing of overearnings only with deadband that varies annually and multiple sharing bands	Case 09-E-0715
NY	New York State Electric & Gas	August 1, 1995 - July 31, 1998, Years 2 and 3 not implemented due to restructuring	Bundled power service	Revenue Cap Stairstep	Sharing of overearnings only with annually varying deadbands	Case 94-M-0349, Opinion 95-27; September 1995
NY	New York State Electric & Gas	December 1, 1993 - August 31, 1995	Gas & bundled power service	Revenue Cap Stairstep	Even sharing of overearnings only above deadband	Case 92-G-1086, Opinion 93-22; November 1993
NY	Niagara Mohawk	July 1, 1990 - December 31, 1992	Gas & bundled power service	Revenue Cap Stairstep	Sharing of overearnings only without deadband up to earnings cap	Case 29327, Opinion 89-37; June 1991
NY	Orange & Rockland Utilities	2009-2012	Gas	Revenue Cap Stairstep	Sharing of overearnings only beyond deadband and multiple sharing bands	Case 08-G-1398
NY	Orange & Rockland Utilities	November 1, 2006 - October 31, 2009	Gas	Price Cap Stairstep	Sharing of overearnings only beyond deadband and multiple sharing bands	Case 05-G-1494; October 2006
NY	Orange & Rockland Utilities	November 1, 2003 - October 31, 2006	Gas	Price Cap Stairstep	Even sharing of overearnings only without deadband	Case 02-G-1553; October 2003
NY	Orange & Rockland Utilities	2012-2015	Power distribution	Revenue Cap Stairstep	Sharing of overearnings only with deadband and multiple bands	Case 11-E-0408
NY	Orange & Rockland Utilities	2008-2011	Power distribution	Revenue Cap Stairstep	Sharing of overearnings only above deadband with multiple sharing bands	Case 07-E-0949
NY	Orange & Rockland Utilities	1991-1993	Bundled power service	Revenue Cap Stairstep	Even sharing of overearnings above deadband	Case 89-E-175
NY	Rochester Gas & Electric	2010-2013	Gas & power distribution	Revenue Cap Stairstep	Sharing of overearnings only with deadband that varies annually and multiple sharing bands	Case 09-E-0717
NY	Rochester Gas & Electric	July 1, 1993 - June 30, 1996	Gas & bundled power service	Revenue Cap Stairstep	Earnings cap only	Case 92-G-0741, Opinion No. 93-19; August 1993
OH	AEP-Ohio	2012-2015	Power distribution	Rate Freeze supplemented by capital and other cost trackers	Company subject to Significantly Excessive Earnings Test conducted annually	Case No. 11-346-EL-SSO; August 2012
OH	Cincinnati Gas & Electric	2009-2011	Power generation	Price Cap Stairstep	Company subject to Significantly Excessive Earnings Test conducted annually	Case 08-920-EL-SSO
OR	PacifiCorp	1998-2001	Power distribution	Revenue Cap Index	Sharing of over/underearning outside deadband in multiple sharing bands	Order No. 98-191
US	All	2006-2011	Oil pipelines	Price Cap Index: PPI-Finished Goods + 1.3%	None	RM05-22-000
US	All	2001-2006	Oil pipelines	Price Cap Index: PPI-Finished Goods + 0%	None	RM00-11-000
US	All	1995-2001	Oil pipelines	Price Cap Index: PPI-Finished Goods - 1%	None	RM93-11-000
VT	Green Mountain Power	2007-2010	Bundled power service	Revenue Cap Stairstep	Earnings cap for overearnings above deadband; Multiple sharing bands for earnings apply if actual ROE below deadband (earnings floor of the deadband also applies)	Docket No. 7176
WA	Puget Sound Energy	1997-2001	Bundled power service	Price Cap Stairstep	None	Docket UE-960195
<b>Australia/New Zealand</b>						
Australia	Jemena Gas Networks	2010-2015	Gas distribution	Australia-Style Hybrid	Not reviewed	Access Arrangement Proposal for NSW Gas Networks, Final Decision; June 2010
Australia	All New South Wales distributors	2009-2014	Power distribution	Australia-Style Hybrid	Not reviewed	New South Wales Distribution Determination 2009-10 to 2013-14 Final Decision
Australia	ElectraNet	2008-2013	Power transmission	Australia-Style Hybrid	Not reviewed	Final Decision; April 2008
Australia	ElectraNet	2003-2008	Power transmission	Australia-Style Hybrid	Not reviewed	File No: C2001/1094
Australia	Powerlink	2007-2012	Power transmission	Australia-Style Hybrid	Not reviewed	Final Decision; June 2007

Table 7 (cont'd)

Jurisdiction	Company	Plan Term	Services Covered	Rate Escalation Provisions	Earnings Sharing Provisions	Case Reference
<b>Historic (cont'd)</b>						
<b>Australia/New Zealand (cont'd)</b>						
Australia	Powerlink	2002-2007	Power transmission	Australia-Style Hybrid	Not reviewed	File No: 2000/659
Australia	Snowy Mountains	1999-2004 (terminated in 2002 due to merger with Transgrid)	Electric transmission	Australia-Style Hybrid	Not reviewed	File No: C1999/62
Australia	SPI PowerNet	2003-2008	Power transmission	Australia-Style Hybrid	Not reviewed	File No: C2001/1093
Australia	Transend	2009-2014	Power transmission	Australia-Style Hybrid	Not reviewed	Transend Transmission Determination 2009/10-2013/14 (Final Decision)
Australia	Transend	2004-2009	Power transmission	Australia-Style Hybrid	Not reviewed	File No: C2001/1100
Australia	Transgrid	2009-2014	Electric transmission	Australia-Style Hybrid	Not reviewed	Transgrid Transmission Determination 2009/10-2013/14 (Final Decision)
Australia	Transgrid	2004-2009	Power transmission	Australia-Style Hybrid	Not reviewed	File No. M2003/287
Australia	Transgrid	1999-2004	Power transmission	Australia-Style Hybrid	Not reviewed	File No: CG98/118
Australia - New South Wales	Country Energy Gas	2006-2010	Gas distribution	Australia-Style Hybrid	Not reviewed	Revised Access Arrangement for Country Energy Gas Network, Final Decision; November 2005
Australia - New South Wales	AGL Gas Networks	1999-2004	Gas transmission & distribution	Australia-Style Hybrid	Not reviewed	Access Arrangement for AGL Gas Networks Limited, Final Decision; July 2000
Australia - New South Wales	All	2004-2009	Power distribution	Australia-Style Hybrid	Not reviewed	File No: S2004/138
Australia - New South Wales	All	1999-2004	Power distribution	Australia-Style Hybrid	Not reviewed	NEC Determination 99-1
Australia - Northern Territory	Power & Water	2000-2003	Power transmission & distribution	Australia-Style Hybrid	Not reviewed	Revenue Determinations document; June 2000
Australia - Northern Territory	Power & Water	2009-2014	Power transmission & distribution	Price Cap Index: CPI + 0.85%	Not reviewed	Final Determination Networks Pricing: 2009 Regulatory Reset; March 2009
Australia - Northern Territory	Power & Water	2004-2009	Power transmission & distribution	Price Cap Index: CPI - 2%	Not reviewed	Final Determination Networks Pricing: 2004 Regulatory Reset; February 2004
Australia - Victoria	All	2008-2012	Gas distribution	Australia-Style Hybrid	Not reviewed	Gas Access Arrangement Review 2008, 2012, Final Decision; March 2008
Australia - Victoria	All	2003-2007	Gas distribution	Australia-Style Hybrid	Not reviewed	Review of Gas Access Arrangements, Final Decision; October 2002
Australia - Victoria	All	2006-2010	Power distribution	Australia-Style Hybrid	Not reviewed	Electricity Distribution Price Review 2006-2010 (Final Decision Volume 1)
Australia - Victoria	All	2001-2005	Power distribution	Australia-Style Hybrid	Not reviewed	Electricity Distribution Price Determination 2001-2005 (Final Decision Volume 1)
New Zealand	All	2010-2015	Power distribution	Revenue Cap Index: CPI - 0%	None	Commerce Commission Initial Reset of the Default Price-Quality Path for Electricity Distribution Businesses Decisions Paper; November 2009

Table 7 (cont'd)

Jurisdiction	Company	Plan Term	Services Covered	Rate Escalation Provisions	Earnings Sharing Provisions	Case Reference
<b>Historic (cont'd)</b>						
<b>Australia/New Zealand (cont'd)</b>						
New Zealand	All	2004-2009	Power distribution	Revenue Cap Index: CPI - 0.86% (Average across firms)	None	Commerce Commission Regulation of Electricity Lines Businesses, Targeted Control Regime, Threshold Decisions; December 2003
<b>Canada</b>						
Alberta	Enmax	2007-2013	Power distribution	Price Cap Index: Input Price Index -1.2%	50-50 for excess earnings above deadband	Decision 2009-035
Alberta	Northwestern Utilities	1999-2002, reopened for 2001-2002	Gas distribution	Revenue Cap Stairstep; at reopener replaced with rate freeze	Sharing of earnings above/below deadband with multiple bands for overearnings; at reopener simplified to 50/50 sharing of overearnings with deadband	Decision U98060; March 1998 and Decision 2000-85; December 2000
Alberta	EPCOR	2002-2005, Terminated 12/31/2003	Power distribution	Price Cap Index	None	City of Edmonton Distribution Tariff Bylaw 12367; August 2000
Northwest Territory	Northland Utilities	2011-2013	Bundled power service	Revenue Cap Stairstep	None	Decision 17-2011; November 2011
Northwest Territory	Northland Utilities (Yellowknife)	2011-2013	Bundled power service	Revenue Cap Stairstep	None	Decision 13-2011; August 2011
Ontario	All Ontario Distributors	2010-2013	Power distribution	Price Cap Index: GDP IPI for Final Domestic Demand - (0.92% to 1.32% depending on company's annual performance in benchmarking studies)	None	EB-2007-0673; July 2008, September 2008, and January 2009
Ontario	All Ontario Distributors	2006-2009	Power distribution	Price Cap Index	None	EB-2006-0089; December 2006
Ontario	All Ontario Distributors	2000-2003	Power distribution	Price Cap Index	50-50 sharing of excess earnings without deadband	RP-1999-0034; January 2000
Ontario	Enbridge Gas Distribution	2008-2012	Gas distribution	Revenue Cap Index: GDP-IPI * 53%	50-50 sharing of excess earnings above deadband	EB-2007-0615; February 2008
Ontario	Union Gas	2008-2012	Gas distribution	Revenue Cap Index: GDP-IPI -1.82%	Sharing of overearnings only with deadband and multiple sharing bands	EB-2007-0606; January 2008
Ontario	Union Gas	2001-2003	Gas distribution	Price Cap Index	50-50 sharing around deadband	RP-1999-0017; July 2001
<b>Great Britain</b>						
Great Britain	All	2008-2013	Gas distribution	British-Style Hybrid	Not reviewed	Review- Final Proposals; Published December 2007
Great Britain	All	2002-2007, extended to 2008	Gas distribution	British-Style Hybrid	Not reviewed	"RPI - X @ 20." Ofgem Publication
Great Britain	All	2007-2012	Gas transmission	British-Style Hybrid	Not reviewed	Transmission Price Control Review; Published December 2006
Great Britain	All	2002-2007	Gas transmission	British-Style Hybrid	Not reviewed	"RPI - X @ 20." Ofgem Publication
Great Britain	All	1998-2002	Gas transmission & distribution	British-Style Hybrid	Not reviewed	Energy Law Journal Volume 23 No. 2 p.444
Great Britain	All	1994-1997	Gas transmission & distribution	British-Style Hybrid	Not reviewed	Energy Law Journal Volume 23 No. 2 p.444
Great Britain	All	1992-1994	Gas transmission & distribution	British-Style Hybrid	Not reviewed	Energy Law Journal Volume 23 No. 2 p.444
England & Wales	All	1995-2000	Power distribution	British-Style Hybrid	Not reviewed	"RPI - X @ 20." Ofgem Publication
Great Britain	All	2010-2015	Power distribution	British-Style Hybrid	Variances of cost from budgets shared through Information Quality Incentive Mechanism	Ofgem Distribution Price Control Review 5
Great Britain	All	2005-2010	Power distribution	British-Style Hybrid	Not reviewed	Ofgem Distribution Price Control Review 4

Table 7 (cont'd)

Jurisdiction	Company	Plan Term	Services Covered	Rate Escalation Provisions	Earnings Sharing Provisions	Case Reference
<b>Historic (cont'd)</b>						
<b>Great Britain (cont'd)</b>						
Great Britain	All	2000-2005	Power distribution	British-Style Hybrid	Not reviewed	"RPI - X @ 20." Ofgem Publication
England & Wales	National Grid	2001-2006, extended to 2007	Power transmission	British-Style Hybrid	Not reviewed	OECD Reviews of Regulatory Reform
England & Wales	National Grid	1997-2001	Power transmission	British-Style Hybrid	Not reviewed	"RPI - X @ 20." Ofgem Publication
England & Wales	National Grid	1993-1997	Power transmission	British-Style Hybrid	Not reviewed	Energy Law Journal Volume 23 No. 2 p.452
Great Britain	All	2007-2012	Power transmission	British-Style Hybrid	Not reviewed	Transmission Price Control Review; Published December 2006
Scotland	All	2000-2005, extended to 2007	Power transmission	British-Style Hybrid	Not reviewed	"RPI - X @ 20." Ofgem Publication
Scotland	All	1995-2000	Power transmission	British-Style Hybrid	Not reviewed	1995 Report by Monopolies and Mergers Commission

<sup>1</sup> Rate freezes without extensive supplemental funding from capital cost trackers are excluded from this table.

## VI. Formula Rates

A cost of service formula rate plan (“FRP”) is essentially a wide-scope cost tracker designed to help a utility’s revenue track its cost of service. Earnings surpluses or deficits occur when revenue and cost are not balanced. FRPs have earnings true up mechanisms that adjust rates so that earnings variances are reduced or eliminated. Regulatory cost is contained by limiting review of costs and revenues.

The earnings true up mechanism plays a key role in an FRP. Some mechanisms compare the earned ROE to the target ROE and then calculate the rate adjustment needed to reduce the ROE variance. Others adjust rates for the difference between revenue and a pro forma cost of service calculated using a rate of return target. Both approaches can keep the utility whole for the time value of money.

Earnings true up mechanisms often include a deadband in which variances don’t trigger a rate adjustment. Once the variance exceeds the deadband, however, earnings true up mechanisms in FRPs commonly move the ROE all, or almost all, of the way to its regulated target without sharing earnings variances. This is an important distinction between the earnings true up mechanism of an FRP and the earnings *sharing* mechanisms found in some multiyear rate plans.

Formula rates do not always address major plant additions. In state-regulated FRPs for retail electric services, for instance, major investment programs are generally approved separately through such means as hearings on certificates of public convenience and necessity. The resultant cost is often recovered through a separate tracker.

Mechanisms are sometimes added to an FRP to encourage better operating performance. For example, escalation of revenue that compensates the utility for its O&M expenses may be limited by a formula tied to an inflation index. FRPs in several states that include Illinois and Mississippi contain a number of targeted performance incentive mechanisms.

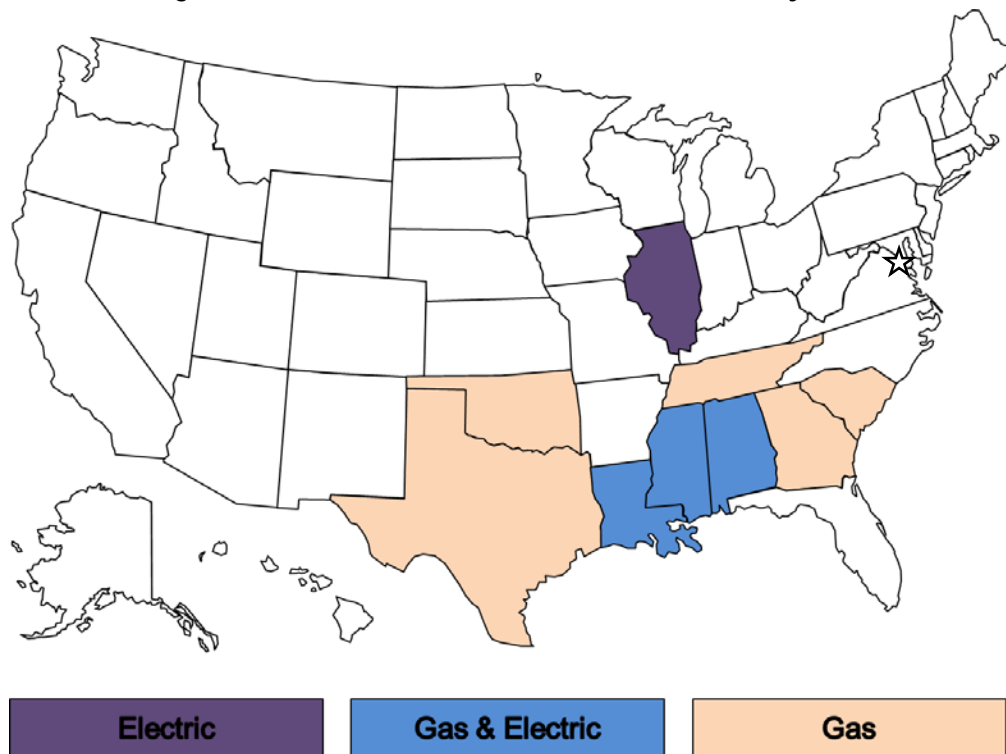
Formula rates have been used at the FERC and its predecessor agency to regulate interstate services of energy utilities for decades. Use of FRPs by the FERC was encouraged in the 1970s and early 1980s by rapid price inflation. Despite slower inflation in recent years, the FERC has made extensive use of formula rates for power transmission in an effort to simplify its daunting regulatory task and facilitate urgently needed investments.

Precedents for retail formula rates, which recover costs of generation and/or distribution, are listed in Table 8 and Figure 9.<sup>10</sup> It can be seen that FRPs for retail utility services are most common in the Southeast and South Central states. Alabama was an early innovator, approving “Rate Stabilization and Equalization”

<sup>10</sup> Some plans labeled as formula rates do not qualify for inclusion in this table and figure based on our definition. These usually take the form of ESMs that may or may not protect the utility from underearning.

plans for Alabama Power and Alabama Gas in the early 1980s.<sup>11</sup> Formula rates are now used to regulate electric utilities in Illinois, some gas and electric utilities in Louisiana and Mississippi, and some gas utilities in Georgia, Oklahoma, South Carolina, Tennessee, and Texas. Most of the recent approvals of formula rates have been for gas distribution, as this is one means to avoid the frequent rate cases that declining average use can trigger. However, formula rates were recently authorized legislatively for electric utilities in Arkansas.

Figure 9: Current Retail Formula Rate Precedents by State



<sup>11</sup> For further discussion of the Alabama FRP experience see Edison Electric Institute, *Case Study of Alabama Rate Stabilization and Equalization Mechanism*, June 2011.

Table 8

# Retail Formula Rate Plan Precedents<sup>1</sup>

Jurisdiction	Company Name	Services	Plan Name	Plan Term	Case Reference
<b>Current</b>					
AL	Alabama Power	Bundled Power Service	Rate Stabilization & Equalization Factor (Rate RSE)	2013-open	Dockets 18117 and 18416 (August 2013)
AL	Alabama Gas	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	2014-2018	Dockets 18406 and 18328 (December 2013)
AL	Mobile Gas Service	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	2013-2017	Docket 28101 (August 2013)
GA	Atmos Energy	Gas	Georgia Rate Adjustment Mechanism (GRAM)	2012-open	Docket 34764 (December 2011)
IL	Ameren Illinois	Power Distribution	Rate Modernization Action Plan - Pricing (Rate MAP-P)	2011-2017, extended through 2019	Case 12-0001 (September 2012) and Public Act 098-1175
IL	Commonwealth Edison	Power Distribution	Rate Delivery Service Pricing and Performance (Rate DSPP)	2011-2017, extended through 2019	Case 11-0721 (May 2012) and Public Act 098-1175
LA	Atmos Energy - Louisiana Gas Service	Gas	Rate Stabilization Clause	2014-open	Docket U-32987 (June 2014)
LA	Atmos Energy - Trans Louisiana Gas	Gas	Rate Stabilization Clause	2014-open	Docket U-32987 (June 2014)
LA	Southwestern Electric Power	Electric	Formula Rate Plan	2013-2016	Docket U-32220 (July 2014)
MS	Atmos Energy Corp	Gas	Stable/Rate Rider	2011-present	Docket 05-UN-0503 (April 2011)
MS	Centerpoint Energy	Gas	Rate Regulation Adjustment Rider	2014-open	Docket 2014-UN-060 (May 2014)
MS	Entergy Mississippi	Bundled Power Service	Formula Rate Plan 6 (FRP-6)	2015-open	Docket 2014-UN-132 (December 2014)
MS	Mississippi Power	Bundled Power Service	Performance Evaluation Plan - 5 (PEP-5)	2010-open	Docket 2003-UN-0898 (November 2009)
OK	Centerpoint Energy Arkla	Gas	Performance Based Rate of Change Plan	2010-open	Cause PUD 201000030 (July 2010)
OK	Arkansas Oklahoma Gas	Gas	Performance Based Rate of Change Plan	2013-open	Cause PUD 201200236 (July 2013)
SC	Piedmont Gas	Gas	NA	2005-open	Docket 2005-125-G (September 2005)
SC	South Carolina Electric and Gas	Gas	NA	2005-open	Docket 2005-113-G (October 2005)
TN	Atmos Energy	Gas	Annual Review Mechanism	2015-open	Docket 14-00146 (May 2015)
TX	Centerpoint Energy-Texas Coast Division	Gas	Cost of Service Adjustment Clause	2008-open	Gas Utility Docket 9791 (October 2008)
TX	Atmos Energy-Mid Texas Division	Gas	Rate Review Mechanism	2013-2017	Various Resolutions/Ordinances across cities in service territory, including City of Fort Worth Ordinance 17989-02-2007
TX	Atmos Energy West Texas Division	Gas	Rate Review Mechanism	2014-open	Various Resolutions/Ordinances across cities in service territory including City of Tulia Ordinance 2014-03
TX	Texas Gas Service - Rio Grande Service Area	Gas	Cost of Service Adjustment	2012-open	Various Resolutions/Ordinances across cities in service territory
TX	Texas Gas Service - North Service Area	Gas	Cost of Service Adjustment Tariff	2009-open	Various Resolutions/Ordinances in service territory and Gas Utility Docket 9839 (April 2009)



Table 8 (cont'd)

Jurisdiction	Company Name	Services	Plan Name	Plan Term	Case Reference
<b>Historic</b>					
AL	Alabama Power	Bundled Power Service	Rate Stabilization & Equalization Factor (Rate RSE)	2006-2013	Dockets 18117 and 18416 (October 2005)
AL	Alabama Power	Bundled Power Service	Rate Stabilization & Equalization Factor (Rate RSE)	2002-2006	Dockets 18117 and 18416 (March 2002)
AL	Alabama Power	Bundled Power Service	Rate Stabilization & Equalization Factor (Rate RSE)	1998-2002	Dockets 18117 and 18416 (March 1998)
AL	Alabama Power	Bundled Power Service	Rate Stabilization & Equalization Factor (Rate RSE)	1990-1998	Dockets 18117 and 18416 (March 1990)
AL	Alabama Power	Bundled Power Service	Rate Stabilization & Equalization Factor (Rate RSE)	1985-1990	Dockets 18117 and 18416 (June 1985)
AL	Alabama Power	Bundled Power Service	Rate Stabilization & Equalization Factor (Rate RSE)	1982-1985	Dockets 18117 and 18416 (November 1982)
AL	Alabama Gas	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	2008-2014, later changed to 2013	Dockets 18406 and 18328 (December 2007)
AL	Alabama Gas	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	2002-2007	Dockets 18046 and 18328 (June 2002)
AL	Alabama Gas	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	1996-2001	Dockets 18046 and 18328 (October 1996)
AL	Alabama Gas	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	1991-1995	Dockets 18046 and 18328 (December 1990)
AL	Alabama Gas	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	1987-1990	Dockets 18046 and 18328 (September 1987)
AL	Alabama Gas	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	1985-1987	Dockets 18046 and 18328 (May 1985)
AL	Alabama Gas	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	1983-1985	Dockets 18046 and 18328 (January 1983)
AL	Mobile Gas Service	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	2009-2013	Docket 28101 (December 2009)
AL	Mobile Gas Service	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	2005-2009	Docket 28101 (June 2005)
AL	Mobile Gas Service	Gas	Rate Stabilization & Equalization Factor (Rate RSE)	2001-2005	Docket 28101 (June 2002)
LA	Atmos Energy - Louisiana Gas Service	Gas	Rate Stabilization Plan	2006-2014	Docket U-21484 (May 2006)
LA	Atmos Energy - Louisiana Gas Service	Gas	Rate Stabilization Plan	2001-2003	Docket U-21484 (January 2001)
LA	Atmos Energy - Trans Louisiana Gas	Gas	Rate Stabilization Plan	2006-2014	Dockets U-28814 and U-28588 and U-28587 (May 2006)
LA	Entergy New Orleans	Electric and Gas	Formula Rate Plan	2010-2012	Docket UD-08-03 (April 2009)
LA	Entergy New Orleans	Electric only	Formula Rate Plan	2004-2006	Docket UD-01-04 (May 2003)
MS	Atmos Energy Corp	Gas	Stable/Rate Rider	2009-2011	Docket 05-UN-0503 (December 2009)
MS	Atmos Energy Corp	Gas	Stable/Rate Rider	2006-2009	Docket 05-UN-0503 (October 2005)
MS	Atmos Energy Corp	Gas	Stable/Rate Rider	1992-2006	Docket 92-UA-0230 (September 1992)
MS	Centerpoint Energy	Gas	Rate Regulation Adjustment Rider	2012-2014	Docket 12-UN-139 (May 2012)

Table 8 (cont'd)

Jurisdiction	Company Name	Services	Plan Name	Plan Term	Case Reference
<b>Historic (cont'd)</b>					
MS	Centerpoint Energy Entex	Gas	Rate Regulation Adjustment Rider	2008-2012	Docket 07-UN-548 (December 2007)
MS	Centerpoint Energy Entex	Gas	Rate Regulation Adjustment Rider	1996-2007	Docket 96-UN-0202 (September 1996)
MS	Entergy Mississippi	Bundled Power Service	Formula Rate Plan 5 (FRP-5)	2010-2014	Docket 2009-UN-388 (March 2010)
MS	Entergy Mississippi	Bundled Power Service	Formula Rate Plan 1 (FRP-1)	1995	Docket 93-UA-0301 (March 1994)
MS	Mississippi Power	Bundled Power Service	Performance Evaluation Plan - 4A (PEP- 4A)	2009	Docket 06-UN-0511 (January 2009)
MS	Mississippi Power	Bundled Power Service	Performance Evaluation Plan - 4 (PEP-4)	2004-2009	Docket 03-UN-0898 (May 2004)
MS	Mississippi Power	Bundled Power Service	Performance Evaluation Plan - 3 (PEP-3)	2002-2004	Docket 01-UN-0826 (October 2002)
MS	Mississippi Power	Bundled Power Service	Performance Evaluation Plan - 2A (PEP-2A)	2001-2002	Docket 01-UN-0548 (December 2001)
MS	Mississippi Power	Bundled Power Service	Performance Evaluation Plan - 1A (PEP-1A)	1992-1993	Docket 92-UN-0059 (July 1992)
MS	Mississippi Power	Bundled Power Service	Performance Evaluation Plan - 1 (PEP-1)	1991-1992	Docket 90-UN-0287 (December 1990)
MS	Mississippi Power	Bundled Power Service	Performance Evaluation Plan	1986-1990	Cause PUD U-4761 (August 1986)
OK	Centerpoint Energy Arkla	Gas	Performance Based Rate of Change Plan	2008-2010	Cause PUD 200800062 (July 2008)
OK	Centerpoint Energy Arkla	Gas	Performance Based Rate of Change Plan	2004-2008	Cause PUD 200400187 (November 2004)
OK	Oklahoma Natural Gas	Gas	Performance Based Rate of Change Plan	2010-2014	Docket 200800348 (April 2009)
TX	Atmos Energy-Mid Texas Division	Gas	Rate Review Mechanism	2008 - varying end dates	Various Resolutions/Ordinances across cities in service territory, including City of Fort Worth Ordinance 17989-02-2008
TX	Atmos Energy West Texas Division	Gas	Rate Review Mechanism	2009 - conclusion of rate case to be filed on or before June 1, 2013	Various Resolutions/Ordinances across cities in service territory
TX	Centerpoint Energy - Beaumont East Texas Gas Division	Gas	Cost of Service Adjustment	2009-2011	Various Resolutions/Ordinances across cities in service territory
TX	Texas Gas Service - Rio Grande Service Area	Gas	Cost of Service Adjustment	2009-2011	Various Resolutions/Ordinances across cities in service territory

<sup>1</sup> Table excludes some mechanisms that do not conform to our FRP definition. Some of these are called formula rate plans.

## VII. Marketing Flexibility

This is a new section, added since the last survey. We've added it because we (and EEI) believe that marketing flexibility is a growing, strategic issue for EEI members. Several trends in business conditions are driving the need for more flexibility. The growth of distributed energy resources, for example, is a competitive challenge but also brings new service opportunities related to the development of distributed energy assets (e.g., designing, financing, procuring, building, fueling, and maintaining). Grid modernization is providing new functional capabilities to the grid which also create new service opportunities.<sup>12</sup> Examples include new reliability, network management, and transaction management services. Residential and commercial customers also have a growing interest in plug-in electric vehicles, and all retail customers have shown an interest in green power packages that can be supplied from grid-accessed resources.

New services will tend to be optional services that all customers will not want. Customers must be able to decline them; and if they do, not to incur associated costs. Competitive alternatives will be available for many of these services, and customers may have special needs that are difficult to address with standard tariffs. Thus, utilities will need to be able to respond quickly to the market. They will often be price "takers," as opposed to price "makers."

To date, regulatory precedent allowing investor-owned electric utilities to offer many of these services has been limited. This chapter is, in effect, a place holder for expected future electricity precedent.

### Why Electric Utilities Need Marketing Flexibility

Of course, electric utilities have always needed flexibility in some of the markets they serve:

- Utility assets have uses in markets other than those for retail electric services. Most notably, surplus generating capacity of VIEUs can be used for sales in bulk power markets. These markets are competitive and price-volatile. Land in transmission corridors can be well-suited for nurseries. Prices utilities charge in competitive markets like these are largely decontrolled. Margins earned in these markets are shared with customers of retail electric services.
- The demand of large-load retail customers is often sensitive to the rates and other terms of service utilities offer because these customers have power-intensive technologies and/or options to cost-competitively cogenerate or operate at alternative locations, or are economically marginal. Customers of this kind are especially important to vertically integrated utilities. Discounts or special contracts for such customers are traditionally allowed but often require specific approval. Commission reviews of special contracts can take months.

<sup>12</sup> For an overview of modernization, see: EPRI, *The Integrated Grid: Realizing the Full Value of Central and Distributed Energy Resources*, 2014.

## Marketing Flexibility Remedies

Marketing flexibility runs the gamut from greater commission effort to approve new rates and services by traditional means to “light handed” regulation and outright decontrol. Light handed regulation typically takes the form of expedited approval of market offerings. These offerings may be subject to further scrutiny at a later date (e.g., in the next rate case).

Flexibility is most commonly granted for rates and services with certain characteristics. Light handed regulation of optional rates and services, for example, is based on the grounds that customers are protected by their freedom not to take the service, their continued access to service under standard tariffs, and the availability of alternatives in unregulated markets. Optional offerings include tariffs open to all qualifying customers, special contracts, and discretionary value-added services. Decontrol is typically permitted only for offerings to markets where vigorous competition reigns.

## Marketing Flexibility Examples: Electric Utilities

Marketing flexibility is not extensive in the electric utility industry today but there are nonetheless notable examples such as the following.

- Four Florida electric utilities have “Commercial/Industrial Service Rider” (“CISR”) tariffs that allow them to negotiate contract service agreements (“CSAs”) that outline discounts on the base energy and/or demand charges for large load customers who can show that they have viable alternatives to utility-provided electric service.<sup>13</sup> The discounted rate must cover the incremental cost of service provision and provide a contribution to fixed costs. CSAs do not need commission approval but the commission has the option to conduct a prudence review of any signed contract.
- Duke Energy offers large North Carolina customers an optional Green Source Rider service. The program allows customers that have added at least 1 MW of new load since June 2012 to apply for an annual amount of renewable energy (and the associated renewable energy certificates) over a specific term (between 3-15 years). Customers may request a particular renewable resource in their application. Duke would then negotiate a purchased power agreement on behalf of the customer or attempt to source the energy from its own assets.

<sup>13</sup> Florida Public Service Commission (2014), Order Approving Commercial/Industrial Service Rider Tariff, Order No. PSC-14-0110-TRF-EI.

## Marketing Flexibility in Other Regulated Industries

Regulators and electric utilities considering new forms of marketing flexibility can learn from other utility industries that have experienced technological change, increased competition, and/or complex and changing customer needs. We provide here brief overviews of experience in the telecommunications, gas distribution, gas transmission, and railroad industries.

### Telecommunications

Local telephone companies (aka incumbent local exchange carriers or "ILECs") control the traditional distribution networks connecting residences and businesses. The "last mile" services they provide include the interconnection needed for long-distance, data, security, paging, and mobile telephone services as well as local telephone calling. ILECs have in the last 30 years confronted extensive competition, rapid technological change, and new marketing opportunities. Challenges they have faced have many parallels to those emerging for electric utilities.

The Federal Communications Commission ("FCC") regulates interstate access services of ILECs. Other ILEC services are regulated by state commissions. In the 1980s, ILECs were still regulated using cost-of-service regulation with complex reporting and compensation schemes. This was succeeded by multiyear rate plans, often called "price cap" plans since they capped rate escalation but permitted some discounts to encourage greater system use. Price caps were often escalated using inflation – X formulas where the X factor reflected an estimate of the telecommunication industry productivity trend. Prices were separately capped for several baskets of services. This insulated customers in each service basket from discounts offered to other baskets. Insulation was heightened by the infrequency (or elimination) of rate cases and the common lack of earnings sharing. The FCC instituted price caps for interstate access services of ILECs in the early 1990s. Price caps also became commonplace in state ILEC regulation.

Marketing flexibility for ILECs has been most relevant in the following two areas.

Competition in Traditional Service Markets Some services ILECs offered became subject to mounting competitive pressure that varied with the location where service was offered. For example, by the late 1990s, competitive access providers like MFS were constructing high-speed fiber optic networks connecting office buildings in metropolitan areas. These networks allowed businesses and long-distance carriers to connect to customers while bypassing ILEC data facilities. They could also be used to transmit voice traffic, avoiding ILEC voice access charges. High regulated prices were uncompetitive in high-traffic locations where facilities-based competitors entered the market. For services subject to competitive challenges, price cap plans in many states permitted discounts to standard tariffs within certain bands (e.g., rates could rise by 5% less than the price cap index) and/or subject to pricing floors that discouraged predation and cross-subsidization. In markets where pronounced competition could be demonstrated, ILEC rates were sometimes effectively decontrolled.

Innovative Services Technological change gave rise to innovative new services [e.g., Voicemail, Centrex and high-speed data (e.g., digital subscriber loop or "DSL")] which utilize essential network assets of ILECs

and cannot not practically be performed by affiliates.<sup>14</sup> Many of these services were deemed “information” services and were regulated by the FCC. Regulators ultimately permitted ILECs to provide a host of these services and allowed considerable pricing flexibility.

### Gas Distribution

Natural gas distributors also need flexibility to address some markets that they serve. Like VIEUs, many large-load customers of gas distributors have price sensitive demands and special needs. Distributors have frequently obtained light handed regulation to respond to these challenges. Nicor Gas, for example, offers a contract service for customers taking delivery near interstate gas pipelines. Contracts are submitted to state regulators for informational purposes and are treated on a proprietary basis. Nicor has similar flexibility to enter into custom contracts with electric power generators. The Company must document to the regulator that revenues from such service exceed the incremental cost of service, thereby ensuring a positive contribution to fixed cost recovery.

### Interstate Gas Transmission

Interstate pipeline companies need marketing flexibility for many reasons. Demand for a pipeline’s services can be sensitive to the terms it offers due to competition from other pipelines, dual-fuel capabilities of large volume customers, the extreme variability of need for service, and other special needs. It is difficult to design standard tariffs that meet the needs of all customers. Pipelines also have their own needs, such as an interest in signing anchor shippers to long-term contracts before constructing new facilities. Since 1996, the FERC has engaged in light handed regulation of negotiated pipeline rates to individual customers who have recourse to service under a standard tariff. The FERC gives a quick turnaround to most requests for negotiated contracts. A sizable share of pipeline service is conducted under negotiated rates. A remarkable variety of rate designs have been employed.<sup>15</sup>

### Railroads

In the railroad industry, MRPs were permitted under the terms of the Staggers Railroad Act of 1980. Railroads were given a freer hand to respond to competition from truckers, waterborne carriers, and other railroads. The railroads also used marketing flexibility to offer discounts to customers that reduced their cost by assembling their own unit trains and not requesting pickups or deliveries in remote locations.

MRPs are less common today in the railroad and telecom industries. However, marketing flexibility continues under new regulatory systems that share with MRPs the attribute of protecting core customers without linking a carrier’s rates closely to its own cost. Railroads have recently used this flexibility to compete for traffic from new oil field developments.

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<sup>14</sup> Centrex service, which provided businesses features like call-waiting, auto attendant, voicemail, 4-digit extension dialing and conference calling, could also be sourced by purchasing or leasing a private branch exchange ("PBX"), a private network platform that enabled these features.

<sup>15</sup> See, for example, Comments of the Interstate Natural Gas Association of America in FERC Docket PLO2-6-000, September 2002.

## VIII. Conclusions

Regulation of North American energy utilities is evolving to better meet the needs of utilities and their customers in a rapidly changing world. Innovation continues, while some older forms of Altreg such as multiyear rate plans are having a renaissance.

The variety of Altreg approaches that have been established reflects the varied circumstances of utilities. Some are vertically integrated, while others are more specialized wire companies. Capex needs and trends in average use vary greatly. Regulatory traditions also vary across the US and other advanced industrial countries.

No single Altreg approach is right for every situation. The availability of multiple remedies for the underlying challenges increases the chance that an approach has already been tried that would work well, with some adjustments, in new situations. Numerous precedents for an approach should raise confidence that it makes good sense under fairly common circumstances.

Taken together, the many innovations described in this survey can encourage utilities to achieve compensatory rates of return while making needed investments, improving efficiency, and developing more market-responsive rates and services. Regulation can be streamlined, and utilities can be encouraged to embrace cost-effective DERs. Regulators and stakeholders to regulation across the US should give priority attention to these options and consider which kinds of Altreg might work best in their situation.

# MOODY'S

## INVESTORS SERVICE

### Credit Opinion: **Louisville Gas & Electric Company**

Global Credit Research - 11 Dec 2015

*Louisville, Kentucky, United States*

#### Ratings

Category	Moody's Rating
Outlook	Stable
Issuer Rating	A3
First Mortgage Bonds	A1
Sr Unsec Bank Credit Facility	A3
Commercial Paper	P-2
<b>Ult Parent: PPL Corporation</b>	
Outlook	Stable
Issuer Rating	Baa2
<b>Parent: LG&amp;E and KU Energy LLC</b>	
Outlook	Stable
Issuer Rating	Baa1
Senior Unsecured	Baa1

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#### Opinion

##### Rating Drivers

- Supportive regulatory environment
- Large capital expenditure program
- High coal concentration
- Strong and stable financial metrics

##### Corporate Profile

Louisville Gas and Electric Company (LG&E: A3 stable) is a regulated public utility engaged in the generation, transmission and distribution of electricity and the storage, distribution and sale of natural gas. It provides electricity to approximately 400,000 customers in Louisville and adjacent areas and delivers natural gas service to approximately 321,000 customers in its electric service area and eight additional counties in Kentucky. LG&E's service area covers approximately 700 square miles.

LG&E is a wholly-owned subsidiary of LG&E and KU Energy LLC (LKE: Baa1 stable). LG&E and its affiliate, Kentucky Utilities (KU: A3 stable), are the two main operating entities of LKE. LKE, in turn, is wholly owned by PPL Corporation (PPL: Baa2 stable), a diversified energy holding company headquartered in Allentown, PA.

##### SUMMARY RATING RATIONALE

LG&E's A3 Issuer Rating reflects its sound financial performance and the credit supportive regulatory environment in which it operates, offset in part by a large capital expenditure program and, to a lesser extent, a lack of fuel and



geographic diversity.

## DETAILED RATING CONSIDERATIONS

### SUPPORTIVE REGULATION PROVIDES FOR TIMELY COST RECOVERY

We consider the Kentucky Public Service Commission (KPSC) to be supportive of long term credit quality and note that it has approved various tracker mechanisms that provide for timely cost recovery outside of a rate case. LG&E's tracker mechanisms include a Fuel Adjustment Clause (FAC), an Environmental Cost Recovery Surcharge (ECR), a Gas Supply Clause (GSC), a Gas Line Tracker (GLT) and a Demand-Side Management Cost Recovery Mechanism (DSM). LG&E does not have a decoupling mechanism in place, which subjects LG&E's net revenue to weather volatilities. The lack of a decoupling mechanism is less of an issue for non-weather related demand fluctuations because LG&E has the DSM and expects to have modest load growth in 2016.

Due to the high level of planned capital expenditures, LG&E and KU filed a rate case in November of 2014, requesting increases in annual base electricity rates of approximately \$30 million at LG&E and approximately \$153 million at KU and an increase in annual base gas rates of approximately \$14 million at LG&E. The rate settlement agreement of LG&E and KU was approved by the KPSC on June 30, 2015. It provided an annual revenue increase for KU's electricity rates of \$125 million, as expected, confirming the regulatory credit supportiveness. Although it didn't specify an ROE with respect to the base rates, it authorized a 10% return on equity in Environmental Cost Recovery (ECR) and Gas Line Tracker (GLT). The settlement agreement also provides for deferred cost recovery of a portion of the costs related to pensions and KU's Green River (retired September 30, 2015). The settlement agreement provided no revenue increase for LG&E' electric operations and a \$7 million increase in LG&E' gas operations.

### LARGE PLANNED CAPITAL EXPENDITURES

Capital expenditures for LG&E are expected to remain at elevated levels from 2015-2019. Total capital expenditures are expected to be \$2.7 billion, with \$1.1 billion related to environmental. The total estimated amount represents about 57% of the company's net book value of property, plant and equipment, which stood at about \$4.7 billion at the end of the third quarter 2015.

The disallowance risk associated with large capital expenditures is meaningfully moderated by Kentucky's supportive regulatory environment especially regarding the environmental expenditures through the ECR. KPSC is also authorized to grant return on construction work in progress (CWIP) in rate case proceedings. Moreover, the ECR virtually eliminates regulatory lag for investments associated with complying with the Clean Air Act and coal combustion waste and byproduct environmental requirements. The terms of the ECR allows LG&E to receive the return of and a return on the investment starting two months after making the investment. This is highly favorable compared to the traditional process where regulatory lag could last a few years due to the length of the construction period plus the rate case proceeding.

### HIGH COAL CONCENTRATION

LG&E's current fuel mix is heavily biased towards coal. Of its 2.9 GW of generating capacity, 2.0 GW (69%) is coal-fired which provides almost all (95%) of its electricity generation. The remaining 31% of the generating capacity is comprised mainly of gas- or oil- fired facilities. The fuel concentration, though a credit negative, is acceptable for its rating levels because Kentucky is very supportive of the coal industry. Kentucky is one of the leading coal producing states and the coal industry is very important to the local economy. This support is evidenced by the passage of the ECR, which provides the company with highly favorable terms for its investments in coal-related environmental expenditures.

LG&E's fuel concentration mix recently began to improve. In June 2015, the 640-MW gas-fired combined generating unit Cane Run 7 started commercial operations. Cane Run replaces some of the older coal plants totaling 234 MW at Tyrone (retired in 2013) and Green River (retired on September 30, 2015), as well as the 563 MW retirement of Cane Run coal plant in 2015. KU and LG&E had also planned to build a 700-MW gas-fired combined-cycle plant at KU's Green River generating site but the companies withdrew that proposal in August 2014 as a result of municipal contract terminations at KU.

### HEALTHY FINANCIAL PROFILE

LG&E's financial metrics have been strong for its rating. As of September 30, 2015, the ratio of consolidated cash flow before changes in working capital (CFO pre W/C) to debt was 26.6% for the last twelve months and averaged

27.7% for the past three years. Debt to capitalization was 38.9% for the last twelve months and averaged 36.5% for the past three years. LG&E's financial metrics may decline somewhat over the next few years due to the expiration of bonus depreciation in 2014 and the large capital expenditure program. However, we expect LG&E's financial metrics to remain supportive of its rating levels based on the company's targeted capital structure of 52% equity, which is calculated net of goodwill and fully loaded with rating agency adjustments. LG&E's goodwill amounted to \$389 million at the end of September 2015 and in comparison total equity, including the goodwill, was \$2,259 million.

### Liquidity Profile

LG&E has adequate liquidity. As of September 30, 2015, after accounting for all commercial paper and letter of credits issued, LG&E had all its \$500 million revolving facility available. For the past twelve months ending September 2015, LG&E had a negative free cash flow of \$350 million which is likely to be more sizeable in the coming years given its large capital expenditure program. LG&E's has debt maturities for \$25 million in 2016.

LKE manages the liquidity of its Kentucky utility operations on a consolidated basis. LG&E has a \$500 million stand-alone revolving credit facility and KU, its sister affiliate, has a \$400 million stand-alone credit facility. Both facilities expire in July 2019. LG&E's parent company also has a \$75 million syndicated credit facility that expires in October 2018. Each facility contains a financial covenant requiring the companies' debt to total capitalization not to exceed 70%. All entities were in compliance as of September 30, 2015.

### Rating Outlook

LG&E's stable outlook reflects its supportive regulatory environment and solid financial performance. LG&E's stable outlook incorporates an expectation of 20%-26% CFO pre-WC to debt and 15-21% RCF to debt.

### What Could Change the Rating - Up

The potential for upgrade is constrained by the large upcoming capital expenditure program. However, ratings could be upgraded if the company received more favorable regulatory recovery mechanisms for non-environmental related capital expenditures and maintained its CFO Pre WC/debt ratios at 26% or above.

### What Could Change the Rating - Down

LG&E's ratings could be downgraded should the company experience an unfavorable rate case outcome or if unanticipated changes were made to the regulatory compact that currently provides for timely recovery of costs and this were to lead to the company's ratios of CFO pre-WC to debt and retained cash flow to debt dropping below 20% and 15%, respectively for an extended period of time.

## Rating Factors

### Louisville Gas & Electric Company

Regulated Electric and Gas Utilities Industry Grid [1][2]	Current LTM 9/30/2015		[3]Moody's 12-18 Month Forward ViewAs of 12/8/2015	
	Measure	Score	Measure	Score
<b>Factor 1 : Regulatory Framework (25%)</b>				
a) Legislative and Judicial Underpinnings of the Regulatory Framework	A	A	A	A
b) Consistency and Predictability of Regulation	A	A	A	A
<b>Factor 2 : Ability to Recover Costs and Earn Returns (25%)</b>				
a) Timeliness of Recovery of Operating and Capital Costs	Baa	Baa	Baa	Baa
b) Sufficiency of Rates and Returns	A	A	A	A
<b>Factor 3 : Diversification (10%)</b>				
a) Market Position	Baa	Baa	Baa	Baa
b) Generation and Fuel Diversity	Baa	Baa	Baa	Baa
<b>Factor 4 : Financial Strength (40%)</b>				

a) CFO pre-WC + Interest / Interest (3 Year Avg)	10.5x	Aaa	5x - 7x	Aa
b) CFO pre-WC / Debt (3 Year Avg)	27.7%	A	20% - 26%	A
c) CFO pre-WC - Dividends / Debt (3 Year Avg)	21.0%	A	15% - 21%	A
d) Debt / Capitalization (3 Year Avg)	36.5%	A	34% - 40%	A
<b>Rating:</b>				
Grid-Indicated Rating Before Notching Adjustment		A2		A2
HoldCo Structural Subordination Notching		-		-
a) Indicated Rating from Grid		A2		A2
b) Actual Rating Assigned		A3		A3

[1] All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations. [2] As of 9/30/2015(L); Source: Moody's Financial Metrics [3] This represents Moody's forward view; not the view of the issuer; and unless noted in the text, does not incorporate significant acquisitions and divestitures.

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on <http://www.moody's.com> for the most updated credit rating action information and rating history.



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# MOODY'S

## INVESTORS SERVICE

### Credit Opinion: **Kentucky Utilities Co.**

Global Credit Research - 11 Dec 2015

*Lexington, Kentucky, United States*

#### Ratings

Category	Moody's Rating
Outlook	Stable
Issuer Rating	A3
First Mortgage Bonds	A1
Sr Unsec Bank Credit Facility	A3
Commercial Paper	P-2
<b>Ult Parent: PPL Corporation</b>	
Outlook	Stable
Issuer Rating	Baa2
<b>Parent: LG&amp;E and KU Energy LLC</b>	
Outlook	Stable
Issuer Rating	Baa1
Senior Unsecured	Baa1

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#### Opinion

##### Rating Drivers

- Supportive regulatory environment
- Large capital expenditure program
- High coal concentration
- Strong and stable financial metrics

##### Corporate Profile

Kentucky Utilities (KU: A3 stable) is a regulated public utility engaged in the generation, transmission and distribution of electricity. KU provides electric service to approximately 515,000 customers in Kentucky and 28,000 customers in Virginia. Its service territory covers approximately 4,800 square miles.

KU is a wholly-owned subsidiary of LG&E and KU Energy LLC (LKE: Baa1 stable). KU and its affiliate, Louisville Gas and Electric Company (LG&E: A3 stable), are the two main operating entities of LKE. LKE, in turn, is wholly owned by PPL Corporation (PPL: Baa2 stable), a diversified energy holding company headquartered in Allentown, PA.

##### SUMMARY RATING RATIONALE

KU's A3 issuer rating reflects its sound financial performance and the credit supportive regulatory environment in which it operates, **offset in part by a large capital expenditure program and, to a lesser extent, a lack of fuel and geographic diversity.**

## DETAILED RATING CONSIDERATIONS

### SUPPORTIVE REGULATION PROVIDES FOR TIMELY COST RECOVERY

We consider the Kentucky Public Service Commission (KPSC) to be supportive of long term credit quality and note that it has approved various tracker mechanisms that provide for timely cost recovery outside of a rate case. KU's tracker mechanisms include a Fuel Adjustment Clause (FAC), an Environmental Cost Recovery Surcharge (ECR) and a Demand-Side Management Cost Recovery Mechanism (DSM). **KU does not have a decoupling mechanism in place, which subjects KU's net revenue to weather volatilities.** The lack of a decoupling mechanism is less of an issue for non-weather related demand fluctuations because KU has the DSM and expects to have modest load growth in 2016.

Due to the high level of planned capital expenditures, LG&E and KU filed a rate case in November of 2014, requesting increases in annual base electricity rates of approximately \$30 million at LG&E and approximately \$153 million at KU along with an increase in annual base gas rates of approximately \$14 million at LG&E. The rate settlement agreement of LG&E and KU was approved by the KPSC on June 30, 2015. It provided an annual revenue increase for KU's electricity rates of \$125 million, as expected, confirming the regulatory credit supportiveness. Although it didn't specify an ROE with respect to the base rates, it authorized a 10% return on equity in Environmental Cost Recovery (ECR). The settlement agreement also provides for deferred cost recovery of a portion of the costs related to pensions and KU's Green River (retired September 30, 2015). The settlement agreement provided no revenue increase for LG&E' electric operations and a \$7 million increase in LG&E' gas operations.

### LARGE PLANNED CAPITAL EXPENDITURES

**Capital expenditures for KU are expected to remain at elevated levels from 2015-2019. Total capital expenditures are expected to be \$2.8 billion, with \$1.1 billion related to environmental. The total estimated amount represents about 42% of its net book value of property, plant and equipment, which stood at about \$6.6 billion at the end of the third quarter 2015.**

The disallowance risk associated with large capital expenditures is meaningfully moderated by Kentucky's supportive regulatory environment especially regarding the environmental expenditures through the ECR. KPSC is also authorized to grant return on construction work in progress (CWIP) in rate case proceedings. Moreover, the ECR virtually eliminates regulatory lag for investments associated with complying with the Clean Air Act and coal combustion waste and byproduct environmental requirements. The terms of the ECR allows KU to receive the return of and a return on the investment starting two months after making the investment. This is highly favorable compared to the traditional process where regulatory lag could last a few years due to the length of the construction period plus the rate case proceeding.

### HIGH COAL CONCENTRATION

KU's current fuel mix is heavily biased towards coal. Of its 5.0 GW of generating capacity, 3.0 GW (60%) is coal-fired which provides almost all (95%) of the electricity generation. The remaining 40% of the generating capacity is comprised mainly of gas- or oil- fired facilities.

The fuel concentration, though a credit negative, is acceptable for its rating levels because Kentucky is very supportive of the coal industry. Kentucky is one of the leading coal producing states and the coal industry is very important to the local economy. This support is evidenced by the passage of the ECR, which provides the company with highly favorable terms for its investments in coal-related environmental expenditures.

KU's fuel concentration mix recently began to improve. In June 2015, the 640-MW gas-fired combined generating unit Cane Run 7 started commercial operations Cane Run replaces some of the older coal plants totaling 234 MW at Tyrone (retired in 2013) and Green River (retired on September 30, 2015), as well as the 563 MW retirement of Cane Run coal plant in 2015. KU and LG&E had also planned to build a 700-MW gas-fired combined-cycle plant at KU's Green River generating site but the companies withdrew that proposal in August 2014 as a result of municipal contract terminations at KU.

### HEALTHY FINANCIAL PROFILE

KU's financial metrics have been strong for its rating. As of September 30, 2015, the ratio of consolidated cash flow before changes in working capital (CFO pre W/C) to debt was 25% for the last twelve months and for the average of the past three years. Debt to capitalization was 37% for the last twelve months and for the average



over the past three years. KU's financial metrics may decline somewhat over the next few years due to the expiration of bonus depreciation in 2014 and the large capital expenditure program. However, we expect KU's financial metrics to remain supportive of its rating levels based on the company's targeted capital structure of 52% equity, which is calculated net of goodwill and fully loaded with rating agency adjustments. KU's goodwill amounted to \$607 million at the end of September 2015 and in comparison total equity, including the goodwill, was \$3,288 million.

### Liquidity Profile

KU has adequate liquidity. As of September 30, 2015, after accounting for all commercial paper backup and letter of credits issued, KU had all its \$400 million revolving facility available. For the past twelve months ending September 2015, KU had a negative free cash flow of \$145 million which is likely to be more sizeable in the coming years given its large capital expenditure program. KU's next debt maturity is the \$500 million Secured Notes maturing in 2020.

LKE manages the liquidity of its Kentucky utility operations on a consolidated basis. KU has a \$400 million stand-alone revolving credit facility and LG&E, its sister affiliate, has a \$500 million stand-alone credit facility. Both facilities expire in July 2019. LKE, KU's parent company, also has a \$75 million syndicated credit facility that expires in October 2018. Each facility contains a financial covenant requiring the companies' debt to total capitalization not to exceed 70%. All entities were in compliance as of September 30, 2015.

### Rating Outlook

KU's stable outlook reflects its supportive regulatory environment and solid financial performance. KU's stable outlook incorporates an expectation of 22%-26% CFO pre-WC to debt and 16-19% RCF to debt.

### What Could Change the Rating - Up

The potential for upgrade is constrained by the large upcoming capital expenditure program. However, ratings could be upgraded if the company received more favorable regulatory recovery mechanisms for non-environmental related capital expenditures and maintained its CFO Pre WC/debt ratios at 26% or above.

### What Could Change the Rating - Down

KU's ratings could be downgraded should the company experience an unfavorable rate case outcome or if unanticipated changes were made to the regulatory compact that currently provides for timely recovery of costs and this were to lead to the company's ratios of CFO pre-WC to debt and retained cash flow to debt dropping below 20% and 15%, respectively, for an extended period of time.

## Rating Factors

### Kentucky Utilities Co.

Regulated Electric and Gas Utilities Industry Grid [1][2]	Current LTM 9/30/2015		[3]Moody's 12-18 Month Forward ViewAs of 12/8/2015	
Factor 1 : Regulatory Framework (25%)	Measure	Score	Measure	Score
a) Legislative and Judicial Underpinnings of the Regulatory Framework	A	A	A	A
b) Consistency and Predictability of Regulation	A	A	A	A
Factor 2 : Ability to Recover Costs and Earn Returns (25%)				
a) Timeliness of Recovery of Operating and Capital Costs	Baa	Baa	Baa	Baa
b) Sufficiency of Rates and Returns	A	A	A	A
Factor 3 : Diversification (10%)				
a) Market Position	Baa	Baa	Baa	Baa
b) Generation and Fuel Diversity	Baa	Baa	Baa	Baa
Factor 4 : Financial Strength (40%)				



a) CFO pre-WC + Interest / Interest (3 Year Avg)	8.8x	Aaa	6x - 8x	Aa
b) CFO pre-WC / Debt (3 Year Avg)	25.6%	A	22% - 26%	A
c) CFO pre-WC - Dividends / Debt (3 Year Avg)	19.6%	A	16% - 19%	A
d) Debt / Capitalization (3 Year Avg)	36.7%	A	35% - 40%	A
<b>Rating:</b>				
Grid-Indicated Rating Before Notching Adjustment		A2		A2
HoldCo Structural Subordination Notching		-		-
a) Indicated Rating from Grid		A2		A2
b) Actual Rating Assigned		A3		A3

[1] All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations. [2] As of 9/30/2015(L); Source: Moody's Financial Metrics [3] This represents Moody's forward view; not the view of the issuer; and unless noted in the text, does not incorporate significant acquisitions and divestitures.

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on <http://www.moody's.com> for the most updated credit rating action information and rating history.



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# Fed's Plosser: Low rates 'should make us nervous'

Katy Barnato | Carolin Roth  
Tuesday, 11 Nov 2014 | 4:16 AM ET



Interest rates in the U.S. are unprecedentedly low, even allowing for [falling oil prices](#) and "very modest" wage growth, Philadelphia Federal Reserve President Charles Plosser told CNBC on Tuesday, who expressed concern over the low levels.

Plosser, who is one of the Fed's most outspoken "hawks" expressed concern over the low rates. Last month, the Fed confirmed that it would hold the target range for the federal funds rate at 0 to 0.25 percent.

"There are many indicators that tell us interest rates are too low," Plosser told CNBC from the UBS European Conference in London.

"There is no precedent history to have rates at zero. I think we are really behaving in a way which is outside of historical norms and that should make us nervous," he added.

Plosser conceded that "wage growth has been very modest" and that falling oil prices were pressuring short-term inflation lower—but said that rates were too low nonetheless.

"Given the unemployment rate, and even given low inflation, we are below where we would normally be," he said. "I think this is something we should be cognisant of."

Plosser added that the Fed should also avoid responding to short-term fluctuations in either the [U.S. dollar](#) or the [stock market](#).

"The dollar is not our responsibility," Plosser told CNBC.

He said the appreciation in the dollar would have "some reverberations", but these would be limited because the U.S. economy was "pretty much closed" when compared to Europe or the U.K.

[Plosser is due to retire from the Fed](#) in March next year. He was an economics professor at the University of Rochester before he became the 10th president of the Philly Fed in August 2006.

His retirement will coincide with that of Dallas Fed's Richard Fisher, another central banker who has stridently advocated paring back monetary stimulus.

Plosser and Fisher's departure could change the tenor of debate within the Fed policy-setting committee, giving it a more dovish bent.

"I am sure that a wide range of views will continue to be discussed," Plosser said regarding his retirement, for which he has no immediate plans.

"There will still be a healthy debate I'm sure."

—Writing by CNBC's [Katy Barnato](#); reporting by [Carolyn Roth](#)

# I. Press Release

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*Release Date: September 17, 2014*

## **For immediate release**

Information received since the Federal Open Market Committee met in July suggests that economic activity is expanding at a moderate pace. On balance, labor market conditions improved somewhat further; however, the unemployment rate is little changed and a range of labor market indicators suggests that there remains significant underutilization of labor resources. Household spending appears to be rising moderately and business fixed investment is advancing, while the recovery in the housing sector remains slow. Fiscal policy is restraining economic growth, although the extent of restraint is diminishing. Inflation has been running below the Committee's longer-run objective. Longer-term inflation expectations have remained stable.

Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects that, with appropriate policy accommodation, economic activity will expand at a moderate pace, with labor market indicators and inflation moving toward levels the Committee judges consistent with its dual mandate. The Committee sees the risks to the outlook for economic activity and the labor market as nearly balanced and judges that the likelihood of inflation running persistently below 2 percent has diminished somewhat since early this year.

The Committee currently judges that there is sufficient underlying strength in the broader economy to support ongoing improvement in labor market conditions. In light of the cumulative progress toward maximum employment and the improvement in the outlook for labor market conditions since the inception of the current asset purchase program, the Committee decided to make a further measured reduction in the pace of its asset purchases. Beginning in October, the Committee will add to its holdings of agency mortgage-backed securities at a pace of \$5 billion per month rather than \$10 billion per month, and will add to its holdings of longer-term Treasury securities at a pace of \$10 billion per month rather than \$15 billion per month. The Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction. The Committee's sizable and still-increasing holdings of longer-term securities should maintain downward pressure on longer-term interest rates, support mortgage markets, and help to make broader financial conditions more accommodative, which in turn should promote a stronger economic recovery and help to ensure that inflation, over time, is at the rate most consistent with the Committee's dual mandate.

The Committee will closely monitor incoming information on economic and financial developments in coming months and will continue its purchases of Treasury and agency mortgage-backed securities, and employ its other policy tools as appropriate, until the outlook for the labor market has improved substantially in a context of price stability. If incoming information broadly supports the Committee's expectation of ongoing improvement in labor market conditions and inflation moving back toward its longer-run objective, the Committee will end its current program of asset purchases at its next meeting. However, asset purchases are not on a preset course, and the Committee's decisions about their pace will remain contingent on the Committee's outlook for the labor market and inflation as well as its assessment of the likely efficacy and costs of such purchases.

To support continued progress toward maximum employment and price stability, the Committee today reaffirmed its view that a highly accommodative stance of monetary policy remains appropriate. In determining how long to maintain the current 0 to 1/4 percent target range for the federal funds rate, the Committee will assess progress--both realized and expected--toward its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations,

and readings on financial developments. The Committee continues to anticipate, based on its assessment of these factors, that it likely will be appropriate to maintain the current target range for the federal funds rate for a considerable time after the asset purchase program ends, especially if projected inflation continues to run below the Committee's 2 percent longer-run goal, and provided that longer-term inflation expectations remain well anchored.

When the Committee decides to begin to remove policy accommodation, it will take a balanced approach consistent with its longer-run goals of maximum employment and inflation of 2 percent. The Committee currently anticipates that, even after employment and inflation are near mandate-consistent levels, economic conditions may, for some time, warrant keeping the target federal funds rate below levels the Committee views as normal in the longer run.

Voting for the FOMC monetary policy action were: Janet L. Yellen, Chair; William C. Dudley, Vice Chairman; Lael Brainard; Stanley Fischer; Narayana Kocherlakota; Loretta J. Mester; Jerome H. Powell; and Daniel K. Tarullo. Voting against the action were Richard W. Fisher and Charles I. Plosser. President Fisher believed that the continued strengthening of the real economy, improved outlook for labor utilization and for general price stability, and continued signs of financial market excess, will likely warrant an earlier reduction in monetary accommodation than is suggested by the Committee's stated forward guidance. President Plosser objected to the guidance indicating that it likely will be appropriate to maintain the current target range for the federal funds rate for "a considerable time after the asset purchase program ends," because such language is time dependent and does not reflect the considerable economic progress that has been made toward the Committee's goals.

# FEDERAL RESERVE statistical release

## H.4.1 Factors Affecting Reserve Balances of Depository Institutions and Condition Statement of Federal Reserve Banks

November 3, 2016

### 1. Factors Affecting Reserve Balances of Depository Institutions

Millions of dollars

Reserve Bank credit, related items, and reserve balances of depository institutions at Federal Reserve Banks	Averages of daily figures			Wednesday Nov 2, 2016
	Week ended Nov 2, 2016	Change from week ended		
		Oct 26, 2016	Nov 4, 2015	
Reserve Bank credit	4,412,757	- 17,278	- 38,984	4,413,155
Securities held outright <sup>1</sup>	4,217,899	- 13,785	- 22,119	4,217,925
U.S. Treasury securities	2,463,564	+ 29	+ 1,786	2,463,586
Bills <sup>2</sup>	0	0	0	0
Notes and bonds, nominal <sup>2</sup>	2,340,847	- 129	- 5,792	2,340,674
Notes and bonds, inflation-indexed <sup>2</sup>	105,353	+ 129	+ 6,819	105,526
Inflation compensation <sup>3</sup>	17,364	+ 29	+ 760	17,385
Federal agency debt securities <sup>2</sup>	18,493	0	- 15,653	18,493
Mortgage-backed securities <sup>4</sup>	1,735,843	- 13,813	- 8,252	1,735,847
Unamortized premiums on securities held outright <sup>5</sup>	175,836	- 767	- 16,386	175,708
Unamortized discounts on securities held outright <sup>5</sup>	-15,315	+ 42	+ 1,538	-15,294
Repurchase agreements <sup>6</sup>	0	0	0	0
Loans	58	- 34	- 89	35
Primary credit	4	- 2	- 2	3
Secondary credit	0	0	0	0
Seasonal credit	53	- 33	- 88	32
Other credit extensions	0	0	0	0
Net portfolio holdings of Maiden Lane LLC <sup>7</sup>	1,706	- 2	- 7	1,708
Float	-835	- 509	- 1,143	-429
Central bank liquidity swaps <sup>8</sup>	1,015	- 2,526	+ 872	1,015
Other Federal Reserve assets <sup>9</sup>	32,393	+ 303	- 1,649	32,487
Foreign currency denominated assets <sup>10</sup>	20,916	+ 47	+ 1,169	21,307
Gold stock	11,041	0	0	11,041
Special drawing rights certificate account	5,200	0	0	5,200
Treasury currency outstanding <sup>11</sup>	48,281	+ 14	+ 826	48,281
<b>Total factors supplying reserve funds</b>	<b>4,498,195</b>	<b>- 17,217</b>	<b>- 36,988</b>	<b>4,498,984</b>

Note: Components may not sum to totals because of rounding. Footnotes appear at the end of the table.



H.4.1

**1. Factors Affecting Reserve Balances of Depository Institutions (continued)**

Millions of dollars

Reserve Bank credit, related items, and reserve balances of depository institutions at Federal Reserve Banks	Averages of daily figures			Wednesday Nov 2, 2016
	Week ended Nov 2, 2016	Change from week ended		
		Oct 26, 2016	Nov 4, 2015	
Currency in circulation <sup>11</sup>	1,479,212	+ 3,300	+ 82,234	1,484,552
Reverse repurchase agreements <sup>12</sup>	395,131	- 6,178	+ 22,946	414,938
Foreign official and international accounts	239,705	+ 283	+ 39,817	238,706
Others	155,426	- 6,461	- 16,871	176,232
Treasury cash holdings	182	+ 5	- 56	184
Deposits with F.R. Banks, other than reserve balances	469,090	- 60,074	+ 411,322	414,973
Term deposits held by depository institutions	0	- 48,601	0	0
U.S. Treasury, General Account	417,665	- 11,362	+ 387,870	371,894
Foreign official	5,173	+ 3	- 97	5,172
Other <sup>13</sup>	46,253	- 113	+ 23,550	37,907
Other liabilities and capital <sup>14</sup>	46,593	- 674	- 18,854	47,128
<b>Total factors, other than reserve balances, absorbing reserve funds</b>	<b>2,390,208</b>	<b>- 63,621</b>	<b>+ 497,591</b>	<b>2,361,775</b>
<b>Reserve balances with Federal Reserve Banks</b>	<b>2,107,987</b>	<b>+ 46,404</b>	<b>- 534,579</b>	<b>2,137,209</b>

Note: Components may not sum to totals because of rounding.

1. Includes securities lent to dealers under the overnight securities lending facility; refer to table 1A.
2. Face value of the securities.
3. Compensation that adjusts for the effect of inflation on the original face value of inflation-indexed securities.
4. Guaranteed by Fannie Mae, Freddie Mac, and Ginnie Mae. The current face value shown is the remaining principal balance of the securities.
5. Reflects the premium or discount, which is the difference between the purchase price and the face value of the securities that has not been amortized. For U.S. Treasury and Federal agency debt securities, amortization is on a straight-line basis. For mortgage-backed securities, amortization is on an effective-interest basis.
6. Cash value of agreements.
7. Refer to table 4 and the note on consolidation accompanying table 6.
8. Dollar value of foreign currency held under these agreements valued at the exchange rate to be used when the foreign currency is returned to the foreign central bank. This exchange rate equals the market exchange rate used when the foreign currency was acquired from the foreign central bank.
9. Includes accrued interest, which represents the daily accumulation of interest earned, and other accounts receivable. Also, includes Reserve Bank premises and equipment net of allowances for depreciation.
10. Revalued daily at current foreign currency exchange rates.
11. Estimated.
12. Cash value of agreements, which are collateralized by U.S. Treasury securities, federal agency debt securities, and mortgage-backed securities.
13. Includes deposits held at the Reserve Banks by international and multilateral organizations, government-sponsored enterprises, and designated financial market utilities. Also includes certain deposit accounts other than the U.S. Treasury, General Account, for services provided by the Reserve Banks as fiscal agents of the United States.
14. Includes the liability for earnings remittances due to the U.S. Treasury.

Sources: Federal Reserve Banks and the U.S. Department of the Treasury.

H.4.1

**1A. Memorandum Items**

Millions of dollars

Memorandum item	Averages of daily figures			Wednesday Nov 2, 2016
	Week ended Nov 2, 2016	Change from week ended		
		Oct 26, 2016	Nov 4, 2015	
Securities held in custody for foreign official and international accounts	3,120,341	- 4,891	- 163,422	3,109,033
Marketable U.S. Treasury securities <sup>1</sup>	2,800,637	- 5,613	- 161,771	2,788,407
Federal agency debt and mortgage-backed securities <sup>2</sup>	259,417	- 249	- 15,896	260,124
Other securities <sup>3</sup>	60,286	+ 970	+ 14,244	60,501
Securities lent to dealers	21,381	+ 234	+ 5,171	19,271
Overnight facility <sup>4</sup>	21,381	+ 234	+ 5,171	19,271
U.S. Treasury securities	21,356	+ 234	+ 5,197	19,247
Federal agency debt securities	25	+ 1	- 26	24

Note: Components may not sum to totals because of rounding.

1. Includes securities and U.S. Treasury STRIPS at face value, and inflation compensation on TIPS. Does not include securities pledged as collateral to foreign official and international account holders against reverse repurchase agreements with the Federal Reserve presented in tables 1, 5, and 6.
2. Face value of federal agency securities and current face value of mortgage-backed securities, which is the remaining principal balance of the securities.
3. Includes non-marketable U.S. Treasury securities, supranationals, corporate bonds, asset-backed securities, and commercial paper at face value.
4. Face value. Fully collateralized by U.S. Treasury securities.

**2. Maturity Distribution of Securities, Loans, and Selected Other Assets and Liabilities, November 2, 2016**

Millions of dollars

Remaining Maturity	Within 15 days	16 days to 90 days	91 days to 1 year	Over 1 year to 5 years	Over 5 year to 10 years	Over 10 years	All
Loans	9	26	0	0	0	...	35
<i>U.S. Treasury securities<sup>1</sup></i>							
Holdings	13,573	32,689	148,238	1,198,562	435,165	635,358	2,463,586
Weekly changes	+ 7,044	- 6,216	+ 1,345	- 4,162	+ 1,700	+ 330	+ 42
<i>Federal agency debt securities<sup>2</sup></i>							
Holdings	0	2,313	9,423	4,410	0	2,347	18,493
Weekly changes	0	0	0	0	0	0	0
<i>Mortgage-backed securities<sup>3</sup></i>							
Holdings	0	0	0	1,582	10,908	1,723,357	1,735,847
Weekly changes	0	0	0	+ 192	- 191	+ 6	+ 6
Repurchase agreements <sup>4</sup>	0	0	...	...	...	...	0
Central bank liquidity swaps <sup>5</sup>	1,015	0	0	0	0	0	1,015
Reverse repurchase agreements <sup>4</sup>	414,938	0	...	...	...	...	414,938
Term deposits	0	0	0	...	...	...	0

Note: Components may not sum to totals because of rounding.

...Not applicable.

1. Face value. For inflation-indexed securities, includes the original face value and compensation that adjusts for the effect of inflation on the original face value of such securities.
2. Face value.
3. Guaranteed by Fannie Mae, Freddie Mac, and Ginnie Mae. The current face value shown is the remaining principal balance of the securities.
4. Cash value of agreements.
5. Dollar value of foreign currency held under these agreements valued at the exchange rate to be used when the foreign currency is returned to the foreign central bank. This exchange rate equals the market exchange rate used when the foreign currency was acquired from the foreign central bank.

H.4.1

**3. Supplemental Information on Mortgage-Backed Securities**

Millions of dollars

Account name	Wednesday Nov 2, 2016
Mortgage-backed securities held outright <sup>1</sup>	1,735,847
Commitments to buy mortgage-backed securities <sup>2</sup>	45,910
Commitments to sell mortgage-backed securities <sup>2</sup>	0
Cash and cash equivalents <sup>3</sup>	0

1. Guaranteed by Fannie Mae, Freddie Mac, and Ginnie Mae. The current face value shown is the remaining principal balance of the securities.
2. Current face value. Generally settle within 180 days and include commitments associated with outright transactions, dollar rolls, and coupon swaps.
3. This amount is included in other Federal Reserve assets in table 1 and in other assets in table 5 and table 6.

**4. Information on Principal Accounts of Maiden Lane LLC**

Millions of dollars

Account name	Wednesday Nov 2, 2016
Net portfolio holdings of Maiden Lane LLC <sup>1</sup>	1,708
Outstanding principal amount of loan extended by the Federal Reserve Bank of New York <sup>2</sup>	0
Accrued interest payable to the Federal Reserve Bank of New York <sup>2</sup>	0
Outstanding principal amount and accrued interest on loan payable to JPMorgan Chase & Co. <sup>3</sup>	0

1. Fair value. Fair value reflects an estimate of the price that would be received upon selling an asset if the transaction were to be conducted in an orderly market on the measurement date. Revalued quarterly. This table reflects valuations as of September 30, 2016. Any assets purchased after this valuation date are initially recorded at cost until their estimated fair value as of the purchase date becomes available.
2. Book value. This amount was eliminated when preparing the Federal Reserve Bank of New York's statement of condition consistent with consolidation under generally accepted accounting principles. Refer to the note on consolidation accompanying table 6.
3. Book value. The fair value of these obligations is included in other liabilities and capital in table 1 and in other liabilities and accrued dividends in table 5 and table 6.

Note: On June 26, 2008, the Federal Reserve Bank of New York (FRBNY) extended credit to Maiden Lane LLC under the authority of section 13(3) of the Federal Reserve Act. This limited liability company was formed to acquire certain assets of Bear Stearns and to manage those assets through time to maximize repayment of the credit extended and to minimize disruption to financial markets. The remaining outstanding balances of the senior loan from FRBNY to Maiden Lane LLC, and the subordinated loan from JPMorgan Chase & Co. to Maiden Lane LLC were repaid in full, with interest.

H.4.1

**5. Consolidated Statement of Condition of All Federal Reserve Banks**

Millions of dollars

Assets, liabilities, and capital	Eliminations from consolidation	Wednesday Nov 2, 2016	Change since	
			Wednesday Oct 26, 2016	Wednesday Nov 4, 2015
<b>Assets</b>				
Gold certificate account		11,037	0	0
Special drawing rights certificate account		5,200	0	0
Coin		1,884	-	11
Securities, unamortized premiums and discounts, repurchase agreements, and loans		4,378,375	-	293
Securities held outright <sup>1</sup>		4,217,925	+	47
U.S. Treasury securities		2,463,586	+	42
Bills <sup>2</sup>		0	-	0
Notes and bonds, nominal <sup>2</sup>		2,340,674	-	302
Notes and bonds, inflation-indexed <sup>2</sup>		105,526	+	302
Inflation compensation <sup>3</sup>		17,385	+	41
Federal agency debt securities <sup>2</sup>		18,493	-	0
Mortgage-backed securities <sup>4</sup>		1,735,847	+	6
Unamortized premiums on securities held outright <sup>5</sup>		175,708	-	348
Unamortized discounts on securities held outright <sup>5</sup>		-15,294	+	49
Repurchase agreements <sup>6</sup>		0	-	0
Loans		35	-	41
Net portfolio holdings of Maiden Lane LLC <sup>7</sup>		1,708	+	3
Items in process of collection	(0)	75	+	13
Bank premises		2,199	-	3
Central bank liquidity swaps <sup>8</sup>		1,015	-	2,526
Foreign currency denominated assets <sup>9</sup>		21,307	+	436
Other assets <sup>10</sup>		30,288	+	1,143
<b>Total assets</b>	(0)	<b>4,453,087</b>	-	<b>1,239</b>
			-	<b>36,615</b>

Note: Components may not sum to totals because of rounding. Footnotes appear at the end of the table.

H.4.1

**5. Consolidated Statement of Condition of All Federal Reserve Banks (continued)**

Millions of dollars

Assets, liabilities, and capital	Eliminations from consolidation	Wednesday Nov 2, 2016	Change since	
			Wednesday Oct 26, 2016	Wednesday Nov 4, 2015
<i>Liabilities</i>				
Federal Reserve notes, net of F.R. Bank holdings		1,438,335	+ 6,954	+ 82,486
Reverse repurchase agreements <sup>11</sup>		414,938	+ 30,129	+ 106,654
Deposits	(0)	2,552,182	- 39,688	- 207,961
Term deposits held by depository institutions		0	- 48,601	0
Other deposits held by depository institutions		2,137,209	+ 72,189	- 552,642
U.S. Treasury, General Account		371,894	- 48,362	+ 327,679
Foreign official		5,172	+ 6	- 109
Other <sup>12</sup>	(0)	37,907	- 14,919	+ 17,111
Deferred availability cash items	(0)	504	- 23	+ 129
Other liabilities and accrued dividends <sup>13</sup>		6,939	+ 1,383	+ 516
<b>Total liabilities</b>	(0)	<b>4,412,898</b>	- 1,245	- 18,177
<i>Capital accounts</i>				
Capital paid in		30,188	+ 6	+ 874
Surplus		10,000	0	- 19,314
Other capital accounts		0	0	0
<b>Total capital</b>		<b>40,188</b>	+ 6	- 18,439

Note: Components may not sum to totals because of rounding.

1. Includes securities lent to dealers under the overnight securities lending facility; refer to table 1A.
2. Face value of the securities.
3. Compensation that adjusts for the effect of inflation on the original face value of inflation-indexed securities.
4. Guaranteed by Fannie Mae, Freddie Mac, and Ginnie Mae. The current face value shown is the remaining principal balance of the securities.
5. Reflects the premium or discount, which is the difference between the purchase price and the face value of the securities that has not been amortized. For U.S. Treasury and Federal agency debt securities, amortization is on a straight-line basis. For mortgage-backed securities, amortization is on an effective-interest basis.
6. Cash value of agreements, which are collateralized by U.S. Treasury and federal agency securities.
7. Refer to table 4 and the note on consolidation accompanying table 6.
8. Dollar value of foreign currency held under these agreements valued at the exchange rate to be used when the foreign currency is returned to the foreign central bank. This exchange rate equals the market exchange rate used when the foreign currency was acquired from the foreign central bank.
9. Revalued daily at current foreign currency exchange rates.
10. Includes accrued interest, which represents the daily accumulation of interest earned, and other accounts receivable.
11. Cash value of agreements, which are collateralized by U.S. Treasury securities, federal agency debt securities, and mortgage-backed securities.
12. Includes deposits held at the Reserve Banks by international and multilateral organizations, government-sponsored enterprises, and designated financial market utilities. Also includes certain deposit accounts other than the U.S. Treasury, General Account, for services provided by the Reserve Banks as fiscal agents of the United States.
13. Includes the liability for earnings remittances due to the U.S. Treasury.

H.4.1

**6. Statement of Condition of Each Federal Reserve Bank, November 2, 2016**

Millions of dollars

Assets, liabilities, and capital	Total	Boston	New York	Philadelphia	Cleveland	Richmond	Atlanta	Chicago	St. Louis	Minneapolis	Kansas City	Dallas	San Francisco
<b>Assets</b>													
Gold certificate account	11,037	355	3,588	359	586	760	1,541	753	360	193	296	875	1,371
Special drawing rights certificate acct.	5,200	196	1,818	210	237	412	654	424	150	90	153	282	574
Coin	1,884	48	74	159	133	301	179	278	31	53	124	186	317
Securities, unamortized premiums and discounts, repurchase agreements, and loans	4,378,375	107,555	2,491,569	118,882	131,124	267,577	245,055	174,457	55,263	32,290	60,943	155,852	537,809
Securities held outright <sup>1</sup>	4,217,925	103,614	2,400,283	114,526	126,320	257,773	236,074	168,063	53,234	31,097	58,702	150,136	518,104
U.S. Treasury securities	2,463,586	60,519	1,401,945	66,892	73,780	150,559	137,885	98,161	31,092	18,163	34,287	87,691	302,612
Bills <sup>2</sup>	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes and bonds <sup>3</sup>	2,463,586	60,519	1,401,945	66,892	73,780	150,559	137,885	98,161	31,092	18,163	34,287	87,691	302,612
Federal agency debt securities <sup>2</sup>	18,493	454	10,524	502	554	1,130	1,035	737	233	136	257	658	2,272
Mortgage-backed securities <sup>4</sup>	1,735,847	42,641	987,813	47,132	51,986	106,084	97,154	69,165	21,908	12,798	24,158	61,787	213,221
Unamortized premiums on securities held outright <sup>5</sup>	175,708	4,316	99,990	4,771	5,262	10,738	9,834	7,001	2,218	1,295	2,445	6,254	21,583
Unamortized discounts on securities held outright <sup>5</sup>	-15,294	-376	-8,704	-415	-458	-935	-856	-609	-193	-113	-213	-544	-1,879
Repurchase agreements <sup>6</sup>	0	0	0	0	0	0	0	0	0	0	0	0	0
Loans	35	0	0	0	0	0	3	2	5	11	8	6	1
Net portfolio holdings of Maiden Lane LLC <sup>7</sup>	1,708	0	1,708	0	0	0	0	0	0	0	0	0	0
Items in process of collection	75	0	0	0	0	0	74	0	0	0	0	0	0
Bank premises	2,199	118	431	71	105	204	206	200	114	90	239	224	196
Central bank liquidity swaps <sup>8</sup>	1,015	45	335	56	77	226	56	27	10	4	10	13	154
Foreign currency denominated assets <sup>9</sup>	21,307	938	7,088	1,168	1,616	4,733	1,178	569	218	91	212	269	3,228
Other assets <sup>10</sup>	30,288	783	16,783	827	915	2,012	1,714	1,223	477	252	478	1,092	3,731
Interdistrict settlement account	0	- 19,243	- 19,000	- 9,198	- 3,157	- 8,481	+ 11,339	+ 3,528	+ 4,181	+ 2,837	+ 1,047	+ 23,508	+ 12,640
<b>Total assets</b>	<b>4,453,087</b>	<b>90,795</b>	<b>2,504,394</b>	<b>112,533</b>	<b>131,636</b>	<b>267,744</b>	<b>261,996</b>	<b>181,459</b>	<b>60,804</b>	<b>35,901</b>	<b>63,503</b>	<b>182,301</b>	<b>560,021</b>

Note: Components may not sum to totals because of rounding. Footnotes appear at the end of the table.

H.4.1

**6. Statement of Condition of Each Federal Reserve Bank, November 2, 2016 (continued)**

Millions of dollars

Assets, liabilities, and capital	Total	Boston	New York	Philadelphia	Cleveland	Richmond	Atlanta	Chicago	St. Louis	Minneapolis	Kansas City	Dallas	San Francisco
<i>Liabilities</i>													
Federal Reserve notes outstanding	1,616,099	49,892	523,852	51,530	80,497	113,908	223,310	109,108	49,767	28,206	43,113	133,840	209,076
Less: Notes held by F.R. Banks	177,764	6,452	45,422	6,536	9,407	14,117	27,225	11,887	5,545	3,164	5,813	15,503	26,693
Federal Reserve notes, net	1,438,335	43,441	478,430	44,994	71,091	99,790	196,085	97,221	44,222	25,042	37,300	118,336	182,383
Reverse repurchase agreements <sup>11</sup>	414,938	10,193	236,128	11,266	12,427	25,358	23,224	16,533	5,237	3,059	5,775	14,770	50,968
Deposits	2,552,182	35,195	1,773,495	53,838	44,654	133,099	39,915	65,873	10,738	7,068	19,881	48,398	320,028
Term deposits held by depository institutions	0	0	0	0	0	0	0	0	0	0	0	0	0
Other deposits held by depository institutions	2,137,209	35,188	1,367,970	53,836	44,650	132,813	39,906	56,758	10,724	7,067	19,880	48,397	320,020
U.S. Treasury, General Account	371,894	0	371,894	0	0	0	0	0	0	0	0	0	0
Foreign official	5,172	2	5,146	2	3	9	2	1	0	0	0	1	6
Other <sup>12</sup>	37,907	5	28,486	0	0	277	7	9,114	13	0	1	1	2
Deferred availability cash items	504	0	0	0	0	0	93	0	0	410	0	0	0
Earnings remittances due to the U.S. Treasury <sup>13</sup>	2,283	64	1,206	71	88	202	141	84	28	15	27	72	286
Other liabilities and accrued dividends	4,656	153	2,095	185	195	493	320	251	141	137	124	209	354
<b>Total liabilities</b>	<b>4,412,898</b>	<b>89,045</b>	<b>2,491,354</b>	<b>110,354</b>	<b>128,454</b>	<b>258,943</b>	<b>259,778</b>	<b>179,962</b>	<b>60,366</b>	<b>35,731</b>	<b>63,107</b>	<b>181,785</b>	<b>554,019</b>
<i>Capital</i>													
Capital paid in	30,188	1,307	9,741	1,629	2,420	6,571	1,663	1,229	336	127	296	388	4,480
Surplus	10,000	442	3,299	550	762	2,230	555	268	103	43	100	127	1,521
Other capital	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total liabilities and capital</b>	<b>4,453,087</b>	<b>90,795</b>	<b>2,504,394</b>	<b>112,533</b>	<b>131,636</b>	<b>267,744</b>	<b>261,996</b>	<b>181,459</b>	<b>60,804</b>	<b>35,901</b>	<b>63,503</b>	<b>182,301</b>	<b>560,021</b>

Note: Components may not sum to totals because of rounding. Footnotes appear at the end of the table.

H.4.1

## 6. Statement of Condition of Each Federal Reserve Bank, November 2, 2016 (continued)

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1. Includes securities lent to dealers under the overnight securities lending facility; refer to table 1A.
2. Face value of the securities.
3. Includes the original face value of inflation-indexed securities and compensation that adjusts for the effect of inflation on the original face value of such securities.
4. Guaranteed by Fannie Mae, Freddie Mac, and Ginnie Mae. The current face value shown is the remaining principal balance of the securities.
5. Reflects the premium or discount, which is the difference between the purchase price and the face value of the securities that has not been amortized. For U.S. Treasury and Federal agency debt securities, amortization is on a straight-line basis. For mortgage-backed securities, amortization is on an effective-interest basis.
6. Cash value of agreements, which are collateralized by U.S. Treasury and federal agency securities.
7. Refer to table 4 and the note on consolidation below.
8. Dollar value of foreign currency held under these agreements valued at the exchange rate to be used when the foreign currency is returned to the foreign central bank. This exchange rate equals the market exchange rate used when the foreign currency was acquired from the foreign central bank.
9. Revalued daily at current foreign currency exchange rates.
10. Includes accrued interest, which represents the daily accumulation of interest earned, and other accounts receivable.
11. Cash value of agreements, which are collateralized by U.S. Treasury securities, federal agency debt securities, and mortgage-backed securities.
12. Includes deposits held at the Reserve Banks by international and multilateral organizations, government-sponsored enterprises, and designated financial market utilities. Also includes certain deposit accounts other than the U.S. Treasury, General Account, for services provided by the Reserve Banks as fiscal agents of the United States.
13. Represents the estimated weekly remittances due to U.S. Treasury. The amounts on this line represent the residual net earnings that the Federal Reserve Banks remit to the U.S. Treasury after providing for the costs of operations, payment of dividends, and the amount necessary to maintain a \$10 billion surplus.

Note on consolidation:

On June 26, 2008, the Federal Reserve Bank of New York (FRBNY) extended a loan to Maiden Lane LLC (ML) under the authority of section 13(3) of the Federal Reserve Act. ML was formed to acquire certain assets of Bear Stearns. On June 14, 2012, the remaining outstanding balance of the senior loan from FRBNY to ML was repaid in full, with interest. On November 15, 2012, the remaining outstanding balance of the subordinated loan from JPMorgan Chase & Co. to ML was repaid in full, with interest. FRBNY was the primary beneficiary of ML because it received any residual returns and could have absorbed any residual losses should they have occurred. Consistent with generally accepted accounting principles, the assets and liabilities of ML were consolidated with the assets and liabilities of FRBNY in the preparation of the statements of condition shown on this release. As a consequence of the consolidation, the extension of credit from FRBNY to ML was eliminated, the net assets of ML appeared as assets on the previous page (and in table 1 and table 5), and the liabilities of ML to entities other than FRBNY, including those with recourse only to the ML portfolio holdings, were included in other liabilities in this table (and table 1 and table 5).



**H.4.1**

**7. Collateral Held against Federal Reserve Notes: Federal Reserve Agents' Accounts**

Millions of dollars

Federal Reserve notes and collateral	Wednesday Nov 2, 2016
Federal Reserve notes outstanding	1,616,099
Less: Notes held by F.R. Banks not subject to collateralization	177,764
Federal Reserve notes to be collateralized	1,438,335
Collateral held against Federal Reserve notes	1,438,335
Gold certificate account	11,037
Special drawing rights certificate account	5,200
U.S. Treasury, agency debt, and mortgage-backed securities pledged <sup>1,2</sup>	1,422,098
Other assets pledged	0
<i>Memo:</i>	
Total U.S. Treasury, agency debt, and mortgage-backed securities <sup>1,2</sup>	4,217,925
Less: Face value of securities under reverse repurchase agreements	388,186
U.S. Treasury, agency debt, and mortgage-backed securities eligible to be pledged	3,829,739

Note: Components may not sum to totals because of rounding.

1. Includes face value of U.S. Treasury, agency debt, and mortgage-backed securities held outright, compensation to adjust for the effect of inflation on the original face value of inflation-indexed securities, and cash value of repurchase agreements.
2. Includes securities lent to dealers under the overnight securities lending facility; refer to table 1A.

## PERSPECTIVES

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# Prospects for and Ramifications of the Great Central Banking Unwind

William Poole

*At the CFA Institute Global Investment Risk Symposium held in Washington, DC, on 7–8 March 2013, William Poole gave a presentation on what he calls the “great central banking unwind.” Total assets on the balance sheets of the U.S. Federal Reserve and European Central Bank have exploded since 2008. The challenges and pressure faced by these and other central banks will probably have serious consequences for the global economy.*

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I am very uneasy about the current economic and fiscal situation in the United States and Europe. The central bank policies and fiscal disequilibrium in these countries are unlike any circumstances they have endured in the past; it is uncertain how the massive easing of the last five years is going to affect the developed nations’ economies as well as the global economy. The world is in uncharted territory.

I am going to focus on the U.S. Federal Reserve System and the European Central Bank (ECB). The Fed is the most important central bank in the world: Without stability in the United States, the world economy will not have stability. Not only must central banks navigate the challenges presented by slower growth and fiscal deficits, but they also face powerful political pressures that, if succumbed to, may have harmful consequences domestically and globally.

### Fed Issues vs. ECB Issues

Although both the United States and the eurozone had significant economic downturns and financial disruption during the financial crisis, the Fed’s expansionary monetary policy has been motivated primarily by a concern over unemployment whereas the ECB’s policy has been motivated by an effort to support the sovereign debt of fiscally weak governments—in particular, the southern European countries.

**Figure 1** shows the Fed’s balance sheet assets from 2007 to 2013. Before the financial crisis, its

assets were around \$850 billion; they have now risen to nearly \$3 trillion, and the Fed keeps pumping money into the system. It is unclear when the Fed’s policy of easing is going to stop or how it is going to be reversed.

But the Fed is not alone. The ECB has been pumping funds into the European markets, as shown in **Figure 2**. Total assets on the ECB’s balance sheet have increased from about €1.2 trillion in 2007 to about €3 trillion in the first quarter of 2013. The Bank of England (BOE) and a number of other central banks have been following suit. A massive monetary expansion has taken place over the last five years.

The ECB is acting as a lifeboat for sinking public finances after a collision of high levels of entitlement spending and sustained low economic growth. The plight of Greece in 2012 has led the way; other nations, Italy prominent among them, will most certainly follow. Greece was unable to raise needed funds by issuing sovereign debt after December 2008 because investors would no longer buy it; the risk of default was too high.

### Great Fed Unwind

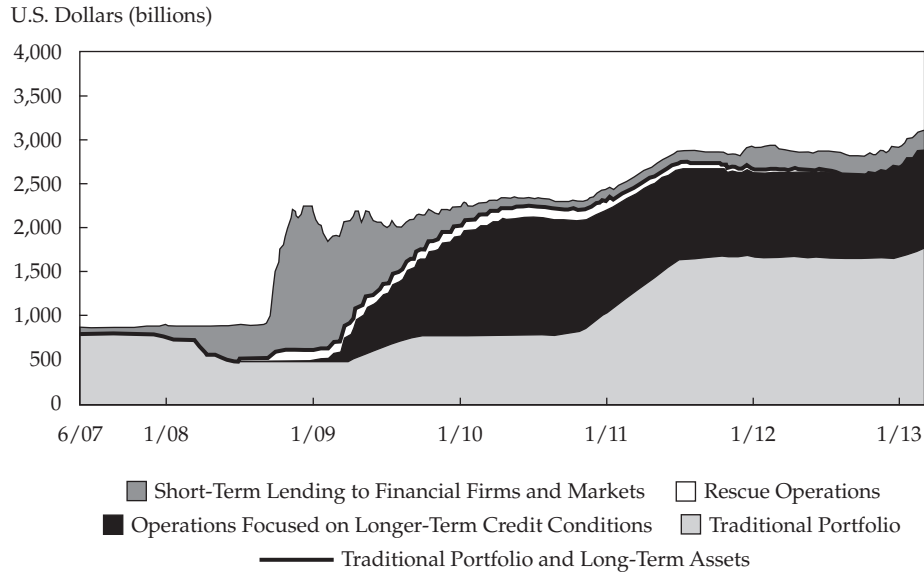
Given the very large buildup of assets on its balance sheet, it might appear that the Fed has to unwind the position, but that is not necessarily the case. The Fed might keep a very large portfolio indefinitely.

**Reserve Ratio.** The monetary mechanism that the Fed, or any central bank, uses to control the growth of money and credit is completely different from what it was in the past. The Fed’s main instrument of controlling money and credit growth in the past was the reserve requirement, which sets

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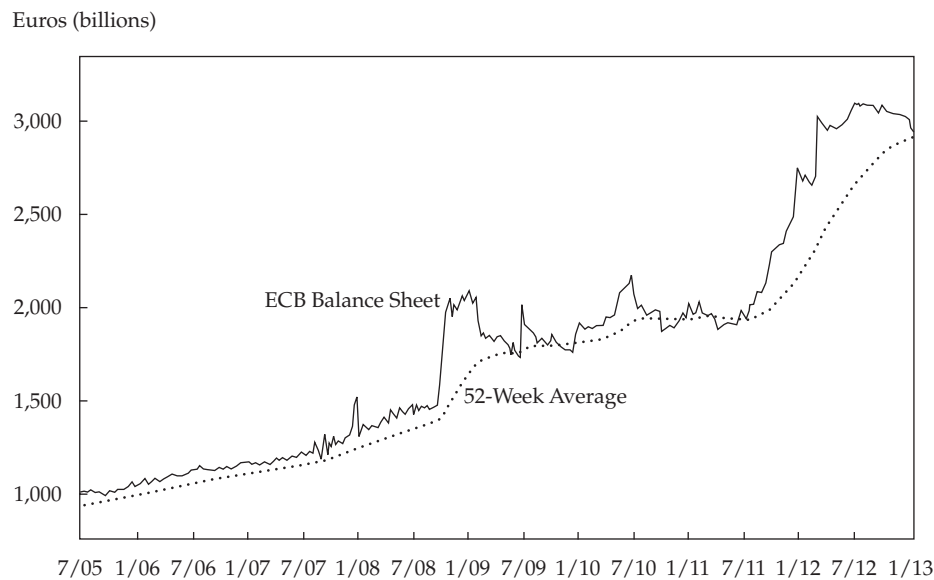
*William Poole is a senior fellow at the Cato Institute, Washington, DC.*

**Figure 1. U.S. Federal Reserve Balance Sheet Assets, June 2007–February 2013**



Source: Based on a figure from the Federal Reserve Bank of St. Louis, “U.S. Financial Data” (22 February 2013):7.

**Figure 2. ECB Balance Sheet Assets, 2005–2013**



Sources: Based on data from Gold Silver Worlds and Weldon Financial.

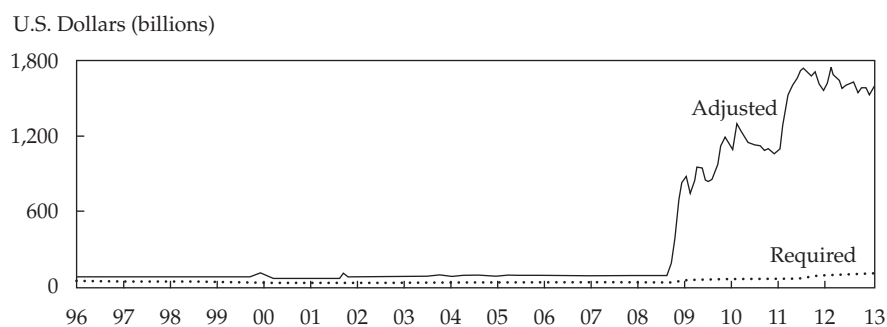
forth the amount of reserves that banks had to keep on deposit with the Fed. The amount of a bank’s deposits with the Fed is a percentage of its total demand deposits.

Today, banks are no longer constrained by the reserve ratio. In the past, the Fed had no authority to pay interest on bank reserves, so banks typically held only the minimum amount of reserves required. But in 2008, new legislation gave the Fed the authority to pay interest on reserves, which the Fed has currently set at the rate of 0.25%. That rate

is above other money market rates and thus has provided an incentive for banks to increase their excess reserves at the Fed.

Figure 3 shows the dramatic increase in bank reserves since mid-2008; as of 20 February 2013, they are now more than \$1.5 trillion. Given the latest round of quantitative easing (QE) by the Federal Reserve, these bank reserves will continue to grow. The dotted line in Figure 3 represents the amount of required reserves, which contrasts markedly with the enormous stockpile of excess reserves sitting

**Figure 3. Adjusted and Required Federal Reserves, January 1996–February 2013**



Source: Based on a figure from the Federal Reserve Bank of St. Louis, "Monetary Trends" (26 February 2013):6.

on bank balance sheets. Banks are holding these reserves rather than lending them or buying assets with them because the Fed is paying interest on them. Reserves are the raw material for a money and credit expansion, but this raw material is not being actively used. To date, money and credit growth has been moderate. There are no signs of overheating, and the same is true for inflation expectations.

Two measures of the money supply—money zero maturity (MZM) and M2—are plotted in **Figure 4** from 1996 through mid-February 2013. M2 is calculated as M1 (all physical money, such as coins and currency, plus demand deposits, or checking accounts, and Negotiable Order of Withdrawal accounts) plus time deposits, savings deposits, and noninstitutional money market funds. MZM is defined as the liquid money supply in an economy—all assets convertible to cash on demand without penalty. The bigger area of shading at the right is the most recent recession, drawn from the cycle peak in December 2007 to the cycle trough in June 2009. The smaller area of shading on the left represents the much milder recession in 2001. Money stock growth measured by both definitions has recently been well within the normal range.

Inflation expectations can be measured in a number of ways, but I prefer a market-based measure to a survey measure. A market-based measure is derived from the spread between inflation-indexed Treasury bonds and conventional bonds. **Figure 5** compares yields in percentage terms for three different maturities: 5, 10, and 30 years. The spread between the conventional and indexed bonds stays in a relatively tight range from December 2011 to February 2013, and the spreads at the 10-year mark are in the same range they have been in for the past 10–12 years.

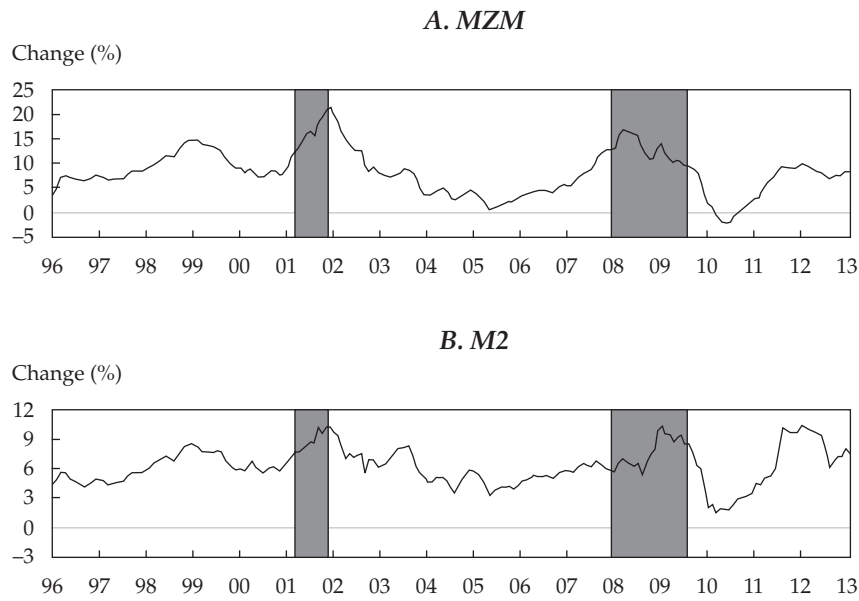
**Raising the Federal Funds Rate.** If inflation starts to rise, the Federal Reserve's standard strategy is to raise its target for the federal funds rate,

which is the interest rate on interbank lending and borrowing. Federal funds are nothing more than bank reserves; banks are able to lend the reserve balances they have on account at the Fed. Now that the Fed pays interest on bank reserves, the interest rate on bank reserves is tied, almost to the basis point, to the federal funds rate. The Fed cannot raise the federal funds rate without also raising the rate that it pays on bank reserves, and at some point, the rate increases must be large enough to persuade banks to hold reserves rather than engage in an excessive expansion of money and credit that would create an inflation problem.

Despite all of the progress the financial industry has made in terms of modeling and statistical technology, the Fed basically decides how much to raise the federal funds rate in the same manner that a driver attempts to hold a steady speed when driving in mountainous territory. If the car is going too fast down the mountain, the driver eases up on the accelerator. If that action isn't enough, the driver eases up more and maybe taps the brakes. Likewise, the Fed reduces its assets to drive up interest rates, but the required pace of reduction is not clear *ex ante*. The basic idea is simple: If the economy is growing too fast, the Fed taps on the monetary policy brake by increasing interest rates. The Fed then adjusts its policy based on feedback and observation of recent data.

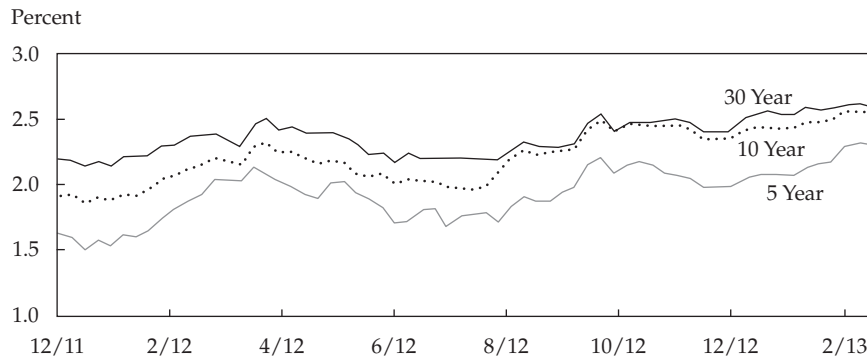
**Forecasts.** Everyone who deals with portfolio management knows that an action taken in response to a problem depends on the decision maker's belief about a forecast. And when making decisions, it is easy to be in denial about the most recent information. Likewise, if the Fed starts to see inflation while the unemployment rate is still high, it may choose to deny reality and take the position that the inflation bump is a temporary aberration, perhaps related to energy prices or some other issue.

**Figure 4. Change in Two Measures of the Money Supply, January 1996–February 2013**



Note: Change is the percentage change from one year ago.  
Source: Based on a figure from the Federal Reserve Bank of St. Louis, “Monetary Trends” (26 February 2013):4.

**Figure 5. Inflation-Indexed Treasury Yield Spreads, December 2011–February 2013**



Note: Data represent averages of daily figures.  
Source: Based on a figure from the Federal Reserve Bank of St. Louis, “U.S. Financial Data” (22 February 2013):12.

Such inaction on the part of the Federal Reserve might be motivated by a desire to avoid tightening policy too soon because of an overriding interest in and responsibility for advancing the rate of employment growth. But if the Fed is in denial too long, inflation can become embedded in the economy. One of the best examples of Fed inflation denial is illustrated by monetary policy from roughly 1965 to 1979; Paul Volcker took over as chairman of the Fed in August 1979 to deal with the inflation. After 1965, the Fed was concerned that tighter policy would choke off employment growth, so it allowed inflation to creep up and up until the creep became a gallop.

**Political Pressure.** The Fed is also likely to face political pressure to raise rates only slowly. Federal Reserve chairman Ben Bernanke talks a lot about risk management and the tradeoff between benefits and costs; he maintains that the need to balance these two issues justifies proceeding with the current policy. But Bernanke does not discuss the risk of political intervention in Fed policy despite numerous examples of the Fed giving in to political pressure and waiting too long to change its policy, which results in a detrimental outcome for the economy.

Mortgage finance interests have been extremely well organized politically and are quite influential.

Part of the Fed's QE policy is to buy \$40 billion of mortgage-backed securities (MBSs) a month. Stopping that part of its expansionary policy—without even considering unwinding the portfolio—will produce a lot of political pushback. This pushback will come through the housing and mortgage interests, through representatives in Congress, and perhaps through the president. Essentially, pressure on the Fed will come from inside the government and may not be very visible; it may be limited to a few op-ed articles from the housing lobby. The true amount of political pressure will largely be hidden.

Pressure to keep rates low will come also from those who argue that the Fed should do its share to hold down the federal budget deficit. Higher interest rates will produce a rapid and enormous increase in the interest expense in the federal budget. The Fed is going to be encouraged to suppress interest rates until longer-run reforms can be put in place to address the budget deficit.

Recent discussion has centered on the impact of Fed policy on a number of issues. For example, is Fed policy creating a bubble in the bond or stock markets or in farmland prices? Is Fed policy pushing down the dollar exchange rate? Bubbles are easy to understand after the fact but very difficult to identify in real time. Many market fluctuations were thought to be unsustainable at the time but turned out to be justified by fundamentals. So, Fed policy may or may not be bubble inducing. But the real issue is the politics of monetary policy.

I believe that the Fed will not successfully resist the political winds that buffet it. I am not a political expert or a political analyst by trade. My qualification for speaking on this topic is that I have followed the interactions between monetary policy and politics for a very long time. As with all things political, the politics of the Fed means that realities often fail to match outward appearances.

I believe the Fed is likely to overdo its current QE policy of purchasing \$45 billion of Treasuries and \$40 billion of MBSs per month. Turning off the spigot would be difficult, but to be effective, the Fed has to stop its expansionary policy before inflation becomes embedded in the economy. For policy to be effective, it needs to be preemptive. Inflation control is better when accomplished before inflation has risen, not after.

**Uncertainties.** Although forecasts always contain uncertainties, the federal budget and regulatory uncertainties today are greater than at any time over the past 60 years. These budget and regulatory uncertainties are the prime explanation for the slowness of the economic recovery; businesses are hanging back until they better understand, or think they better understand, the way that the regulations

are going to be written and interpreted. The load of regulations on the business sector is larger than it has been since the 1930s: the Affordable Care Act and the Dodd-Frank Wall Street Reform and Consumer Protection Act, as well as the policies of the Environmental Protection Agency and the Department of Labor. I think President Obama and his administration—in large part because they do not understand the markets as well as they might—will not hesitate to pressure the Fed, initially from the inside and perhaps ultimately from the outside by encouraging heavy public criticism once the Fed embarks on a policy of raising rates. Such an approach will likely be counterproductive, and the markets will respond very negatively.

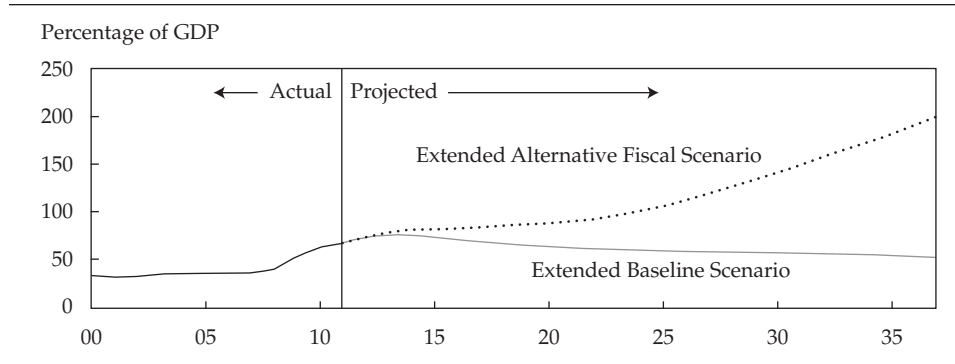
The very deep fiscal disequilibrium in the United States is best understood by looking at the data from the Congressional Budget Office (CBO). The budget games that are played with the numbers are full of screwy and misleading accounting. For example, the alternative minimum tax (AMT) was patched one year at a time so that the forward projections of revenues from the AMT would be in all the official projections of the budget. But the patchwork nature of the process created uncertainty about its final structure. Another example on the expenditure side is from more than 10 years ago: Since the Clinton years, legislation on the books has called for large reductions in Medicare reimbursements to physicians. The “doc fix” was enacted one year at a time so that the physicians would not have their reimbursements cut by a third. The budget encompassed forward projections of outlays that were lower than the outlays that would actually occur.

**Figure 6** shows the federal debt forecast under two CBO long-term budget scenarios as of June 2012. This forecast is updated each summer. The dotted line shows the projected debt level over the next 25 years without the kind of budget gimmicks I just described. The shaded line shows the debt-level projection with all the budget gimmicks included. The United States is in the process of struggling with this enormous disequilibrium, although its struggle so far has been about the discretionary part of the budget, without any very serious political discussion—let alone legislative proposals—related to Social Security and Medicare expenditures, which are driving the budget. Until entitlement outlays are addressed, the budget is going to look more like the dotted line in Figure 6 than the shaded line.

## Great ECB Unwind

The ECB has acquired a substantial amount of the sovereign debt of the fiscally weak southern European countries. It has also been lending to banks that have, in turn, purchased the debt of the weak



**Figure 6. Federal Debt Forecast under the CBO's Long-Term Budget Scenarios, 2000–2037**

Note: Forecast is as of June 2012.

Source: Based on a figure from the Congressional Budget Office, "The 2012 Long-Term Budget Outlook" (5 June 2012):2.

countries. The European banking regulations have so-called risk-weighted capital requirements, but the risk weight on all sovereign debt is zero. So, a bank can buy the bonds of Italy or Spain or even Greece and have a zero capital requirement. Obviously, the capital requirements are not truly risk weighted; they are politically weighted. The capital requirements in Europe, as in the United States, are deeply affected by the politics of bank regulation.

The situation in Europe is still very much in flux. Italy recently had a very indecisive election. The citizens of the weak nations are not embracing the austerity that is required to bring their economies back in line. They want to keep their benefits, and they do not want to pay taxes. These desires are perfectly rational but are not conducive to fiscal sustainability. So, the crisis that has long been predicted—because of much larger welfare state commitments than can be financed with an aging and retired population—has finally arrived and is by no means resolved.

The ECB cannot unwind the assets it owns unless Spain, Italy, Portugal, and Greece resolve their fiscal problems. Thus, these countries' debt might remain on the ECB's balance sheet—and the loans to these countries on European banks' balance sheets—for some time. Therefore, if Europe begins to have an inflation problem, the ECB will have its hands tied to a significant extent and will be limited in its ability to deal with rising inflation.

Europe is afraid of contagion, in which a default in one country results in investors fleeing the bond markets of the other fiscally weak countries. Thus, the weak countries remain supported by the fiscally sound countries—essentially, Germany—but Germany does not have the resources to support the weak countries indefinitely.

The ECB's charter was supposed to protect it from this situation, but the ECB has caved in to the pressure. To date, there is no evidence of

inflationary problems in Europe, at least on the continent, although the United Kingdom has experienced some inflation.

It is a close call in Europe, but I believe that the fundamental fiscal weakness in Europe will end in a crisis. The European community encompasses over-extended welfare states, many of which, particularly in southern Europe, have weak administration of tax law and negative politics on decreasing outlays. Many of its public enterprises are inefficient, and its labor markets are burdened by structural rigidities.

The consequences of poor fundamentals in Europe are negative economic growth and rising unemployment. It remains an open question whether Germany's voters will ultimately say that they will no longer support Italy, Spain, Portugal, and Greece. The Merkel administration has retained the support of the German people so far, but without any improvement in the situation, the time may come when Germany's voters ask themselves why they should pay for the excesses of others.

## Conclusion

Because no precedents exist for the massive monetary easing that has been practiced over the past five years in the United States and Europe, the uncertainty surrounding the outcome of central bank policy is also vast. So far, inflationary pressures remain subdued, but the ability and willingness of the Fed and the ECB to react quickly to control inflation fears are in jeopardy, largely because of political forces. Total assets on the balance sheets of most developed nations' central banks have grown massively since 2008, and the timing of when the banks will unwind those positions is uncertain.

*This article qualifies for 0.5 CE credit.*

## Question and Answer Session

William Poole

**Question:** Is the dual mandate of maximum employment and price stability a burden on Fed policy?

**Poole:** The dual mandate is not necessarily a problem. The 1977 law stated that the Fed is supposed to work toward two objectives: inflation and employment. In January 2012, the Federal Open Market Committee (FOMC) set forth the principles with which it approaches its dual mandate. At that time, the FOMC adopted an inflation target of 2%, and the target was renewed in January 2013. The published principles state that no central bank can promise to create a certain level of employment growth or a certain level of unemployment because those are real variables that are controlled by the real conditions in the economy, including such conditions as fiscal policy, and are ultimately not the responsibility of Fed policy.

**Question:** What is the primary weakness of the Fed?

**Poole:** I fault the Fed for its lack of intellectual leadership on the economy and, in particular, Bernanke's lack of forthrightness about the limits of the Fed's ability to address slow growth and fiscal disequilibrium. Most of the Federal Reserve bank presidents (with the exceptions of Charles Plosser in Philadelphia, Richard Fisher in Dallas, Jeffrey Lacker in Richmond, and to some extent, my successor in St. Louis, Jim Bullard) have been essentially silent on this issue, speaking only in vague terms about the necessity for fiscal stability and not identifying the uncertainty over that issue as a reason for the slow economic expansion.

**Question:** Is the Fed structured for failure?

**Poole:** That question is very important. Institutions need to be considered separately from the individuals who inhabit them. If certain individuals are going to make a mess of something,

no institutional structure can guard against that except through a system of checks and balances. Past research has shown that central bank independence produces a better result than monetary policy run by the Treasury. Independence for the Federal Reserve began 100 years ago, when the Federal Reserve Act was signed in December 1913. The Fed's structure provides substantial independence, allowing room for strong leadership to do what has to be done in the face of adverse political pressure. The Fed's structure does not guarantee independence, but it provides the room. Paul Volcker has made significant use of that independence, whereas Arthur Burns, one of the architects of monetary policy and the inflation that culminated from it, did not. No institutional structure can guarantee a good result, but institutional structures can allow strong people to fail because they lose control.

**Question:** If the Fed were to adopt the equivalent of a Taylor rule today,<sup>1</sup> what should it be?

**Poole:** A simple Taylor-like rule that relates to only a couple of variables when so much is going on is unworkable at this point. An appropriate goal might be to have a central bank that is more constrained by legislative rules, but I just do not see a workable rule at this time.

**Question:** What is your opinion about returning to the gold standard?

**Poole:** I think the gold standard is unworkable. It was not as satisfactory in the 19th century, during its heyday, as is often argued. The basic problem is easy to see. When there is a flight to liquidity, when the market wants more gold, there is no more gold. The supply is fixed. All sorts of liabilities backed by gold have been issued, but those liabilities far exceed the gold supply. Therefore, the gold standard is a recipe for a banking system that collapses under stress, although it did stabilize the price level over a long period of time.

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## Notes

1. A Taylor rule is a monetary policy rule that stipulates how much the central bank should change the nominal interest rate in response to changes in inflation, output, or other economic conditions.



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5. Standard & Poor's
6. Morningstar
7. BARRA

Value Line is the largest and most widely circulated independent investment advisory service, and influences the expectations of a large number of institutional and individual investors. The Value Line data are commercially available on a timely basis to investors in paper format or electronically. Value Line betas are derived from a least-squares regression analysis between weekly percent changes in the price of a stock and weekly percent changes in the New York Stock Exchange Average over a period of 5 years. In the case of shorter price histories, a smaller time period is used, but 2 years is the minimum. Value Line betas are computed on a theoretically sound basis using a broadly based market index, and they are adjusted for the regression tendency of betas to converge to 1.00. This necessary adjustment to beta is discussed below.

### **Practical and Conceptual Difficulties**

**Computational Issues.** Absolute estimates of beta may vary over a wide range when different computational methods are used. The return data, the time period used, its duration, the choice of market index, and whether annual, monthly, or weekly return figures are used will influence the final result.

Ideally, the returns should be total returns, that is, dividends and capital gains. In practice, beta estimates are relatively unaffected if dividends are excluded. Theoretically, market returns should be expressed in terms of total returns on a portfolio of all risky assets. In practice, a broadly based value-weighted market index is used. For example, Merrill Lynch betas use the Standard & Poor's 500 market index, while Value Line betas use the New York Stock Exchange Composite market index. In theory, unless the market index used is the true market index, fully diversified to include all securities in their proportion outstanding, the beta estimate obtained is potentially distorted. Failure to include bonds, Treasury bills, real estate, etc., could lead to a biased beta estimate. But if beta is used as a relative risk ranking device, choice of the market index may not alter the relative rankings of security risk significantly.

To enhance statistical significance, beta should be calculated with return data going as far back as possible. But the company's risk may have changed if the historical period is too long. Weighting the data for this tendency is one possible remedy, but this procedure presupposes some knowledge of how risk changed over time. A frequent compromise is to use a 5-year period with either weekly or monthly returns. Value Line betas are computed based on weekly returns over a 5-year period, whereas Merrill Lynch betas are computed with monthly returns over a 5-year period. In an empirical study of utility

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so that the current value can be widely off the mark as a measure of the expected future value.

#### 5.4 Other Measures of Growth

The measure of expected growth in the dividend established in the previous two sections, the intrinsic growth rate, is not the only possible measure of the variable. Another plausible measure is some average of the past rates of growth in the dividend. Under our model of security valuation, dividend, earnings, and price per share all are expected to grow at the same rate. Hence, the rates of growth in the dividend, earnings, and price also are candidates for estimates of the expected rate of growth in the dividend.

Let us consider first the rate of growth in earnings per share. The earnings per share during  $T$  adjusted for stock splits and stock dividends to make interperiod comparisons valid is

$$AYPS(T) = AFC(T)/.5 [ANS(T) + ANS(T - 1)], \quad (5.4.1)$$

where  $ANS(T)$  is the number of shares outstanding at the end of  $T$  adjusted for stock splits and dividends. The rate of growth in earnings per share during  $T$  is

$$YGR(T) = [AYPS(T) - AYPS(T - 1)]/AYPS(T - 1). \quad (5.4.2)$$

For reasons to be given shortly, the smoothed rate of growth in earnings is superior to the current rate as a forecast of the expected rate. The smoothed rate of earnings growth is obtained from

$$\begin{aligned} \ln[1 + YGRS(T)] &= \lambda \ln[1 + YGR(T)] \\ &+ (1 - \lambda) \ln[1 + YGRS(T - 1)], \end{aligned} \quad (5.4.3)$$

with  $\lambda = .15$  and  $YGRS(1953) = .04$ .

The primary reason for a difference between  $YGR$  and  $GRTH$  is a change in the rate of return on the common equity. To illustrate, assume a firm that has been earning a return on common of .10 and retaining one-half of its income to finance its investment. The rate of growth under both measures will be .05. If the firm's rate

of return on common rises from .10 to .11, the retention growth rate will rise from .05 to  $(.5)(.11) = .055$ . However, the earnings growth rate will rise from .05 to .155.<sup>5</sup> Furthermore, the earnings growth rate in subsequent periods will be .055 if the return on common remains .11. This example suggests that the intrinsic growth rate is superior to the earnings growth rate as a measure of expected growth. Investors nonetheless may look to past data on earnings growth for information on expected future growth, and it is the growth investors expect that should be used to measure share yield.

A number of considerations suggest that investors may, in fact, use earnings growth as a measure of expected future growth. First, the intrinsic growth rate includes stock financing growth as well as retention growth. The former is difficult for us to measure and may be even more difficult for investors. Consequently, investors may use past earnings growth to forecast the future since it incorporates in one statistic growth from all sources. Second, we saw that inflation will result in a rise in the allowed rate of return on equity for a regulated company. If this response to inflation takes place with a lag, that is, the regulatory agency raises RRC over time, earnings growth will reflect the forecast rate of growth better than intrinsic growth. Finally, it appears that security analysts use past growth in earnings more than any other variable to forecast future growth.

Given that earnings growth is used by investors to forecast future growth, the smoothed value of the variable  $YGRS$  is superior to the current value. The previous illustration revealed that  $YGR$  overreacts to changes in the allowed rate of return and therefore is subject to large random fluctuations. The data on  $YGR$  confirm this conclusion.

The use of dividend growth as a forecast of future growth is subject to the same limitations as earnings if the firm pays a constant fraction of its earnings in dividends. That is, under this assumption the dividend growth rate in any period is the same as the earnings growth rate. Firms tend to change their dividend rate from one

<sup>5</sup>Let the book value per share at the start of  $T$  be  $BVS(T - 1) = \$50.00$ . With  $RRC(T) = .10$ ,  $AYP(T) = \$5.00$ , and with  $RETR(T) = .5$ ,  $BVS(T) = \$52.50$ . If  $RRC(T + 1) = .10$ ,  $AYP(T + 1) = \$5.25$ , and  $YGR(T + 1) = RTGR(T + 1) = .05$ . However, if  $RRC(T + 1) = .11$ ,  $RTGR(T + 1) = (.11)(.5) = .055$ , while  $AYP(T + 1) = \$5.775$ , and  $YGR(T + 1) = (\$5.775 - \$5.00)/\$5.00 = .155$ .

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The average growth rate estimate from all the analysts that follow the company measures the consensus expectation of the investment community for that company. In most cases, it is necessary to use earnings forecasts rather than dividend forecasts due to the extreme scarcity of dividend forecasts compared to the widespread availability of earnings forecasts. Given the paucity and variability of dividend forecasts, using the latter would produce unreliable DCF results. In any event, the use of the DCF model prospectively assumes constant growth in both earnings and dividends. Moreover, as discussed below, there is an abundance of empirical research that shows the validity and superiority of earnings forecasts relative to historical estimates when estimating the cost of capital.

The uniformity of growth projections is a test of whether they are typical of the market as a whole. If, for example, 10 out of 15 analysts forecast growth in the 7%–9% range, the probability is high that their analysis reflects a degree of consensus in the market as a whole. As a side note, the lack of uniformity in growth projections is a reasonable indicator of higher risk. Chapter 3 alluded to divergence of opinion amongst analysts as a valid risk indicator.

Because of the dominance of institutional investors and their influence on individual investors, analysts' forecasts of long-run growth rates provide a sound basis for estimating required returns. Financial analysts exert a strong influence on the expectations of many investors who do not possess the resources to make their own forecasts, that is, they are a cause of  $g$ . The accuracy of these forecasts in the sense of whether they turn out to be correct is not at issue here, as long as they reflect widely held expectations. As long as the forecasts are typical and/or influential in that they are consistent with current stock price levels, they are relevant. The use of analysts' forecasts in the DCF model is sometimes denounced on the grounds that it is difficult to forecast earnings and dividends for only one year, let alone for longer time periods. This objection is unfounded, however, because it is present investor expectations that are being priced; it is the consensus forecast that is embedded in price and therefore in required return, and not the future as it will turn out to be.

### **Empirical Literature on Earnings Forecasts**

Published studies in the academic literature demonstrate that growth forecasts made by security analysts represent an appropriate source of DCF growth rates, are reasonable indicators of investor expectations and are more accurate than forecasts based on historical growth. These studies show that investors rely on analysts' forecasts to a greater extent than on historic data only.

Academic research confirms the superiority of analysts' earnings forecasts over univariate time-series forecasts that rely on history. This latter category

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recommendation that is different than the expected ROE that the method assumes the utility will earn forever. For example, using an expected return on equity of 11% to determine the growth rate and using the growth rate to recommend a return on equity of 9% is inconsistent. It is not reasonable to assume that this regulated utility company is expected to earn 11% forever, but recommend a 9% return on equity. The only way this utility can earn 11% is that rates be set by the regulator so that the utility will in fact earn 11%. One is assuming, in effect, that the company will earn a return rate exceeding the recommended cost of equity forever, but then one is recommending that a different rate be granted by the regulator. In essence, using an ROE in the sustainable growth formula that differs from the final estimated cost of equity is asking the regulator to adopt two different returns.

The circularity problem is somewhat dampened by the self-correcting nature of the DCF model. If a high equity return is granted, the stock price will increase in response to the unanticipated favorable return allowance, lowering the dividend yield component of market return in compensation for the high  $g$  induced by the high allowed return. At the next regulatory hearing, more conservative forecasts of  $r$  would prevail. The impact on the dual components of the DCF formula, yield and growth, are at least partially offsetting.

Third, the empirical finance literature discussed earlier demonstrates that the sustainable growth method of determining growth is not as significantly correlated to measures of value, such as stock price and price/earnings ratios, as other historical growth measures or analysts' growth forecasts. Other proxies for growth, such as historical growth rates and analysts' growth forecasts, outperform retention growth estimates. See for example Timme and Eisman (1989).

In summary, there are three proxies for the expected growth component of the DCF model: historical growth rates, analysts' forecasts, and the sustainable growth method. Criteria in choosing among the three proxies should include ease of use, ease of understanding, theoretical and mathematical correctness, and empirical validation. The latter two are crucial. The method should be logically valid and consistent, and should possess an adequate track record in predicting and explaining security value. The retention growth method is the weakest of the three proxies on both conceptual and empirical grounds. The research in this area has shown that the first two growth proxies do a better job of explaining variations in market valuation (M/B and P/E ratios) and are more highly correlated to measures of value than is the retention growth proxy.



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## About 70% Of The Panelists Look For Rate Hike In June Or July

**Domestic** Fewer than half of our panelists now believe the Federal Reserve's Open Market Committee (FOMC) will opt to hike interest rates at its June 14<sup>th</sup>-15<sup>th</sup> meeting. However, a bit more than seven-out-of-ten panelists still predict an increase will be enacted at either the June meeting or the next one in late July, according to our May 23<sup>rd</sup>-24<sup>th</sup> survey. Interestingly, the shift to a lower likelihood of a June hike and a higher likelihood of one in July occurred despite the release of minutes from the FOMC's April meeting that were interpreted by many as more hawkish than the FOMC's April policy statement and recent suggestions from several FOMC members that a June rate hike was a distinct possibility.

In answer to a special question this month, all but two of our panelists think the FOMC will hike rates at least once this year. However, the percentage of those looking for an increase at the June 14<sup>th</sup>-15<sup>th</sup> meeting fell to 38.3% from 57.4% last month and 86.0% in our April survey. A likely roadblock to a June rate hike, according to many analysts, is a desire by some FOMC members to see further evidence of a snapback in economic growth and inflation, coupled with additional improvement in labor market conditions. Many analysts also suspect that the FOMC would prefer to see the outcome of the U.K.'s June 23<sup>rd</sup> referendum on leaving the European Union.

Among the panelists looking for a later rate hike from the FOMC, 31.9% now say the first increase of this year will be enacted at its July 26<sup>th</sup>-27<sup>th</sup> meeting versus 17.0% a month ago and 4.7% a month before that. The percentage of our panelists that now say the first hike will not occur until the FOMC's September 20<sup>th</sup>-21<sup>st</sup> meeting rose to 21.3% this month from 12.8% a month ago and 4.7% in our April survey. None of the panelists predicted that the first hike of 2016 would occur at the November 1<sup>st</sup>-2<sup>nd</sup> meeting and the percentage of those forecasting the first hike would finally be enacted at the December 13<sup>th</sup>-14<sup>th</sup> meeting slipped to 4.3% this month from 10.6% in our May survey. One panelist now predicts that no rate hike will occur until the FOMC's March 2017 meeting and another foresees no rate increase this year or next.

Asked how many 25 basis point rate hikes the FOMC will enact this year, 4.4% of the panelists this month said none, 22.2% said one, 60% said two, and 13.3% said three. These forecasts compare with the "dot plot" released in conjunction with the FOMC's March meeting that implied two quarter-point rate hikes this year. Based on this month's forecasts of the federal funds rate, the consensus envisions more than two, but less than three 25 basis point increases from the FOMC in 2017. That is fewer than the four quarter-point hikes in 2017 implied by the FOMC's March "dot plot".

As previously mentioned, minutes of the FOMC's late-April meeting that were released on May 18<sup>th</sup> were seen as hawkish. Prior to their release fed funds futures prices put the odds of a June rate hike at about 14%, but that figure jumped to 30% in the wake of their release. The most hawkish takeaway from the minutes was that "most participants judged that if incoming data were consistent with economic growth picking up in the second quarter, labor market conditions continuing to strengthen, and inflation making progress toward the Committee's 2 percent objective, then it would be appropriate for the Committee to increase the target range for the federal funds rate in June." Committee members seemed to dismiss the softness of GDP growth in Q1, attributing at least some of it to the residual seasonality issues that appear to have depressed government estimates of Q1 growth in each of the past six years. They noted that labor market conditions had continued to improve and that consumer fundamentals were positive. The minutes also noted the significant improvement in financial markets following their late-2015/early-2016 swoon.

In conjunction with the implicit message in the April meeting minutes that the June meeting would be "live", a bevy of FOMC members – some voting members and some not – also have made

recent comments underscoring that a June rate hike was a possibility. San Francisco Fed President John Williams and Atlanta Fed President Dennis Lockhart have both said over the past two weeks that the June meeting is "live". Dallas Fed President Robert Kaplan recently called for a rate increase "in the not too distant future". New York Fed President William Dudley, a permanent voting member, recently said "We are on track to satisfy a lot of conditions" for a rate increase. "If I am convinced that my own forecast is sort of on track, then I think a tightening in the summer, the June-July time frame is a reasonable expectation". Boston Fed bank President Eric Rosengren was recently quoted as saying "So I want to be sensitive to how the data comes in, but I would say that most of the conditions that were laid out in the (April) minutes as of right now seem to be ... on the verge of broadly being met...". Fed Chair Janet Yellen, scheduled to speak in Massachusetts May 27<sup>th</sup> and elsewhere on June 6<sup>th</sup>, may reinforce the notion that the June meeting is "live" or simply play coy about the Fed's intentions. However, some analysts suspect recent comments from FOMC members simply represent jaw-boning and imply little about the timing of when the Fed will actually hike rates.

Consensus forecasts of real GDP growth over the next six quarters went completely unchanged this month. After growing an upwardly revised 0.8% (saar) in Q1, real GDP still is forecast to grow 2.3% in the current quarter and 2.4% in Q3 and Q4 of this year. GDP growth in the current quarter is expected to be supported by a notable pick-up in the pace of personal consumption expenditures, solid residential investment, a small contribution from business fixed investment despite another contraction in business structures, some contribution from government spending as federal defense spending rebounds, and little if any drag from net exports. Strength in these areas is expected to offset a further subtraction by inventories from GDP. Next year, the consensus still sees real GDP growing 2.3% (saar) in Q1 2017, 2.4% in Q2 and 2.3% in Q3. The consensus remains pretty sanguine about the possibility of a recession in the medium term. Asked the odds (between 0% and 100%) of a U.S. recession starting this year, the consensus forecast came in at 15.4% versus 14.9% a month ago, 16.2% in April, 19.0% in March and 16.7% in February. The consensus this month put the odds of a recession starting in 2017 at 21.3% compared to 20.3% last month, 21.4% in April, 23.2% in March and 22.0% in February.

Consensus forecasts of inflation over the forecast horizon were little changed this month, with a bias to the upside that most likely results from higher energy prices. The Consumer Price Index (CPI) is forecast to increase 2.2% (saar) in Q2, 0.3 of a percentage point faster than last month. It is expected to increase 2.4% (saar) in Q3, 0.2 of a percentage point more than last month. The forecast of its Q4 2016 change remained at 2.3% (saar). The CPI is forecast to increase 2.2% (saar) in Q1 2017, 2.4% in Q2 and 2.3% in Q3, all identical to last month except for the Q1 2017 forecast that fell 0.1 of a percentage point over the past month. Forecasts of the expected change in the GDP price index looked very similar to those of last month.

**Consensus Forecast** The consensus predicts real GDP growth will rebound to an annualized rate of slightly more than 2.0% over the next six quarters. Inflation will continue its rebound from recent depressed levels, but remain low enough to keep the FOMC cautious about raising rates rapidly. Treasury yields are expected to rise over the forecast horizon as the FOMC tightens, but the yield curve will flatten, in part because overseas sovereign yields remain below those in the U.S. The trade-weighted U.S. dollar will resume its appreciation, but increase by less than previously expected (*see page 2*).

**Long-Range Survey** On page 14 are results of our twice-yearly, long-range survey with consensus estimates for the years 2018 through 2022 and averages for the 5-year periods 2018-2022 and 2023-2027 (*see page 14*)

### Consensus Forecasts Of U.S. Interest Rates And Key Assumptions<sup>1</sup>

Interest Rates	-----History-----								Consensus Forecasts-Quarterly Avg.					
	-----Average For Week Ending-----				----Average For Month----				Latest Qtr	2Q 2016	3Q 2016	4Q 2016	1Q 2017	2Q 2017
	May 20	May 13	May 6	Apr. 29	Apr.	Mar.	Feb.	1Q 2016	2016	2016	2016	2017	2017	2017
Federal Funds Rate	0.37	0.37	0.34	0.37	0.37	0.36	0.38	0.36	0.4	0.6	0.7	0.9	1.1	1.3
Prime Rate	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.5	3.7	3.8	4.0	4.2	4.4
LIBOR, 3-mo.	0.63	0.63	0.63	0.63	0.63	0.63	0.62	0.62	0.6	0.8	1.0	1.2	1.4	1.7
Commercial Paper, 1-mo.	0.35	0.34	0.35	0.36	0.35	0.34	0.35	0.34	0.4	0.6	0.8	1.0	1.3	1.5
Treasury bill, 3-mo.	0.30	0.26	0.20	0.23	0.23	0.30	0.31	0.29	0.3	0.5	0.7	0.9	1.1	1.3
Treasury bill, 6-mo.	0.42	0.37	0.40	0.40	0.37	0.47	0.45	0.45	0.4	0.6	0.8	1.0	1.2	1.4
Treasury bill, 1 yr.	0.62	0.53	0.52	0.58	0.56	0.66	0.53	0.58	0.6	0.8	1.0	1.2	1.4	1.6
Treasury note, 2 yr.	0.86	0.74	0.75	0.82	0.77	0.88	0.73	0.84	0.8	1.0	1.2	1.4	1.6	1.8
Treasury note, 5 yr.	1.34	1.21	1.25	1.33	1.26	1.38	1.22	1.37	1.3	1.5	1.7	1.9	2.1	2.3
Treasury note, 10 yr.	1.82	1.75	1.81	1.88	1.81	1.89	1.78	1.92	1.9	2.1	2.2	2.4	2.6	2.7
Treasury note, 30 yr.	2.62	2.59	2.65	2.71	2.62	2.68	2.62	2.72	2.7	2.9	3.0	3.2	3.3	3.4
Corporate Aaa bond	3.65	3.63	3.66	3.62	3.62	3.82	3.96	3.93	3.7	3.9	4.1	4.3	4.4	4.6
Corporate Baa bond	4.69	4.64	4.66	4.75	4.79	5.13	5.32	5.30	4.9	5.1	5.2	5.4	5.5	5.7
State & Local bonds	3.26	3.32	3.32	3.32	3.30	3.38	3.30	3.36	3.4	3.5	3.6	3.8	4.0	4.1
Home mortgage rate	3.58	3.57	3.61	3.66	3.61	3.69	3.66	3.74	3.7	3.9	4.0	4.2	4.4	4.5

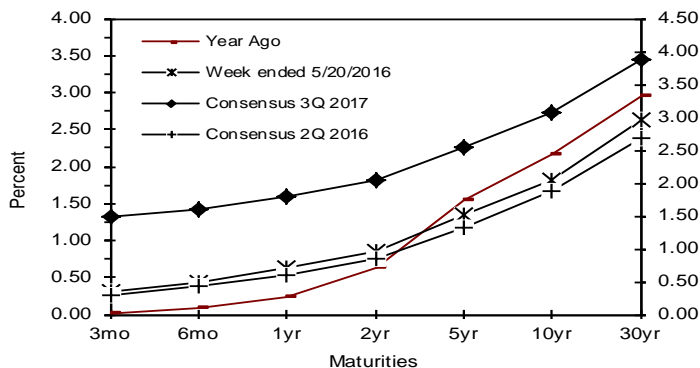
  

Key Assumptions	-----History-----								Consensus Forecasts-Quarterly					
	2Q 2014	3Q 2014	4Q 2014	1Q 2015	2Q 2015	3Q 2015	4Q 2015	1Q 2016	2Q 2016	3Q 2016	4Q 2016	1Q 2017	2Q 2017	3Q 2017
Major Currency Index	76.6	77.8	82.6	89.4	89.9	91.8	93.1	93.3	90.4	91.3	92.1	92.4	92.3	92.3
Real GDP	4.6	4.3	2.1	0.6	3.9	2.0	1.4	0.8	2.3	2.4	2.4	2.3	2.4	2.3
GDP Price Index	2.2	1.6	0.1	0.1	2.1	1.3	0.9	0.6	1.8	1.8	1.9	1.9	2.2	2.1
Consumer Price Index	1.9	0.9	-0.3	-2.9	2.4	1.4	0.8	-0.3	2.2	2.4	2.3	2.2	2.4	2.3

Forecasts for interest rates and the Federal Reserve's Major Currency Index represent averages for the quarter. Forecasts for Real GDP, GDP Price Index and Consumer Price Index are seasonally-adjusted annual rates of change (saar). Individual panel members' forecasts are on pages 4 through 9. Historical data for interest rates except LIBOR is from Federal Reserve Release (FRSR) H.15. LIBOR quotes available from *The Wall Street Journal*. Interest rate definitions are same as those in FRSR H.15. Treasury yields are reported on a constant maturity basis. Historical data for Fed's Major Currency Index is from FRSR H.10 and G.5. Historical data for Real GDP and GDP Chained Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index (CPI) history is from the Department of Labor's Bureau of Labor Statistics (BLS).

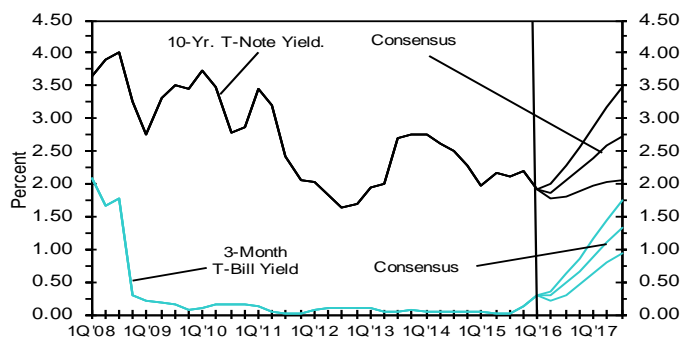
#### U.S. Treasury Yield Curve

Week ended May 20, 2016 and Year Ago v.s. 2Q 2016 and 3Q 2017 Consensus Forecasts



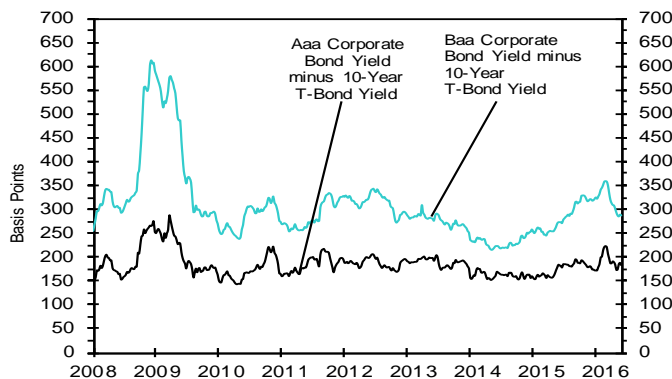
#### U.S. 3-Mo. T-Bills & 10-Yr. T-Note Yield

(Quarterly Average) Forecast



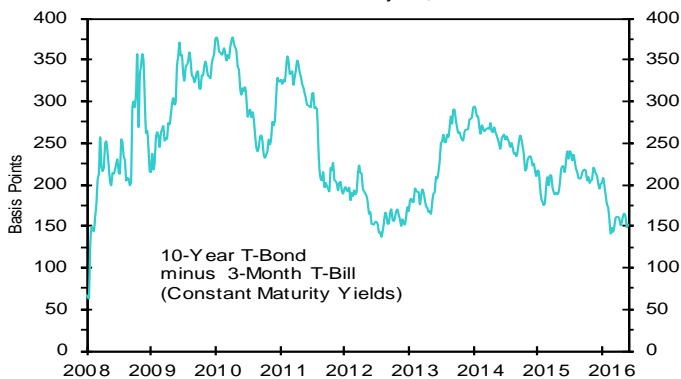
#### Corporate Bond Spreads

As of week ended May 20, 2016



#### U.S. Treasury Yield Curve

As of week May 20, 2016



-----3-Month Interest Rates<sup>1</sup>-----

	History			Consensus Forecasts		
	Month	Year	Months From Now:			
Latest:	Ago:	Ago:	3	6	12	
U.S.	0.67	0.63	0.29	<b>0.86</b>	<b>0.93</b>	<b>1.28</b>
Japan	-0.02	-0.02	0.10	<b>0.01</b>	<b>-0.01</b>	<b>0.00</b>
U.K.	0.57	0.57	0.54	<b>0.61</b>	<b>0.66</b>	<b>0.91</b>
Switzerland	-0.73	-0.72	-0.79	<b>-0.85</b>	<b>-0.85</b>	<b>0.85</b>
Canada	0.85	0.88	0.94	<b>0.70</b>	<b>0.73</b>	<b>0.98</b>
Australia	2.08	2.34	2.40	<b>1.60</b>	<b>1.60</b>	<b>1.70</b>
Eurozone	-0.26	-0.25	-0.01	<b>-0.27</b>	<b>-0.28</b>	<b>-0.27</b>

-----10-Yr. Government Bond Yields<sup>2</sup>-----

	History			Consensus Forecasts		
	Month	Year	Months From Now:			
Latest:	Ago:	Ago:	3	6	12	
U.S.	1.88	1.93	2.21	<b>2.04</b>	<b>2.13</b>	<b>2.43</b>
Germany	0.16	0.30	0.54	<b>0.37</b>	<b>0.43</b>	<b>0.67</b>
Japan	-0.10	-0.10	0.41	<b>-0.06</b>	<b>-0.02</b>	<b>0.04</b>
U.K.	1.57	1.67	2.02	<b>1.71</b>	<b>1.87</b>	<b>2.07</b>
France	0.50	0.65	0.89	<b>0.73</b>	<b>0.81</b>	<b>1.13</b>
Italy	1.36	1.54	1.86	<b>1.57</b>	<b>1.61</b>	<b>1.88</b>
Switzerland	-0.26	-0.38	-0.01	<b>-0.23</b>	<b>-0.09</b>	<b>0.19</b>
Canada	1.39	1.55	1.67	<b>1.51</b>	<b>1.65</b>	<b>1.98</b>
Australia	2.31	2.71	2.84	<b>2.41</b>	<b>2.55</b>	<b>2.72</b>
Spain	1.54	1.64	1.77	<b>1.68</b>	<b>1.73</b>	<b>1.99</b>

-----Foreign Exchange Rates<sup>1</sup>-----

	History			Consensus Forecasts		
	Month	Year	Months From Now:			
Latest:	Ago:	Ago:	3	6	12	
U.S.	90.791	89.646	89.948	<b>91.1</b>	<b>91.1</b>	<b>91.8</b>
Japan	110.52	111.50	121.45	<b>108.7</b>	<b>111.7</b>	<b>115.0</b>
U.K.	1.4513	1.4390	1.5484	<b>1.45</b>	<b>1.47</b>	<b>1.49</b>
Switzerland	0.9920	0.9774	0.9428	<b>1.02</b>	<b>1.04</b>	<b>1.04</b>
Canada	1.3136	1.2672	1.2288	<b>1.34</b>	<b>1.33</b>	<b>1.29</b>
Australia	0.7215	0.7713	0.7828	<b>0.71</b>	<b>0.71</b>	<b>0.73</b>
Euro	1.1207	1.1239	1.1033	<b>1.09</b>	<b>1.08</b>	<b>1.08</b>

Consensus  
3-Month Rates  
vs. U.S. Rate

	Now	In 12 Mo.
Japan	-0.69	<b>-1.28</b>
U.K.	-0.10	<b>-0.37</b>
Switzerland	-1.40	<b>-0.43</b>
Canada	0.18	<b>-0.31</b>
Australia	1.41	<b>0.42</b>
Eurozone	-0.93	<b>-1.55</b>

Consensus  
10-Year Gov't  
Yields vs. U.S. Yield

	Now	In 12
Germany	-1.72	<b>-1.75</b>
Japan	-1.98	<b>-2.38</b>
U.K.	-0.31	<b>-0.35</b>
France	-1.38	<b>-1.29</b>
Italy	-0.52	<b>-0.55</b>
Switzerland	-2.14	<b>-2.24</b>
Canada	-0.49	<b>-0.45</b>
Australia	0.43	<b>0.29</b>
Spain	-0.34	<b>-0.44</b>

**International Commentary** Global asset markets continued to levitate over the past month, extending recoveries from the shellacking they took earlier this year. Stocks, commodities and high-yield debt all have undergone significant rebounds from their earlier lows. Underpinning the turnaround was soothing words and in some cases easing on the part of major central banks, action by China to stabilize growth, and a pullback in the value of the U.S. dollar. Developments in June will likely determine whether the rallies get extended into the summer months or peter out. Major events confronting the markets over the next 30 days include the possibility of a rate hike from the Federal Reserve on June 15<sup>th</sup>, the U.K.'s Brexit referendum on June 23<sup>rd</sup>, general elections in Spain, Japan's likely announcement of a major fiscal stimulus package, and a German Constitutional Court ruling on the legality of the European Central Bank's QE programs.

The Bank of England's Monetary Policy Committee is expected to leave policy unchanged at its June 16<sup>th</sup> meeting in the run up to the June 23<sup>rd</sup> Brexit referendum on continued membership in the European Union. Real GDP growth slowed to 1.6% (saar) in Q1 and may come in even weaker in Q2. Consumer price inflation fell to 0.3% (y/y) in April and core inflation dipped back to 1.4%. Analysts' tend not to look for a rate hike from the MPC until early next year.

The European Central Bank (ECB) also is expected to leave policy unchanged at its June 2<sup>nd</sup> meeting. The press conference is likely to focus on implementation of already announced measures and downplay any suggestions of a further reduction in the bank's already negative deposit rate. Eurozone real GDP grew a downwardly revised, but still solid 2.1% (saar) in Q1 as Germany posted its fastest pace of expansion in two years. However, Eurozone GDP growth is expected to slow in the current quarter given data currently in hand. Eurozone inflation came in at -0.2% y/y in April.

Real GDP growth in Japan during Q1 surprised to the upside, growing at an annualized rate of 1.7% versus expectations of a slight contraction. That followed an identically-sized contraction in Q4 2015. The largest contributor to the Q1 increase was consumer spending which accounted for a full percentage point of the increase in GDP. Net exports contributed another 0.7 of a percentage point. Inventories, however, rose for a fifth, consecutive quarter. The last time we saw a string of increases that long was Q2 2008, followed thereafter by a long series of declines. Most analysts expect the government to soon announce a new fiscal stimulus package and a delay in the scheduled April 2017 increase in the VAT. Many also anticipate that the Bank of Japan will eventually provide more monetary stimulus to fight deflation. However, a move at its June 16<sup>th</sup> meeting seems unlikely.

The Bank of Canada, as expected, left its policy unchanged on May 25<sup>th</sup>, and most analysts believe it will remain on hold until early 2017 when it is expected to begin raising its overnight rate from the current record low of 0.5%. Real GDP likely grew at an annualized rate of about 3.0% in Q1. However, it is widely expected to be flat to down slightly in Q2 due the massive Alberta wildfires. The effects should be transitory, with growth rebounding to an annual rate of 3%-plus in Q3 before settling down to about 2.0% in Q4. Consumer price inflation was up 1.7% y/y in April, with the core CPI up 2.2% y/y.

As expected, the Reserve Bank of Australia cut its cash rate by 25 basis points to 1.75% on May 3<sup>rd</sup>. Moreover, minutes of the meeting hinted at another rate cut due to remain stubbornly low levels of inflation. Indeed, core consumer price inflation recently slumped to a record low of 1.55%. While GDP growth has remained solid, especially, domestic demand has softened and wage growth has slowed sharply. The Australian dollar has weakened in the wake of the RBA's May 3<sup>rd</sup> rate cut and speculation of a further reduction later this year. However, most analysts assume the RBA will hold off on another cut until at least August, since the government has called an election for July 2 (see pages 10-11 for individual panelists' forecasts).

Forecasts of panel members are on pages 10 and 11. Definitions of variables are as follows: <sup>1</sup>Three month rate on interest-earning money market deposits denominated in selected currencies. <sup>2</sup>Government bonds are yields to maturity. Foreign exchange rate forecasts for U.K., Australia and the Euro are U.S. dollars per currency unit. For the U.S. dollar, forecasts are of the U.S. Federal Reserve Board's Major Currency Index.

## Second Quarter 2016

### Interest Rate Forecasts

### Key Assumptions

Blue Chip Financial Forecasts Panel Members	-----Percent Per Annum -- Average For Quarter-----															Avg. For			
	-----Short-Term-----					-----Intermediate-Term-----					-----Long-Term-----					---Qtr---	------(Q-Q % Change)-----		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	A.	B.	C.	D.
	Federal Funds Rate	Prime Bank Rate	LIBOR 3-Mo.	Com. Paper 1-Mo.	Treas. Bills 3-Mo.	Treas. Bills 6-Mo.	Treas. Bills 1-Yr.	Treas. Notes 2-Yr.	Treas. Notes 5-Yr.	Treas. Notes 10-Yr.	Treas. Bonds 30-Yr.	Aaa Corp. Bond	Baa Corp. Bond	State & Local Bonds	Home Mtg. Rate	Fed's Major Currency \$ Index	Real GDP	GDP Price Index	Cons. Price Index
Scotiabank Group	0.5 H	3.5 L	na	na	0.3	na	na	0.8	1.4	2.0	2.8	na	na	na	na	na	2.2	1.8	1.1
Regions Financial Corporation	0.5 H	3.5 L	0.7	0.4	0.4 H	0.5 H	0.6	0.8	1.3	1.8	2.7	3.7	4.8	na	3.6	90.1	2.3	1.4	2.3
J.P. Morgan Chase	0.5 H	na	0.6	na	na	na	na	0.8	1.3	1.8	2.6 L	na	na	na	na	na	2.0	2.1	2.5
Swiss Re	0.5 H	3.5 L	0.7	0.4	0.3	0.4	0.8 H	1.0	1.3	1.9	2.8	3.8	4.9	na	3.7	na	2.8	1.7	2.7
DS Economics	0.5 H	3.5 L	0.6	0.5 H	0.3	0.4	0.6	0.8	1.2	1.8	2.6 L	3.7	4.7 L	3.3	3.6	92.0	2.6	1.5	2.1
Standard & Poor's Corp.	0.5 H	3.5 L	0.6	na	0.4 H	0.5 H	0.7	0.8	1.2	1.8	2.6 L	3.0 L	4.8	na	3.8	94.0 H	3.2	1.9	0.8
Action Economics	0.5 H	3.6	0.7	0.5 H	0.4 H	0.5 H	0.6	0.8	1.3	1.9	2.7	3.7	4.8	3.3	3.7	na	2.0	2.4	2.5
The Northern Trust Company	0.4 L	3.6	0.7	0.4	0.3	0.4	0.6	0.8	1.3	1.8	2.6 L	3.6	4.7 L	3.3	3.6	na	2.3	1.9	2.0
GLC Financial Economics	0.4 L	3.5 L	0.7	0.4	0.3	0.4	0.6	0.8	1.3	1.8	2.6 L	3.7	4.9	3.3	3.8	90.0	2.1	1.7	2.5
Amherst Pierpont Securities	0.4 L	3.6	0.7	0.5 H	0.4 H	0.5 H	0.6	0.9	1.4	1.9	2.7	3.7	4.7 L	3.3	3.7	90.4	2.7	1.5	2.7
DePrince & Associates	0.4 L	3.5 L	0.7	0.4	0.3	0.4	0.6	0.8	1.3	1.8	2.6 L	3.7	4.8	3.4	3.6	90.9	2.3	1.6	1.7
MacroFin Analytics	0.4 L	3.6	0.7	0.5 H	0.3	0.5 H	0.6	0.9	1.4	1.9	2.7	3.7	4.8	3.3	3.7	91.0	2.0	1.6	1.8
RidgeWorth Investments	0.4 L	3.5 L	0.8 H	0.5 H	0.3	0.5 H	0.6	0.9	1.3	1.9	2.7	3.8	5.0	3.3	3.7	91.1	2.5	1.3	3.5
Woodworth Holdings	0.4 L	3.5 L	0.5 L	0.4	0.4 H	0.5 H	0.7	0.9	1.4	1.9	2.7	3.7	4.8	3.3	3.6	89.5	2.0	0.5 L	0.8
Cycledata Corp.	0.4 L	3.5 L	0.6	0.4	0.3	0.4	0.6	0.9	1.4	1.9	2.7	3.8	5.0	3.4	3.5 L	91.0	2.4	1.8	1.8
RDQ Economics	0.4 L	3.5 L	0.6	0.5 H	0.3	0.5 H	0.7	0.8	1.4	1.9	2.6 L	3.6	4.8	3.2 L	3.6	89.6	2.9	1.7	1.9
Chase Wealth Management	0.4 L	3.6	0.8 H	0.5 H	0.4 H	0.5 H	0.7	1.0	1.5 H	2.0	2.9 H	3.9 H	5.1	3.5	3.6	91.0	2.2	1.8	1.9
Naroff Economic Advisors	0.4 L	3.6	0.7	0.5 H	0.3	0.4	0.7	0.9	1.4	1.9	2.7	3.7	4.8	3.3	3.7	90.0	3.8 H	1.7	2.0
Natl Assn. of Realtors	0.4 L	3.5 L	0.6	0.4	0.3	0.4	0.6	0.8	1.3	1.8	2.6 L	3.6	4.7 L	3.3	3.6	na	1.8	2.1	2.3
Wells Fargo	0.4 L	3.5 L	0.6	0.5 H	0.3	0.4	0.5 L	0.9	1.3	1.8	2.6 L	3.6	4.7 L	3.3	3.6	88.3 L	1.4	1.9	2.4
AIG	0.4 L	na	na	na	0.3	na	na	1.1 H	na	2.2 H	na	na	5.4 H	na	3.8	na	1.9	1.5	2.6
SunTrust Banks	0.4 L	3.5 L	0.6	0.3 L	0.3	0.5 H	0.6	0.9	1.4	1.9	2.8	3.7	5.0	3.9 H	3.9	na	2.6	1.5	1.4
Moody's Analytics	0.4 L	3.5 L	0.6	0.3 L	0.2 L	0.3 L	0.5 L	0.7 L	1.4	2.2 H	2.8	3.7	5.0	3.2 L	3.9	na	2.2	1.9	2.9
Economist Intelligence Unit	0.4 L	3.5 L	0.6	0.4	0.3	0.4	0.6	0.8	1.3	2.0	2.7	na	na	na	3.7	na	3.0	na	1.5
High Frequency Economics	0.4 L	3.5 L	na	na	0.3	0.5 H	0.7	0.9	1.4	1.9	2.7	na	na	na	na	na	2.5	2.0	2.0
Stone Harbor Investment Partners	0.4 L	3.7 H	0.6	0.5 H	0.3	0.5 H	0.7	0.9	1.4	1.9	2.7	3.7	5.0	na	3.5 L	90.0	2.3	1.6	2.3
Moody's Capital Markets Group	0.4 L	3.5 L	0.7	0.4	0.3	0.4	0.6	0.9	1.4	1.9	2.7	3.7	4.7 L	3.6	3.7	90.1	2.6	1.7	2.3
Bank of America Merrill Lynch	0.4 L	na	0.7	na	0.4 H	na	na	0.9	1.4	1.9	2.8	na	na	na	na	na	2.0	1.9	2.5
Oxford Economics	0.4 L	3.5 L	na	na	0.2 L	0.3 L	0.5 L	0.7 L	1.3	1.9	2.7	na	na	na	3.7	90.9	2.1	1.6	2.6
Nomura Securities, Inc.	0.4 L	3.5 L	0.7	na	na	na	na	0.8	1.2	1.9	2.6 L	3.8	4.8	na	3.8	na	1.7	1.6	2.7
BMO Capital Markets	0.4 L	3.5 L	0.6	na	0.3	0.4	0.6	0.8	1.3	1.8	2.6 L	na	na	na	3.6	90.0	2.3	2.6	2.8
UBS AG	0.4 L	na	0.6	na	0.3	na	na	na	na	1.9	na	na	na	na	na	na	1.3 L	2.3	3.1
Comerica Bank	0.4 L	na	0.6	na	0.2 L	0.4	0.5 L	0.8	1.2	1.8	2.6 L	na	na	na	3.6	na	1.6	1.4	4.3 H
RBC	0.4 L	na	na	na	0.2 L	na	na	0.9	1.4	2.0	2.8	na	na	na	na	na	3.1	3.7 H	1.1
Goldman Sachs & Co.	0.4 L	na	0.6	na	0.2 L	na	na	0.8	1.5 H	1.8	2.8	na	na	na	4.0 H	na	2.7	2.0	2.6
BNP Paribas Americas	0.4 L	na	0.7	na	na	na	na	0.9	1.4	1.8	na	na	na	na	na	na	2.1	na	2.6
Daiwa Capital Markets America	0.4 L	3.5 L	0.6	0.4	0.3	0.4	0.6	0.8	1.3	1.8	2.7	3.7	4.9	3.3	3.7	89.0	2.2	1.9	2.8
Barclays Capital	0.4 L	3.5 L	0.7	na	na	na	na	1.1 H	1.5 H	1.9	na	na	na	na	na	na	2.0	2.3	2.9
Georgia State University	0.4 L	3.5 L	na	na	0.3	0.4	0.6	0.8	1.3	1.8	2.6 L	3.8	5.2	na	3.7	na	1.7	1.2	0.4 L
Chmura Economics & Analytics	0.4 L	3.5 L	0.7	0.4	0.3	0.4	0.5 L	0.8	1.2	1.8	2.6 L	3.6	na	na	3.6	92.2	2.3	1.0	0.6
PNC Financial Services Corp.	0.4 L	3.5 L	0.6	na	0.2 L	0.4	0.5 L	0.8	1.3	1.8	2.6 L	na	4.7 L	3.3	3.6	91.4	2.5	1.6	2.0
Fannie Mae	0.4 L	3.5 L	na	na	0.3	0.4	0.6	0.8	1.3	1.8	2.6 L	na	na	na	3.6	na	2.2	1.2	2.2
RBS Securities	0.4 L	3.5 L	0.6	0.4	0.3	0.4	0.5 L	0.8	1.4	1.9	2.8	3.8	5.0	3.4	3.7	90.0	2.7	1.7	2.2
Wells Capital Management	0.4 L	3.5 L	0.6	0.4	0.3	0.4	0.6	0.8	1.3	1.9	2.7	3.7	4.7 L	3.4	3.7	90.0	2.5	1.9	2.4
Societe Generale	0.4 L	3.5 L	0.6	na	na	na	na	0.7 L	1.1 L	1.6 L	2.9 H	na	na	na	na	na	3.1	2.1	2.4
MUFG Union Bank	0.4 L	3.5 L	0.7	0.4	0.3	0.5 H	0.6	0.9	1.5 H	2.0	2.7	3.6	4.8	3.4	3.8	89.0	2.8	2.6	2.5
Loomis, Sayles & Company	0.4 L	3.5 L	0.6	0.4	0.3	0.4	0.5 L	0.8	1.3	1.8	2.7	3.7	4.9	3.2 L	3.5 L	88.7	2.1	1.5	2.5
<b>June Consensus</b>	<b>0.4</b>	<b>3.5</b>	<b>0.6</b>	<b>0.4</b>	<b>0.3</b>	<b>0.4</b>	<b>0.6</b>	<b>0.8</b>	<b>1.3</b>	<b>1.9</b>	<b>2.7</b>	<b>3.7</b>	<b>4.9</b>	<b>3.4</b>	<b>3.7</b>	<b>90.4</b>	<b>2.3</b>	<b>1.8</b>	<b>2.2</b>
Top 10 Avg.	0.5	3.6	0.7	0.5	0.4	0.5	0.7	1.0	1.4	2.0	2.8	3.8	5.0	3.5	3.8	91.6	3.0	2.4	3.0
Bottom 10 Avg.	0.4	3.5	0.6	0.4	0.2	0.4	0.5	0.7	1.2	1.8	2.6	3.6	4.7	3.3	3.6	89.4	1.7	1.3	1.1
May Consensus	0.4	3.6	0.7	0.5	0.3	0.5	0.6	0.9	1.4	2.0	2.8	3.8	5.0	3.4	3.8	90.8	2.3	1.8	1.9
<u>Number of Forecasts Changed From A Month Ago:</u>																			
Down	15	13	20	14	25	21	19	26	28	27	26	19	23	13	26	13	14	13	8
Same	25	23	8	8	12	9	10	13	10	10	9	6	3	5	5	5	17	16	11
Up	7	3	11	5	5	6	7	7	7	10	8	5	4	4	7	6	16	16	28
Diffusion Index	41 %	37 %	38 %	33 %	26 %	29 %	33 %	29 %	27 %	32 %	29 %	27 %	18 %	30 %	25 %	35 %	52 %	53 %	71 %

# Third Quarter 2016

## Interest Rate Forecasts

## Key Assumptions

Blue Chip Financial Forecasts Panel Members	Percent Per Annum -- Average For Quarter--															Avg. For	----(Q-Q % Change)----			
	-----Short-Term-----					-----Intermediate-Term-----					-----Long-Term-----					---Qtr---	------(SAAR)-----			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	A.	B.	C.	D.	
	Federal Funds Rate	Prime Bank Rate	LIBOR Rate 3-Mo.	Com. Paper 1-Mo.	Treas. Bills 3-Mo.	Treas. Bills 6-Mo.	Treas. Bills 1-Yr.	Treas. Notes 2-Yr.	Treas. Notes 5-Yr.	Treas. Notes 10-Yr.	Treas. Bonds 30-Yr.	Aaa Bond	Baa Corp. Bond	State & Local Bonds	Home Mtg. Rate	Fed's Major Currency \$ Index	Real GDP	GDP Price Index	Cons. Price Index	
DS Economics	0.8 H	3.8	0.9	0.8 H	0.6	0.8	1.0	1.2	1.7	2.2	3.0	4.0	5.0	3.3	4.0	94.0	2.5	1.7	2.5	
Scotiabank Group	0.8 H	3.8	na	na	0.6	na	na	1.1	1.7	2.2	3.1	na	na	na	na	na	2.3	2.0	1.4	
SunTrust Banks	0.7	3.7	0.9	0.6	0.6	0.7	0.8	1.0	1.5	1.9	2.9	4.1	5.6 H	4.0 H	4.0	na	2.8	1.6	1.5	
RDQ Economics	0.7	3.7	0.9	0.8 H	0.7	1.0 H	1.1 H	1.2	1.8 H	2.3	2.9	3.9	5.2	3.5	3.9	91.6	2.1	2.1	2.1	
Naroff Economic Advisors	0.7	3.9 H	1.0	0.8	0.8 H	0.9	1.1 H	1.3 H	1.8 H	2.3	3.1	4.0	5.2	3.5	4.1	90.5	3.1	2.0	2.4	
DePrince & Associates	0.7	3.7	0.9	0.7	0.6	0.7	0.9	1.1	1.5	2.1	2.8	3.9	4.9	3.6	3.9	89.6	2.7	1.8	2.0	
Moody's Analytics	0.7	3.8	0.9	0.6	0.3	0.4	0.6	0.9	1.7	2.5 H	3.3 H	4.1	5.6 H	3.4	4.0	na	2.9	1.5	2.5	
Regions Financial Corporation	0.7	3.7	0.8	0.6	0.6	0.7	0.8	1.0	1.5	2.0	2.8	3.8	4.8	3.7	na	92.0	2.2	1.5	2.8	
Woodworth Holdings	0.7	3.8	0.8	0.6	0.6	0.7	0.9	1.1	1.6	2.2	3.0	4.0	5.1	3.6	3.9	90.0	2.5	0.6 L	0.8 L	
GLC Financial Economics	0.7	3.8	0.9	0.7	0.6	0.7	0.8	1.0	1.7	2.2	3.0	4.2 H	5.4	3.8	4.4	90.1	2.8	1.9	2.5	
MJFG Union Bank	0.7	3.8	0.9	0.7	0.6	0.8	0.9	1.3 H	1.8 H	2.3	3.0	3.8	5.0	3.5	4.1	91.0	2.7	1.1	2.9	
MacroFin Analytics	0.6	3.8	0.9	0.7	0.6	0.7	0.9	1.1	1.7	2.1	3.0	4.0	5.0	3.6	3.9	91.7	2.4	1.7	1.7	
The Northern Trust Company	0.6	3.8	0.9	0.6	0.5	0.6	0.8	1.0	1.6	2.0	2.8	3.6	4.8	3.4	3.7	na	2.3	2.1	2.2	
Action Economics	0.6	3.8	0.7	0.7	0.6	0.6	0.8	1.0	1.6	2.1	2.8	3.8	5.0	3.4	3.7	na	2.5	1.4	2.4	
Swiss Re	0.6	3.6	0.8	0.6	0.5	0.5	1.0	1.3 H	1.5	2.1	3.1	4.0	5.0	na	3.8	na	3.1	1.4	2.4	
J.P. Morgan Chase	0.6	na	0.8	na	na	na	na	1.0	1.5	1.9	2.7	na	na	na	na	na	2.3	1.9	2.4	
BMO Capital Markets	0.6	3.8	0.9	na	0.5	0.6	0.8	1.1	1.5	2.0	2.8	na	na	na	3.8	92.7	2.5	2.3	2.6	
Nomura Securities, Inc.	0.6	3.6	0.9	na	na	na	na	1.0	1.4	2.0	2.5 L	3.9	4.9	na	3.9	na	2.3	1.6	2.8	
Bank of America Merrill Lynch	0.6	na	0.8	na	0.5	na	na	1.0	1.5	2.0	2.9	na	na	na	na	na	2.3	1.9	2.9	
Standard & Poor's Corp.	0.6	3.7	0.8	na	0.4	0.6	0.9	0.9	1.5	2.1	2.8	3.4 L	5.0	na	4.0	94.6 H	3.0	1.6	4.5 H	
Barclays Capital	0.6	3.8	0.9	na	na	na	na	1.2	1.6	2.0	na	na	na	na	na	na	2.5	2.1	3.5	
Chmura Economics & Analytics	0.6	3.8	0.9	0.6	0.5	0.7	0.9	1.1	1.7	2.2	3.0	4.0	na	na	3.9	91.8	2.8	1.5	1.1	
RidgeWorth Investments	0.6	3.8	1.0	0.7	0.5	0.6	0.8	1.0	1.6	2.2	3.0	4.0	5.2	3.7	4.0	93.0	2.0	2.0	1.8	
Stone Harbor Investment Partners	0.6	3.8	0.9	0.7	0.6	0.7	0.9	1.0	1.6	2.1	2.8	3.7	5.0	na	3.6	92.0	3.3 H	1.2	2.4	
Amherst Pierpont Securities	0.6	3.8	0.9	0.7	0.7	0.9	1.1	1.2	1.8 H	2.3	3.1	4.1	5.1	3.7	4.1	92.5	2.6	1.7	3.0	
Cycledata Corp.	0.6	3.7	0.8	0.6	0.5	0.6	0.8	1.1	1.6	2.1	2.8	3.9	5.1	3.5	3.7	92.0	2.1	2.0	2.0	
Chase Wealth Management	0.6	3.7	1.1 H	0.8 H	0.7	0.8	1.0	1.3 H	1.8	2.3	3.2	4.2 H	5.4	3.8	3.9	91.2	2.1	1.9	2.1	
Natl Assn. of Realtors	0.6	3.8	0.8	0.7	0.6	0.7	0.9	1.0	1.5	2.0	2.7	3.7	4.9	3.5	3.8	na	2.1	2.0	2.2	
Daiwa Capital Markets America	0.6	3.7	0.9	0.7	0.6	0.7	0.9	1.0	1.5	2.0	2.8	3.7	4.9	3.4	3.8	90.0	2.2	1.8	2.1	
Moody's Capital Markets Group	0.5	3.6	0.8	0.6	0.5	0.7	0.8	1.0	1.6	2.0	2.8	3.8	4.7 L	3.6	3.8	90.5	2.0	1.8	2.2	
Wells Fargo	0.5	3.6	0.7	0.6	0.4	0.5	0.6	0.9	1.4	1.9	2.7	3.7	4.9	3.4	3.7	88.3	2.6	1.9	2.4	
Goldman Sachs & Co.	0.5	na	0.8	na	0.4	na	na	0.9	1.7	2.0	2.9	na	na	na	4.5 H	na	2.3	2.1	2.8	
UBS AG	0.5	na	1.1 H	na	0.6	na	na	na	na	2.0	na	na	na	na	na	na	2.0	2.3	3.3	
Oxford Economics	0.4 L	3.6	na	na	0.4	0.6	0.8	1.1	1.6	2.1	2.9	na	na	na	3.7	91.3	2.6	2.1	2.2	
RBS Securities	0.4 L	3.6	0.7	0.4 L	0.4	0.5	0.7	1.0	1.5	2.0	2.7	3.8	5.0	3.4	3.7	91.0	2.8	1.6	2.4	
Loomis, Sayles & Company	0.4 L	3.6	0.7	0.4 L	0.3	0.4	0.6	0.9	1.3	1.8	2.5 L	3.5	4.7 L	3.1 L	3.4 L	88.3 L	2.0	1.8	3.4	
High Frequency Economics	0.4 L	3.5 L	na	na	0.4	0.6	0.7	0.7	1.4	2.2	2.9	na	na	na	na	na	2.5	2.4 H	2.4	
Economist Intelligence Unit	0.4 L	3.5 L	0.7	0.5	0.3	0.5	0.6	0.9	1.4	2.0	2.8	na	na	na	3.8	na	2.4	na	2.3	
Fannie Mae	0.4 L	3.5 L	na	na	0.6	0.7	0.8	1.0	1.5	1.9	2.7	na	na	na	3.7	na	2.2	1.6	2.7	
AIG	0.4 L	na	na	na	0.6	na	na	1.3 H	na	2.3	na	na	5.5	na	3.9	na	3.0	1.7	3.0	
Societe Generale	0.4 L	3.5 L	0.6 L	na	na	na	na	0.6 L	1.1 L	1.6 L	3.0	na	na	na	na	na	2.6	2.0	1.7	
Comerica Bank	0.4 L	na	0.6 L	na	0.2	0.4	0.5	0.8	1.2	1.7	2.6	na	na	na	3.6	na	1.3 L	1.4	3.4	
RBC	0.4 L	na	na	na	0.1 L	na	na	0.9	1.6	2.2	3.0	na	na	na	na	na	2.8	2.3	1.5	
BNP Paribas Americas	0.4 L	na	0.7	na	na	na	na	0.7	1.1 L	1.6 L	na	na	na	na	na	na	1.6	na	2.2	
Georgia State University	0.4 L	3.5 L	na	na	0.2	0.3 L	0.4 L	0.7	1.4	2.1	2.8	4.1	5.4	na	3.9	na	1.5	1.6	1.7	
Wells Capital Management	0.4 L	3.5 L	0.6 L	0.4 L	0.3	0.5	0.8	0.9	1.4	2.0	2.8	3.9	4.9	3.7	3.8	90.5	2.3	2.0	1.9	
PNC Financial Services Corp.	0.4 L	3.5 L	0.7	na	0.3	0.4	0.5	0.8	1.4	2.0	2.6	na	4.7 L	3.3	3.7	91.7	2.5	1.6	2.0	
<b>June Consensus</b>	<b>0.6</b>	<b>3.7</b>	<b>0.8</b>	<b>0.6</b>	<b>0.5</b>	<b>0.6</b>	<b>0.8</b>	<b>1.0</b>	<b>1.5</b>	<b>2.1</b>	<b>2.9</b>	<b>3.9</b>	<b>5.1</b>	<b>3.5</b>	<b>3.9</b>	<b>91.3</b>	<b>2.4</b>	<b>1.8</b>	<b>2.4</b>	
Top 10 Avg.	0.7	3.8	1.0	0.7	0.6	0.8	1.0	1.2	1.7	2.3	3.1	4.1	5.4	3.7	4.1	92.6	3.0	2.2	3.3	
Bottom 10 Avg.	0.4	3.5	0.7	0.5	0.3	0.4	0.6	0.8	1.3	1.8	2.6	3.7	4.8	3.3	3.6	89.9	1.9	1.3	1.5	
May Consensus	0.6	3.7	0.9	0.6	0.5	0.7	0.8	1.1	1.6	2.1	2.9	4.0	5.2	3.6	4.0	91.2	2.4	1.9	2.2	
<b>Number of Forecasts Changed From A Month Ago:</b>																				
Down	11	11	19	11	18	16	17	24	23	28	27	16	20	11	20	9	15	15	9	
Same	29	24	11	12	16	11	10	14	17	13	13	5	6	7	11	6	19	20	17	
Up	7	5	11	7	9	10	10	8	5	6	3	11	7	7	8	13	13	10	21	
Diffusion Index	46 %	43 %	40 %	43 %	40 %	42 %	41 %	33 %	30 %	27 %	22 %	42 %	30 %	42 %	35 %	57 %	48 %	44 %	63 %	



## Fourth Quarter 2016 Interest Rate Forecasts

### Key Assumptions

Blue Chip Financial Forecasts Panel Members	-----Percent Per Annum -- Average For Quarter-----															Avg. For	----- (Q-Q % Change) -----			
	Short-Term					Intermediate-Term					Long-Term					---Qtr---	----- (SAAR) -----			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	A.				
	Federal Funds Rate	Prime Bank Rate	LIBOR Rate 3-Mo.	Com. Paper 1-Mo.	Treas. Bills 3-Mo.	Treas. Bills 6-Mo.	Treas. Bills 1-Yr.	Treas. Notes 2-Yr.	Treas. Notes 5-Yr.	Treas. Notes 10-Yr.	Treas. Notes 30-Yr.	Aaa Corp. Bond	Baa Corp. Bond	State & Local Bonds	Home Mtg. Rate	Fed's Major Currency \$ Index	B. Real GDP	C. GDP Price Index	D. Cons. Price Index	
Naroff Economic Advisors	1.1 H	4.1 H	1.4 H	1.2 H	1.2 H	1.3 H	1.5 H	1.7 H	2.2 H	2.7	3.2	4.3	5.4	3.8	4.3	91.0	2.6	2.6	2.7	
Scotiabank Group	1.0	4.0	na	na	0.8	na	na	1.6	2.0	2.3	3.2	na	na	na	na	na	2.6	2.0	2.0	
SunTrust Banks	0.9	3.9	1.1	0.8	0.8	0.9	1.0	1.1	1.6	2.0	2.9	4.4	5.9 H	3.9	4.3	na	3.1 H	1.7	1.8	
Cycledata Corp.	0.9	4.0	1.0	0.9	0.8	0.9	1.1	1.4	1.9	2.4	3.1	4.2	5.4	3.7	3.9	92.0	2.0	2.0	2.2	
Chase Wealth Management	0.9	3.9	1.2	0.9	0.8	0.9	1.1	1.4	1.9	2.4	3.3	4.3	5.5	3.9	4.0	91.4	2.2	2.0	2.2	
MUFG Union Bank	0.9	4.0	1.1	1.0	0.8	1.0	1.2	1.7 H	2.0	2.5	3.1	4.1	5.2	3.6	4.3	93.0	2.6	1.1	2.5	
RDQ Economics	0.9	3.9	1.1	1.0	0.9	1.2	1.4	1.5	2.0	2.5	3.0	4.0	5.3	3.6	4.1	93.8	2.0	2.2	2.5	
Economist Intelligence Unit	0.9	3.9	0.9	0.8	0.6	0.8	0.9	1.3	1.7	2.2	3.0	na	na	na	4.0	na	2.2	na	2.2	
J.P. Morgan Chase	0.9	na	1.1	na	na	na	na	1.1	1.6	1.9	2.7	na	na	na	na	na	2.3	2.0	2.3	
DePrince & Assoc.	0.9	3.9	1.2	1.0	0.8	1.0	1.2	1.4	1.8	2.4	3.0	4.2	5.1	3.9	4.2	89.5	2.7	2.1	2.4	
Chmura Economics & Analytics	0.9	4.0	1.1	0.9	0.7	1.0	1.1	1.4	2.1	2.6	3.4	4.3	na	na	4.3	91.2	2.7	1.6	1.5	
Moody's Analytics	0.9	4.0	1.1	0.8	0.5	0.6	0.9	1.3	1.9	2.8 H	3.5	4.4	5.9 H	3.6	4.3	na	2.9	1.4	2.7	
GLC Financial Economics	0.8	3.9	1.1	0.9	0.8	0.9	0.9	1.2	1.9	2.5	3.2	4.6 H	5.9 H	4.1 H	4.3	90.4	3.1 H	2.7 H	2.9	
DS Economics	0.8	3.8	1.0	0.8	0.6	0.9	1.2	1.4	1.9	2.5	3.2	4.1	5.1	3.6	4.2	96.0 H	2.1	2.2	2.7	
Regions Financial Corporation	0.8	3.8	1.0	0.8	0.7	0.8	0.9	1.1	1.6	2.1	3.0	3.9	4.9	na	3.8	93.1	2.1	1.6	2.0	
Swiss Re	0.8	3.8	1.0	0.7	0.6	0.7	1.1	1.4	1.6	2.2	3.2	4.1	5.1	na	4.0	na	3.0	1.0	2.0	
High Frequency Economics	0.8	3.9	na	na	0.7	0.9	1.0	1.1	1.7	2.4	3.1	na	na	na	na	na	2.5	2.5	2.5	
Goldman Sachs & Co.	0.8	na	1.0	na	0.7	na	na	1.0	1.6	2.3	2.9	na	na	na	4.6 H	na	2.3	2.1	2.7	
UBS AG	0.8	na	1.4 H	na	1.0	na	na	na	na	2.0	na	na	na	na	na	na	2.0	2.3	3.6	
MacroFin Analytics	0.7	3.9	1.0	0.8	0.7	0.8	1.0	1.2	1.8	2.2	3.1	4.1	5.2	3.7	4.0	92.0	2.3	1.8	1.9	
Action Economics	0.7	3.8	0.8	0.8	0.7	0.8	0.9	1.2	1.7	2.2	3.0	3.9	5.1	3.4	3.8	na	2.5	1.3	1.9	
Standard & Poor's Corp.	0.7	3.9	1.0	na	0.6	0.7	1.1	1.1	1.8	2.3	3.0	3.6	5.2	na	4.2	95.0	2.7	1.7	2.0	
BMO Capital Markets	0.7	3.9	1.0	na	0.6	0.7	0.9	1.2	1.6	2.1	2.9	na	na	na	3.9	94.3	2.4	2.0	2.4	
RidgeWorth Investments	0.7	3.8	1.1	0.8	0.6	0.7	0.9	1.1	1.7	2.4	3.2	4.2	5.4	3.3	4.2	94.0	2.5	2.0	1.8	
Natl Assn. of Realtors	0.7	3.8	0.9	0.8	0.7	1.0	1.1	1.3	1.8	2.3	2.9	4.0	5.1	3.7	4.0	na	2.2	1.9	2.1	
Wells Fargo	0.7	3.7	0.9	0.8	0.6	0.7	0.8	1.2	1.6	2.0	2.8	3.8	5.0	3.5	3.8	90.0	2.5	1.9	2.2	
The Northern Trust Company	0.7	3.8	0.9	0.7	0.6	0.8	0.9	1.2	1.8	2.2	3.0	3.8	5.0	3.5	3.8	na	2.3	2.0	2.1	
Oxford Economics	0.7	3.8	na	na	0.6	0.7	1.0	1.2	1.7	2.2	3.0	na	na	na	4.0	92.2	2.4	2.1	1.9	
Stone Harbor Investment Partners	0.7	3.8	0.9	0.7	0.7	0.8	0.9	1.2	1.8	2.2	2.9	3.7	4.8	na	3.6	94.0	2.9	1.4	2.6	
Amherst Pierpont Securities	0.7	3.8	1.1	0.8	0.7	1.0	1.2	1.5	2.1	2.6	3.6 H	4.6 H	5.6	4.0	4.5	94.0	2.6	2.0	3.0	
Woodworth Holdings	0.7	3.8	0.8	0.6	0.6	0.7	0.9	1.1	1.6	2.2	3.0	4.0	5.1	3.6	3.9	90.5	2.5	0.8 L	0.9 L	
Daiwa Capital Markets America	0.7	3.9	1.1	0.8	0.7	0.9	1.0	1.2	1.6	2.0	2.9	3.8	4.9	3.5	3.9	91.0	2.3	1.8	2.2	
AIG	0.7	na	na	na	0.8	na	na	1.6	na	2.5	na	na	5.8	na	4.1	na	2.7	1.9	2.4	
Nomura Securities, Inc.	0.6	3.6	0.9	na	na	na	na	1.0	1.4	2.0	2.8	3.9	5.0	na	3.9	na	2.3	1.6	2.2	
Loomis, Sayles & Company	0.6	3.7	0.8	0.6	0.5	0.6	0.7	1.0	1.3	1.8	2.5 L	3.5 L	4.7 L	3.0 L	3.4 L	88.3 L	2.0	2.3	2.7	
Fannie Mae	0.6	3.8	na	na	0.8	0.9	1.0	1.1	1.6	2.0	2.7	na	na	na	3.7	na	2.0	1.8	2.8	
Bank of America Merrill Lynch	0.6	na	0.9	na	0.6	na	na	1.0	1.5	2.0	2.9	na	na	na	na	na	2.2	1.9	3.2	
RBC	0.6	na	na	na	0.4	na	na	1.2	1.8	2.5	3.3	na	na	na	na	na	3.0	1.6	1.8	
Barclays Capital	0.6	3.8	1.0	na	na	na	na	1.3	1.7	2.0	na	na	na	na	na	na	2.5	2.1	2.6	
RBS Securities	0.6	3.8	0.9	0.6	0.6	0.8	0.9	1.2	1.6	2.1	2.9	3.9	5.1	3.6	3.9	92.0	2.7	1.6	2.3	
Moody's Capital Markets Group	0.6	3.6	0.9	0.7	0.6	0.7	0.9	1.1	1.7	2.1	2.8	3.8	4.8	3.6	3.8	91.5	2.2	1.8	2.0	
Societe Generale	0.5	3.5	0.8	na	na	na	na	1.0	1.5	2.0	3.0	na	na	na	na	na	2.2	2.5	3.9 H	
Wells Capital Management	0.5	3.6	0.7 L	0.5 L	0.4	0.6	1.0	1.1	1.5	2.1	3.1	4.2	5.2	4.0	3.9	91.0	2.4	1.9	1.8	
Comerica Bank	0.4 L	na	0.7 L	na	0.3 L	0.4	0.6	0.8 L	1.2 L	1.8	2.6	na	na	na	3.6	na	2.1	1.8	3.1	
PNC Financial Services Corp.	0.4 L	3.6	0.8	na	0.5	0.5	0.6	1.0	1.5	2.1	2.8	na	4.9	3.4	3.8	91.3	2.3	1.6	2.0	
BNP Paribas Americas	0.4 L	na	0.7 L	na	na	na	na	0.8 L	1.2 L	1.6 L	na	na	na	na	na	na	1.5 L	na	2.2	
Georgia State University	0.4 L	3.5 L	na	na	0.3 L	0.3 L	0.5 L	0.8 L	1.5	2.3	3.0	4.3	5.5	na	4.1	na	2.4	2.1	2.4	
<b>June Consensus</b>	<b>0.7</b>	<b>3.8</b>	<b>1.0</b>	<b>0.8</b>	<b>0.7</b>	<b>0.8</b>	<b>1.0</b>	<b>1.2</b>	<b>1.7</b>	<b>2.2</b>	<b>3.0</b>	<b>4.1</b>	<b>5.2</b>	<b>3.6</b>	<b>4.0</b>	<b>92.1</b>	<b>2.4</b>	<b>1.9</b>	<b>2.3</b>	
Top 10 Avg.	0.9	4.0	1.2	0.9	0.9	1.0	1.2	1.5	2.0	2.6	3.3	4.4	5.6	3.9	4.3	93.9	2.9	2.4	3.1	
Bottom 10 Avg.	0.5	3.6	0.8	0.7	0.5	0.6	0.8	0.9	1.4	1.9	2.7	3.8	4.9	3.4	3.7	90.4	2.0	1.3	1.7	
May Consensus	0.8	3.8	1.0	0.8	0.7	0.8	1.0	1.3	1.8	2.3	3.1	4.1	5.3	3.7	4.1	91.9	2.4	1.9	2.3	
<u>Number of Forecasts Changed From A Month Ago:</u>																				
Down	11	10	15	10	16	13	12	23	27	28	24	18	16	9	25	10	11	14	8	
Same	29	21	14	13	17	14	15	16	13	13	14	6	6	7	9	6	29	24	24	
Up	7	8	11	5	9	9	9	7	5	6	5	6	3	3	4	9	7	7	15	
Diffusion Index	46 %	47 %	45 %	41 %	42 %	44 %	46 %	33 %	26 %	27 %	28 %	30 %	24 %	34 %	22 %	48 %	46 %	42 %	57 %	



## First Quarter 2017 Interest Rate Forecasts

### Key Assumptions

Blue Chip Financial Forecasts Panel Members	-----Percent Per Annum-- Average For Quarter-----															Avg. For	----- (Q-Q % Change) -----		
	Short-Term					Intermediate-Term					Long-Term					---Qtr---	----- (SAAR) -----		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	A.	B.	C.	D.
	Federal Funds Rate	Prime Bank Rate	LIBOR Rate 3-Mo.	Com. Paper 1-Mo.	Treas. Bills 3-Mo.	Treas. Bills 6-Mo.	Treas. Bills 1-Yr.	Treas. Notes 2-Yr.	Treas. Notes 5-Yr.	Treas. Notes 10-Yr.	Treas. Bond 30-Yr.	Aaa Corp. Bond	Baa Corp. Bond	State & Local Bonds	Home Mtg. Rate	Fed's Major Currency \$ Index	Real GDP	Price Index	Cons. Price Index
RDQ Economics	1.4 H	4.4 H	1.7 H	1.5 H	1.5 H	1.7 H	1.9 H	2.0 H	2.5	2.9	3.4	4.4	5.5	4.1	4.5	97.1	1.9	2.2	2.5
Moody's Analytics	1.3	4.4 H	1.6	1.2	0.8	0.9	1.4	1.7	2.6 H	3.2 H	3.9	4.9	6.4 H	3.9	4.7	na	3.2	1.8	2.8
Scotiabank Group	1.3	4.3	na	na	1.3	na	na	2.0 H	2.3	2.6	3.4	na	na	na	na	na	2.3	2.0	2.5
Naroff Economic Advisors	1.3	4.3	1.6	1.3	1.4	1.5	1.7	2.0 H	2.5	3.2 H	3.7	4.4	5.5	4.1	4.7	90.0	2.2	2.4	2.9
DePrince & Associates	1.2	4.2	1.5	1.3	1.1	1.3	1.5	1.8	2.1	2.7	3.2	4.5	5.4	4.2	4.5	90.0	2.7	2.3	2.6
MUFG Union Bank	1.2	4.3	1.4	1.2	1.1	1.3	1.5	1.9	2.2	2.7	3.2	4.3	5.4	3.7	4.5	92.0	2.5	0.7 L	2.6
J.P. Morgan Chase	1.1	na	1.3	na	na	na	na	1.3	1.7	2.0	2.7	na	na	na	na	na	2.0	2.0	2.4
Chase Wealth Management	1.1	4.1	1.5	1.2	1.1	1.2	1.4	1.7	2.2	2.7	3.6	4.6	5.8	4.2	4.3	91.5	1.5	2.1	2.2
Economist Intelligence Unit	1.1	4.1	1.2	1.0	0.9	1.0	1.2	1.5	1.9	2.5	3.2	na	na	na	4.2	na	2.2	na	2.2
SunTrust Banks	1.1	4.1	1.6	1.2	0.9	1.0	1.1	1.2	1.7	2.0	2.9	4.9	6.4 H	3.9	4.7	na	3.3 H	1.8	2.0
GLC Financial Economics	1.1	4.1	1.3	1.1	1.0	1.1	1.1	1.4	2.1	2.7	3.4	4.8	6.1	4.2	4.2	90.9	2.9	2.4	3.0
UBS AG	1.0	na	1.6	na	1.2	na	na	na	na	2.1	na	na	na	na	na	na	3.0	2.3	1.5
Swiss Re	1.0	4.0	1.2	1.0	0.9	1.0	1.3	1.6	1.8	2.3	3.3	4.2	5.2	na	4.1	na	2.3	1.8	1.8
MacroFin Analytics	1.0	4.2	1.3	1.1	0.9	1.1	1.2	1.5	2.0	2.5	3.3	4.3	5.4	3.9	4.3	93.4	2.2	1.9	2.0
Regions Financial Corporation	1.0	4.0	1.2	1.1	0.8	1.0	1.1	1.4	1.8	2.3	3.1	4.0	5.0	na	4.0	92.4	2.2	1.8	2.1
Daiwa Capital Markets America	1.0	4.2	1.3	1.1	1.0	1.1	1.3	1.4	1.8	2.2	3.0	3.9	5.0	3.6	4.0	92.0	2.5	1.9	2.2
Cycledata Corp.	1.0	4.3	1.2	1.0	0.9	1.0	1.2	1.5	2.0	2.5	3.2	4.3	5.5	3.8	4.0	92.0	2.0	2.1	2.4
High Frequency Economics	1.0	4.1	na	na	1.0	1.1	1.3	1.5	2.0	2.5	3.2	na	na	na	na	na	2.3	2.6 H	2.6
DS Economics	1.0	4.0	1.1	1.0	0.8	1.1	1.4	1.6	2.2	2.7	3.4	4.0	5.0	3.8	4.3	98.0 H	2.0	2.3	2.3
Standard & Poor's Corp.	1.0	3.9	1.1	na	0.7	0.8	1.1	1.4	1.9	2.5	3.2	3.9	5.3	na	4.4	94.8	1.5	2.0	1.4
Chmura Economics & Analytics	1.0	4.0	1.2	1.0	0.8	1.0	1.3	1.5	2.4	2.8	3.6	4.6	na	na	4.5	89.4	2.7	1.8	1.9
The Northern Trust Company	0.9	4.1	1.1	0.9	0.8	1.0	1.1	1.5	2.1	2.5	3.3	4.0	5.1	3.8	4.1	na	2.3	2.0	2.1
Amherst Pierpont Securities	0.9	4.1	1.4	1.0	1.0	1.3	1.6	1.8	2.4	3.0	4.0 H	5.1 H	6.2	4.4 H	4.8 H	95.0	2.3	2.3	3.1 H
Oxford Economics	0.9	3.9	na	na	0.9	1.0	1.2	1.5	1.9	2.4	3.1	na	na	na	4.3	92.8	2.2	2.0	2.4
Moody's Capital Markets Group	0.9	3.9	1.2	1.0	1.0	1.1	1.1	1.2	1.8	2.2	2.8	3.9	4.8	3.6	3.9	92.0	2.7	1.8	1.8
Woodworth Holdings	0.9	4.0	1.0	0.9	0.9	1.0	1.2	1.4	2.0	2.5	3.2	4.3	5.4	3.8	4.2	91.0	2.5	1.0	1.2 L
Natl Assn. of Realtors	0.9	4.0	1.1	1.0	1.0	1.2	1.3	1.5	2.1	2.5	3.1	4.2	5.3	3.9	4.2	na	2.1	2.0	2.1
Wells Fargo	0.9	3.9	1.1	1.0	0.8	0.9	1.0	1.3	1.7	2.1	2.8	3.9	5.0	3.5	3.9	91.8	2.2	2.0	2.1
AIG	0.9	na	na	na	1.0	na	na	1.8	na	2.6	na	na	5.9	na	4.1	na	2.1	2.0	2.2
Nomura Securities, Inc.	0.9	3.9	1.2	na	na	na	na	1.3	1.8	2.3	2.7	4.2	5.2	na	4.1	na	2.1	1.6	2.0
Action Economics	0.9	4.0	1.0	0.9	0.8	0.9	1.1	1.3	1.9	2.4	3.1	4.0	5.2	3.5	4.0	na	2.0	1.8	2.1
Goldman Sachs	0.9	na	1.1	na	0.8	na	na	1.2	1.7	2.5	2.9	na	na	na	4.7	na	2.0	2.1	2.6
BMO Capital Markets	0.9	4.0	1.1	na	0.8	0.9	1.1	1.3	1.7	2.2	2.9	na	na	na	3.9	94.5	2.0	2.3	2.6
Barclays Capital	0.9	4.0	1.2	na	na	na	na	1.4	1.7	2.0	na	na	na	na	na	na	2.5	2.2	2.0
RBC	0.9	na	na	na	0.8	na	na	1.3	1.9	2.6	3.3	na	na	na	na	na	2.7	1.2	2.1
RidgeWorth Investments	0.9	4.0	1.2	0.9	0.7	0.9	1.1	1.3	1.9	2.6	3.4	4.4	5.6	4.3	4.4	93.0	2.5	2.0	2.2
Stone Harbor Investment Partners	0.9	4.0	1.1	0.9	0.8	1.0	1.2	1.4	2.0	2.3	3.0	3.9	4.9	na	3.8	93.0	2.4	1.8	2.3
Societe Generale	0.8	3.8	1.1	na	na	na	na	1.2	1.8	2.2	3.1	na	na	na	na	na	2.3	2.2	2.7
Wells Capital Management	0.7	3.8	1.0	0.8	0.7	0.9	1.3	1.4	1.7	2.2	3.2	4.4	5.4	4.2	4.0	91.2	2.6	2.0	1.9
RBS Securities	0.7	3.8	1.1	0.7	0.7	0.9	1.1	1.5	1.9	2.4	3.0	4.2	5.4	3.7	4.2	93.0	2.5	1.7	2.2
Fannie Mae	0.7	3.8	na	na	1.0	1.0	1.1	1.2	1.6	2.0	2.7	na	na	na	3.8	na	1.9	2.1	2.3
Comerica Bank	0.6	na	0.9	na	0.5	0.6	0.8	1.0	1.5	1.9	2.8	na	na	na	3.8	na	2.4	1.8	2.0
Loomis, Sayles & Company	0.6	3.7	0.8 L	0.6 L	0.5	0.6	0.8	1.1	1.4	1.8	2.5 L	3.5 L	4.7 L	2.9 L	3.4 L	88.3 L	2.0	2.5	2.8
PNC Financial Services Corp.	0.6	3.8	0.9	na	0.6	0.6	0.8	1.1	1.7	2.2	2.9	na	5.0	3.5	3.9	91.6	2.2	1.9	2.2
Georgia State University	0.4 L	3.5 L	na	na	0.4 L	0.5 L	0.4 L	0.8 L	1.6	2.4	3.0	4.3	5.5	na	4.3	na	3.1	0.9	2.5
BNP Paribas Americas	0.4 L	na	0.9	na	na	na	na	1.0	1.3 L	1.6 L	na	na	na	na	na	na	1.4 L	na	1.7
<b>June Consensus</b>	<b>0.9</b>	<b>4.0</b>	<b>1.2</b>	<b>1.0</b>	<b>0.9</b>	<b>1.0</b>	<b>1.2</b>	<b>1.4</b>	<b>1.9</b>	<b>2.4</b>	<b>3.2</b>	<b>4.3</b>	<b>5.4</b>	<b>3.8</b>	<b>4.2</b>	<b>92.4</b>	<b>2.3</b>	<b>1.9</b>	<b>2.2</b>
Top 10 Avg.	1.2	4.2	1.5	1.2	1.2	1.3	1.5	1.8	2.3	2.9	3.6	4.6	5.9	4.1	4.6	94.5	2.9	2.4	2.8
Bottom 10 Avg.	0.6	3.8	1.0	0.9	0.6	0.7	0.9	1.1	1.6	2.0	2.8	3.9	5.0	3.5	3.8	90.6	1.8	1.4	1.7
May Consensus	1.0	4.1	1.3	1.1	1.0	1.1	1.3	1.5	2.0	2.5	3.2	4.3	5.5	3.9	4.3	92.1	2.3	2.0	2.3
<u>Number of Forecasts Changed From A Month Ago:</u>																			
Down	13	13	18	12	16	16	16	22	24	27	24	19	21	11	24	10	11	10	10
Same	27	22	14	11	18	12	14	19	17	15	13	6	5	7	10	7	28	26	27
Up	7	4	8	4	8	8	6	5	4	5	6	4	4	4	4	9	8	9	10
Diffusion Index	44 %	38 %	38 %	35 %	40 %	39 %	36 %	32 %	28 %	27 %	29 %	24 %	22 %	34 %	24 %	48 %	47 %	49 %	50 %

# Second Quarter 2017

## Interest Rate Forecasts

## Key Assumptions

Blue Chip Financial Forecasts Panel Members	-----Percent Per Annum -- Average For Quarter-----															Avg. For ---Qtr.---	----- (Q-Q % Change) -----			
	Short-Term					Intermediate-Term					Long-Term						A. Fed's Major Currency \$ Index	----- (SAAR) -----		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			B.	C.	D.
	Federal Funds Rate	Prime Bank Rate	LIBOR Rate 3-Mo.	Com. Paper 1-Mo.	Treas. Bills 3-Mo.	Treas. Bills 6-Mo.	Treas. Bills 1-Yr.	Treas. Notes 2-Yr.	Treas. Notes 5-Yr.	Treas. Notes 10-Yr.	Treas. Bond 30-Yr.	Aaa Corp. Bond	Baa Corp. Bond	State & Local Bonds	Home Mtg. Rate			Real GDP	Price Index	Cons. Price Index
Moody's Analytics	1.7 H	4.9 H	2.0 H	1.6	1.2	1.3	1.9	2.0	2.9	3.6 H	4.2 H	5.1	6.7 H	4.1	5.1	na	3.1 H	2.1	2.9	
RDQ Economics	1.7 H	4.7	2.0 H	1.8 H	1.8 H	2.0 H	2.2 H	2.3	2.8	3.2	3.6	4.7	5.7	4.3	4.8	98.2 H	1.9	2.3	2.7	
Scotiabank Group	1.5	4.5	na	na	1.6	na	na	2.3	2.6	2.8	3.5	na	na	na	na	na	2.4	2.0	2.3	
Naroff Economic Advisors	1.5	4.5	1.9	1.6	1.7	1.9	2.2 H	2.5 H	3.0 H	3.6 H	4.1	4.7	5.7	4.1	5.2 H	88.5	2.6	2.6	3.1	
DePrince & Assoc.	1.4	4.4	1.8	1.6	1.4	1.5	1.8	2.2	2.5	3.0	3.5	4.8	5.7	4.5	4.8	90.5	2.8	2.3	2.5	
MUFG Union Bank	1.4	4.5	1.6	1.5	1.4	1.6	1.8	2.1	2.4	2.8	3.3	4.5	5.7	3.8	4.6	90.0	2.5	2.5	3.8	
J.P. Morgan Chase	1.4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	2.0	2.0	2.4	
Economist Intelligence Unit	1.4	4.4	1.5	1.3	1.2	1.3	1.4	1.8	2.2	2.7	3.5	na	na	na	4.4	na	2.8	na	2.3	
GLC Financial Economics	1.3	4.3	1.6	1.4	1.3	1.3	1.4	1.6	2.4	3.0	3.7	5.0	6.2	4.4	4.8	91.0	2.9	2.8	3.0	
Amherst Pierpont Securities	1.3	4.5	1.8	1.4	1.4	1.7	2.1	2.2	2.8	3.3	3.4	5.4 H	6.5	4.6	5.1	96.0	2.6	2.2	3.2	
Cycledata Corp.	1.3	4.5	1.5	1.3	1.2	1.3	1.4	1.6	2.1	2.6	3.3	4.4	5.6	3.9	4.0	92.0	2.0	2.1	2.4	
Chmura Economics & Analytics	1.3	4.3	1.5	1.3	1.1	1.4	1.6	1.9	2.7	3.3	4.0	4.9	na	na	4.9	87.6 L	2.4	1.9	1.9	
MacroFin Analytics	1.3	4.4	1.6	1.3	1.2	1.3	1.5	1.7	2.3	2.8	3.6	4.6	5.7	4.2	4.5	94.0	2.3	2.0	2.0	
UBS AG	1.3	na	1.9	na	1.5	na	na	na	na	2.2	na	na	na	na	na	na	3.0	2.3	2.0	
Daiwa Capital Markets America	1.3	4.4	1.6	1.3	1.2	1.4	1.5	1.7	2.0	2.3	3.1	4.0	5.0	3.8	4.2	92.0	2.2	1.9	2.2	
High Frequency Economics	1.3	4.4	na	na	1.2	1.4	1.5	1.6	2.1	2.6	3.3	na	na	na	na	na	2.3	2.7	2.7	
Swiss Re	1.3	4.3	1.5	1.2	1.1	1.2	1.5	1.8	2.0	2.5	3.5	4.3	5.3	na	4.3	na	2.0	3.2	4.2 H	
Standard & Poor's Corp.	1.2	4.0	1.3	na	0.9	1.1	1.3	1.6	2.1	2.7	3.4	4.1	5.3	na	4.7	94.3	2.5	2.4	2.8	
Natl Assn. of Realtors	1.2	4.3	1.4	1.3	1.3	1.4	1.6	1.8	2.3	2.7	3.3	4.4	5.5	4.0	4.4	na	2.1	2.0	2.1	
Chase Wealth Management	1.2	4.2	1.5	1.2	1.1	1.2	1.4	1.7	2.2	2.7	3.6	4.6	5.8	4.2	4.3	91.4	2.2	2.0	2.3	
The Northern Trust Company	1.2	4.3	1.3	1.2	1.0	1.2	1.4	1.7	2.4	2.8	3.6	4.3	5.4	4.1	4.4	na	2.2	2.0	2.1	
SunTrust Banks	1.2	4.2	2.0	1.6	1.0	1.1	1.2	1.3	1.7	2.1	2.9	5.1	6.7 H	3.9	5.1	na	3.0	1.9	2.2	
Woodworth Holdings	1.2	4.3	1.3	1.1	1.1	1.2	1.4	1.6	2.2	2.8	3.5	4.6	5.7	4.1	4.5	91.5	2.5	1.2 L	1.3 L	
DS Economics	1.2	4.2	1.2	1.1	1.0	1.3	1.7	1.9	2.4	2.9	3.6	3.9	5.0	3.9	4.4	96.0	2.3	2.1	1.8	
AIG	1.2	na	na	na	1.3	na	na	2.1	na	2.8	na	na	6.0	na	4.3	na	2.1	2.0	2.2	
Oxford Economics	1.1	4.0	na	na	1.1	1.3	1.4	1.6	2.0	2.5	3.1	na	na	na	4.4	93.3	2.2	2.5	2.3	
Moody's Capital Markets Group	1.1	4.1	1.4	1.2	1.1	1.2	1.2	1.2	1.7	2.1	2.7	3.8	4.8	3.6	3.9	92.3	2.1	2.0	1.7	
RBC	1.1	na	na	na	1.0	na	na	1.5	2.2	2.9	3.6	na	na	na	na	na	2.7	3.6 H	2.1	
RidgeWorth Investments	1.1	4.3	1.5	1.2	1.0	1.1	1.3	1.5	2.2	3.0	3.8	4.7	5.9	4.8 H	4.8	92.0	2.5	2.2	2.2	
Stone Harbor Investment Partners	1.1	4.3	1.3	1.1	1.1	1.3	1.4	1.5	2.2	2.5	3.2	4.0	5.0	na	3.9	92.0	2.7	1.8	2.5	
Regions Financial Corporation	1.0	4.0	1.3	1.1	1.0	1.1	1.2	1.5	1.9	2.4	3.3	4.1	5.1	na	4.1	91.6	2.1	1.8	2.1	
Societe Generale	1.0	4.0	1.3	na	na	na	na	1.3	1.9	2.4	3.1	na	na	na	na	na	2.3	2.1	2.1	
Goldman Sachs & Co.	1.0	na	1.3	na	0.9	na	na	1.4	2.0	2.6	2.9	na	na	na	4.8	na	2.0	2.0	2.3	
Action Economics	1.0	4.1	1.1	1.0	1.0	1.1	1.2	1.5	2.0	2.5	3.2	4.1	5.4	3.6	4.1	na	2.3	2.6	2.1	
BMO Capital Markets	1.0	4.1	1.2	na	0.9	1.0	1.2	1.4	1.8	2.3	3.0	na	na	na	4.0	93.7	2.4	2.0	2.3	
RBS Securities	0.9	4.1	1.3	1.0	1.0	1.1	1.3	1.8	2.1	2.5	3.2	4.2	5.4	3.9	4.3	94.0	2.7	1.9	2.9	
Wells Fargo	0.9	3.9	1.1	1.0	0.9	1.0	1.1	1.5	1.8	2.2	2.9	4.0	5.1	3.6	4.0	93.3	2.0	2.1	2.2	
Fannie Mae	0.9	4.0	na	na	1.0	1.1	1.1	1.2	1.7	2.0	2.8	na	na	na	3.8	na	1.7	1.9	1.8	
Nomura Securities, Inc.	0.9	3.9	1.2	na	na	na	na	1.3	1.8	2.3	2.7	4.2	5.3	na	4.2	na	2.0	1.6	2.1	
Barclays Capital	0.9	4.0	na	na	na	na	na	na	na	na	na	na	na	na	na	na	2.5	2.2	3.1	
Wells Capital Management	0.9	4.0	1.1	1.0	0.9	1.0	1.4	1.6	1.8	2.4	3.3	4.5	5.5	4.5	4.1	91.4	2.8	2.2	2.0	
Loomis, Sayles & Company	0.7	3.7	0.9 L	0.7 L	0.6	0.7	0.9	1.3	1.5	1.8	2.5 L	3.4 L	4.6 L	2.8 L	3.4 L	88.3	2.0	2.4	2.8	
Comerica Bank	0.7	na	0.9 L	na	0.5 L	0.7	0.8	1.1	1.5	2.0	2.8	na	na	na	3.8	na	2.5	1.8	2.0	
PNC Financial Services Corp.	0.7	3.8	1.0	na	0.7	0.7	0.9	1.2	1.7	2.3	2.9	na	5.0	3.4	3.9	91.8	2.2	2.0	2.3	
Georgia State University	0.6	3.6 L	na	na	0.6	0.6 L	0.6 L	0.9 L	1.7	2.5	3.1	4.4	5.5	na	4.3	na	2.9	2.1	2.9	
BNP Paribas Americas	0.4 L	na	1.0	na	na	na	na	1.0	1.3 L	1.7 L	na	na	na	na	na	na	1.5 L	na	1.8	
<b>June Consensus</b>	<b>1.1</b>	<b>4.2</b>	<b>1.4</b>	<b>1.3</b>	<b>1.1</b>	<b>1.2</b>	<b>1.4</b>	<b>1.6</b>	<b>2.1</b>	<b>2.6</b>	<b>3.3</b>	<b>4.4</b>	<b>5.5</b>	<b>4.0</b>	<b>4.4</b>	<b>92.3</b>	<b>2.4</b>	<b>2.2</b>	<b>2.4</b>	
Top 10 Avg.	1.5	4.5	1.8	1.5	1.5	1.6	1.8	2.1	2.6	3.2	3.8	4.9	6.1	4.4	4.9	94.5	2.9	2.7	3.2	
Bottom 10 Avg.	0.7	3.9	1.1	1.0	0.8	0.9	1.0	1.2	1.6	2.0	2.8	4.0	5.0	3.6	3.9	90.2	1.9	1.8	1.8	
May Consensus	1.2	4.3	1.5	1.3	1.2	1.3	1.5	1.7	2.2	2.7	3.4	4.5	5.6	4.1	4.5	92.0	2.4	2.1	2.4	
<b>Number of Forecasts Changed From A Month Ago:</b>																				
Down	16	16	17	14	19	20	21	25	24	23	22	16	20	12	22	10	14	10	13	
Same	26	19	12	12	15	11	12	14	16	15	11	6	7	8	12	9	24	23	25	
Up	5	4	8	2	7	5	3	4	2	6	8	8	4	3	4	7	9	12	9	
Diffusion Index	38 %	35 %	38 %	29 %	35 %	29 %	25 %	26 %	24 %	31 %	33 %	37 %	24 %	30 %	26 %	44 %	45 %	52 %	46 %	

## Third Quarter 2017 Interest Rate Forecasts

## Key Assumptions

Blue Chip Financial Forecasts Panel Members	-----Percent Per Annum -- Average For Quarter-----															Avg. For ---Qtr.---	------(Q-Q % Change)-----			
	-----Short-Term-----					-----Intermediate-Term-----					-----Long-Term-----						Fed's Major Currency \$ Index	B. Real GDP	C. Price Index	D. Cons. Price Index
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15					
	Federal Funds Rate	Prime Bank Rate	LIBOR Rate 3-Mo.	Com. Paper 1-Mo.	Treas. Bills 3-Mo.	Treas. Bills 6-Mo.	Treas. Bills 1-Yr.	Treas. Notes 2-Yr.	Treas. Notes 5-Yr.	Treas. Notes 10-Yr.	Treas. Bonds 30-Yr.	Aaa Corp. Bond	Baa Corp. Bond	State & Local Bonds	Home Mtg. Rate					
Moody's Analytics	2.2 H	5.3 H	2.4 H	2.1	1.6	1.7	2.3	2.4	3.1	3.7	4.4	5.3	6.9 H	4.2	5.3	na	3.0	2.3	2.6	
RDQ	2.1	5.1	2.4 H	2.2 H	2.2 H	2.4	2.6	2.7	3.1	3.5	3.9	5.0	6.0	4.7	5.1	99.4 H	1.7	2.3	2.7	
Naroff Economic Advisors	2.0	5.0	2.4 H	2.1	2.2 H	2.5 H	2.7 H	3.0 H	3.6 H	4.3 H	4.7 H	5.2	6.1	4.3	5.9 H	86.5	1.8	2.8 H	2.8	
Scotiabank Group	1.8	4.8	na	na	1.8	na	na	2.5	2.8	3.0	3.6	na	na	na	na	na	2.2	2.0	2.3	
MacroFin Analytics	1.7	4.8	2.0	1.7	1.6	1.7	1.9	2.1	2.7	3.2	4.0	5.0	6.1	4.6	4.9	94.5	2.2	2.0	2.1	
Amherst Pierpont Securities	1.7	4.8	2.1	1.7	1.7	2.0	2.3	2.5	3.0	3.5	4.4	5.5 H	6.7	4.7	5.2	97.0	2.7	2.3	3.4 H	
J.P. Morgan Chase	1.6	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	1.5 L	2.0	2.5	
DePrince & Assoc.	1.6	4.6	2.1	1.9	1.7	1.8	2.1	2.5	2.8	3.3	3.6	5.1	6.0	4.7	5.1	91.0	2.7	2.3	2.6	
Economist Intelligence Unit	1.6	4.6	1.8	1.5	1.5	1.6	1.7	2.0	2.4	2.9	3.7	na	na	na	4.6	na	2.8	na	2.2	
MJFG Union Bank	1.6	4.8	1.9	1.7	1.6	1.9	2.1	2.3	2.5	2.9	3.3	4.7	5.9	4.0	4.7	89.0	2.3	1.8	2.3	
GLC Financial Economics	1.6	4.6	1.8	1.6	1.5	1.6	1.6	1.9	2.7	3.3	4.0	5.3	6.5	4.7	5.6	91.6	3.0	2.6	2.8	
RidgeWorth Investments	1.5	4.6	1.9	1.6	1.4	1.5	1.7	1.9	2.7	3.5	4.3	5.1	6.3	5.2 H	5.2	91.0	2.5	2.2	2.2	
UBS AG	1.5	na	2.1	na	1.8	na	na	na	na	2.2	na	na	na	na	na	na	2.6	2.3	2.2	
Chmura Economics & Analytics	1.5	4.5	1.8	1.5	1.3	1.6	1.9	2.2	3.0	3.5	4.3	5.1	na	na	5.1	85.9 L	3.1	2.2	2.3	
Swiss Re	1.5	4.5	1.7	1.4	1.3	1.4	1.6	1.9	2.2	2.7	3.6	4.5	5.5	na	4.6	na	1.9	1.4 L	2.4	
High Frequency Economics	1.5	4.6	na	na	1.5	1.6	1.6	1.5	2.1	2.7	3.4	na	na	na	na	na	2.3	2.8 H	2.8	
Standard & Poor's Corp.	1.5	4.1	1.6	na	1.2	1.4	1.6	1.8	2.3	2.8	3.5	4.3	5.5	na	4.8	93.8	3.1	2.4	2.0	
The Northern Trust Company	1.4	4.6	1.6	1.4	1.3	1.4	1.6	2.0	2.6	3.1	3.9	4.6	5.7	4.4	4.7	na	2.2	2.1	2.2	
DS Economics	1.4	4.4	1.5	1.4	1.2	1.5	1.9	2.1	2.7	3.0	3.7	4.0	5.1	4.1	4.6	94.0	2.1	2.3	2.0	
Nat'l Assn. of Realtors	1.4	4.5	1.6	1.5	1.5	1.7	1.9	2.1	2.6	2.9	3.5	4.6	5.7	4.2	4.6	na	2.0	2.0	2.1	
Chase Wealth Management	1.4	4.4	1.7	1.4	1.3	1.4	1.6	1.9	2.4	2.9	3.8	4.8	6.0	4.4	4.5	91.2	2.3	2.1	2.2	
AIG	1.4	na	na	na	1.5	na	na	2.4	na	2.9	na	na	6.0	na	4.4	na	2.3	2.1	2.2	
Daiwa Capital Markets America	1.4	4.5	1.7	1.4	1.3	1.5	1.6	1.9	2.2	2.4	3.1	4.0	5.0	3.8	4.2	92.0	2.3	2.0	2.3	
RBC	1.4	na	na	na	1.3	na	na	1.8	2.5	3.1	3.7	na	na	na	na	na	2.7	1.9	1.9	
Stone Harbor Investment Partners	1.4	4.5	1.5	1.4	1.3	1.4	1.6	1.7	2.3	2.6	3.3	4.2	5.2	na	4.1	94.0	2.0	2.0	2.3	
Cycledata Corp.	1.3	4.5	1.5	1.3	1.2	1.3	1.4	1.6	2.1	2.6	3.3	4.4	5.6	3.9	4.0	92.0	1.9	2.1	2.4	
Regions Financial Corporation	1.3	4.3	1.5	1.4	1.2	1.3	1.4	1.7	2.1	2.6	3.4	4.1	5.2	na	4.2	91.3	2.0	1.7	2.3	
SunTrust Banks	1.3	4.3	2.4 H	2.1	1.1	1.2	1.3	1.4	1.8	2.1	2.9	5.3	6.9 H	3.9	5.3	na	3.2 H	2.1	2.5	
Societe Generale	1.3	4.3	1.6	na	na	na	na	1.4	1.9	2.5	3.2	na	na	na	na	na	2.3	2.2	2.6	
Goldman Sachs & Co.	1.3	na	1.5	na	1.2	na	na	1.7	2.2	2.7	2.9	na	na	na	4.9	na	2.0	1.9	2.3	
Wells Fargo	1.2	4.2	1.4	1.3	1.2	1.3	1.4	1.7	1.9	2.3	2.9	4.1	5.2	3.7	4.1	94.5	2.2	2.1	2.3	
RBS Securities	1.2	4.3	1.6	1.2	1.2	1.4	1.5	1.9	2.2	2.7	3.2	4.4	5.6	3.9	4.4	95.0	2.7	1.7	2.4	
Oxford Economics	1.2	4.0	na	na	1.1	1.3	1.4	1.6	2.1	2.6	3.3	na	na	na	4.5	93.9	2.5	2.5	1.8	
Woodworth Holdings	1.2	4.3	1.3	1.1	1.1	1.2	1.4	1.6	2.2	2.8	3.5	4.6	5.7	4.1	4.5	92.0	2.5	1.4 L	1.5	
Nomura Securities, Inc.	1.1	4.1	1.4	na	na	na	na	1.0 L	1.5	2.0	2.4 L	4.0	5.0	na	4.0	na	1.9	1.6	2.1	
Action Economics	1.1	4.3	1.3	1.2	1.1	1.2	1.4	1.6	2.1	2.5	3.3	4.2	5.5	3.6	4.2	na	2.3	1.7	2.2	
BMO Capital Markets	1.1	4.3	1.4	na	1.0	1.1	1.3	1.6	1.9	2.3	3.0	na	na	na	4.1	93.0	2.1	2.0	2.2	
Moody's Capital Markets Group	1.1	4.1	1.4	1.1	1.1	1.2	1.1	1.1	1.6	2.0	2.5	3.7	5.0	3.4	3.8	92.2	1.8	2.0	1.4 L	
Barclays Capital	1.1	4.3	na	na	na	na	na	na	na	na	na	na	na	na	na	na	2.5	2.3	2.3	
Wells Capital Management	1.0	4.1	1.2	1.1	1.0	1.1	1.4	1.6	1.8	2.4	3.4	4.6	5.7	4.6	4.1	91.5	2.5	2.2	2.1	
Comerica Bank	0.9	na	1.2	na	0.8	0.9	1.1	1.3	1.7	2.2	3.1	na	na	na	4.0	na	2.4	1.8	2.0	
Fannie Mae	0.9	4.0	na	na	1.1	1.1	1.2	1.3	1.8	2.1	2.8	na	na	na	3.8	na	1.8	2.0	2.0	
Loomis, Sayles & Company	0.9	3.9	1.0 L	0.9 L	0.8	0.9	1.0	1.3	1.5	1.8	2.5	3.4 L	4.5 L	2.7 L	3.4 L	88.3	1.9	2.1	2.2	
PNC Financial Services Corp.	0.9	4.0	1.2	na	0.9	0.9	1.0	1.4	1.8	2.3	2.9	na	5.1	3.3	4.0	92.0	2.2	2.0	2.3	
Georgia State University	0.7	3.7 L	na	na	0.7 L	0.7 L	0.7 L	1.1	1.8	2.6	3.2	4.5	5.6	na	4.4	na	2.5	2.1	3.3	
BNP Paribas Americas	0.4 L	na	1.0 L	na	na	na	na	1.1	1.4 L	1.7 L	na	na	na	na	na	na	1.6	na	2.3	
<b>June Consensus</b>	<b>1.3</b>	<b>4.4</b>	<b>1.7</b>	<b>1.5</b>	<b>1.3</b>	<b>1.4</b>	<b>1.6</b>	<b>1.8</b>	<b>2.3</b>	<b>2.7</b>	<b>3.4</b>	<b>4.6</b>	<b>5.7</b>	<b>4.1</b>	<b>4.5</b>	<b>92.3</b>	<b>2.3</b>	<b>2.1</b>	<b>2.3</b>	
Top 10 Avg.	1.8	4.8	2.2	1.9	1.8	1.9	2.2	2.5	2.9	3.5	4.1	5.2	6.3	4.6	5.3	94.9	2.9	2.5	2.8	
Bottom 10 Avg.	0.9	4.0	1.2	1.2	1.0	1.0	1.1	1.2	1.7	2.1	2.8	4.0	5.1	3.6	3.9	89.7	1.8	1.7	1.9	
May Consensus	1.5	4.5	1.8	1.6	1.4	1.6	1.7	1.9	2.4	2.8	3.5	4.6	5.8	4.2	4.7	91.9	2.3	2.0	2.3	
<b>Number of Forecasts Changed From A Month Ago:</b>																				
Down	19	21	22	15	21	20	21	26	25	23	23	16	20	10	24	10	6	5	9	
Same	24	17	9	12	14	9	10	14	15	17	11	7	6	7	12	7	34	27	29	
Up	3	1	6	1	6	7	5	3	2	4	7	7	5	4	2	8	6	12	8	
Diffusion Index	33 %	24 %	28 %	25 %	32 %	32 %	28 %	23 %	23 %	28 %	30 %	35 %	26 %	36 %	21 %	46 %	50 %	58 %	49 %	

International Interest Rate And Foreign Exchange Rate Forecasts

Blue Chip Forecasters	3 Mo. Interest Rate %		
	In 3 Mo.	In 6 Mo.	In 12 Mo.
Barclays	na	na	na
BMO Capital Markets	0.90	0.90	1.10
BNP Paribas Americas	na	na	na
ING Financial Markets	0.90	0.85	1.05
Mizuho Research Institute	0.65	0.65	0.85
Moody's Analytics	0.92	1.07	1.97
Moody's Capital Markets	na	na	na
Nomura Securities	na	na	na
Oxford Economics	na	na	na
Scotiabank	na	na	na
UBS AG	na	na	na
Wells Fargo	0.95	1.20	1.45
<b>June Consensus</b>	<b>0.86</b>	<b>0.93</b>	<b>1.28</b>
High	0.95	1.20	1.97
Low	0.65	0.65	0.85
Last Months Avg.	0.79	0.83	1.16

United States			
10 Yr. Gov't Bond Yield %			
In 3 Mo.	In 6 Mo.	In 12 Mo.	
2.00	2.00	na	
1.95	2.05	2.25	
na	na	na	
2.00	2.10	2.30	
1.80	1.85	2.00	
2.49	2.79	3.55	
2.00	2.10	2.10	
2.00	2.00	2.25	
2.12	2.24	2.46	
2.15	2.25	2.80	
1.96	2.00	2.15	
1.95	2.02	2.22	
<b>2.04</b>	<b>2.13</b>	<b>2.43</b>	
2.49	2.79	3.55	
1.80	1.85	2.00	
2.01	2.13	2.38	

Fed's Major Currency \$ Index			
In 3 Mo.	In 6 Mo.	In 12 Mo.	
na	na	na	
94.9	96.5	96.0	
na	na	na	
88.9	87.5	85.0	
92.0	89.0	91.0	
na	na	na	
91.0	91.5	92.3	
na	na	na	
91.3	92.2	93.3	
na	na	na	
na	na	na	
88.3	90.0	93.3	
<b>91.1</b>	<b>91.1</b>	<b>91.8</b>	
94.9	96.5	96.0	
88.3	87.5	85.0	
92.4	92.4	92.5	

Blue Chip Forecasters	3 Mo. Interest Rate %		
	In 3 Mo.	In 6 Mo.	In 12 Mo.
Barclays	na	na	na
BMO Capital Markets	0.00	0.00	0.00
BNP Paribas Americas	na	na	na
ING Financial Markets	0.04	0.02	0.05
Mizuho Research Institute	0.06	0.06	0.06
Moody's Analytics	na	na	na
Moody's Capital Markets	na	na	na
Nomura Securities	na	na	na
Oxford Economics	na	na	na
Scotiabank	na	na	na
UBS AG	na	na	na
Wells Fargo	-0.05	-0.10	-0.10
<b>June Consensus</b>	<b>0.01</b>	<b>-0.01</b>	<b>0.00</b>
High	0.06	0.06	0.06
Low	-0.05	-0.10	-0.10
Last Months Avg.	0.03	0.00	-0.01

Japan			
10 Yr. Gov't Bond Yield %			
In 3 Mo.	In 6 Mo.	In 12 Mo.	
-0.10	-0.05	na	
-0.10	0.00	0.10	
na	na	na	
-0.07	-0.02	0.05	
-0.10	-0.10	-0.10	
0.01	0.01	0.02	
-0.05	0.05	0.25	
-0.15	-0.15	-0.15	
-0.08	-0.08	-0.03	
na	na	na	
0.17	0.20	0.25	
-0.10	-0.08	-0.02	
<b>-0.06</b>	<b>-0.02</b>	<b>0.04</b>	
0.17	0.20	0.25	
-0.15	-0.15	-0.15	
-0.10	-0.03	0.04	

Yen/USD			
In 3 Mo.	In 6 Mo.	In 12 Mo.	
100.0	100.0	na	
111.0	116.0	116.0	
108.0	112.0	116.0	
95.0	100.0	108.0	
105.0	106.0	109.0	
111.0	114.0	115.0	
112.0	115.0	118.0	
120.0	122.0	na	
110.0	114.0	118.0	
115.0	118.0	120.0	
na	na	na	
na	na	na	
<b>108.7</b>	<b>111.7</b>	<b>115.0</b>	
120.0	122.0	120.0	
95.0	100.0	108.0	
112.3	113.5	116.9	

Blue Chip Forecasters	3 Mo. Interest Rate %		
	In 3 Mo.	In 6 Mo.	In 12 Mo.
Barclays	na	na	na
BMO Capital Markets	0.65	0.75	1.00
BNP Paribas Americas	na	na	na
ING Financial Markets	0.60	0.65	1.10
Mizuho Research Institute	0.60	0.60	0.60
Moody's Analytics	na	na	na
Moody's Capital Markets	na	na	na
Nomura Securities	na	na	na
Oxford Economics	na	na	na
Scotiabank	na	na	na
UBS AG	na	na	na
Wells Fargo	0.58	0.65	0.95
<b>June Consensus</b>	<b>0.61</b>	<b>0.66</b>	<b>0.91</b>
High	0.65	0.75	1.10
Low	0.58	0.60	0.60
Last Months Avg.	0.61	0.66	0.99

United Kingdom			
10 Yr. Gilt Yields %			
In 3 Mo.	In 6 Mo.	In 12 Mo.	
1.75	1.75	na	
1.55	1.80	2.00	
na	na	na	
1.70	2.00	2.30	
1.50	1.60	1.70	
2.05	2.34	2.84	
1.65	1.75	1.80	
1.90	2.10	na	
1.81	2.00	2.29	
na	na	na	
1.70	1.80	1.90	
1.50	1.55	1.75	
<b>1.71</b>	<b>1.87</b>	<b>2.07</b>	
2.05	2.34	2.84	
1.50	1.55	1.70	
1.69	1.85	2.11	

USD/Pound Sterling			
In 3 Mo.	In 6 Mo.	In 12 Mo.	
1.45	1.45	na	
1.42	1.44	1.49	
1.51	1.56	1.57	
1.51	1.55	1.56	
na	na	na	
1.47	1.49	1.51	
1.42	1.42	1.43	
1.47	1.50	na	
1.41	1.43	1.44	
1.40	1.40	1.45	
na	na	na	
na	na	na	
<b>1.45</b>	<b>1.47</b>	<b>1.49</b>	
1.51	1.56	1.57	
1.40	1.40	1.43	
1.42	1.45	1.49	

Blue Chip Forecasters	3 Mo. Interest Rate %		
	In 3 Mo.	In 6 Mo.	In 12 Mo.
Barclays	na	na	na
BMO Capital Markets	na	na	na
BNP Paribas Americas	na	na	na
ING Financial Markets	-0.85	-0.85	0.85
Mizuho Research Institute	na	na	na
Moody's Analytics	na	na	na
Moody's Capital Markets	na	na	na
Nomura Securities	na	na	na
Oxford Economics	na	na	na
Scotiabank	na	na	na
UBS AG	na	na	na
Wells Fargo	na	na	na
<b>June Consensus</b>	<b>-0.85</b>	<b>-0.85</b>	<b>0.85</b>
High	-0.85	-0.85	0.85
Low	-0.85	-0.85	0.85
Last Months Avg.	-0.75	-0.90	-0.90

Switzerland			
10 Yr. Gov't Bond Yield %			
In 3 Mo.	In 6 Mo.	In 12 Mo.	
na	na	na	
na	na	na	
na	na	na	
-0.30	0.00	0.30	
na	na	na	
-0.35	-0.32	0.20	
-0.25	-0.15	-0.05	
na	na	na	
-0.20	-0.15	0.19	
na	na	na	
-0.05	0.15	0.30	
na	na	na	
<b>-0.23</b>	<b>-0.09</b>	<b>0.19</b>	
-0.05	0.15	0.30	
-0.35	-0.32	-0.05	
-0.27	-0.17	0.08	

CHF/USD			
In 3 Mo.	In 6 Mo.	In 12 Mo.	
1.07	1.11	na	
1.00	1.03	1.06	
0.98	1.00	1.08	
0.96	0.97	0.96	
na	na	na	
1.03	1.06	1.11	
1.00	1.00	1.00	
1.05	1.08	na	
1.00	1.01	1.03	
1.05	1.08	1.06	
na	na	na	
na	na	na	
<b>1.02</b>	<b>1.04</b>	<b>1.04</b>	
1.07	1.11	1.11	
0.96	0.97	0.96	
1.01	1.04	1.05	

Blue Chip Forecasters	3 Mo. Interest Rate %		
	In 3 Mo.	In 6 Mo.	In 12 Mo.
Barclays	na	na	na
BMO Capital Markets	na	na	na
BNP Paribas Americas	na	na	na
ING Financial Markets	0.50	0.50	0.70
Mizuho Research Institute	na	na	na
Moody's Analytics	na	na	na
Moody's Capital Markets	na	na	na
Nomura Securities	na	na	na
Oxford Economics	na	na	na
Scotiabank	na	na	na
UBS AG	na	na	na
Wells Fargo	0.90	0.95	1.25
<b>June Consensus</b>	<b>0.70</b>	<b>0.73</b>	<b>0.98</b>
High	0.90	0.95	1.25
Low	0.50	0.50	0.70
Last Months Avg.	0.75	0.70	0.80

Canada			
10 Yr. Gov't Bond Yield %			
In 3 Mo.	In 6 Mo.	In 12 Mo.	
na	na	na	
1.40	1.50	1.55	
na	na	na	
1.30	1.40	1.90	
na	na	na	
2.17	2.51	3.32	
1.50	1.65	1.75	
1.40	1.55	1.75	
1.39	1.47	1.63	
1.55	1.65	2.15	
na	na	na	
1.40	1.50	1.75	
<b>1.51</b>	<b>1.65</b>	<b>1.98</b>	
2.17	2.51	3.32	
1.30	1.40	1.55	
1.45	1.55	1.86	

CAD/USD			
In 3 Mo.	In 6 Mo.	In 12 Mo.	
1.38	1.40	na	
1.32	1.31	1.29	
1.35	1.41	1.39	
1.38	1.30	1.23	
na	na	na	
1.35	1.32	1.27	
1.32	1.30	1.28	
1.38	1.35	na	
1.31	1.30	1.30	
1.30	1.30	1.28	
na	na	na	
na	na	na	
<b>1.34</b>	<b>1.33</b>	<b>1.29</b>	
1.38	1.41	1.39	
1.30	1.30	1.23	
1.35	1.34	1.30	

## International Interest Rate And Foreign Exchange Rate Forecasts

Blue Chip Forecasters	3 Mo. Interest Rate %		
	In 3 Mo.	In 6 Mo.	In 12 Mo.
Barclays	na	na	na
BMO Capital Markets	na	na	na
BNP Paribas Americas	na	na	na
ING Financial Markets	1.60	1.60	1.70
Mizuho Research Institute	na	na	na
Moody's Analytics	na	na	na
Moody's Capital Markets	na	na	na
Nomura Securities	na	na	na
Oxford Economics	na	na	na
Scotiabank	na	na	na
UBS AG	na	na	na
Wells Fargo	na	na	na
<b>June Consensus</b>	<b>1.60</b>	<b>1.60</b>	<b>1.70</b>
High	1.60	1.60	1.70
Low	1.60	1.60	1.70
Last Months Avg.	2.20	2.20	2.30

Australia		
10 Yr. Gov't Bond Yield %		
In 3 Mo.	In 6 Mo.	In 12 Mo.
na	na	na
na	na	na
na	na	na
2.50	2.80	3.00
na	na	na
2.77	2.77	3.18
2.43	2.50	2.47
2.50	2.75	2.85
2.04	2.18	2.44
na	na	na
2.20	2.30	2.35
na	na	na
<b>2.41</b>	<b>2.55</b>	<b>2.72</b>
2.77	2.80	3.18
2.04	2.18	2.35
2.66	2.73	2.91

USD/AUD		
In 3 Mo.	In 6 Mo.	In 12 Mo.
0.69	0.68	na
0.71	0.72	0.74
0.73	0.69	0.67
0.69	0.75	0.82
na	na	na
0.75	0.76	0.77
0.72	0.71	0.70
0.68	0.67	na
0.72	0.70	0.71
0.70	0.70	0.72
na	na	na
na	na	na
<b>0.71</b>	<b>0.71</b>	<b>0.73</b>
0.75	0.76	0.82
0.68	0.67	0.67
0.72	0.71	0.73

Blue Chip Forecasters	3 Mo. Interest Rate %		
	In 3 Mo.	In 6 Mo.	In 12 Mo.
Barclays	na	na	na
BMO Capital Markets	-0.25	-0.25	-0.25
BNP Paribas Americas	na	na	na
ING Financial Markets	-0.27	-0.28	-0.28
Mizuho Research Institute	-0.30	-0.30	-0.30
Moody's Analytics	na	na	na
Moody's Capital Markets	na	na	na
Nomura Securities	-0.25	-0.25	-0.25
Oxford Economics	na	na	na
Scotiabank	na	na	na
UBS AG	na	na	na
Wells Fargo	-0.30	-0.30	-0.25
<b>June Consensus</b>	<b>-0.27</b>	<b>-0.28</b>	<b>-0.27</b>
High	-0.25	-0.25	-0.25
Low	-0.30	-0.30	-0.30
Last Months Avg.	-0.27	-0.27	-0.28

## Eurozone

USD/EUR		
In 3 Mo.	In 6 Mo.	In 12 Mo.
1.06	1.03	na
1.09	1.05	1.05
na	na	na
1.15	1.15	1.20
1.18	1.17	1.15
1.06	1.04	1.00
1.09	1.08	1.07
1.07	1.05	na
1.10	1.09	1.07
1.05	1.02	1.05
na	na	na
na	na	na
<b>1.09</b>	<b>1.08</b>	<b>1.08</b>
1.18	1.17	1.20
1.05	1.02	1.00
1.09	1.08	1.08

Blue Chip Forecasters	10 Yr. Gov't Bond Yields %											
	Germany			France			Italy			Spain		
	In 3 Mo.	In 6 Mo.	In 12 Mo.	In 3 Mo.	In 6 Mo.	In 12 Mo.	In 3 Mo.	In 6 Mo.	In 12 Mo.	In 3 Mo.	In 6 Mo.	In 12 Mo.
Barclays	0.50	0.50	na	na	na	na	na	na	na	na	na	na
BMO Capital Markets	0.25	0.30	0.50	na	na	na	na	na	na	na	na	na
BNP Paribas Americas	0.30	0.00	na	0.60	0.30	na	1.45	1.25	na	1.55	1.35	na
ING Financial Markets	0.40	0.60	0.90	0.70	0.90	1.10	1.50	1.60	1.70	1.50	1.55	1.65
Mizuho Research Institute	0.10	0.20	0.25	na	na	na	na	na	na	na	na	na
Moody's Analytics	0.32	0.40	0.83	0.59	0.64	1.02	1.44	1.42	1.74	2.02	2.14	2.33
Moody's Capital Markets	0.40	0.55	0.63	0.75	0.90	0.95	1.65	1.78	1.84	1.75	1.90	1.95
Nomura Securities	0.40	0.40	0.50	na	na	na	na	na	na	na	na	na
Oxford Economics	0.36	0.43	0.74	0.66	0.75	1.09	1.49	1.58	1.93	1.60	1.69	2.01
UBS	0.80	1.10	1.30	1.10	1.35	1.50	1.90	2.00	2.18	na	na	na
Wells Fargo	0.20	0.25	0.40	na	na	na	na	na	na	na	na	na
<b>June Consensus</b>	<b>0.37</b>	<b>0.43</b>	<b>0.67</b>	<b>0.73</b>	<b>0.81</b>	<b>1.13</b>	<b>1.57</b>	<b>1.61</b>	<b>1.88</b>	<b>1.68</b>	<b>1.73</b>	<b>1.99</b>
High	0.80	1.10	1.30	1.10	1.35	1.50	1.90	2.00	2.18	2.02	2.14	2.33
Low	0.10	0.00	0.25	0.59	0.30	0.95	1.44	1.25	1.70	1.50	1.35	1.65
Last Months Avg.	0.34	0.39	0.63	0.68	0.74	1.08	1.52	1.55	1.82	1.60	1.65	1.91

	Consensus Forecasts			
	10-year Bond Yields vs U.S. Yield			
	Current	In 3 Mo.	In 6 Mo.	In 12 Mo.
Japan	-1.98	-2.10	-2.15	-2.38
United Kingdom	-0.31	-0.33	-0.26	-0.35
Switzerland	-2.14	-2.27	-2.22	-2.24
Canada	-0.49	-0.52	-0.47	-0.45
Australia	0.43	0.37	0.42	0.29
Germany	-1.72	-1.67	-1.70	-1.75
France	-1.38	-1.30	-1.32	-1.29
Italy	-0.52	-0.47	-0.52	-0.55
Spain	-0.34	-0.35	-0.40	-0.44

	Consensus Forecasts			
	3 Mo. Deposit Rates vs U.S. Rate			
	Current	In 3 Mo.	In 6 Mo.	In 12 Mo.
Japan	-0.69	-0.85	-0.93	-1.28
United Kingdom	-0.10	-0.26	-0.27	-0.37
Switzerland	-1.40	-1.71	-1.78	-0.43
Canada	0.18	-0.16	-0.21	-0.31
Australia	1.41	0.74	0.67	0.42
Eurozone	-0.93	-1.14	-1.21	-1.55

## Viewpoints:

### A Sampling of Views on the Economy, Financial Markets and Government Policy Excerpted from Recent Reports Issued by our Blue Chip Panel Members and Others

#### FOMC: Three Big “Ifs”

The minutes from the April meeting of the Federal Open Market Committee indicated that officials are inclined to increase interest rates again if certain conditions are met. Specifically, policymakers need to see a pickup in the pace of economic growth and continued improvement in the labor market. In addition, they need to be confident that inflation will return to the target of two percent in the medium term.

A review of recent developments shows that a case can be made for tighter policy in June, although the arguments are far from air-tight. We would not be surprised by a policy change in June, but we are more inclined to look for a shift at the meeting in late July. With the evidence likely to leave the Fed in a grey area, and with officials planning to move gradually, we look for the next step in normalization to be a hawkish statement in June that sets the stage for a rate hike in July.

The first criterion of the FOMC -- faster economic growth -- is moving in the right direction. Recent statistics suggest that GDP growth in the first quarter will be revised upward to approximately 1.0 percent versus the initial estimate of 0.5 percent. More important, available indicators for Q2 suggest a quickening from the revised pace of Q1 (chart). Our reading of the figures suggests an advance of approximately two percent, while the so-called GDPNow estimate of the Atlanta Fed shows stronger results (2.5 percent). A similar measure from the New York Fed suggests growth of 1.7 percent.

Growth in the neighborhood of two percent is respectable, but it is far from vigorous and thus does not suggest an urgency to raise interest rates. Moreover, we doubt that officials will expect a further acceleration in growth in the second half of the year. Forecasts of officials published in March showed expected growth in the low-two-percent area for the year, and we have not detected any shift in fundamentals that might boost expectations. In fact, as discussed below, we have been mildly disappointed in two areas that might have stirred economic activity (housing and business fixed investment).

Both the hawks and doves will be able to use recent developments in the labor market to support their cases. The hawks can cite generally steady job growth and hints of faster wage growth, while doves can point to the underwhelming payroll figures for April and an uptick in the unemployment rate in March (which was sustained in April). Thus, like the prospects for economic growth, the employment situation does not lead to a clear-cut conclusion on policy.

Headline and core inflation have accelerated since last fall, although the pace has eased somewhat in the past month or two (chart, above right). While some Fed officials might emphasize recent easing, we suspect that most policymakers will take a longer-term view and conclude that inflation is on a path back to two percent.

William Dudley of the New York Fed, an ardent dove, confirmed this view in a recent Q&A session on macroeconomic developments. He indicated that the recent easing in year-over-year inflation was most likely the result of random volatility and that the pickup since late 2015 was more meaningful. He noted that core inflation was generally stable in 2014 and much of 2015 when a strong dollar and soft oil prices might have pushed core inflation lower. With those forces now dissipating, underlying inflation was likely to pickup. He indicated that this experience had made him more confident that inflation would return to target over time. He also was more relaxed about possibly eroding inflation expectations.

*Michael Moran, Daiwa Capital Markets, New York, NY*

#### The Fed Puts June Back On the Table

The minutes from the April FOMC meeting clearly indicate that many members of the Federal Open Market Committee believe economic conditions are strong enough to warrant an interest rate hike well ahead of market expectations, and a hike at the June 14-15 meeting remains a real possibility. Market participants still believe such a move remains a relatively low probability, however, even after a string of stronger economic reports on Industrial Production and Retail Sales and a larger than expected increase in the Consumer Price Index. The market assigns about a 30 percent chance of a move in June, up from single digits last week, but now puts the odds of a July move at just over 50 percent.

Expectations for an earlier Fed move took off this week following this week's stronger economic reports and a string of hawkish comments from several Federal Reserve Bank presidents, including Dennis Lockhart, from the Atlanta Fed, and John Williams, from the San Francisco Fed. Both reiterated that a rate hike in June remains a real or live possibility. Economies in both regions are also notably stronger than the U.S. economy, and wage and price pressures, particularly in construction, are much more acute in both areas.

We doubt the Fed's timetable has changed all that much. While the Fed would like to raise interest rates in June, the upcoming Brexit vote will closely follow the Fed meeting and uncertainty about the outcome of that vote will likely be enough to keep the Fed on hold in June. The rhetoric will likely heat up further, however, particularly if first quarter growth is revised higher, as we expect.

Even if the timing of the Fed's next move gets pulled forward into June or, more likely, July, the ultimate magnitude of the Fed's future rate hikes is probably less than the Fed outlined in its previous dot plots. If the Fed is serious about avoiding surprises, then it not only needs to raise market expectations for a rate hike in the near term, but must also close the wide gap in expectations for the funds rate in 2017 and 2018. The market simply does not believe that many rate hikes are credible.

*Wells Fargo Economics Group, Charlotte, NC*

#### Next Fed Policy Move Will Come In July

The minutes of the April FOMC meeting were hawkish and reported that “Most participants judged that if incoming data were consistent with economic growth picking up in the second quarter, labor market conditions continuing to strengthen, and inflation making progress toward the Committee's 2 percent objective, then it likely would be appropriate for the Committee to increase the target range for the federal funds rate in June.”

We do not think that there will be enough data between now and the June 14-15 meeting to prompt a rate hike then. And the Brexit vote shortly thereafter may argue for delay in any case. But we think the Fed's conditions for a rate hike will be met and that the next Fed policy move will come in July.

The much stronger than expected April retail sales report should make the Fed more confident than they were at the April meeting that economic growth is picking up in the second quarter. We look for the May 27th second estimate of 1Q16 GDP to show 1.0% (saar) real GDP growth (revised up from 0.5%). And our tracking forecast for 2Q16 growth is 2.0%, with modest upside risk.

*Robert Mellman, JPMorgan Chase Bank, New York, NY*

#### Will They Or Won't They

The *Cliffs Notes* version of the minutes to the April FOMC meeting is that conditions are supportive of a hike in the Fed funds rate at either the June or July FOMC meetings, unless of course they're not. Yes, the minutes had a more hawkish tone than had been (*continued on next page*)

## Viewpoints

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been anticipated, and, yes, many FOMC members have used public appearances to reinforce the notion that the June FOMC meeting is indeed “live.” While all this talk seems to have rattled the markets a bit, there is still very much a “we’ll believe it when we see it” attitude on the part of many market participants – at present the bond market is pricing in only about a 28 percent chance of a hike in June. This is to a large degree understandable as the FOMC has basically been prepping the markets for a higher Fed funds rate since the start of last year only to deliver a single 25-basis point hike in the funds rate target range in all this time. As Roseanne Roseannadana would say, it just goes to show you, it’s always something – if it’s not the twists and turns in the economic data, it’s some global event that gives the FOMC cause to pause. Our sense is that this time they really mean it but, at the same time, the reality is that while the evolution of the U.S. economic data gives the FOMC the green light, structural headwinds at home and a still shaky global backdrop put clear limits on how far and how fast the FOMC can go.

*Richard F. Moody, Regions Financial Corp., Birmingham, AL*

#### June Or July?

Ah, the age-old tango between the Fed and markets continues. First, hawkish Fed chatter sets the market up for tighter policy; then investors tremble and the dollar rises; and ultimately policy makers get cold feet and delay tightening. This time-worn dance has played out frequently since the 2013 “taper tantrum”—when then-Chair Bernanke hinted at slowing the QE drip-line. (Wasn’t increased transparency supposed to reduce market volatility?) But this time, the Fed seems to be sticking to its guns. In a rare show of harmony, both dovish and hawkish officials are singing from the same hymn book, apparently in a concerted effort to align the market’s thinking (which, until recently, was summed up as: fat chance of even one move this year) with the Fed’s view (two moves are likely baked in the cake). Here’s what a few officials said this week to prime the markets for the real possibility of a June rate hike:

Dudley—June is “definitely a live meeting”. Lockhart—June should not be “taken off the table”. Williams—2 or 3 moves this year “makes sense”. Kaplan—Fed should raise rates “in not too distant future”

In fact, even at the time of the April policy meeting, the Fed saw a much greater chance of a hike than the market. According to the minutes, “many” members leaned toward a move at the next meeting if conditions were appropriate. And that was before seeing solid April data—industrial production and retail sales up 0.7% and 1.3%, respectively, existing home sales rising for a fourth time in five months, and housing starts up a crackling 6.6%.

The better data suggest the economy has picked up in the second quarter to an above potential rate (which, given scrawny productivity growth, is anything with at least a 2-handle). For the Fed, this points to more progress in labor markets, a key precondition for the second stage of rate lift-off. Pay close attention to the “all-in” unemployment rate in the May jobs report, which has been eking out steady progress this year despite slower payrolls growth and a steady official jobless rate. And, according to Dudley, also keep a close eye on U.K. polls, as rising support for Brexit could stay the Fed’s cautious hand. By contrast, a show of strength in the May indicators and a comfortable lead for the “stay” crowd could tip the odds toward June.

Despite all the Fed chatter, we remain in the July camp. You just need to read Chair Yellen’s March 29<sup>th</sup> speech to know that any material misstep in markets or the economy in coming weeks would likely weigh on the side of inaction. Investors in fed funds futures also remain skeptical of a June move, even if the odds have shot up from the low single-digits last week to 30%. Still, unless the market starts pricing in greater

odds, the Fed will likely worry about investors tripping on the dance floor if the music shifts too abruptly.

*Sal Guatieri, BMO Capital Markets, Toronto, Canada*

#### June, July Or September?

Some aspects of our Fed call seem fairly straightforward, others are more complicated. We have a strong conviction that Fed has been and will continue to be highly attuned to downside risks. Hence, they will hike very slowly, they will focus more on evolving risks than on their baseline forecast and they will stop moving on any sign of trouble. This suggests a very low probability of a Fed-induced recession and a high probability of overshooting the inflation target over the next several years. Indeed, we think they should and will overshoot by 2018.

The hard part is mapping this strategic story into a tactical view of the exact timing and pace of rate hikes. The Fed is not helping much. They want to avoid “calendar guidance” in favor of data dependence: the market is supposed to figure out when they will move based on the news flow. However, the Fed’s reaction function has been changing over time and is complicated. Like everyone else, we struggle to figure out the Fed’s time-varying weights on the labor market, GDP growth, inflation, global developments and financial conditions.

On May 6<sup>th</sup> we dropped our longstanding call for a June rate hike. This was partly in reaction to soft data, but mainly due to super-dovish Fed rhetoric, including commentary from Chair Yellen and two very dovish FOMC statements. Indeed, with the markets pricing in a roughly 5% probability of a June hike, our call was looking increasing out of touch. We moved the next hike to September, but noted that June and July remained live meetings.

Now the Fed minutes and a series of hawkish speakers have made it clear that the April statement was a head fake. It is now clear that June is very much on the table. What is less clear is whether the Fed is just protesting the super-low probability priced into the markets or is setting us up for a June hike. In other words, should we stick to our September call or flip flop?

We are sticking to September. In our view, the distribution of outcomes is very flat, but September still seems most consistent with Yellen’s high risk aversion. June seems a bit early given how dovish she has sounded. Moreover, with the market pricing in just a 34% chance of a move, it would shock the markets and bring into question their credibility. This would draw attention to the competence of the Fed during an election year. The Fed would also be moving in front of the Brexit vote, a potential serious shock to financial markets. What is the cost of waiting?

July is also live, but suffers the usual problem of not having a scheduled press conference. The Fed has made it clear that they can call a press conference on short notice. However, it would still require meticulous preparation from Yellen. In our view, avoiding that painful preparation is a key reason there are only four press conferences a year. A compromise would be for the Fed to repeat what it did in October and in the June statement highlight that July is a live meeting absent adverse developments.

This is a close call and we will be nimble going forward. Payrolls on June 2<sup>nd</sup> and a Yellen speech on June 6<sup>th</sup> could change our mind. In our view, the Fed will want the market to be pricing in at least a 50% probability before it moves and hawkish news from these events could do the trick. Regardless of the exact timing, we think the economy and inflation are a lot more resilient than the markets believe. Hence, the Fed is likely to hike more than what the bond market is pricing in over the next several years.

*Ethan Harris, Bank of America-Merrill Lynch, New York, NY*

## Long-Range Survey:

The table below contains results of our semi-annual long-range CONSENSUS survey. There are also Top 10 and bottom 10 averages for each variable. Shown are estimates for the years 2018 through 2022 and averages for the five-year periods 2018-2022 and 2023-2027. Apply these projections cautiously. Few economic, demographic and political forces can be evaluated accurately over such long time spans.

<b>Interest Rates</b>		-----Average For The Year-----					Five-Year Averages	
		<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2018-2022</b>	<b>2023-2027</b>
1. Federal Funds Rate	<b>CONSENSUS</b>	<b>2.2</b>	<b>2.7</b>	<b>3.0</b>	<b>3.2</b>	<b>3.2</b>	<b>2.9</b>	<b>3.2</b>
	Top 10 Average	3.1	3.6	3.8	3.9	3.9	3.7	3.8
	Bottom 10 Average	1.4	1.6	2.0	2.5	2.4	2.0	2.5
2. Prime Rate	<b>CONSENSUS</b>	<b>5.2</b>	<b>5.7</b>	<b>6.0</b>	<b>6.1</b>	<b>6.1</b>	<b>5.8</b>	<b>6.0</b>
	Top 10 Average	6.1	6.6	6.9	6.9	6.9	6.7	6.7
	Bottom 10 Average	4.4	4.7	5.1	5.4	5.3	5.0	5.4
3. LIBOR, 3-Mo.	<b>CONSENSUS</b>	<b>2.5</b>	<b>3.0</b>	<b>3.2</b>	<b>3.4</b>	<b>3.4</b>	<b>3.1</b>	<b>3.4</b>
	Top 10 Average	3.4	3.9	4.0	4.1	4.1	3.9	4.0
	Bottom 10 Average	1.7	1.9	2.3	2.8	2.7	2.3	2.7
4. Commercial Paper, 1-Mo.	<b>CONSENSUS</b>	<b>2.5</b>	<b>3.0</b>	<b>3.2</b>	<b>3.4</b>	<b>3.3</b>	<b>3.1</b>	<b>3.3</b>
	Top 10 Average	3.2	3.7	3.9	4.0	4.0	3.7	3.8
	Bottom 10 Average	1.8	2.2	2.6	2.8	2.6	2.4	2.7
5. Treasury Bill Yield, 3-Mo.	<b>CONSENSUS</b>	<b>2.2</b>	<b>2.7</b>	<b>2.9</b>	<b>3.1</b>	<b>3.1</b>	<b>2.8</b>	<b>3.1</b>
	Top 10 Average	3.0	3.6	3.8	3.8	3.8	3.6	3.7
	Bottom 10 Average	1.4	1.6	1.9	2.5	2.4	2.0	2.4
6. Treasury Bill Yield, 6-Mo.	<b>CONSENSUS</b>	<b>2.4</b>	<b>2.9</b>	<b>3.2</b>	<b>3.3</b>	<b>3.2</b>	<b>3.0</b>	<b>3.2</b>
	Top 10 Average	3.2	3.7	4.0	4.0	4.0	3.8	3.8
	Bottom 10 Average	1.6	1.9	2.4	2.6	2.5	2.2	2.6
7. Treasury Bill Yield, 1-Yr.	<b>CONSENSUS</b>	<b>2.5</b>	<b>3.0</b>	<b>3.2</b>	<b>3.4</b>	<b>3.3</b>	<b>3.1</b>	<b>3.3</b>
	Top 10 Average	3.4	4.0	4.0	4.1	4.1	3.9	4.0
	Bottom 10 Average	1.7	2.0	2.4	2.6	2.5	2.3	2.7
8. Treasury Note Yield, 2-Yr.	<b>CONSENSUS</b>	<b>2.7</b>	<b>3.1</b>	<b>3.4</b>	<b>3.6</b>	<b>3.5</b>	<b>3.3</b>	<b>3.5</b>
	Top 10 Average	3.6	4.1	4.3	4.3	4.3	4.1	4.2
	Bottom 10 Average	1.8	2.0	2.4	2.8	2.8	2.4	2.7
10. Treasury Note Yield, 5-Yr.	<b>CONSENSUS</b>	<b>3.0</b>	<b>3.4</b>	<b>3.6</b>	<b>3.8</b>	<b>3.8</b>	<b>3.5</b>	<b>3.8</b>
	Top 10 Average	3.9	4.3	4.5	4.6	4.6	4.4	4.5
	Bottom 10 Average	2.1	2.3	2.7	3.0	2.9	2.6	3.0
11. Treasury Note Yield, 10-Yr.	<b>CONSENSUS</b>	<b>3.3</b>	<b>3.7</b>	<b>3.9</b>	<b>4.1</b>	<b>4.0</b>	<b>3.8</b>	<b>4.1</b>
	Top 10 Average	4.2	4.6	4.8	4.8	4.8	4.6	4.8
	Bottom 10 Average	2.5	2.7	3.0	3.2	3.2	2.9	3.3
12. Treasury Bond Yield, 30-Yr.	<b>CONSENSUS</b>	<b>3.9</b>	<b>4.2</b>	<b>4.4</b>	<b>4.6</b>	<b>4.5</b>	<b>4.3</b>	<b>4.6</b>
	Top 10 Average	4.8	5.2	5.3	5.4	5.4	5.2	5.4
	Bottom 10 Average	3.1	3.3	3.5	3.7	3.6	3.4	3.8
13. Corporate Aaa Bond Yield	<b>CONSENSUS</b>	<b>5.1</b>	<b>5.4</b>	<b>5.5</b>	<b>5.5</b>	<b>5.5</b>	<b>5.4</b>	<b>5.6</b>
	Top 10 Average	5.7	6.2	6.3	6.3	6.3	6.2	6.3
	Bottom 10 Average	4.4	4.6	4.6	4.7	4.7	4.6	4.9
13. Corporate Baa Bond Yield	<b>CONSENSUS</b>	<b>6.1</b>	<b>6.4</b>	<b>6.5</b>	<b>6.5</b>	<b>6.5</b>	<b>6.4</b>	<b>6.6</b>
	Top 10 Average	6.7	7.2	7.3	7.3	7.3	7.1	7.3
	Bottom 10 Average	5.4	5.6	5.7	5.7	5.6	5.6	5.9
14. State & Local Bonds Yield	<b>CONSENSUS</b>	<b>4.4</b>	<b>4.6</b>	<b>4.7</b>	<b>4.7</b>	<b>4.7</b>	<b>4.7</b>	<b>4.8</b>
	Top 10 Average	5.2	5.5	5.6	5.6	5.6	5.5	5.6
	Bottom 10 Average	3.7	3.7	3.8	3.9	3.8	3.8	4.0
15. Home Mortgage Rate	<b>CONSENSUS</b>	<b>5.1</b>	<b>5.5</b>	<b>5.6</b>	<b>5.7</b>	<b>5.7</b>	<b>5.5</b>	<b>5.8</b>
	Top 10 Average	5.8	6.3	6.4	6.4	6.5	6.3	6.4
	Bottom 10 Average	4.3	4.6	4.8	4.9	4.8	4.7	5.0
A. FRB - Major Currency Index	<b>CONSENSUS</b>	<b>92.2</b>	<b>91.5</b>	<b>91.2</b>	<b>91.1</b>	<b>91.0</b>	<b>91.4</b>	<b>90.1</b>
	Top 10 Average	95.6	95.7	96.1	96.0	95.9	95.9	95.2
	Bottom 10 Average	88.8	87.2	86.1	86.0	85.9	86.8	85.0
		-----Year-Over-Year, % Change-----					Five-Year Averages	
		<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2018-2022</b>	<b>2023-2027</b>
B. Real GDP	<b>CONSENSUS</b>	<b>2.2</b>	<b>2.1</b>	<b>2.1</b>	<b>2.2</b>	<b>2.2</b>	<b>2.2</b>	<b>2.2</b>
	Top 10 Average	2.7	2.7	2.6	2.6	2.5	2.6	2.5
	Bottom 10 Average	1.7	1.6	1.6	1.8	1.8	1.7	1.9
C. GDP Chained Price Index	<b>CONSENSUS</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>
	Top 10 Average	2.4	2.4	2.4	2.3	2.2	2.4	2.3
	Bottom 10 Average	1.8	1.9	1.9	1.9	1.9	1.9	1.9
D. Consumer Price Index	<b>CONSENSUS</b>	<b>2.3</b>	<b>2.3</b>	<b>2.3</b>	<b>2.3</b>	<b>2.2</b>	<b>2.3</b>	<b>2.2</b>
	Top 10 Average	2.7	2.6	2.5	2.4	2.5	2.6	2.5
	Bottom 10 Average	1.9	2.0	2.0	2.1	2.0	2.0	2.0



**2016 Historical Data**

Monthly Indicator	Jan	Feb	Mar	Apr	May	Jun	Jly	Aug	Sep	Oct	Nov	Dec
Retail and Food Service Sales (a)	-0.5	0.3	-0.3	1.3								
Auto & Light Truck Sales (b)	17.45	17.43	16.46	17.32								
Personal Income (a, current \$)	0.4	0.1	0.4									
Personal Consumption (a, current \$)	0.2	0.2	0.1									
Consumer Credit (e)	4.4	4.8	10.0									
Consumer Sentiment (U. of Mich.)	92.0	91.7	91.0	89.0								
Household Employment (c)	615	530	246	-316								
Non-farm Payroll Employment (c)	168	233	208	160								
Unemployment Rate (%)	4.9	4.9	5.0	5.0								
Average Hourly Earnings (All, cur. \$)	25.38	25.39	25.45	25.53								
Average Workweek (All, hrs.)	34.6	34.4	34.4	34.5								
Industrial Production (d)	-1.3	-1.4	-1.9	-1.1								
Capacity Utilization (%)	75.7	75.6	74.9	75.4								
ISM Manufacturing Index (g)	48.2	49.5	51.8	50.8								
ISM Non-Manufacturing Index (g)	53.5	53.4	54.5	55.7								
Housing Starts (b)	1.128	1.213	1.099	1.172								
Housing Permits (b)	1.188	1.162	1.077	1.116								
New Home Sales (1-family, c)	521	538	531	619								
Construction Expenditures (a)	-0.3	1.0	0.3									
Consumer Price Index (nsa., d)	1.4	1.0	0.9	1.1								
CPI ex. Food and Energy (nsa., d)	2.2	2.3	2.2	2.1								
Producer Price Index (n.s.a., d)	-0.2	0.0	-0.1	0.0								
Durable Goods Orders (a)	4.3	-3.3	1.9	3.4								
Leading Economic Indicators (g)	-0.2	-0.1	0.2									
Balance of Trade & Services (f)	-45.9	-47.0	-40.4									
Federal Funds Rate (%)	0.34	0.38	0.36	0.37								
3-Mo. Treasury Bill Rate (%)	0.26	0.31	0.29	0.23								
10-Year Treasury Note Yield (%)	2.09	1.78	1.89	1.81								

**2015 Historical Data**

Monthly Indicator	Jan	Feb	Mar	Apr	May	Jun	Jly	Aug	Sep	Oct	Nov	Dec
Retail and Food Service Sales (a)	-0.5	-0.5	1.5	0.1	0.9	0.1	0.6	-0.1	0.1	0.0	0.3	0.4
Auto & Light Truck Sales (b)	16.63	16.32	17.06	16.70	17.63	16.95	17.47	17.73	18.07	18.13	18.06	17.22
Personal Income (a, current \$)	0.2	0.3	0.0	0.6	0.6	0.5	0.3	0.3	0.1	0.3	0.3	0.3
Personal Consumption (a, current \$)	-0.4	0.2	0.5	0.3	0.9	0.3	0.3	0.3	0.2	0.2	0.4	0.1
Consumer Credit (e)	3.6	5.5	7.6	7.6	7.0	9.6	6.8	5.1	9.9	5.2	4.8	7.3
Consumer Sentiment (U. of Mich.)	98.1	95.4	93.0	95.9	90.7	96.1	93.1	91.9	87.2	90.0	91.3	92.6
Household Employment (c)	665	127	102	176	239	-26	144	177	-101	255	247	485
Non-Farm Payroll Employment (c)	221	265	84	251	273	228	277	150	149	295	280	271
Unemployment Rate (%)	5.7	5.5	5.5	5.4	5.5	5.3	5.3	5.1	5.1	5.0	5.0	5.0
Average Hourly Earnings (All, cur. \$)	24.76	24.80	24.87	24.91	24.97	24.96	25.03	25.12	25.14	25.21	25.27	25.26
Average Workweek (All, hrs.)	34.6	34.6	34.5	34.5	34.5	34.5	34.6	34.6	34.5	34.5	34.5	34.5
Industrial Production (d)	3.4	2.5	1.3	1.1	0.3	-0.2	0.3	0.4	-0.3	-0.4	-2.1	-2.3
Capacity Utilization (%)	78.0	77.7	77.3	76.9	76.6	76.4	76.7	76.7	76.4	76.3	75.7	75.4
ISM Manufacturing Index (g)	53.5	53.3	52.3	51.6	53.1	53.1	51.9	51.0	50.0	49.4	48.4	48.0
ISM Non-Manufacturing Index (g)	56.7	57.1	56.9	57.5	55.9	56.2	59.6	58.3	56.7	58.3	56.6	55.8
Housing Starts (b)	1.101	0.893	0.964	1.192	1.063	1.213	1.147	1.132	1.189	1.073	1.171	1.160
Housing Permits (b)	1.073	1.114	1.071	1.178	1.266	1.334	1.142	1.166	1.129	1.175	1.286	1.201
New Home Sales (1-family, c)	521	545	485	508	513	469	500	507	457	480	511	537
Construction Expenditures (a)	1.5	0.4	1.5	3.1	2.1	0.5	0.0	0.6	0.2	-0.1	-0.5	0.8
Consumer Price Index (s.a., d)	-0.1	0.0	-0.1	-0.2	0.0	0.1	0.2	0.2	0.0	0.2	0.5	0.7
CPI ex. Food and Energy (s.a., d)	1.6	1.7	1.8	1.8	1.7	1.8	1.8	1.8	1.9	1.9	2.0	2.1
Producer Price Index (n.s.a., d)	0.0	-0.5	-0.9	-1.1	-0.8	0.5	-0.7	-1.0	-1.1	-1.4	-1.3	-1.1
Durable Goods Orders (a)	1.9	-3.5	5.1	-1.7	-2.3	4.1	1.9	-2.9	-0.8	2.8	-0.5	-4.6
Leading Economic Indicators (g)	0.2	-0.2	0.4	0.6	0.6	0.6	0.0	-0.1	0.0	0.6	0.5	-0.3
Balance of Trade & Services (f)	-43.6	-38.6	-52.2	-43.4	-43.5	-46.3	-43.7	-50.5	-44.3	-45.5	-43.6	-44.7
Federal Funds Rate (%)	0.11	0.11	0.11	0.12	0.12	0.13	0.13	0.14	0.14	0.12	0.12	0.24
3-Mo. Treasury Bill Rate (%)	0.03	0.02	0.03	0.02	0.02	0.02	0.03	0.07	0.02	0.02	0.12	0.23
10-Year Treasury Note Yield (%)	1.88	1.98	2.04	1.94	2.20	2.36	2.32	2.17	2.17	2.07	2.26	2.24

(a) month-over-month % change; (b) millions, saar; (c) month-over-month change, thousands; (d) year-over-year % change; (e) annualized % change; (f) \$ billions; (g) level. Most series are subject to frequent government revisions. Use with care.

**Calendar Of Upcoming Economic Data Releases**

<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
<b>May 30</b> <b>Memorial Day</b> <b>U.S. Markets Closed</b>	<b>31</b> S&P/Case-Shiller Home Price Index (Mar) Consumer Confidence (May, Conference Board) Personal Income and Consumption (Apr) Chicago PMI (May) Dallas Fed Survey (May)	<b>June 1</b> Markit Manufacturing PMI (May, Final) ISM Manufacturing ((May) Construction Spending (Apr) Light Vehicle Sales (May) Beige Book EIA Crude Oil Stocks Mortgage Applications	<b>2</b> ADP Employment (May) Weekly Jobless Claims Weekly Money Supply	<b>3</b> Employment (May) International Trade (Apr) Markit Services PMI (May, Final) ISM Non-manufacturing (May) Factory Orders (Apr)
<b>6</b>	<b>7</b> Productivity and Costs (Q1, Revised) Consumer Credit (Apr)	<b>8</b> JOLTS (Apr) Quarterly Services Spending (Q1) EIA Crude Oil Stocks Mortgage Applications	<b>9</b> Wholesale Trade (Apr) Weekly Jobless Claims Weekly Money Supply	<b>10</b> Consumer Sentiment (Jun, Preliminary, University of Michigan)
<b>13</b>	<b>14</b> <b>FOMC Meeting</b> Retail Sales (May) NFIB Survey (May) Import Prices (May) Business Inventories (Apr)	<b>15</b> <b>FOMC Meeting</b> <b>Statement and Projections 2:00 pm</b> <b>Press conference 2:30 pm</b> Producer Price Index May Empire State Survey (Jun) Industrial Production (May) TIC Data (Apr)	<b>16</b> Philadelphia Fed Survey (Jun) Consumer Price Index (May) NAHB survey (Jun) Current Account (Q1) Weekly Jobless Claims Weekly Money Supply	<b>17</b> Housing Starts (May)
<b>20</b>	<b>21</b>	<b>22</b> Existing Home Sales (May) FHFA Home Price Index (Apr) EIA Crude Oil Stocks Mortgage Applications	<b>23</b> Markit Manufacturing PMI (Jun, flash) New Home Sales (May) Kansas City Fed Survey (Jun) Weekly Jobless Claims Weekly Money Supply	<b>24</b> Durable Goods (May) Consumer Sentiment (Jun, Final, University of Michigan)
<b>27</b> International Trade (May, Advance) Markit Services PMI (Jun, Flash) Dallas Fed Survey (Jun)	<b>28</b> Real GDP (Q1, Flash) S&P/Case-Shiller Home Price Index (Apr) Consumer Confidence (Jun, Conference Board) Richmond Fed Survey (Jun)	<b>29</b> Personal Income and Consumption (May) Pending Home Sales (May) EIA Crude Oil Stocks Mortgage Applications	<b>30</b> Chicago PMI (Jun) Weekly Jobless Claims Weekly Money Supply	<b>July 1</b> Markit Manufacturing PMI (Jun, Final) ISM Manufacturing (Jun) Construction Spending (May) Light Vehicle Sales
<b>4</b> <b>Independence Day</b> <b>U.S. Markets Closed</b>	<b>5</b> Factory Orders (May)	<b>6</b> <b>FOMC Minutes</b> International Trade (May) Markit Services PMI (Jun, final) ISM Non-Manufacturing (Jun) EIA Crude Oil Stocks Mortgage Applications	<b>7</b> ADP Employment (Jun) Weekly Jobless Claims Weekly Money Supply	<b>8</b> Employment (Jun) Consumer Credit (May)

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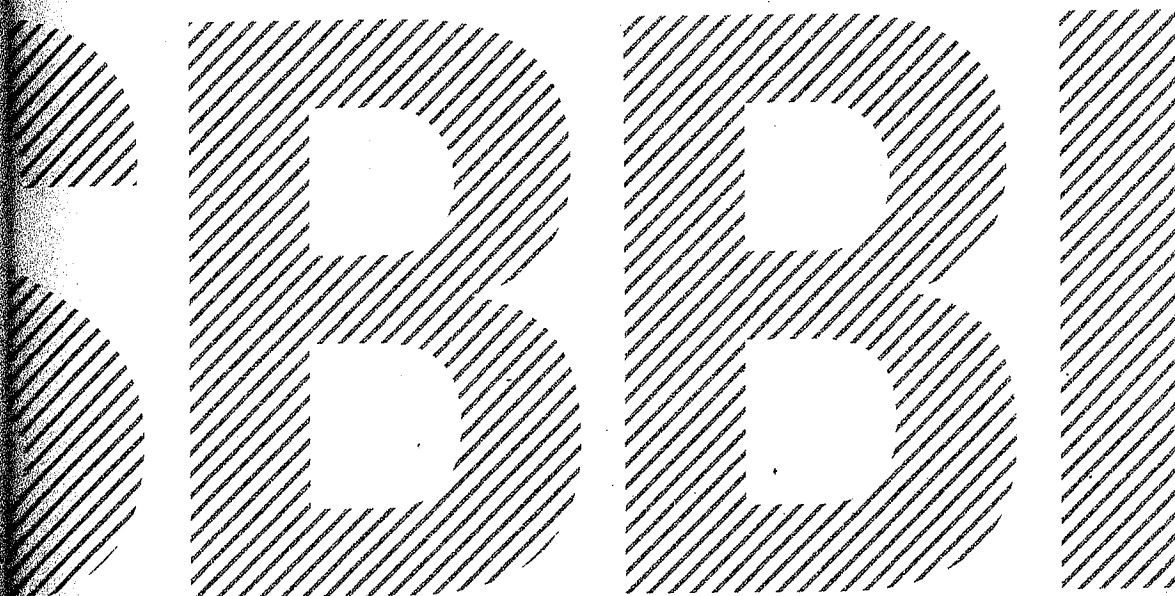
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## Chapter 7

## Company Size and Return

One of the most remarkable discoveries of modern finance is the finding of a relationship between company size and return.<sup>1</sup> Historically on average, small companies have higher returns than those of large ones. Earlier chapters of this book document this phenomenon for the smallest stocks on the New York Stock Exchange, or NYSE. The relationship between company size and return cuts across the entire size spectrum; it is not restricted to the smallest stocks. This chapter examines returns across the entire range of company size.

**Construction of the Size Decile Portfolios**

The portfolios used in this chapter are those created by the Center for Research in Security Prices, or CRSP, at the University of Chicago's Booth School of Business. CRSP has refined the methodology of creating size-based portfolios and has applied this methodology to the entire universe of NYSE/AMEX/NASDAQ-listed securities going back to 1926.

The NYSE universe excludes closed-end mutual funds, preferred stocks, real estate investment trusts, foreign stocks, American Depository Receipts, unit investment trusts, and Americus Trusts. All companies on the NYSE are ranked by the combined market capitalization of all their eligible equity securities. The companies are then split into 10 equally populated groups or deciles. Eligible companies traded on the NYSE, the NYSE MKT LLC (formerly known as the American Stock Exchange, or AMEX), and the NASDAQ Stock Market (formerly the NASDAQ National Market) are then assigned to the appropriate deciles according to their capitalization in relation to the NYSE breakpoints. The portfolios are rebalanced using closing prices for the last trading day of March, June, September, and December. Securities added during the quarter are assigned to the

appropriate portfolio when two consecutive month-end prices are available. If the final NYSE price of a security that becomes delisted is a month-end price, then that month's return is included in the quarterly return of the portfolio. When a month-end NYSE price is missing, the month-end value is derived from merger terms, quotations on regional exchanges, and other sources. If a month-end value is not available, the last available daily price is used.

In October 2008, NYSE Euronext acquired the American Stock Exchange and rebranded the index as NYSE Amex. Later, in May 2012, it was renamed NYSE MKT LLC. For the sake of continuity, we refer to this index as AMEX, its historical name.

Base security returns are monthly holding period returns. All distributions are added to the month-end prices. Appropriate adjustments are made to prices to account for stock splits and dividends. The return on a portfolio for one month is calculated as the value weighted average of the returns for the individual stocks in the portfolio. Annual portfolio returns are calculated by compounding the monthly portfolio returns.

**Aspects of the Company Size Effect**

The company size phenomenon is remarkable in several ways. First, the greater risk of small-cap does not, in the context of the capital asset pricing model, fully account for their higher returns over the long term. In the CAPM only systematic, or beta risk, is rewarded; small-cap stock returns have exceeded those implied by their betas.

Second, the calendar annual return differences between small- and large-cap companies are serially correlated. This suggests that past annual returns may be of some value in predicting future annual returns. Such serial correlation, or autocorrelation, is practically unknown in the market for large-cap stocks and in most other equity markets but is evident in the size premium series.

**Table 7-5: Size-Decile Portfolios of the NYSE/AMEX/NASDAQ Number of Companies, Historical and Recent Market Capitalization**

Decile	Historical Average Percentage of Total Capitalization	Recent Number of Companies	Recent Decile Market Capitalization (in Thousands)	Recent Percentage of Total Capitalization
1-Largest	64.03%	185	14,808,784,274	64.25%
2	14.04	199	3,247,447,914	14.09
3	6.88	194	1,579,432,904	6.85
4	4.56	221	1,042,428,212	4.52
5	3.03	215	694,147,086	3.01
6	2.56	265	585,657,120	2.54
7	1.99	317	449,325,255	1.95
8	1.51	417	333,731,801	1.45
9	0.80	395	173,673,205	0.75
10-Smallest	0.61	948	135,401,288	0.59
Mid-Cap 3-5	14.47	630	3,316,008,202	14.39
Low-Cap 6-8	6.05	999	1,368,714,176	5.94
Micro-Cap 9-10	1.41	1,343	309,074,493	1.34

Data from 1926–2014. Source: Morningstar and CRSP. Calculated (or Derived) based on data from CRSP US Stock Database and CRSP US Indices Database ©2015 Center for Research in Security Prices (CRSP®), The University of Chicago Booth School of Business. Used with permission.

Historical average percentage of total capitalization shows the average, over the last 89 years, of the decile market values as a percentage of the total NYSE/AMEX/NASDAQ calculated each month. Number of companies in deciles, recent market capitalization of deciles, and recent percentage of total capitalization are as of Sept. 30, 2014.

Decile	Recent Market Capitalization (in Thousands)	Company Name
1-Largest	\$591,015,721	Apple Inc
2	24,272,837	Cummins Inc
3	10,105,622	Murphy Oil Corp
4	5,844,592	Alaska Airgroup Inc
5	3,724,186	Great Plains Energy Inc
6	2,542,913	Wolverine World Wide Inc
7	1,686,860	Wesco Aircraft Holdings Inc
8	1,010,634	First Bancorp P R
9	548,839	G P Strategies Corp
10-Smallest	300,725	M V Oil Trust

Source: Morningstar and CRSP. Calculated (or Derived) based on data from CRSP US Stock Database and CRSP US Indices Database ©2015 Center for Research in Security Prices (CRSP®), The University of Chicago Booth School of Business. Used with permission. Market capitalization and name of largest company in each decile are as of Sept. 30, 2014.

### Long-Term Returns in Excess of Systematic Risk

The capital asset pricing model, or CAPM, does not fully account for the higher returns of small-cap stocks. Table 7-6 shows the returns in excess of the riskless rate over the past 89 years for each decile of the NYSE/AMEX/NASDAQ.

The CAPM can be expressed as follows:

$$k_s = r_f + (\beta_s \times ERP)$$

where,

- $k_s$  = the expected return for company  $s$ ;
- $r_f$  = the expected return of the riskless asset;
- $\beta_s$  = the beta of the stock of company  $s$ ; and,
- ERP = the expected equity risk premium, or the amount by which investors expect the future return on equities to exceed that on the riskless asset.

Table 7-6 uses the CAPM to estimate the return in excess of the riskless rate and compares this estimate to historical performance. According to the CAPM, the expected return on a security should consist of the riskless rate plus an additional return to compensate for the systematic risk of the security. The return in excess of the riskless rate is estimated in the context of the CAPM by multiplying the equity risk premium by  $\beta$  (beta). The equity risk premium is the return that compensates investors for taking on risk equal to the risk of the market as a whole (systematic risk). Beta measures the extent to which a security or portfolio is exposed to systematic risk. The beta of each decile indicates the degree to which the decile's return moves with that of the overall market.

A beta greater than one indicates that the security or portfolio has greater systematic risk than the market; according to the CAPM equation, investors are compensated for taking on this additional risk. Yet, Table 7-6 illustrates that the smaller deciles have had returns that are not fully explained by their higher betas. This return in excess of that predicted by CAPM increases as one moves from the largest companies in decile 1 to the smallest in decile 10. The excess return is especially pronounced for micro-cap stocks (deciles 9-10). This size-related phenomenon has prompted a revision to the CAPM, which includes a size premium.

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Chapter 6: Alternative Asset Pricing Models

The model is analogous to the standard CAPM, but with the return on a minimum risk portfolio that is unrelated to market returns,  $R_z$ , replacing the risk-free rate,  $R_F$ . The model has been empirically tested by Black, Jensen, and Scholes (1972), who find a flatter than predicted SML, consistent with the model and other researchers' findings. An updated version of the Black-Jensen-Scholes study is available in Brealey, Myers, and Allen (2006) and reaches similar conclusions.

The zero-beta CAPM cannot be literally employed to estimate the cost of capital, since the zero-beta portfolio is a statistical construct difficult to replicate. Attempts to estimate the model are formally equivalent to estimating the constants,  $a$  and  $b$ , in Equation 6-2. A practical alternative is to employ the Empirical CAPM, to which we now turn.

### 6.3 Empirical CAPM

As discussed in the previous section, several finance scholars have developed refined and expanded versions of the standard CAPM by relaxing the constraints imposed on the CAPM, such as dividend yield, size, and skewness effects. These enhanced CAPMs typically produce a risk-return relationship that is flatter than the CAPM prediction in keeping with the actual observed risk-return relationship. The ECAPM makes use of these empirical findings. The ECAPM estimates the cost of capital with the equation:

$$K = R_F + \alpha + \beta \times (\text{MRP} - \alpha) \quad (6-5)$$

where  $\alpha$  is the "alpha" of the risk-return line, a constant, and the other symbols are defined as before. All the potential vagaries of the CAPM are telescoped into the constant  $\alpha$ , which must be estimated econometrically from market data. Table 6-2 summarizes<sup>10</sup> the empirical evidence on the magnitude of alpha.<sup>11</sup>

<sup>10</sup> The technique is formally applied by Litzenberger, Ramaswamy, and Sosin (1980) to public utilities in order to rectify the CAPM's basic shortcomings. Not only do they summarize the criticisms of the CAPM insofar as they affect public utilities, but they also describe the econometric intricacies involved and the methods of circumventing the statistical problems. Essentially, the average monthly returns over a lengthy time period on a large cross-section of securities grouped into portfolios are related to their corresponding betas by statistical regression techniques; that is, Equation 6-5 is estimated from market data. The utility's beta value is substituted into the equation to produce the cost of equity figure. Their own results demonstrate how the standard CAPM underestimates the cost of equity capital of public utilities because of utilities' high dividend yield and return skewness.

<sup>11</sup> Adapted from Vilbert (2004).



**TABLE 6-2**  
**EMPIRICAL EVIDENCE ON THE ALPHA FACTOR**

Author	Range of alpha
Fischer (1993)	-3.6% to 3.6%
Fischer, Jensen and Scholes (1972)	-9.61% to 12.24%
Fama and McBeth (1972)	4.08% to 9.36%
Fama and French (1992)	10.08% to 13.56%
Litzenberger and Ramaswamy (1979)	5.32% to 8.17%
Litzenberger, Ramaswamy and Sosin (1980)	1.63% to 5.04%
Pettengill, Sundaram and Mathur (1995)	4.6%
Morin (1989)	2.0%

For an alpha in the range of 1%–2% and for reasonable values of the market risk premium and the risk-free rate, Equation 6-5 reduces to the following more pragmatic form:

$$K = R_F + 0.25 (R_M - R_F) + 0.75 \beta(R_M - R_F) \quad (6-6)$$

Over reasonable values of the risk-free rate and the market risk premium, Equation 6-6 produces results that are indistinguishable from the ECAPM of Equation 6-5.<sup>12</sup>

An alpha range of 1%–2% is somewhat lower than that estimated empirically. The use of a lower value for alpha leads to a lower estimate of the cost of capital for low-beta stocks such as regulated utilities. This is because the use of a long-term risk-free rate rather than a short-term risk-free rate already incorporates some of the desired effect of using the ECAPM. That is, the

<sup>12</sup> Typical of the empirical evidence on the validity of the CAPM is a study by Morin (1989) who found that the relationship between the expected return on a security and beta over the period 1926–1984 was given by:

$$\text{Return} = 0.0829 + 0.0520 \beta$$

Given that the risk-free rate over the estimation period was approximately 6% and that the market risk premium was 8% during the period of study, the intercept of the observed relationship between return and beta exceeds the risk-free rate by about 2%, or 1/4 of 8%, and that the slope of the relationship is close to 3/4 of 8%. Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:

$$K = R_F + x(R_M - R_F) + (1 - x)\beta(R_M - R_F)$$

where x is a fraction to be determined empirically. The value of x that best explains the observed relationship  $\text{Return} = 0.0829 + 0.0520 \beta$  is between 0.25 and 0.30. If  $x = 0.25$ , the equation becomes:

$$K = R_F + 0.25(R_M - R_F) + 0.75\beta(R_M - R_F)$$



Chapter 6: Alternative Asset Pricing Models

long-term risk-free rate version of the CAPM has a higher intercept and a flatter slope than the short-term risk-free version which has been tested. Thus, it is reasonable to apply a conservative alpha adjustment. Moreover, the lowering of the tax burden on capital gains and dividend income enacted in 2002 may have decreased the required return for taxable investors, steepening the slope of the ECAPM risk-return trade-off and bring it closer to the CAPM predicted returns.<sup>13</sup>

To illustrate the application of the ECAPM, assume a risk-free rate of 5%, a market risk premium of 7%, and a beta of 0.80. The Empirical CAPM equation (6-6) above yields a cost of equity estimate of 11.0% as follows:

$$\begin{aligned} K &= 5\% + 0.25 (12\% - 5\%) + 0.75 \times 0.80 (12\% - 5\%) \\ &= 5.0\% + 1.8\% + 4.2\% \\ &= 11.0\% \end{aligned}$$

As an alternative to specifying alpha, see Example 6-1.

Some have argued that the use of the ECAPM is inconsistent with the use of adjusted betas, such as those supplied by Value Line and Bloomberg. This is because the reason for using the ECAPM is to allow for the tendency of betas to regress toward the mean value of 1.00 over time, and, since Value Line betas are already adjusted for such trend, an ECAPM analysis results in double-counting. This argument is erroneous. Fundamentally, the ECAPM is not an adjustment, increase or decrease, in beta. This is obvious from the fact that the expected return on high beta securities is actually lower than that produced by the CAPM estimate. The ECAPM is a formal recognition that the observed risk-return tradeoff is flatter than predicted by the CAPM based on myriad empirical evidence. The ECAPM and the use of adjusted betas comprised two separate features of asset pricing. Even if a company's beta is estimated accurately, the CAPM still understates the return for low-beta stocks. Even if the ECAPM is used, the return for low-beta securities is understated if the betas are understated. Referring back to Figure 6-1, the ECAPM is a return (vertical axis) adjustment and not a beta (horizontal axis) adjustment. Both adjustments are necessary. Moreover, recall from Chapter 3 that the use of adjusted betas compensates for interest rate sensitivity of utility stocks not captured by unadjusted betas.

<sup>13</sup> The lowering of the tax burden on capital gains and dividend income has no impact as far as non-taxable institutional investors (pension funds, 401K, and mutual funds) are concerned, and such investors engage in very large amounts of trading on security markets. It is quite plausible that taxable retail investors are relatively inactive traders and that large non-taxable investors have a substantial influence on capital markets.



## The Risk Premium Approach to Measuring a Utility's Cost of Equity

Eugene F. Brigham; Dilip K. Shome; Steve R. Vinson

*Financial Management*, Vol. 14, No. 1. (Spring, 1985), pp. 33-45.

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## *Cost of Capital Estimation*

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# **The Risk Premium Approach to Measuring a Utility's Cost of Equity**

**Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson**

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■ In the mid-1960s, Myron Gordon and others began applying the theory of finance to help estimate utilities' costs of capital. Previously, the standard approach in cost of equity studies was the "comparable earnings method," which involved selecting a sample of unregulated companies whose investment risk was judged to be comparable to that of the utility in question, calculating the average return on book equity (ROE) of these sample companies, and setting the utility's service rates at a level that would permit the utility to achieve the same ROE as comparable companies. This procedure has now been thoroughly discredited (see Robichek [15]), and it has been replaced by three market-oriented (as opposed to accounting-oriented) approaches: (i) the DCF method, (ii) the bond-yield-plus-risk-premium method, and (iii) the CAPM, which is a specific version of the generalized bond-yield-plus-risk-premium approach.

Our purpose in this paper is to discuss the risk-premium approach, including the market risk premium that is used in the CAPM. First, we critique the various procedures that have been used in the past to estimate risk premiums. Second, we present some data on esti-

mated risk premiums since 1965. Third, we examine the relationship between equity risk premiums and the level of interest rates, because it is important, for purposes of estimating the cost of capital, to know just how stable the relationship between risk premiums and interest rates is over time. If stability exists, then one can estimate the cost of equity at any point in time as a function of interest rates as reported in *The Wall Street Journal*, the *Federal Reserve Bulletin*, or some similar source.<sup>1</sup> Fourth, while we do not discuss the CAPM directly, our analysis does have some important implications for selecting a market risk premium for use in that model. Our focus is on utilities, but the methodology is applicable to the estimation of the cost of

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<sup>1</sup>For example, the Federal Energy Regulatory Commission's Staff recently proposed that a risk premium be estimated every two years and that, between estimation dates, the last-determined risk premium be added to the current yield on ten-year Treasury bonds to obtain an estimate of the cost of equity to an average utility (Docket RM 80-36). Subsequently, the FCC made a similar proposal ("Notice of Proposed Rulemaking," August 13, 1984, Docket No. 84-800). Obviously, the validity of such procedures depends on (i) the accuracy of the risk premium estimate and (ii) the stability of the relationship between risk premiums and interest rates. Both proposals are still under review.

equity for any publicly traded firm, and also for non-traded firms for which an appropriate risk class can be assessed, including divisions of publicly traded corporations.<sup>2</sup>

**Alternative Procedures for Estimating Risk Premiums**

In a review of both rate cases and the academic literature, we have identified three basic methods for estimating equity risk premiums: (i) the *ex post*, or historic, yield spread method; (ii) the survey method; and (iii) an *ex ante* yield spread method based on DCF analysis.<sup>3</sup> In this section, we briefly review these three methods.

**Historic Risk Premiums**

A number of researchers, most notably Ibbotson and Sinquefeld [12], have calculated historic holding period returns on different securities and then estimated risk premiums as follows:

$$\text{Historic Risk Premium} = \left( \begin{array}{c} \text{Average of the} \\ \text{annual returns on} \\ \text{a stock index for} \\ \text{a particular} \\ \text{past period} \end{array} \right) - \left( \begin{array}{c} \text{Average of the} \\ \text{annual returns on} \\ \text{a bond index for} \\ \text{the same} \\ \text{past period} \end{array} \right) \quad (1)$$

Ibbotson and Sinquefeld (I&S) calculated both arithmetic and geometric average returns, but most of their risk-premium discussion was in terms of the geometric averages. Also, they used both corporate and Treasury bond indices, as well as a T-bill index, and they analyzed all possible holding periods since 1926. The I&S study has been employed in numerous rate cases in two ways: (i) directly, where the I&S historic risk premium is added to a company's bond yield to obtain an esti-

<sup>2</sup>The FCC is particularly interested in risk-premium methodologies, because (i) only eighteen of the 1,400 telephone companies it regulates have publicly-traded stock, and hence offer the possibility of DCF analysis, and (ii) most of the publicly-traded telephone companies have both regulated and unregulated assets, so a corporate DCF cost might not be applicable to the regulated units of the companies.

<sup>3</sup>In rate cases, some witnesses also have calculated the differential between the yield to maturity (YTM) of a company's bonds and its concurrent ROE, and then called this differential a risk premium. In general, this procedure is unsound, because the YTM on a bond is a *future expected* return on the bond's *market value*, while the ROE is the *past realized* return on the stock's *book value*. Thus, comparing YTM's and ROE's is like comparing apples and oranges.

mate of its cost of equity, and (ii) indirectly, where I&S data are used to estimate the market risk premium in CAPM studies.

There are both conceptual and measurement problems with using I&S data for purposes of estimating the cost of capital. Conceptually, there is no compelling reason to think that investors expect the same relative returns that were earned in the past. Indeed, evidence presented in the following sections indicates that relative expected returns should, and do, vary significantly over time. Empirically, the measured historic premium is sensitive both to the choice of estimation horizon and to the end points. These choices are essentially arbitrary, yet they can result in significant differences in the final outcome. These measurement problems are common to most forecasts based on time series data.

**The Survey Approach**

One obvious way to estimate equity risk premiums is to poll investors. Charles Benore [1], the senior utility analyst for Paine Webber Mitchell Hutchins, a leading institutional brokerage house, conducts such a survey of major institutional investors annually. His 1983 results are reported in Exhibit 1.

**Exhibit 1.** Results of Risk Premium Survey, 1983\*

Assuming a double A, long-term utility bond currently yields 12½%, the common stock for the same company would be fairly priced relative to the bond if its expected return was as follows:

Total Return	Indicated Risk Premium (basis points)	Percent of Respondents
over 20½%	over 800	
20½%	800	
19½%	700	
18½%	600	10%
17½%	500	8%
16½%	400	29%
15½%	300	35%
14½%	200	16%
13½%	100	0%
under 13½%	under 100	1%
Weighted average	358	100%

\*Benore's questionnaire included the first two columns, while his third column provided a space for the respondents to indicate which risk premium they thought applied. We summarized Benore's responses in the frequency distribution given in Column 3. Also, in his questionnaire each year, Benore adjusts the double A bond yield and the total returns (Column 1) to reflect current market conditions. Both the question above and the responses to it were taken from the survey conducted in April 1983.

Benore's results, as measured by the average risk premiums, have varied over the years as follows:

Year	Average RP (basis points)
1978	491
1979	475
1980	423
1981	349
1982	275
1983	358

The survey approach is conceptually sound in that it attempts to measure investors' expectations regarding risk premiums, and the Benore data also seem to be carefully collected and processed. Therefore, the Benore studies do provide one useful basis for estimating risk premiums. However, as with most survey results, the possibility of biased responses and/or biased sampling always exists. For example, if the responding institutions are owners of utility stocks (and many of them are), and if the respondents think that the survey results might be used in a rate case, then they might bias upward their responses to help utilities obtain higher authorized returns. Also, Benore surveys large institutional investors, whereas a high percentage of utility stocks are owned by individuals rather than institutions, so there is a question as to whether his reported risk premiums are really based on the expectations of the "representative" investor. Finally, from a pragmatic standpoint, there is a question as to how to use the Benore data for utilities that are not rated AA. The Benore premiums can be applied as an add-on to the own-company bond yields of any given utility only if it can be assumed that the premiums are constant across bond rating classes. *A priori*, there is no reason to believe that the premiums will be constant.

#### DCF-Based *Ex Ante* Risk Premiums

In a number of studies, the DCF model has been used to estimate the *ex ante* market risk premium,  $RP_M$ . Here, one estimates the average expected future return on equity for a group of stocks,  $k_M$ , and then subtracts the concurrent risk-free rate,  $R_F$ , as proxied by the yield to maturity on either corporate or Treasury securities:<sup>4</sup>

$$RP_M = k_M - R_F \quad (2)$$

Conceptually, this procedure is exactly like the I&S approach except that one makes direct estimates of future expected returns on stocks and bonds rather than

assuming that investors expect future returns to mirror past returns.

The most difficult task, of course, is to obtain a valid estimate of  $k_M$ , the expected rate of return on the market. Several studies have attempted to estimate DCF risk premiums for the utility industry and for other stock market indices. Two of these are summarized next.

**Vandell and Kester.** In a recently published monograph, Vandell and Kester [18] estimated *ex ante* risk premiums for the period from 1944 to 1978.  $R_F$  was measured both by the yield on 90-day T-bills and by the yield on the Standard and Poor's AA Utility Bond Index. They measured  $k_M$  as the average expected return on the S&P's 500 Index, with the expected return on individual securities estimated as follows:

$$k_i = \left( \frac{D_t}{P_0} \right)_i + g_i \quad (3)$$

where,

- $D_t$  = dividend per share expected over the next twelve months,
- $P_0$  = current stock price,
- $g$  = estimated long-term constant growth rate, and
- $i$  = the  $i^{\text{th}}$  stock.

To estimate  $g_i$ , Vandell and Kester developed fifteen forecasting models based on both exponential smoothing and trend-line forecasts of earnings and dividends, and they used historic data over several estimating horizons. Vandell and Kester themselves acknowledge that, like the Ibbotson-Sinquefeld premiums, their analysis is subject to potential errors associated with trying to estimate expected future growth purely from past data. We shall have more to say about this point later.

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<sup>4</sup>In this analysis, most people have used yields on long-term bonds rather than short-term money market instruments. It is recognized that long-term bonds, even Treasury bonds, are not risk free, so an  $RP_M$  based on these debt instruments is smaller than it would be if there were some better proxy to the long-term riskless rate. People have attempted to use the T-bill rate for  $R_F$ , but the T-bill rate embodies a different average inflation premium than stocks, and it is subject to random fluctuations caused by monetary policy, international currency flows, and other factors. Thus, many people believe that for cost of capital purposes,  $R_F$  should be based on long-term securities.

We did test to see how debt maturities would affect our calculated risk premiums. If a short-term rate such as the 30-day T-bill rate is used, measured risk premiums jump around widely and, so far as we could tell, randomly. The choice of a maturity in the 10- to 30-year range has little effect, as the yield curve is generally fairly flat in that range.



**Malkiel.** Malkiel [14] estimated equity risk premiums for the Dow Jones Industrials using the DCF model. Recognizing that the constant dividend growth assumption may not be valid, Malkiel used a nonconstant version of the DCF model. Also, rather than rely exclusively on historic data, he based his growth rates on Value Line's five-year earnings growth forecasts plus the assumption that each company's growth rate would, after an initial five-year period, move toward a long-run real national growth rate of four percent. He also used ten-year maturity government bonds as a proxy for the riskless rate. Malkiel reported that he tested the sensitivity of his results against a number of different types of growth rates, but, in his words, "The results are remarkably robust, and the estimated risk premiums are all very similar." Malkiel's is, to the best of our knowledge, the first risk-premium study that uses analysts' forecasts. A discussion of analysts' forecasts follows.

### Security Analysts' Growth Forecasts

*Ex ante* DCF risk premium estimates can be based either on expected growth rates developed from time series data, such as Vandell and Kester used, or on analysts' forecasts, such as Malkiel used. Although there is nothing inherently wrong with time series-based growth rates, an increasing body of evidence suggests that primary reliance should be placed on analysts' growth rates. First, we note that the observed market price of a stock reflects the consensus view of investors regarding its future growth. Second, we know that most large brokerage houses, the larger institutional investors, and many investment advisory organizations employ security analysts who forecast future EPS and DPS, and, to the extent that investors rely on analysts' forecasts, the consensus of analysts' forecasts is embodied in market prices. Third, there have been literally dozens of academic research papers dealing with the accuracy of analysts' forecasts, as well as with the extent to which investors actually use them. For example, Cragg and Malkiel [7] and Brown and Rozeff [5] determined that security analysts' forecasts are more relevant in valuing common stocks and estimating the cost of capital than are forecasts based solely on historic time series. Stanley, Lewellen, and Schlarbaum [16] and Linke [13] investigated the importance of analysts' forecasts and recommendations to the investment decisions of individual and institutional investors. Both studies indicate that investors rely heavily on analysts' reports and incorporate analysts' forecast information in the formation of their

expectations about stock returns. A representative listing of other work supporting the use of analysts' forecasts is included in the References section. Thus, evidence in the current literature indicates that (i) analysts' forecasts are superior to forecasts based solely on time series data, and (ii) investors do rely on analysts' forecasts. Accordingly, we based our cost of equity, and hence risk premium estimates, on analysts' forecast data.<sup>5</sup>

### Risk Premium Estimates

For purposes of estimating the cost of capital using the risk premium approach, it is necessary either that the risk premiums be time-invariant or that there exists a predictable relationship between risk premiums and interest rates. If the premiums are constant over time, then the constant premium could be added to the prevailing interest rate. Alternatively, if there exists a stable relationship between risk premiums and interest rates, it could be used to predict the risk premium from the prevailing interest rate.

To test for stability, we obviously need to calculate risk premiums over a fairly long period of time. Prior to 1980, the only consistent set of data we could find came from Value Line, and, because of the work involved, we could develop risk premiums only once a year (on January 1). Beginning in 1980, however, we began collecting and analyzing Value Line data on a monthly basis, and in 1981 we added monthly estimates from Merrill Lynch and Salomon Brothers to our data base. Finally, in mid-1983, we expanded our analysis to include the IBES data.

### Annual Data and Results, 1966-1984

Over the period 1966-1984, we used Value Line data to estimate risk premiums both for the electric utility industry and for industrial companies, using the companies included in the Dow Jones Industrial and Utility averages as representative of the two groups. Value Line makes a five-year growth rate forecast, but it also gives data from which one can develop a longer-term forecast. Since DCF theory calls for a truly long-term (infinite horizon) growth rate, we concluded that it was better to develop and use such a forecast than to

<sup>5</sup>Recently, a new type of service that summarizes the key data from most analysts' reports has become available. We are aware of two sources of such services, the Lynch, Jones, and Ryan's Institutional Brokers Estimate System (IBES) and Zack's Icarus Investment Service. IBES and the Icarus Service gather data from both buy-side and sell-side analysts and provide it to subscribers on a monthly basis in both a printed and a computer-readable format.

**Exhibit 2.** Estimated Annual Risk Premiums, Nonconstant (Value Line) Model, 1966-1984

January 1 of the Year Reported	Dow Jones Electrics			Dow Jones Industrials			(3) ÷ (6)
	$k_{Avg}$	$R_F$	RP	$k_{Avg}$	$R_F$	RP	
	(1)	(2)	(3)	(4)	(5)	(6)	
1966	8.11%	4.50%	3.61%	9.56%	4.50%	5.06%	0.71
1967	9.00%	4.76%	4.24%	11.57%	4.76%	6.81%	0.62
1968	9.68%	5.59%	4.09%	10.56%	5.59%	4.97%	0.82
1969	9.34%	5.88%	3.46%	10.96%	5.88%	5.08%	0.68
1970	11.04%	6.91%	4.13%	12.22%	6.91%	5.31%	0.78
1971	10.80%	6.28%	4.52%	11.23%	6.28%	4.95%	0.91
1972	10.53%	6.00%	4.53%	11.09%	6.00%	5.09%	0.89
1973	11.37%	5.96%	5.41%	11.47%	5.96%	5.51%	0.98
1974	13.85%	7.29%	6.56%	12.38%	7.29%	5.09%	1.29
1975	16.63%	7.91%	8.72%	14.83%	7.91%	6.92%	1.26
1976	13.97%	8.23%	5.74%	13.32%	8.23%	5.09%	1.13
1977	12.96%	7.30%	5.66%	13.63%	7.30%	6.33%	0.89
1978	13.42%	7.87%	5.55%	14.75%	7.87%	6.88%	0.81
1979	14.92%	8.99%	5.93%	15.50%	8.99%	6.51%	0.91
1980	16.39%	10.18%	6.21%	16.53%	10.18%	6.35%	0.98
1981	17.61%	11.99%	5.62%	17.37%	11.99%	5.38%	1.04
1982	17.70%	14.00%	3.70%	19.30%	14.00%	5.30%	0.70
1983	16.30%	10.66%	5.64%	16.53%	10.66%	5.87%	0.96
1984	16.03%	11.97%	4.06%	15.72%	11.97%	3.75%	1.08

use the five-year prediction.<sup>6</sup> Therefore, we obtained data as of January 1 from Value Line for each of the Dow Jones companies and then solved for  $k$ , the expected rate of return, in the following equation:

$$P_0 = \sum_{t=1}^n \frac{D_t}{(1+k)^t} + \left( \frac{D_n(1+g_n)}{k-g_n} \right) \left( \frac{1}{1+k} \right)^n \quad (4)$$

Equation (4) is the standard nonconstant growth DCF model;  $P_0$  is the current stock price;  $D_t$  represents the forecasted dividends during the nonconstant growth period;  $n$  is the years of nonconstant growth;  $D_n$  is the first constant growth dividend; and  $g_n$  is the constant, long-run growth rate after year  $n$ . Value Line provides  $D_t$  values for  $t = 1$  and  $t = 4$ , and we interpolated to obtain  $D_2$  and  $D_3$ . Value Line also gives estimates for

<sup>6</sup>This is a debatable point. Cragg and Malkiel, as well as many practicing analysts, feel that most investors actually focus on five-year forecasts. Others, however, argue that five-year forecasts are too heavily influenced by base-year conditions and/or other nonpermanent conditions for use in the DCF model. We note (i) that most published forecasts do indeed cover five years, (ii) that such forecasts are typically "normalized" in some fashion to alleviate the base-year problem, and (iii) that for relatively stable companies like those in the Dow Jones averages, it generally does not matter greatly if one uses a normalized five-year or a longer-term forecast, because these companies meet the conditions of the constant-growth DCF model rather well.

ROE and for the retention rate ( $b$ ) in the terminal year,  $n$ , so we can forecast the long-term growth rate as  $g_n = b(\text{ROE})$ . With all the values in Equation (4) specified except  $k$ , we can solve for  $k$ , which is the DCF rate of return that would result if the Value Line forecasts were met, and, hence, the DCF rate of return implied in the Value Line forecast.<sup>7</sup>

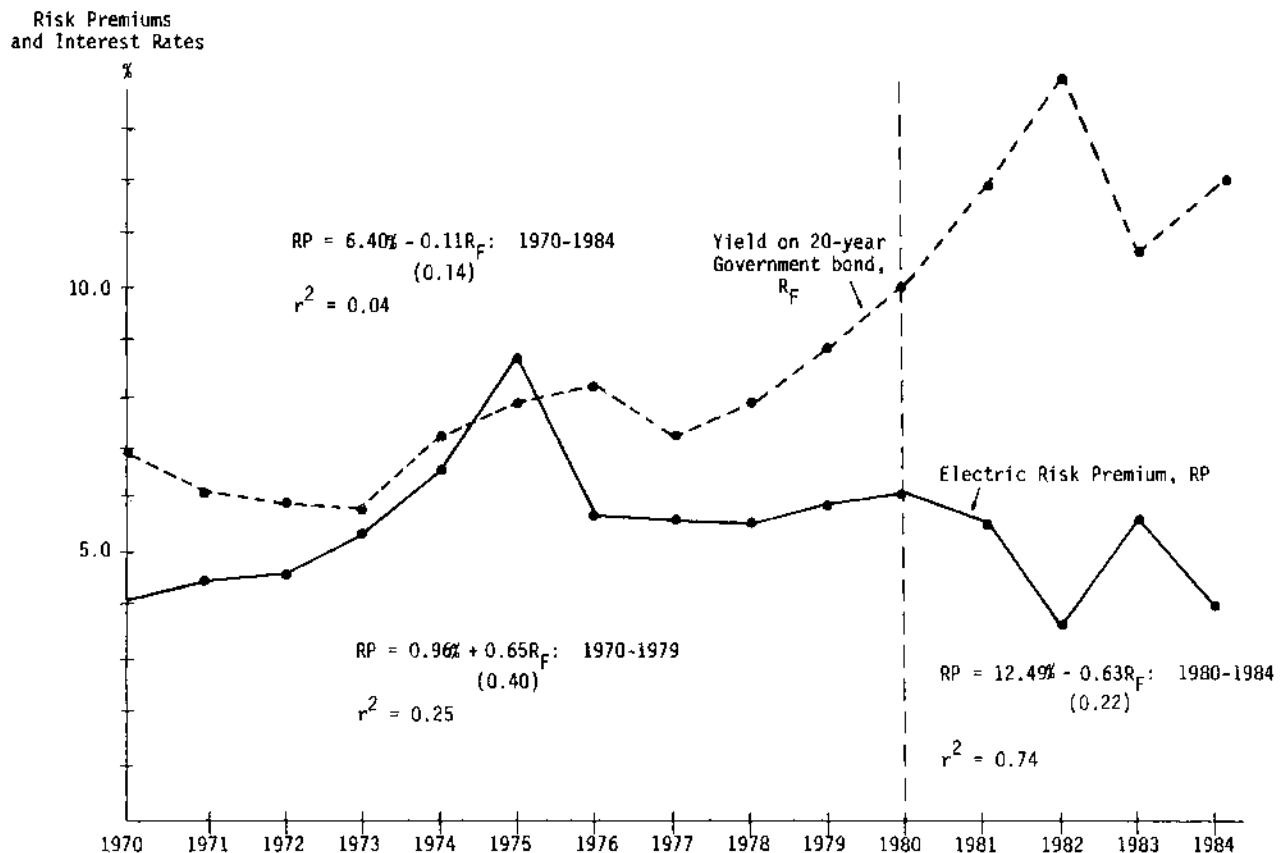
Having estimated a  $k$  value for each of the electric and industrial companies, we averaged them (using market-value weights) to obtain a  $k$  value for each group, after which we subtracted  $R_F$  (taken as the December 31 yield on twenty-year constant maturity Treasury bonds) to obtain the estimated risk premiums shown in Exhibit 2. The premiums for the electrics are plotted in Exhibit 3, along with interest rates. The following points are worthy of note:

1. Risk premiums fluctuate over time. As we shall see in the next section, fluctuations are even wider when measured on a monthly basis.
2. The last column of Exhibit 2 shows that risk premi-

<sup>7</sup>Value Line actually makes an explicit price forecast for each stock, and one could use this price, along with the forecasted dividends, to develop an expected rate of return. However, Value Line's forecasted stock price builds in a forecasted change in  $k$ . Therefore, the forecasted price is inappropriate for use in estimating current values of  $k$ .



**Exhibit 3.** Equity Risk Premiums for Electric Utilities and Yields on 20-Year Government Bonds, 1970-1984\*



\*Standard errors of the coefficients are shown in parentheses below the coefficients.

ums for the utilities increased relative to those for the industrials from the mid-1960s to the mid-1970s. Subsequently, the perceived riskiness of the two groups has, on average, been about the same.

3. Exhibit 3 shows that, from 1970 through 1979, utility risk premiums tended to have a positive association with interest rates: when interest rates rose, so did risk premiums, and vice versa. However, beginning in 1980, an inverse relationship appeared: rising interest rates led to declining risk premiums. We shall discuss this situation further in the next section.

**Monthly Data and Results, 1980-1984**

In early 1980, we began calculating risk premiums on a monthly basis. At that time, our only source of analysts' forecasts was Value Line, but beginning in 1981 we also obtained Merrill Lynch and Salomon Brothers' data, and then, in mid-1983, we obtained

IBES data. Because our focus was on utilities, we restricted our monthly analysis to that group.

Our 1980-1984 monthly risk premium data, along with Treasury bond yields, are shown in Exhibits 4 and 5 and plotted in Exhibits 6, 7, and 8. Here are some comments on these Exhibits:

1. Risk premiums, like interest rates and stock prices, are volatile. Our data indicate that it would not be appropriate to estimate the cost of equity by adding the current cost of debt to a risk premium that had been estimated in the past. Current risk premiums should be matched with current interest rates.
2. Exhibit 6 confirms the 1980-1984 section of Exhibit 3 in that it shows a strong inverse relationship between interest rates and risk premiums; we shall discuss shortly why this relationship holds.
3. Exhibit 7 shows that while risk premiums based on Value Line, Merrill Lynch, and Salomon Brothers

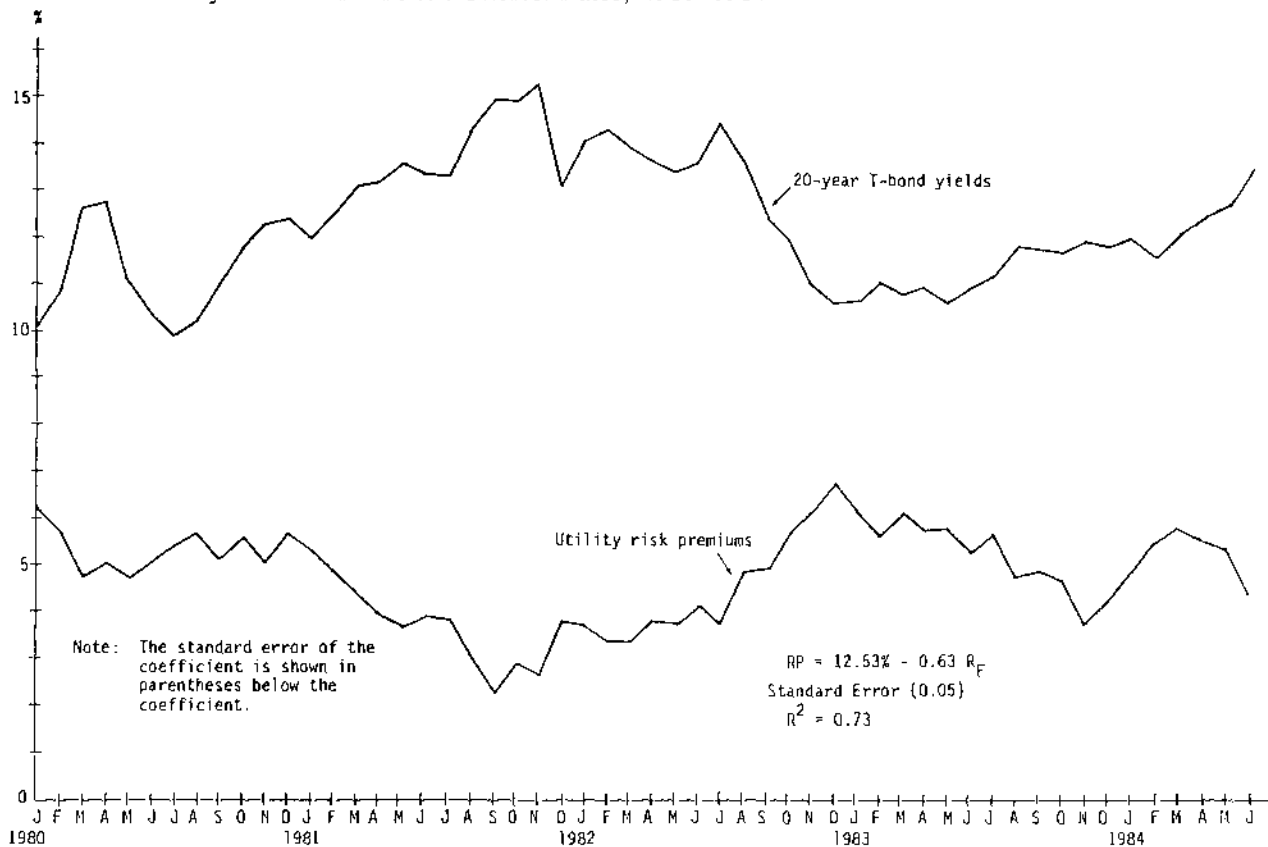
**Exhibit 4.** Estimated Monthly Risk Premiums for Electric Utilities Using Analysts' Growth Forecasts, January 1980-June 1984

Beginning of Month	Value Line	Merrill Lynch	Salomon Brothers	Average Premiums	20-Year Treasury Bond Yield, Constant Maturity Series	Beginning of Month	Value Line	Merrill Lynch	Salomon Brothers	Average Premiums	20-Year Treasury Bond Yield, Constant Maturity Series
Jan 1980	6.21%	NA	NA	6.21%	10.18%	Apr 1982	3.49%	3.61%	4.29%	3.80%	13.69%
Feb 1980	5.77%	NA	NA	5.77%	10.86%	May 1982	3.08%	4.25%	3.91%	3.75%	13.47%
Mar 1980	4.73%	NA	NA	4.73%	12.59%	Jun 1982	3.16%	4.51%	4.72%	4.13%	13.53%
Apr 1980	5.02%	NA	NA	5.02%	12.71%	Jul 1982	2.57%	4.21%	4.21%	3.66%	14.48%
May 1980	4.73%	NA	NA	4.73%	11.04%	Aug 1982	4.33%	4.83%	5.27%	4.81%	13.69%
Jun 1980	5.09%	NA	NA	5.09%	10.37%	Sep 1982	4.08%	5.14%	5.58%	4.93%	12.40%
Jul 1980	5.41%	NA	NA	5.41%	9.86%	Oct 1982	5.35%	5.24%	6.34%	5.64%	11.95%
Aug 1980	5.72%	NA	NA	5.72%	10.29%	Nov 1982	5.67%	5.95%	6.91%	6.18%	10.97%
Sep 1980	5.16%	NA	NA	5.16%	11.41%	Dec 1982	6.31%	6.71%	7.45%	6.82%	10.52%
Oct 1980	5.62%	NA	NA	5.62%	11.75%	Annual Avg.	4.00%	4.54%	5.01%	4.52%	13.09%
Nov 1980	5.09%	NA	NA	5.09%	12.33%	Jan 1983	5.64%	6.04%	6.81%	6.16%	10.66%
Dec 1980	5.65%	NA	NA	5.65%	12.37%	Feb 1983	4.68%	5.99%	6.10%	5.59%	11.01%
Annual Avg.	5.35%			5.35%	11.31%	Mar 1983	4.99%	6.89%	6.43%	6.10%	10.71%
Jan 1981	5.62%	4.76%	5.63%	5.34%	11.99%	Apr 1983	4.75%	5.82%	6.31%	5.63%	10.84%
Feb 1981	4.82%	4.87%	5.16%	4.95%	12.48%	May 1983	4.50%	6.41%	6.24%	5.72%	10.57%
Mar 1981	4.70%	3.73%	4.97%	4.47%	13.10%	Jun 1983	4.29%	5.21%	6.16%	5.22%	10.90%
Apr 1981	4.24%	3.23%	4.52%	4.00%	13.11%	Jul 1983	4.78%	5.72%	6.42%	5.64%	11.12%
May 1981	3.54%	3.24%	4.24%	3.67%	13.51%	Aug 1983	3.89%	4.74%	5.41%	4.68%	11.78%
Jun 1981	3.57%	4.04%	4.27%	3.96%	13.39%	Sep 1983	4.07%	4.90%	5.57%	4.85%	11.71%
Jul 1981	3.61%	3.63%	4.16%	3.80%	13.32%	Oct 1983	3.79%	4.64%	5.38%	4.60%	11.64%
Aug 1981	3.17%	3.05%	3.04%	3.09%	14.23%	Nov 1983	2.84%	3.77%	4.46%	3.69%	11.90%
Sep 1981	2.11%	2.24%	2.35%	2.23%	14.99%	Dec 1983	3.36%	4.27%	5.00%	4.21%	11.83%
Oct 1981	2.83%	2.64%	3.24%	2.90%	14.93%	Annual Avg.	4.30%	5.37%	5.86%	5.17%	11.22%
Nov 1981	2.08%	2.49%	3.03%	2.53%	15.27%	Jan 1984	4.06%	5.04%	5.65%	4.92%	11.97%
Dec 1981	3.72%	3.45%	4.24%	3.80%	13.12%	Feb 1984	4.25%	5.37%	5.96%	5.19%	11.76%
Annual Avg.	3.67%	3.45%	4.07%	3.73%	13.62%	Mar 1984	4.73%	6.05%	6.38%	5.72%	12.12%
Jan 1982	3.70%	3.37%	4.04%	3.70%	14.00%	Apr 1984	4.78%	5.33%	6.32%	5.48%	12.51%
Feb 1982	3.05%	3.37%	3.70%	3.37%	14.37%	May 1984	4.36%	5.30%	6.42%	5.36%	12.78%
Mar 1982	3.15%	3.28%	3.75%	3.39%	13.96%	Jun 1984	3.54%	4.00%	5.63%	4.39%	13.60%

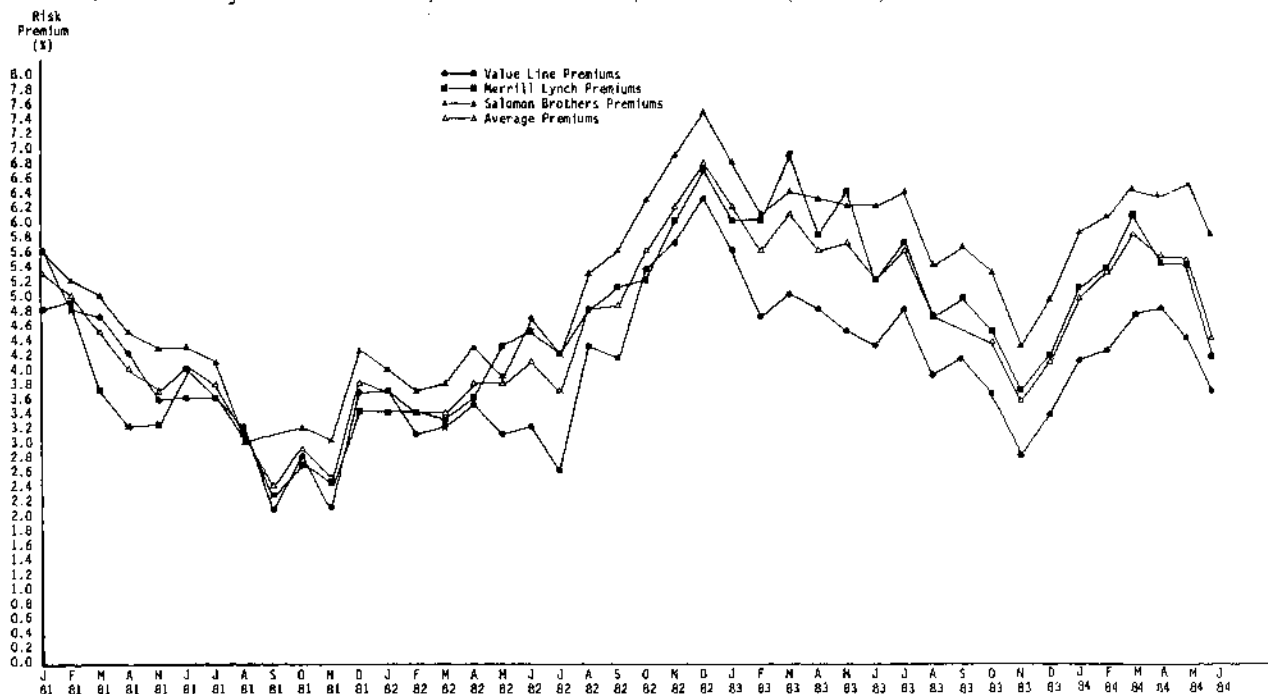
**Exhibit 5.** Monthly Risk Premiums Based on IBES Data

Beginning of Month	Average of Merrill Lynch, Salomon Brothers, and Value Line Premiums for Dow Jones Electrics	IBES Premiums for Dow Jones Electrics	IBES Premiums for Entire Electric Industry	Beginning of Month	Average of Merrill Lynch, Salomon Brothers, and Value Line Premiums for Dow Jones Electrics	IBES Premiums for Dow Jones Electrics	IBES Premiums for Entire Electric Industry
Aug 1983	4.68%	4.10%	4.16%	Feb 1984	5.19%	5.00%	4.36%
Sep 1983	4.85%	4.43%	4.27%	Mar 1984	5.72%	5.35%	4.45%
Oct 1983	4.60%	4.31%	3.90%	Apr 1984	5.48%	5.33%	4.23%
Nov 1983	3.69%	3.36%	3.36%	May 1984	5.36%	5.26%	4.30%
Dec 1983	4.21%	3.86%	3.54%	Jun 1984	4.39%	4.47%	3.40%
Jan 1984	4.92%	4.68%	4.18%	Average Premiums	4.83%	4.56%	4.01%

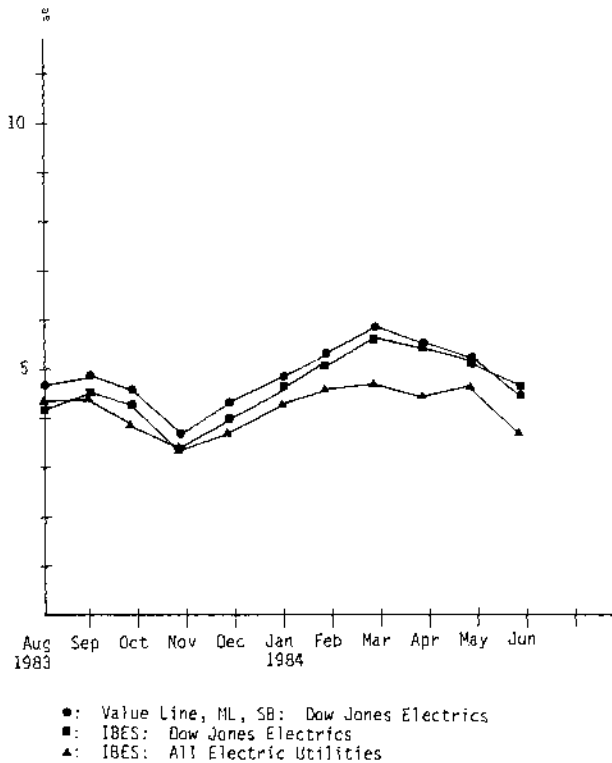
**Exhibit 6.** Utility Risk Premiums and Interest Rates, 1980-1984



**Exhibit 7.** Monthly Risk Premiums, Electric Utilities, 1981-1984 (to Date)



**Exhibit 8.** Comparative Risk Premium Data



do differ, the differences are not large given the nature of the estimates, and the premiums follow one another closely over time. Since all of the analysts are examining essentially the same data and since utility companies are not competitive with one another, and hence have relatively few secrets, the similarity among the analysts' forecasts is not surprising.

- The IBES data, presented in Exhibit 5 and plotted in Exhibit 8, contain too few observations to enable us to draw strong conclusions, but (i) the Dow Jones Electrics risk premiums based on our three-analyst data have averaged 27 basis points above premiums based on the larger group of analysts surveyed by IBES and (ii) the premiums on the 11 Dow Jones Electrics have averaged 54 basis points higher than premiums for the entire utility industry followed by IBES. Given the variability in the data, we are, at this point, inclined to attribute these differences to random fluctuations, but as more data become available, it may turn out that the differences are statistically significant. In particular, the 11 electric utilities included in the Dow

Jones Utility Index all have large nuclear investments, and this may cause them to be regarded as riskier than the industry average, which includes both nuclear and non-nuclear companies.

### Tests of the Reasonableness of the Risk Premium Estimates

So far our claims to the reasonableness of our risk-premium estimates have been based on the reasonableness of our variable measures, particularly the measures of expected dividend growth rates. Essentially, we have argued that since there is strong evidence in the literature in support of analysts' forecasts, risk premiums based on these forecasts are reasonable. In the spirit of positive economics, however, it is also important to demonstrate the reasonableness of our results more directly.

It is theoretically possible to test for the validity of the risk-premium estimates in a CAPM framework. In a cross-sectional estimate of the CAPM equation,

$$(k - R_F)_i = \alpha_0 + \alpha_1 \beta_i + u_i, \quad (5)$$

we would expect

$$\hat{\alpha}_0 = 0 \text{ and } \hat{\alpha}_1 = k_M - R_F = \text{Market risk premium.}$$

This test, of course, would be a joint test of both the CAPM and the reasonableness of our risk-premium estimates. There is a great deal of evidence that questions the empirical validity of the CAPM, especially when applied to regulated utilities. Under these conditions, it is obvious that no unambiguous conclusion can be drawn regarding the efficacy of the premium estimates from such a test.<sup>8</sup>

A simpler and less ambiguous test is to show that the risk premiums are higher for lower rated firms than for higher rated firms. Using 1984 data, we classified the

<sup>8</sup>We carried out the test on a monthly basis for 1984 and found positive but statistically insignificant coefficients. A typical result (for April 1984) follows:

$$(k - R_F)_i = 3.1675 + 1.8031 \beta_i$$

(0.91)            (1.44)

The figures in parentheses are standard errors. Utility risk premiums do increase with betas, but the intercept term is not zero as the CAPM would predict, and  $\alpha_1$  is both less than the predicted value and not statistically significant. Again, the observation that the coefficients do not conform to CAPM predictions could be as much a problem with CAPM specification for utilities as with the risk premium estimates.

A similar test was carried out by Friend, Westerfield, and Granito [9]. They tested the CAPM using expectational (survey) data rather than *ex post* holding period returns. They actually found their coefficient of  $\beta_i$  to be negative in all their cross-sectional tests.

**Exhibit 9.** Relationship between Risk Premiums and Bond Ratings, 1984\*

Month	Aaa/AA	AA	Aa/A	A	A/BBB	BBB	Below BBB
January†	—	2.61%	3.06%	3.70%	5.07%	4.90%	9.45%
February	2.98%	3.17%	3.36%	4.03%	5.26%	5.14%	7.97%
March	2.34%	3.46%	3.29%	4.06%	5.43%	5.02%	8.28%
April	2.37%	3.03%	3.29%	3.88%	5.29%	4.97%	6.96%
May	2.00%	2.48%	3.42%	3.72%	4.72%	6.64%	8.81%
June	0.72%	2.17%	2.46%	3.16%	3.76%	5.00%	5.58%
Average	2.08%	2.82%	3.15%	3.76%	4.92%	5.28%	7.84%

\*The risk premiums are based on IBES data for the electric utilities followed by both IBES and Salomon Brothers. The number of electric utilities followed by both firms varies from month to month. For the period between January and June 1984, the number of electric utilities followed by both firms ranged from 96 to 99 utilities.

†In January, there were no Aaa/AA companies. Subsequently, four utilities were upgraded to Aaa/AA.

utility industry into risk groups based on bond ratings. For each rating group, we estimated the average risk premium. The results, presented in Exhibit 9, clearly show that the lower the bond rating, the higher the risk premiums. Our premium estimates therefore would appear to pass this simple test of reasonableness.

### Risk Premiums and Interest Rates

Traditionally, stocks have been regarded as being riskier than bonds because bondholders have a prior claim on earnings and assets. That is, stockholders stand at the end of the line and receive income and/or assets only after the claims of bondholders have been satisfied. However, if interest rates fluctuate, then the holders of long-term bonds can suffer losses (either realized or in an opportunity cost sense) even though they receive all contractually due payments. Therefore, if investors' worries about "interest rate risk" versus "earning power risk" vary over time, then perceived risk differentials between stocks and bonds, and hence risk premiums, will also vary.

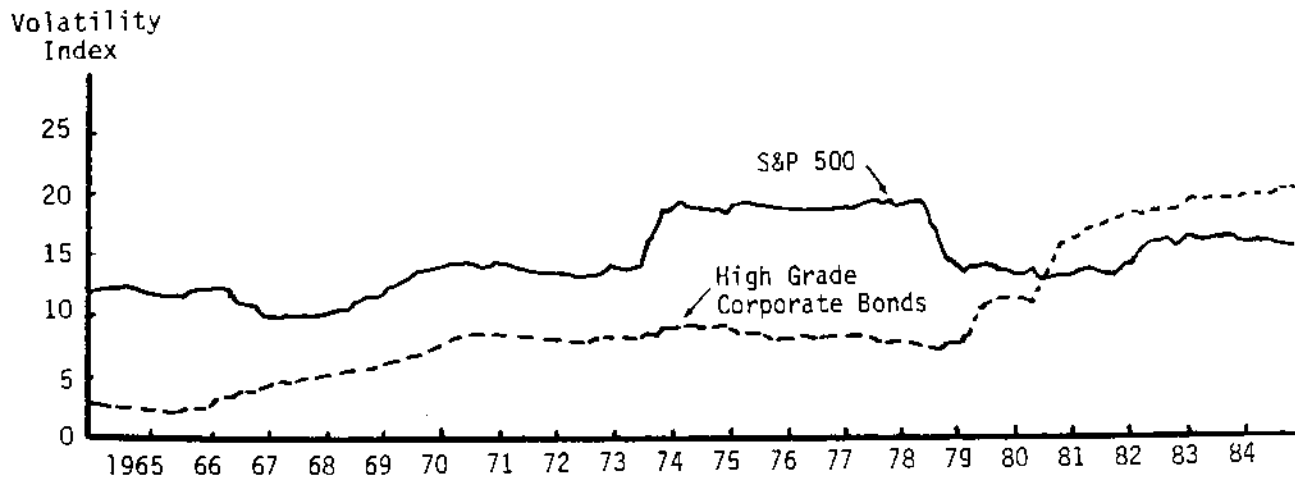
Any number of events could occur to cause the perceived riskiness of stocks versus bonds to change, but probably the most pervasive factor, over the 1966–1984 period, is related to inflation. Inflationary expectations are, of course, reflected in interest rates. Therefore, one might expect to find a relationship between risk premiums and interest rates. As we noted in our discussion of Exhibit 3, risk premiums were positively correlated with interest rates from 1966 through 1979, but, beginning in 1980, the relationship turned negative. A possible explanation for this change is given next.

**1966–1979 Period.** During this period, inflation heated up, fuel prices soared, environmental problems

surfaced, and demand for electricity slowed even as expensive new generating units were nearing completion. These cost increases required offsetting rate hikes to maintain profit levels. However, political pressure, combined with administrative procedures that were not designed to deal with a volatile economic environment, led to long periods of "regulatory lag" that caused utilities' earned ROEs to decline in absolute terms and to fall far below the cost of equity. These factors combined to cause utility stockholders to experience huge losses: S&P's Electric Index dropped from a mid-1960s high of 60.90 to a mid-1970s low of 20.41, a decrease of 66.5%. Industrial stocks also suffered losses during this period, but, on average, they were only one third as severe as the utilities' losses. Similarly, investors in long-term bonds had losses, but bond losses were less than half those of utility stocks. Note also that, during this period, (i) bond investors were able to reinvest coupons and maturity payments at rising rates, whereas the earned returns on equity did not rise, and (ii) utilities were providing a rising share of their operating income to debtholders versus stockholders (interest expense/book value of debt was rising, while net income/common equity was declining). This led to a widespread belief that utility commissions would provide enough revenues to keep utilities from going bankrupt (barring a disaster), and hence to protect the bondholders, but that they would not necessarily provide enough revenues either to permit the expected rate of dividend growth to occur or, perhaps, even to allow the dividend to be maintained.

Because of these experiences, investors came to regard inflation as having a more negative effect on utility stocks than on bonds. Therefore, when fears of inflation increased, utilities' measured risk premiums

**Exhibit 10.** Relative Volatility\* of Stocks and Bonds, 1965–1984



\*Volatility is measured as the standard deviation of total returns over the last 5 years.  
 Source: Merrill Lynch, *Quantitative Analysis*, May/June 1984.

also increased. A regression over the period 1966–1979, using our Exhibit 2 data, produced this result:

$$RP = 0.30\% + 0.73 R_F; \quad r^2 = 0.48. \\ (0.22)$$

This indicates that a one percentage point increase in the Treasury bond rate produced, on average, a 0.73 percentage point increase in the risk premium, and hence a  $1.00 + 0.73 = 1.73$  percentage point increase in the cost of equity for utilities.

**1980–1984 Period.** The situation changed dramatically in 1980 and thereafter. Except for a few companies with nuclear construction problems, the utilities' financial situations stabilized in the early 1980s, and then improved significantly from 1982 to 1984. Both the companies and their regulators were learning to live with inflation; many construction programs were completed; regulatory lags were shortened; and in general the situation was much better for utility equity investors. In the meantime, over most of the 1980–1984 period, interest rates and bond prices fluctuated violently, both in an absolute sense and relative to common stocks. Exhibit 10 shows the volatility of corporate bonds very clearly. Over most of the eighteen-year period, stock returns were much more volatile than returns on bonds. However, that situation changed in October 1979, when the Fed began to focus

on the money supply rather than on interest rates.<sup>4</sup>

In the 1980–1984 period, an increase in inflationary expectations has had a more adverse effect on bonds than on utility stocks. If the expected rate of inflation increases, then interest rates *will increase* and bond prices *will fall*. Thus, uncertainty about inflation translates directly into risk in the bond markets. The effect of inflation on stocks, including utility stocks, is less clear. If inflation increases, then utilities should, in theory, be able to obtain rate increases that would offset increases in operating costs and also compensate for the higher cost of equity. Thus, with "proper" regulation, utility stocks would provide a better hedge against unanticipated inflation than would bonds. This hedge did not work at all well during the 1966–1979 period, because inflation-induced increases in operating and capital costs were not offset by timely rate increases. However, as noted earlier, both the utilities and their regulators seem to have learned to live better with inflation during the 1980s.

Since inflation is today regarded as a major investment risk, and since utility stocks now seem to provide a better hedge against unanticipated inflation than do

<sup>4</sup>Because the standard deviations in Exhibit 10 are based on the last five years of data, even if bond returns stabilize, as they did beginning in 1982, their reported volatility will remain high for several more years. Thus, Exhibit 10 gives a rough indication of the current relative riskiness of stocks versus bonds, but the measure is by no means precise or necessarily indicative of future expectations.

bonds, the interest-rate risk inherent in bonds offsets, to a greater extent than was true earlier, the higher operating risk that is inherent in equities. Therefore, when inflationary fears rise, the perceived riskiness of bonds rises, helping to push up interest rates. However, since investors are today less concerned about inflation's impact on utility stocks than on bonds, the utilities' cost of equity does not rise as much as that of debt, so the observed risk premium tends to fall.

For the 1980-1984 period, we found the following relationship (see Exhibit 6):

$$RP = 12.53\% - 0.63 R_{pi}; \quad r^2 = 0.73.$$

(0.05)

Thus, a one percentage point increase in the T-bond rate, on average, caused the risk premium to fall by 0.63%, and hence it led to a  $1.00 - 0.63 = 0.37$  percentage point increase in the cost of equity to an average utility. This contrasts sharply with the pre-1980 period, when a one percentage point increase in interest rates led, on average, to a 1.73 percentage point increase in the cost of equity.

### Summary and Implications

We began by reviewing a number of earlier studies. From them, we concluded that, for cost of capital estimation purposes, risk premiums must be based on expectations, not on past realized holding period returns. Next, we noted that expectational risk premiums may be estimated either from surveys, such as the ones Charles Benore has conducted, or by use of DCF techniques. Further, we found that, although growth rates for use in the DCF model can be either developed from time-series data or obtained from security analysts, analysts' growth forecasts are more reflective of investors' views, and, hence, in our opinion are preferable for use in risk-premium studies.

Using analysts' growth rates and the DCF model, we estimated risk premiums over several different periods. From 1966 to 1984, risk premiums for both electric utilities and industrial stocks varied widely from year to year. Also, during the first half of the period, the utilities had smaller risk premiums than the industrials, but after the mid-1970s, the risk premiums for the two groups were, on average, about equal.

The effects of changing interest rates on risk premiums shifted dramatically in 1980, at least for the utilities. From 1965 through 1979, inflation generally had a more severe adverse effect on utility stocks than on bonds, and, as a result, an increase in inflationary expectations, as reflected in interest rates, caused an

increase in equity risk premiums. However, in 1980 and thereafter, rising inflation and interest rates increased the perceived riskiness of bonds more than that of utility equities, so the relationship between interest rates and utility risk premiums shifted from positive to negative. Earlier, a 1.00 percentage point increase in interest rates had led, on average, to a 1.73% increase in the utilities' cost of equity, but after 1980 a 1.00 percentage point increase in the cost of debt was associated with an increase of only 0.37% in the cost of equity.

Our study also has implications for the use of the CAPM to estimate the cost of equity for utilities. The CAPM studies that we have seen typically use either Ibbotson-Sinquefeld or similar historic holding period returns as the basis for estimating the market risk premium. Such usage implicitly assumes (i) that *ex post* returns data can be used to proxy *ex ante* expectations and (ii) that the market risk premium is relatively stable over time. Our analysis suggests that neither of these assumptions is correct; at least for utility stocks, *ex post* returns data do not appear to be reflective of *ex ante* expectations, and risk premiums are volatile, not stable.

Unstable risk premiums also make us question the FERC and FCC proposals to estimate a risk premium for the utilities every two years and then to add this premium to a current Treasury bond rate to determine a utility's cost of equity. Administratively, this proposal would be easy to handle, but risk premiums are simply too volatile to be left in place for two years.

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# Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts

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■ One of the most widely used concepts in finance is that shareholders require a risk premium over bond yields to bear the additional risks of equity investments. While models such as the two-parameter capital asset pricing model (CAPM) or arbitrage pricing theory offer explicit methods for varying risk premia across securities, the models are invariably linked to some underlying market (or factor-specific) risk premium. Unfortunately, the theoretical models provide limited practical advice on establishing empirical estimates of such a benchmark market risk premium. As a result, the typical advice to practitioners is to estimate the market risk premium based on historical realizations of share and bond returns (see Brealey and Myers [3]).

In this paper, we present estimates of shareholder required rates of return and risk premia which are derived

using forward-looking analysts' growth forecasts. We update, through 1991, earlier work which, due to data availability, was restricted to the period 1982-1984 (Harris [12]). Using stronger tests, we also reexamine the efficacy of using such an expectational approach as an alternative to the use of historical averages. Using the S&P 500 as a proxy for the market portfolio, we find an average market risk premium (1982-1991) of 6.47% above yields on long-term U.S. government bonds and 5.13% above yields on corporate bonds. We also find that required returns for individual stocks vary directly with their risk (as proxied by beta) and that the market risk premium varies over time. In particular, the equity market premium over government bond yields is higher in low interest rate environments and when there is a larger spread between corporate and government bond yields. These findings show that, in addition to fitting the theoretical requirement of being forward-looking, the utilization of analysts' forecasts in estimating return requirements provides reasonable empirical results that can be useful in practical applications.

Section I provides background on the estimation of equity required returns and a brief discussion of related

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literature on financial analysts' forecasts (FAF). In Section II, models and data are discussed. Following a comparison of the results to historical risk premia, the estimates are subjected to economic tests of both their time-series and cross-sectional characteristics in Section III. Finally, conclusions are offered in Section IV.

## I. Background and Literature Review

In establishing economic criteria for resource allocation, it is often convenient to use the notion of a shareholder's required rate of return. Such a rate ( $k$ ) is the minimum level of expected return necessary to compensate the investor for bearing risks and receiving dollars in the future rather than in the present. In general,  $k$  will depend on returns available on alternative investments (e.g., bonds or other equities) and the riskiness of the stock. To isolate the effects of risk, it is useful to work in terms of a risk premium ( $rp$ ), defined as

$$rp = k - i, \quad (1)$$

where  $i$  = required return for a zero risk investment.<sup>1</sup>

Lacking a superior alternative, investigators often use averages of historical realizations to estimate a benchmark "market" risk premium which then may be adjusted for the relative risk of individual stocks (e.g., using the CAPM or a variant). The historical studies of Ibbotson Associates [13] have been used frequently to implement this approach.<sup>2</sup> This historical approach requires the assumptions that past realizations are a good surrogate for future expectations and, as typically applied, that risk premia are constant over time. Carleton and Lakonishok [5] demonstrate empirically some of the problems with such historical premia when they are disaggregated for different time periods or groups of firms.

As an alternative to historical estimates, the current paper derives estimates of  $k$ , and hence, implied values of  $rp$ , using publicly available expectational data. This expectational approach employs the dividend growth model (hereafter referred to as the discounted cash flow or DCF model) in which a consensus measure of financial analysts' forecasts (FAF) of earnings is used as a proxy for investor expectations. Earlier works by Malkiel [17], Brigham,

Vinson, and Shome [4], and Harris [12] have used FAF in DCF models, and this approach has been employed in regulatory settings (see Harris [12]) and suggested by consultants as an alternative to use of historical data (e.g., Ibbotson Associates [13, pp. 127, 128]). Unfortunately, the published studies use data extending to 1984 at the latest. Our paper draws on this earlier work but extends it through 1991.<sup>3</sup> Our work is closest to that done by Harris [12], who reviews literature showing a strong link between equity prices and FAF and supporting the use of FAF as a proxy for investor expectations. Using data from 1982 to 1984, Harris' results suggest that this expectational approach to estimating equity risk premia is an encouraging alternative to the use of historical averages. He also demonstrates that such risk premia vary both cross-sectionally with the riskiness of individual stocks and over time with financial market conditions.

## II. Models and Data

### A. Model for Estimation

The simplest and most commonly used version of the DCF model to estimate shareholders' required rate of return,  $k$ , is shown in Equation (2):

$$k = \left( \frac{D_1}{P_0} \right) + g, \quad (2)$$

where  $D_1$  = dividend per share expected to be received at time one,  $P_0$  = current price per share (time 0), and  $g$  = expected growth rate in dividends per share. The limitations of this model are well known, and it is straightforward to derive expressions for  $k$  based on more general specifications of the DCF model.<sup>4</sup> The primary difficulty in using the DCF model is obtaining an estimate of  $g$ , since it should reflect market expectations of future perfor-

<sup>3</sup>See Harris [12] for a discussion of the earlier work and a detailed discussion of the approach employed here.

<sup>4</sup>As stated, Equation (2) requires expectations of either an infinite horizon of dividend growth at a rate  $g$  or a finite horizon of dividend growth at rate  $g$  and special assumptions about the price of the stock at the end of that horizon. Essentially, the assumption must ensure that the stock price grows at a compound rate of  $g$  over the finite horizon. One could alternatively estimate a nonconstant growth model, although the proxies for multistage growth rates are even more difficult to obtain than single stage growth estimates. Marston, Harris, and Crawford [19] examine publicly available data from 1982-1985 and find that plausible measures of risk are more closely related to expected returns derived from a constant growth model than to those derived from multistage growth models. These findings illustrate empirical difficulties in finding empirical proxies for multistage growth models for large samples.

<sup>1</sup>Theoretically,  $i$  is a risk-free rate, though empirically its proxy (e.g., yield to maturity on a government bond) is only a "least risk" alternative that is itself subject to risk. In this development, the effects of tax codes on required returns are ignored.

<sup>2</sup>Many leading texts in financial management use such historical risk premia to estimate a market return. See, for example, Brealey and Myers [3]. Often a market risk premium is adjusted for the observed relative risk of a stock.

mance. Without a ready source for measuring such expectations, application of the DCF model is fraught with difficulties. This paper uses published FAF of long-run growth in earnings as a proxy for  $g$ .

### B. Data

FAF for this research come from IBES (Institutional Broker's Estimate System), which is a product of Lynch, Jones, and Ryan, a major brokerage firm.<sup>5</sup> Representative of industry practice, IBES contains estimates of (i) EPS for the upcoming fiscal years (up to five separate years), and (ii) a five-year growth rate in EPS. Each item is available at monthly intervals.

The mean value of individual analysts' forecasts of five-year growth rate in EPS will be used as a proxy for  $g$  in the DCF model.<sup>6</sup> The five-year horizon is the longest horizon over which such forecasts are available from IBES and often is the longest horizon used by analysts. IBES requests "normalized" five-year growth rates from analysts in order to remove short-term distortions that might stem from using an unusually high or low earnings year as a base.

Dividend and other firm-specific information come from COMPUSTAT. Interest rates (both government and corporate) are gathered from Federal Reserve Bulletins and *Moody's Bond Record*. Exhibit 1 describes key variables used in the study. Data collected cover all dividend paying stocks in the Standard & Poor's 500 stock (S&P 500) index, plus approximately 100 additional stocks of regulated companies. Since five-year growth rates are first available from IBES beginning in 1982, the analysis covers the 113-month period from January 1982 to May 1991.

## III. Risk Premia and Required Rates of Return

### A. Construction of Risk Premia

For each month, a "market" required rate of return is calculated using each dividend paying stock in the S&P 500 index for which data are available. The DCF model in

<sup>5</sup>Harris [12] provides a discussion of IBES data and its limitations. In more recent years, IBES has begun collecting forecasts for each of the next five years. Since this work was completed, the FAF used here have become available from IBES Inc., now a subsidiary of CitiBank.

<sup>6</sup>While the model calls for expected growth in dividends, no source of data on such projections is readily available. In addition, in the long run, dividend growth is sustainable only via growth in earnings. As long as payout ratios are not expected to change, the two growth rates will be the same.

### Exhibit 1. Variable Definitions

$k$	=	Equity required rate of return.
$P_0$	=	Average daily price per share.
$D_1$	=	Expected dividend per share measured as current indicated annual dividend from COMPUSTAT multiplied by $(1 + g)$ . <sup>a</sup>
$g$	=	Average financial analysts' forecast of five-year growth rate in earnings per share (from IBES).
$i_t$	=	Yield to maturity on long-term U.S. government obligations (source: Federal Reserve Bulletin, constant maturity series).
$i_c$	=	Yield to maturity on long-term corporate bonds: Moody's average. <sup>b</sup>
$rp$	=	Equity risk premium calculated as $rp = k - i$ .
$\beta$	=	beta, calculated from CRSP monthly data over 60 months.

#### Notes:

<sup>a</sup>See footnote 7 for a discussion of the  $(1 + g)$  adjustment.

<sup>b</sup>The average corporate bond yield across bond rating categories as reported by Moody's. See *Moody's Bond Survey* for a brief description and the latest published list of bonds included in the bond rating categories.

Equation (2) is applied to each stock and the results weighted by market value of equity to produce the market required return.<sup>7</sup> The return is converted to a risk premium

<sup>7</sup>The construction of  $D_1$  is controversial since dividends are paid quarterly and may be expected to change during the year; whereas, Equation (2), as is typical, is being applied to annual data. Both the quarterly payment of dividends (due to investors' reinvestment income before year's end, see Linke and Zumwalt [15]) and any growth during the year require an upward adjustment of the current annual rate of dividends to construct  $D_1$ . If quarterly dividends grow at a constant rate, both factors could be accommodated straightforwardly by applying Equation (2) to quarterly data with a quarterly growth rate and then annualizing the estimated quarterly required return. Unfortunately, with lumpy changes in dividends, the precise nature of the adjustment depends on both an individual company's pattern of growth during the calendar year and an individual company's required return (and hence reinvestment income in the risk class).

In this work,  $D_1$  is calculated as  $D_0(1 + g)$ . The full  $g$  adjustment is a crude approximation to adjust for both growth and reinvestment income. For example, if one expected dividends to have been raised, on average, six months ago, a "1/2  $g$ " adjustment would allow for growth, and the remaining "1/2  $g$ " would be justified on the basis of reinvestment income. Any precise accounting for both reinvestment income and growth would require tracking each company's dividend change history and making explicit judgments about the quarter of the next change. Since no organized "market" forecast of such a detailed nature exists, such a procedure is not possible. To get a feel for the magnitudes involved, during the sample period the dividend yield ( $D_1/P_0$ ) and growth (market value weighted) for the S&P 500 were typically 4% to 6% and 11% to 13%, respectively. As a result, a "full  $g$ " adjustment on average increases the required return by 60 to 70 basis points (relative to no  $g$  adjustment).

**Exhibit 2. Bond Market Yields, Equity Required Return, and Equity Risk Premium,<sup>a</sup> 1982-1991**

Year	Bond Market Yields <sup>b</sup>		Equity Market Required Return <sup>c</sup>	Equity Risk Premium	
	(1) U.S. Gov't	(2) Moody's Corporates	(3) S&P 500	U.S. Gov't (3) - (1)	Moody's Corporates (3) - (2)
1982	12.92	14.94	20.08	7.16	5.14
1983	11.34	12.78	17.89	6.55	5.11
1984	12.48	13.49	17.26	4.78	3.77
1985	10.97	12.05	16.32	5.37	4.28
1986	7.85	9.71	15.09	7.24	5.38
1987	8.58	9.84	14.71	6.13	4.86
1988	8.96	10.18	15.37	6.41	5.19
1989	8.46	9.66	15.06	6.60	5.40
1990	8.61	9.77	15.69	7.08	5.92
1991 <sup>d</sup>	8.21	9.41	15.61	7.40	6.20
Average <sup>e</sup>	9.84	11.18	16.31	6.47	5.13

*Notes:*

<sup>a</sup>Values are averages of monthly figures in percent.

<sup>b</sup>Yields to maturity.

<sup>c</sup>Required return on value weighted S&P 500 index using Equation (1).

<sup>d</sup>Figures for 1991 are through May.

<sup>e</sup>Months weighted equally.

over government bonds by subtracting  $i_{lt}$ , the yield to maturity on long-term government bonds. A risk premium over corporate bond yields is also constructed by subtracting  $i_c$ , the yield on long-term corporate bonds. Exhibit 2 reports the results by year (averages of monthly data).

The results are quite consistent with the patterns reported earlier (i.e., Harris [12]). The estimated risk premia in Exhibit 2 are positive, consistent with equity owners demanding additional rewards over and above returns on debt securities. The average expectational risk premium (1982 to 1991) over government bonds is 6.47%, only slightly higher than the 6.16% average for 1982 to 1984 reported earlier (Harris [12]). Furthermore, Exhibit 2 shows the estimated risk premia change over time, suggesting changes in the market's perception of the incremental risk of investing in equity rather than debt securities.

For comparison purposes, Exhibit 3 contains historical returns and risk premia. The average expectational risk premium reported in Exhibit 2 falls roughly midway between the arithmetic (7.5%) and geometric (5.7%) long-term differentials between returns on stocks and long-term government bonds. Note, however, that the expectational risk premia appear to change over time. In the following

sections, we examine the estimated risk premia to see if they vary cross-sectionally with the risk of individual stocks and over time with financial market conditions.

### B. Cross-Sectional Tests

Earlier, Harris [12] conducted crude tests of whether expectational equity risk premia varied with risk proxied by bond ratings and the dispersion of analysts' forecasts and found that required returns increased with higher risk. Here we examine the link between these premia and beta, perhaps the most commonly used measure of risk for equities.<sup>8</sup> In keeping with traditional work in this area, we adopt the methodology introduced by Fama and Macbeth [9] but replace realized returns with expected returns from Equation (2) as the variable to be explained. For this portion of our tests, we restrict our sample to 1982-1987

<sup>8</sup>For other efforts using expectational data in the context of the two-parameter CAPM, see Friend, Westerfield, and Granito [10], Cragg and Malkiel [7], Marston, Crawford, and Harris [19], Marston and Harris [20], and Linke, Kannan, Whitford, and Zumwalt [16]. For a more complete treatment of the subject, see Marston and Harris [20] from which we draw some of these results. Marston and Harris also investigate the role of unsystematic risk and the difference in estimates found when using expected versus realized returns.

**Exhibit 3.** Average Historical Returns on Bonds, Stocks, Bills, and Inflation in the U.S., 1926-1989

Historical Return Realizations	Geometric	Arithmetic
Common stock	10.3%	12.4%
Long-term government bonds	4.6%	4.9%
Long-term corporate bonds	5.2%	5.5%
Treasury bills	3.6%	3.7%
Inflation rate	3.1%	3.2%

Source: Ibbotson Associates, Inc., *1990 Stocks, Bonds, Bills and Inflation*, 1990 Yearbook.

and in any month include firms that have at least three forecasts of earnings growth to reduce measurement error associated with individual forecasts.<sup>9</sup> This restricted sample still consists of, on average, 399 firms for each of the 72 months (or 28,744 company months).

For a given company in a given month, beta is estimated via the market model (using ordinary least squares) on the prior 60 months of return data taken from CRSP. Beta estimates are updated monthly and are calculated against an equally weighted index of all NYSE securities. For each month, we aggregate firms into 20 portfolios (consisting of approximately 20 securities each). The advantage of grouped data is the reduction in potential measurement error inherent in independent variables at the company level. Portfolios are formed based on a ranking of beta estimated from a prior time period ( $t = -61$  to  $t = -120$ ). Portfolio expected returns and beta are calculated as the simple averages for the individual securities.

Using these data, we estimate the following model for each of the 72 months:

$$R_p = \alpha_0 + \alpha_1 \beta_p + u_p, \quad p = 1 \dots 20, \quad (3)$$

where:

- $R_p$  = Expected return for portfolio  $p$  in the given month,
- $\beta_p$  = Portfolio beta, estimated over 60 prior months, and
- $u_p$  = A random error term with mean zero.

As a result of estimating regression (3) for each month, 72 estimates of each coefficient ( $\alpha_0$  and  $\alpha_1$ ) are obtained.

<sup>9</sup>Firms for which the standard deviation of individual FAF exceeded 20 in any month were excluded since we suspect some of these involve errors in data entry. This screen eliminated very few companies in any month. The 1982-1987 period was chosen due to the availability of data on betas.

Using realized returns as the dependent variable, the traditional approach (e.g., Fama and Macbeth [9]) is to assume that realized returns are a fair game. Given this assumption, the mean of the 72 values of each coefficient is an unbiased estimate of the mean over that same time period if one could have actually used expected returns as the dependent variable. Note that if expected returns are used as the dependent variable the fair-game assumption is not required. Making the additional assumption that the true value of the coefficient is constant over the 72 months, a test of whether the mean coefficient is different from zero is performed using a  $t$ -statistic where the denominator is the standard error of the 72 values of the coefficient. This is the technique employed by Fama and Macbeth [9]. If one assumes the CAPM is correct, the coefficient  $\alpha_1$  is an empirical estimate of the market risk premium, which should be positive.

To test the sensitivity of the results, we also repeat our procedures using individual security returns rather than portfolios. To account, at least in part, for differences in precision of coefficient estimates in different months we also report results in which monthly parameter estimates are weighted inversely by the standard error of the coefficient estimate rather than being weighted equally (following Chan, Hamao, and Lakonishok [6]).

Exhibit 4 shows that there is a significant positive link between expectational required returns and beta. For instance, in Panel A, the mean coefficient of 2.78 on beta is significantly different from zero at better than the 0.001 level ( $t = 35.31$ ), and each of the 72 monthly coefficients going into this average is positive (as shown by that 100% positive figure). Using individual stock returns, the significant positive link between beta and expected return remains, though it is smaller in magnitude than for portfolios.<sup>10</sup> Comparison of Panels A and B shows that the results are not sensitive to the weighting of monthly coefficients.

While the findings in Exhibit 4 suggest a strong positive link between beta and risk premia (a result often not supported when realized returns are used as a proxy for expectations; e.g., see Tinic and West [22]), the results do not support the predictions of a simple CAPM. In particular, the intercept is higher than a proxy for the risk-free rate over the sample period and the coefficient of beta is well below estimates of a market risk premium obtained from either expectational (Exhibit 2) or historical data (Exhibit

<sup>10</sup>The smaller coefficients on beta using individual stock portfolio returns are likely due in part to the higher measurement error in measuring individual stock versus portfolio betas.

**Exhibit 4.** Mean Values of Monthly Parameter Estimates for the Relationship Between Required Returns and Beta for Both Portfolios and Individual Securities (Figures in Parentheses are *t* Values and Percent Positive), 1982-1987

<i>Panel A. Equal Weighting<sup>a</sup></i>				
	Intercept	B	Adjusted $R^2$ <sup>c</sup>	F <sup>c</sup>
Portfolio returns	14.06 (54.02, 100)	2.78 (35.31, 100)	0.503	25.4
Security returns	14.77 (58.10, 100)	1.91 (16.50, 99)	0.080	39.0
<i>Panel B. Weighted by Standard Errors<sup>b</sup></i>				
Portfolio returns	13.86 (215.6, 100)	2.67 (35.80, 100)	0.503	25.4
Security returns	14.63 (398.9, 100)	1.92 (47.3, 99)	0.080	39.0

<sup>a</sup>Equally weighted average of monthly parameters estimated using cross-sectional data for each of the 72 months, January 1982 - December 1987.

<sup>b</sup>In obtaining the reported means, estimates of the monthly intercept and slope coefficients are weighted inversely by the standard error of the estimate from the cross-sectional regression for that month.

<sup>c</sup>Values are averages for the 72 monthly regressions.

3).<sup>11</sup> Nonetheless, the results show that the estimated risk premia conform to the general theoretical relationship between risk and required return that is expected when investors are risk-averse.

### C. Time Series Tests — Changes in Market Risk Premia

A potential benefit of using ex ante risk premia is the estimation of changes in market risk premia over time. With changes in the economy and financial markets, equity investments may be perceived to change in risk. For instance, investor sentiment about future business conditions likely affects attitudes about the riskiness of equity investments compared to investments in the bond markets. Moreover, since bonds are risky investments themselves, equity risk premia (relative to bonds) could change due to changes in perceived riskiness of bonds, even if equities displayed no shifts in risk. For example, during the high interest rate period of the early 1980s, the high level of interest rate volatility made fixed income investments more risky holdings than they were in a world of relatively stable rates.

<sup>11</sup>Estimation difficulties confound precise interpretation of the intercept as the risk-free rate and the coefficient on beta as the market risk premium (see Miller and Scholes [21], and Black, Jensen, and Scholes [2]). The higher than expected intercept and lower than expected slope coefficient on beta are consistent with the prior studies of Black, Jensen, and Scholes [2], and Fama and MacBeth [9] using historical returns. Such results are consistent with Black's [1] zero beta model, although alternative explanations for these findings exist as well (as noted by Black, Jensen, and Scholes [2]).

Studying changes in risk premia for utility stocks, Brigham, et al [4] conclude that, prior to 1980, utility risk premia increased with the level of interest rates, but that this pattern reversed thereafter, resulting in an inverse correlation between risk premia and interest rates. Studying risk premia for both utilities and the equity market generally, Harris [12] also reports that risk premia appear to change over time. Specifically, he finds that equity risk premia decreased with the level of government interest rates, increased with the increases in the spread between corporate and government bond yields, and increased with increases in the dispersion of analysts' forecasts. Harris' study is, however, restricted to the 36-month period, 1982 to 1984.

Exhibit 5 reports results of analyzing the relationship between equity risk premia, interest rates, and yield spreads between corporate and government bonds. Following Harris [12], these bond yield spreads are used as a time series proxy for equity risk. As the perceived riskiness of corporate activity increases, the difference between yields on corporate bonds and government bonds should increase. One would expect the sources of increased riskiness to corporate bonds to also increase risks to shareholders. All regressions in Exhibit 5 are corrected for serial correlation.<sup>12</sup>

<sup>12</sup>Ordinary least squares regressions showed severe positive autocorrelation in many cases, with Durbin Watson statistics typically below one. Estimation used the Prais-Winsten method. See Johnston [14, pp. 321-325].

**Exhibit 5.** Changes in Equity Risk Premia Over Time — Entries are Coefficient (*t*-value); Dependent Variable is Equity Risk Premium

Time period	Intercept	$i_{lt}$	$i_c - i_{lt}$	$R^2$
A. May 1991-1992 8	0.131 (19.82)	-0.651 (-11.16)		0.53
	0.092 (14.26)	-0.363 (-6.74)	0.666 (5.48)	0.54
B. 1982-1984	0.140 (8.15)	-0.637 (-5.00)		0.43
	0.064 (3.25)	-0.203 (-1.63)	1.549 (4.84)	0.60
C. 1985-1987	0.131 (7.73)	-0.739 (-9.67)		0.74
	0.110 (12.53)	-0.561 (-7.30)	0.317 (1.87)	0.77
D. 1988-1991	0.136 (16.23)	-0.793 (-8.29)		0.68
	0.130 (8.71)	-0.738 (-4.96)	0.098 (0.40)	0.68

Note: All variables are defined in Exhibit 1. Regressions were estimated using monthly data and were corrected for serial correlation using the Prais-Winsten method. For purposes of this regression, variables are expressed in decimal form, e.g., 14% = 0.14.

For the entire sample period, Panel A shows that risk premia are negatively related to the level of interest rates — as proxied by yields on government bonds,  $i_{lt}$ . This negative relationship is also true for each of the subperiods displayed in Panels B through D. Such a negative relationship may result from increases in the perceived riskiness of investment in government debt at high levels of interest rates. A direct measure of uncertainty about investments in government bonds would be necessary to test this hypothesis directly.

For the entire 1982 to 1991 period, the addition of the yield spread risk proxy to the regressions dramatically lowers the magnitude of the coefficient on government bond yields, as can be seen by comparing Equations 1 and 2 of Panel A. Furthermore, the coefficient of the yield spread (0.666) is itself significantly positive. This pattern suggests that a reduction in the risk differential between investment in government bonds and in corporate activity is translated into a lower equity market risk premium. Further examination of Panels B through D, however, suggests that the yield spread variable is much more important in explaining changes in equity risk premia in the early portion of the 1980s than in the 1988 to 1991 period.

In summary, market equity risk premia change over time and appear inversely related to the level of government interest rates but positively related to the bond yield spread, which proxies for the incremental risk of investing in equities as opposed to government bonds.

#### IV. Conclusions

Shareholder required rates of return and risk premia are based on theories about investors' expectations for the future. In practice, however, risk premia are often estimated using averages of historical returns. This paper applies an alternate approach to estimating risk premia that employs publicly available expectational data. At least for the decade studied (1982 to 1991), the resultant average market equity risk premium over government bonds is comparable in magnitude to long-term differences (1926 to 1989) in historical returns between stocks and bonds. There is strong evidence, however, that market risk premia change over time and, as a result, use of a constant historical average risk premium is not likely to mirror changes in investor return requirements. The results also show that the expectational risk premia vary cross-sectionally with the relative risk (beta) of individual stocks.

The approach offers a straightforward and powerful aid in establishing required rates of return either for corporate investment decisions or in the regulatory arena. Since data are readily available on a wide range of equities, an investigator can analyze various proxy groups (e.g., portfolios of utility stocks) appropriate for a particular decision as well as analyze changes in equity return requirements over time.

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Any forward-looking cost of capital calculation already embodies tax effects since investors price securities on the basis of after-tax returns. Besides, a very large proportion of trading is conducted by tax-exempt financial institutions (pension funds, mutual funds, 401K, etc.) for whom tax issues are largely immaterial.

The existence of a negative risk premium is highly unlikely, as it is at serious odds with the basic tenets of finance, economics, and law. Using proper definitions for expected rates of return of equity and debt, the preponderance of the evidence indicates that the negative risk premium does not exist. Several risk premium studies cited in this chapter have found positive risk premiums well in excess of 5% over the last decade. Risk premiums do narrow during unusually turbulent and volatile interest rate environments, but then return to normal levels. They are most unlikely to ever become negative.

### **4.7 Risk Premium Determinants**

Fundamentally, the primary determinant of expected returns is risk. To wit, the various paradigms of financial theory, including the Capital Asset Pricing Model and the Arbitrage Pricing Model covered in subsequent chapters, posit fundamental relationships between return and risk. There are also secondary influences on the relative magnitude of the risk premium, however, including the level of interest rates, default risk, and taxes.

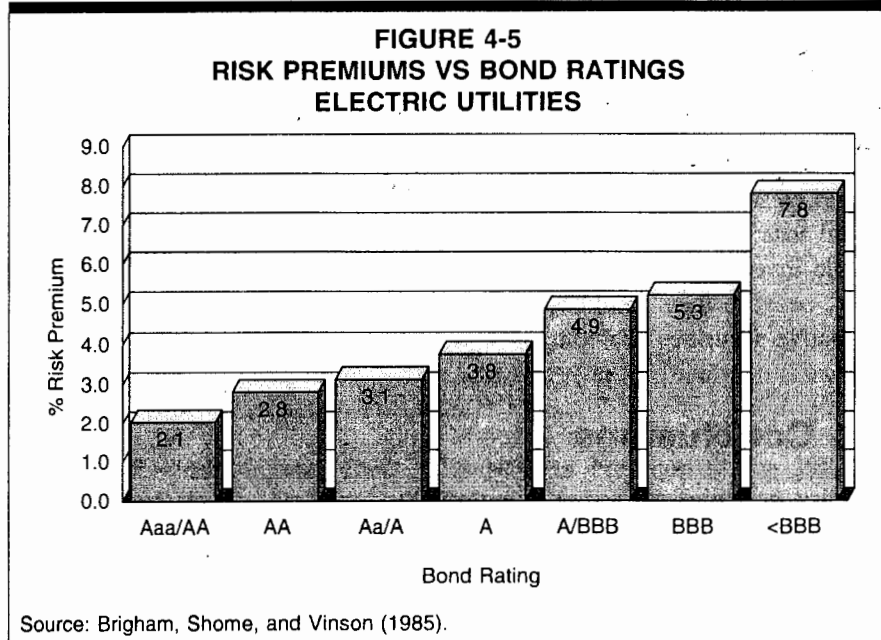
#### **Interest Rates**

Published studies by Brigham, Shome, and Vinson (1985), Harris (1986), Harris and Marston (1992, 1993), Carleton, Chambers, and Lakonishok (1983), Morin, (2005), and McShane (2005), and others demonstrate that, beginning in 1980, risk premiums varied inversely with the level of interest rates—rising when rates fell and declining when interest rates rose. The reason for this relationship is that when interest rates rise, bondholders suffer a capital loss. This is referred to as interest rate risk. Stockholders, on the other hand, are more concerned with the firm's earning power. So, if bondholders' fear of interest rate risk exceeds shareholders' fear of loss of earning power, the risk differential will narrow and hence the risk premium will shrink. This is particularly true in high inflation environments. Interest rates rise as a result of accelerating inflation, and the interest rate risk of bonds intensifies more than the earnings risk of common stocks, which are partially hedged from the ravages of inflation. This phenomenon has been termed as a "lock-in" premium. Conversely in low interest rate environments, when bondholders' interest rate fears subside and shareholders' fears of loss of earning power dominate, the risk differential will widen and hence the risk premium will increase.

Harris (1986) showed that for every 100 basis point change in government bond yields, the equity risk premium for utilities changes 51 basis points in the opposite direction, for a net change in the cost of equity of 49 basis points. For example, a 100 basis point decline in government bond yields would lead to a 51 basis point increase in the equity risk premium and therefore an overall decrease in the cost of equity of 49 basis points, a result almost identical to the estimate reported in Morin (2005). As discussed earlier, similar results were uncovered by McShane (2005), who examined the statistical relationship between DCF-derived risk premiums and interest rates using a sample of natural gas distribution utilities.

The gist of the empirical research on this subject is that the cost of equity has changed only half as much as interest rates have changed in the past. The knowledge that risk premiums vary inversely to the level of interest rates can be used to adjust historical risk premiums to better reflect current market conditions. Thus, when interest rates are unusually high (low), the appropriate current risk premium is somewhat below (above) that long-run average. The empirical research cited above provides guidance as to the magnitude of the adjustment.

Risk premiums also tend to fluctuate with changes in investor risk aversion. Such changes can be tracked by observing the yield spreads between different bond rating categories over time. Brigham, Shome, and Vinson (1985) examined the relationship between risk premium and bond rating and found, unsurprisingly, that the risk premiums are higher for lower rated firms than for higher rated firms. Figure 4-5 shows the results graphically.



to the DCF method, which may be sluggish in detecting changes in return requirements, especially when based on historical data.

One advantage of risk premium over DCF is that the former is a period-by-period (time-series) study of the cost of equity over the cost of debt, in contrast to the latter which is a point-in-time cross-sectional estimate. In other words, the risk premium approach takes a broader time-series perspective rather than a snapshot point-in-time viewpoint, and is therefore less vulnerable to the vagaries of any one particular capital market environment. A prospective risk premium test relies on a succession of DCF observations over long periods, and is not as vulnerable to a given capital market environment as a spot DCF test.

Of course, the estimation of the appropriate risk premium for either the equity market as a whole or for a specific utility company, is not an exact science. Therefore, it is necessary to evaluate a broad spectrum of data and apply alternative risk premium estimation approaches in order to derive a fair and reasonable estimate of the required equity risk premium. Equal emphasis should be accorded to risk premium results based on history and those based on prospective data. Each proxy for expected risk premium brings information to the judgment process from a different light. Neither proxy is without blemish, each has advantages and shortcomings. Historical risk premiums over long periods are available and verifiable, but may no longer be applicable if structural shifts have occurred. Prospective risk premiums may be more relevant since they encompass both history and current changes, but are nevertheless imperfect proxies and are subject to measurement error and to the vagaries of the DCF input proxies.

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# Common Equity Flotation Costs and Rate Making

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The proper treatment of common stock flotation costs is an issue in almost every utility rate case, and becomes increasingly important – for reasons shown in this article – as new stock offerings decline. The article provides clarification of the issue and offers a reasonable solution.

Incorrect statements have been made about the proper treatment of common equity flotation costs in the financial literature, and this has contributed to incorrect rate case testimony and to several improper decisions. The problem seems to have arisen for two reasons: (1) During the 1970s, when most utilities were raising large amounts of equity, the case for an equity cost adjustment was generally based on the need to sell common stock at prices greater than book value so as to avoid dilution when new stock was sold, but the proper rationale for the adjustment, and the argument that should have been made, is that an adjustment is necessary to recover actual incurred costs. (2) A number of academic writers [1, 2, 3, 6, 7, 8, 11]<sup>1</sup> have attempted to deal with the problem algebraically, and while a mathematical approach has merit, the different authors based their models on different and somewhat obscure assumptions, with the result that the academic research has actually done more to confuse than to clarify the issue.

As we see it, there are two questions which need answers:

- 1) Is an adjustment needed even if a company has no plans to sell new common stock in the foreseeable future?
- 2) If an adjustment is required, should it be applied to common stock only or to total common equity (common stock plus retained earnings)?

The answers are "yes" to the first question and "total common equity" to the second. Specifically, the market-

<sup>1</sup>Numbers in brackets correspond to numbers in the list of references at the end of the article.

determined cost of equity should be adjusted (increased) to reflect issuance costs associated with past issues regardless of whether a company plans to issue stock in the future or not, and the adjustment should be applied to the total common equity, including retained earnings. The reasons for these conclusions are set forth in the balance of this article.

## Background and Approach

The flotation cost adjustment – whether for bonds, preferred stocks, or common equity – is designed to convert a market rate of return into a fair rate of return on accounting book values. Prior to the 1970s, most utilities were regulated on the basis of the comparable earnings approach. With that method no market return was involved, and hence there was no need for a common equity flotation adjustment. However, as use of market-oriented equity cost approaches, especially the discounted cash flow (DCF) method, became prevalent during the 1970s, a specific flotation adjustment became necessary. The first use of DCF, to the authors' knowledge, was by Professor Myron J. Gordon as a staff witness in an American Telephone and Telegraph Company rate case before the Federal Communications Commission in the mid-1960s. Professors Alexander A. Robichek and Ezra Solomon of Stanford University, testifying for AT&T, proved that if a commission correctly identifies and then allows a *company* to earn its DCF cost of equity,  $k$ , on book equity, then *investors* will never be able to earn  $k$  on their investment, because the capital that investors have put up will exceed the company's book equity as a result of issuance (or flotation) costs. Thus, in the very first

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case where DCF methodology was used, Robichek and Solomon proved, and Gordon accepted, the idea that the allowed return on equity should exceed the DCF cost. Unfortunately, only the need for an adjustment, not the proper adjustment mechanism itself, was identified in that rate case.

The DCF method's great increase in popularity occurred during the 1970s, just when the companies were raising unprecedented amounts of new equity capital. Witnesses who used the DCF method recognized the need for an adjustment, and they had to provide a rationale to commissioners. Most witnesses gave this explanation:

- 1) If a company were allowed to earn only its DCF cost of equity, then its stock would normally sell at book value.
- 2) When new stock was issued, flotation expenses plus market pressure would drive the price of the stock below book value.
- 3) The issuance of stock at below book value would dilute the book value of the existing shares, and since future earnings and dividends are dependent upon book value, the market value of existing stock would also be diluted.
- 4) This dilution would obviously harm current stockholders; indeed, it would amount to economic confiscation.
- 5) Therefore, fair regulation requires commissioners to set authorized returns high enough to cause utility stocks to sell at prices that exceed book value by an amount sufficient to prevent below-book sales.

This argument was correct, although incomplete, and it was generally accepted during the 1970s, when most utilities were selling new stock every year or two. There were, of course, arguments about the level of flotation costs and the extent of market pressure, and hence about the proper market-to-book ratio, but the logic of some type of adjustment was rarely questioned.

However, as many utilities' construction programs neared completion in the early 1980s, and, accordingly, as new stock offerings slowed, the issue of the need for a flotation adjustment resurfaced. Patterson [6, 7] applied standard corporate finance techniques and concluded that a flotation adjustment is needed irrespective of current equity sales. Richter [11] supported Patterson's position. Arzac and Marcus [1, 2] also concluded that a flotation adjustment is always needed, but their formula produces an almost trivial adjustment factor unless the company is selling very large amounts of stock every year. Patterson and Arzac-Marcus debated in the finance journals, but they reached no reconciliation. Finally, in the latest article, Professors Bierman and Hass [3] derived yet another formula, one which produces an adjustment factor between those recommended by Patterson and Arzac-Marcus.

The issue is important, so it is necessary that we resolve the conflict. Further, since utility executives and regulators, not financial economists, must make decisions in this area, the resolution must be understandable to these decision makers. After studying the

problem, we concluded that the best way to approach a clear resolution is to set up some hypothetical, but reasonable, situations and then to test the alternative theories, asking the following question: What results do the several methods produce, and are those results fair to both consumers and investors?

### Bonds and Preferred Stocks

Because the proper treatment of flotation costs on bonds and preferred stocks is well known and not controversial, it helps to begin by examining that treatment as a lead-in to the analysis of common stock. First, note that debt flotation costs can be recovered in either of two ways: (1) They can be expensed and recovered from customers during the year the securities are sold, or (2) They can be capitalized and recovered over the life of the securities. The second method, which is consistent with the theory that those customers who benefit from a cost should pay for it, is generally used. Under this theory, bond flotation expenses are reflected in the embedded cost of the bond and are recovered over the life of the bond. For example, if flotation costs of 5 per cent were incurred on a \$100 million, ten-year, 15 per cent coupon bond issue, they would be handled in the following manner by most federal and state regulators:

$$\begin{aligned} \text{Cost to company} &= \frac{\text{Interest expense} + \text{Amortization of flotation costs}}{\text{Principal value} - \text{Unamortized flotation costs}} \quad (1) \\ &= \frac{\$15,000,000 + (\$5,000,000/10)}{\$100,000,000 - \$5,000,000} \\ &= \frac{\$15,500,000}{\$95,000,000} = 16.3158\% \text{ for the first year} \end{aligned}$$

Return requirements would be calculated as follows:

$$\begin{aligned} \text{Return require-} &= \frac{\text{Cost rate}(\text{Principal value} - \text{Unamortized flotation costs})}{\text{ments}} \quad (2) \\ &= 0.163158(\$100,000,000 - \$5,000,000) \\ &= \$15,500,000. \end{aligned}$$

In this example, the company received \$95 million of cash, which it used to purchase \$95 million of operating assets. To meet its interest expense and flotation amortization requirements, the company must have \$15.5 million in return dollars. This return will only be generated if the company earns 16.3158 per cent on its \$95 million of operating assets. Under this procedure, the percentage cost as calculated in Equation 1 declines each year, but the return dollar amount remains constant.<sup>2</sup>

<sup>2</sup>An alternative procedure that produces exactly the same result is to divide interest charges plus flotation amortization by the principal value of the issue, and then to multiply this cost rate by the principal value of the issue:

$$\text{Embedded cost rate} = \frac{\$15,500,000}{\$100,000,000} = 0.155 = 15.5\%$$

$$\text{Return requirements} = 0.155(\$100,000,000) = \$15,500,000.$$

This procedure in effect includes both flotation costs and operating assets in the rate base.



Preferred stocks are handled similarly. Actually, utilities issue two types of preferred stocks, those with sinking funds and those that are perpetual. The adjustment formula for sinking fund preferred is exactly like that for bonds, but a difference arises in the case of perpetual preferreds. Perpetual preferred stock represents permanent capital; hence its flotation costs are not amortized.<sup>3</sup> Assuming again a \$100 million issue and a 5 per cent flotation cost, this formula applies:

$$\text{Cost to company} = \frac{\text{Dividend requirements}}{\text{Net proceeds}} = \frac{\$15,000,000}{\$95,000,000} \quad (3)$$

$$= 15.7895\%$$

Alternatively, we could write the formula as follows:

$$\text{Cost to company} = \frac{\text{Dividend rate}}{1.0 - \text{Flotation}} = \frac{15\%}{0.95} = 15.7895\% \quad (3a)$$

The return dollars can then be calculated as follows:<sup>4</sup>

$$\begin{aligned} \text{Dollars of return} &= 0.157895(\$95,000,000) \\ &= \$15,000,000. \end{aligned}$$

In this example, the preferred stockholders expect and require a return of 15 per cent on *their investment* (\$100 million), but the company must earn 15.7895 per cent on *its operating assets* (\$95 million) to provide this required return.<sup>5</sup> If the company earned only 15 per cent on the \$95 million, then the company would have after-tax revenues of only \$14,250,000 to meet investors' preferred dividend requirements of \$15 million. Obviously, then, the 15 per cent market value cost of preferred must be adjusted upward to a 15.7895 per cent return on the company's operating assets if investors are to receive the reasonable rate of return they contracted for.

### Common Stock

From a conceptual standpoint, it has long been recognized that the situation with common stock is similar to that for bonds and preferred stocks: Issuance costs are incurred; they should not be and are not expensed at the time the stock is sold; and therefore recovery must occur in subsequent years. Further, just as with bonds and preferred stock, the authorized rate of return on rate base equity must be above the rate of return to the investor; that is, the cost to the utility is above the return to the investor. The standard text-

<sup>3</sup>In effect, the flotation costs of the preferred are amortized over an infinite period, which is to say the amortization per year is zero. Investors have made a *permanent* investment, so the original investors or those who purchase the stock in the secondary market must receive a return on that investment in perpetuity.

<sup>4</sup>Of course, preferred stock dividends are not deductible, so the total revenues required to produce the return dollars is higher for preferred stock than for debt.

<sup>5</sup>Note that the return dollars for the bond exceed those for the perpetual preferred stock - \$15.5 million versus \$15 million. However, these are first-year costs only. The bond's cost rate declines over time due to the amortization of its flotation costs, whereas the cost rate associated with the preferred stock remains constant, and the rates of return to the bondholders and the preferred stockholders are identical.

book formula, which Patterson [6] used, is as follows:<sup>6</sup>

$$r = \frac{\text{Expected dividend yield}}{1.0 - F} + g$$

Here:

- r = authorized rate of return on book equity, if stockholders are to earn their required rate of return, k,
- F = percentage flotation cost associated with common stock offerings, and
- g = the expected growth rate in earnings and dividends.

The percentage flotation factor, F, consists of two elements: (1) underwriting costs and (2) "market pressure," which is the decline in the stock price that results when the supply of shares is suddenly increased. Historically, utility underwriting expenses have averaged from 3 to 4 per cent of gross proceeds [9]. Market pressure varies over time, depending on the size of the issue, the condition of the market, and the degree to which investors were surprised by the announcement of the stock sale. Moreover, stock prices change for reasons other than new offerings, so it is difficult to obtain an exact measure of market pressure. However, several careful studies have been reported, and they indicate that market pressure is in the range of one to 3 per cent [10]. Thus, for most utilities, flotation expenses plus pressure have totaled about 5.5 per cent.

To illustrate the flotation cost adjustment process, and following Bierman and Hass for consistency, we assume that a new, start-up utility has the following characteristics:

- 1) Our hypothetical company can sell stock in the market at \$10 per share, and investors expect it to pay a dividend of one dollar and to grow at a rate of 5 per cent. Thus, its DCF cost of equity is  $k = D/P + g = 10\% + 5\% = 15\%$ , investors' required rate of return.
- 2) To raise initial capital, the company plans to sell an issue of stock, incurring flotation costs of  $F = 5$  per cent.
- 3) Applying Equation 5, we obtain a flotation-adjusted cost of equity ( $r$ ) of 15.5263 per cent:

$$\begin{aligned} r &= \frac{\text{Expected dividend yield}}{1 - F} + g \\ &= \frac{10.0\%}{0.95} + 5\% \\ &= 10.5263\% + 5\% = 15.5263\% \end{aligned}$$

Thus, the illustrative utility's fair rate of return on book equity according to Equation 5 is approximately 53 basis points above its 15 per cent unadjusted "bare bones DCF cost of equity."

- 4) The company will sell one share of stock and obtain net proceeds of \$9.50. This \$9.50 is also the initial book value, B, and rate base. (Obvi-

<sup>6</sup>This formula is developed in reference citation 5, Chapter 7, as well as in most other corporate finance textbooks.



ously, this amount, which we use for simplicity, could be scaled up without altering the conclusions.)

- 5) After its inception and initial stock offering, all of the company's equity is expected to come from retained earnings. In a later case, we will examine the situation when more stock is sold.
- 6) The company operates in a reasonable and prudent manner, such that by any fairness criteria, investors should be allowed to earn their 15 per cent cost of capital return, no more and no less. For simplicity, we also assume that regulation operates properly, without lags.
- 7) Initially, we assume that the market cost of capital remains constant at 15 per cent, and that the company maintains a constant payout ratio so as to keep the dividend yield and growth components at 10 per cent and 5 per cent, respectively. These assumptions are consistent with the

DCF model, but later in the article we expand the analysis by relaxing both of them.

Now these questions may be asked:

Should the flotation adjustment be applied to all common equity or, once retained earnings appear on the balance sheet, only to common stock?

For how many years should an adjustment be applied: One, two, ten, twenty, or forever?

When we applied Equation 5, the textbook formula which Patterson recommended, we found that it produces results that satisfy the fairness criterion; namely, it permits investors to earn exactly their 15 per cent cost of capital, no more and no less. This result for our initial case is demonstrated in Table 1, which was produced by a simple computer model, and it is analyzed below:

**Table 1**

Case 1: Company Earns Flotation-adjusted Cost of Equity (r) on All Common Equity

Year	Common Stock (1)	Retained Earnings (2)	Total Equity (3)	Stock Price (4)	Market-Book Ratio (5)	EPS (6)	DPS (7)	Payout (8)
1	\$9.50	\$0.0000	\$ 9.5000	\$10.0000	1.0526x	\$1.4750	\$1.0000	67.7966%
2	9.50	0.4750	9.9750	10.5000	1.0526	1.5488	1.0500	67.7966
3	9.50	0.9738	10.4738	11.0250	1.0526	1.6262	1.1025	67.7966
4	9.50	1.4974	10.9974	11.5763	1.0526	1.7075	1.1576	67.7966
5	9.50	2.0473	11.5473	12.1551	1.0526	1.7929	1.2155	67.7966
6	9.50	2.6247	12.1247	12.7628	1.0526	1.8825	1.2763	67.7966
7	9.50	3.2309	12.7309	13.4010	1.0526	1.9766	1.3401	67.7966
8	9.50	3.8675	13.3675	14.0710	1.0526	2.0755	1.4071	67.7966
9	9.50	4.5358	14.0358	14.7746	1.0526	2.1792	1.4775	67.7966
10	9.50	5.2376	14.7376	15.5133	1.0526	2.2882	1.5513	67.7966

NOTES:

1) Assumptions made in this case are as follows:

- a) Issue price = \$10
- b) Flotation cost = 5%
- c)  $k = D/P + g = 10\% + 5\% = 15\%$
- d)  $r = 15.5263\%$

2) The data in this case, and also the more complex cases, were developed with a Lotus 1-2-3 computer program.

- 1) The company's balance sheet item common stock is shown in Column 1.
- 2) Retained earnings are shown in Column 2. Initially, they are zero, but they build up over time.
- 3) Total equity as shown in Column 3 is the sum of common stock and retained earnings. Total equity grows as retained earnings build up.
- 4) Column 4 shows the stock price as determined by the basic DCF formula. It starts at \$10 and grows at a rate of 5 per cent per year, which is necessary to produce the 5 per cent capital gains yield that investors expect and should receive.<sup>7</sup>

- 5) Column 5 shows the market-to-book (M/B) ratio. Notice that the M/B always exceeds one. The only way the M/B ratio could go to one would be for the stock price to fall below the value shown in Column 4, but if that were to happen, then investors would not receive the capital gains to which they are entitled. Thus, the M/B will exceed one if investors are being treated fairly.
- 6) Earnings per share (EPS) as shown in Column 6 is the product of total equity times 0.155263, the fair rate of return as determined by Equation 5.
- 7) Dividends per share (DPS) as shown in Column 7 begin at one dollar and grow at a rate of 5 per cent per year. This growth rate is a requirement if investors are to earn their DCF cost of capital.
- 8) The payout ratio is shown in Column 8. Under

<sup>7</sup>The DCF valuation equation is

$$P_0 = \frac{D_1}{k - g}$$

This equation, solved for k, produces the standard DCF cost of capital equation,  $k = D_1/P_0 + g$ . See reference citation 5, Chapter 5, for a derivation and discussion.



the assumptions of the standard DCF constant growth model, the payout must be constant, and it is if  $r$  as determined by Equation 5 is used as the allowed return on equity.

9) Note also that book value per share as shown in Column 3 is growing at a constant rate, 5 per cent. The retention growth rate,  $g = br$ , where  $r$  is the return on book equity and  $b$  is the fraction of earnings, is

$$g = br = (1.0 - 0.677966)(15.5263) = 0.322(15.5263) = 5.0\%, \text{ just as it should be.}$$

Case 1 proves that Equation 5 produces the desired results: namely, returns that exactly cover the cost of equity, no more and no less. Any return on book equity different from that established by Equation 5 would produce inconsistent results. For example, suppose the authorized rate of return were cut from 15.5263 to the DCF return, 15 per cent, in Year 2. This would cause the stock price to drop from \$10.50 to the \$9.9750 book value. Thus, stockholders would suffer a loss, and they would not obtain the capital gains yield to which they are entitled. Any other type of experimentation will show exactly the same thing: If the company is not allowed to earn the cost of equity as determined by Equation 5 on total common equity, stockholders will not receive a 15 per cent return on their invested capital.

**Sale of Additional Equity**

While the only-one-equity-sale conditions used to develop Case 1 are consistent with Bierman and Hass's example, and also with some actual companies such as Comsat and the Yankee Atomic Power companies, most utilities sell additional common stock from time

to time. Therefore, we modified the computer model to analyze stock sales subsequent to the initial offering, and we report the results in Table 2 as Case 2, in which the company raises an additional share of new common equity for \$12.1247 at the beginning of Year 6. (Note that the \$12.1247 is calculated as the price of the stock at the beginning of Year 6 less flotation costs.) Earnings, dividends, and common equity all increase in Year 6 as a result of the sale, but investors continue to earn exactly 15 per cent on their investment so long as the company is allowed to earn 15.5263 per cent on its total book equity.

In Case 3, reported in Table 3, we present the results for a company that issues new equity at a flotation cost different from the cost of its original stock issue. Case 3 is similar to Case 2. Just as in Case 2, the company issues new equity at the beginning of Year 6. However, in Case 3, the equity sold at the beginning of Year 6 has a different flotation cost (3 per cent) from that of the original issue (5 per cent). With lower flotation costs, the company nets more common equity in Case 3 than in Case 2. (The dollar amount of new equity raised is calculated as the price of the share of stock at the beginning of Year 6 less the 3 per cent flotation costs incurred.)

In this example, because the new equity is sold at a different flotation cost than the old equity, a new value of  $r$  must be calculated and used to determine net income. The new  $r$  is a weighted average of  $r$  as determined by Equation 5 for each equity issue, with the weights being the fraction of total equity attributable to the new and old stock at the time the new stock is issued. Because of the lower flotation costs on the new equity, there is a corresponding drop in the market-to-book ratio in Year 6. Note, however, that after the transitional Year 6, earnings and dividends continue to grow at the required 5 per cent rate, which is neces-

**Table 2**  
Case 2: Company Sells Additional Stock at the Beginning of Year 6  
Beginning of Year

Year	Common Stock (1)	New Issue (1a)	Retained Earnings (2)	Total Equity (3)	Stock Price (4)	Market-Book Ratio (5)	EPS (6)	DPS (7)	Payout Ratio (8)
1	\$ 9.50		\$0.0000	\$ 9.5000	\$10.0000	1.0526x	\$1.4750	\$1.0000	67.7966%
2	9.50		0.4750	9.9750	10.5000	1.0526	1.5488	1.0500	67.7966
3	9.50		0.9738	10.4738	11.0250	1.0526	1.6262	1.1025	67.7966
4	9.50		1.4974	10.9974	11.5763	1.0526	1.7075	1.1576	67.7966
5	9.50		2.0473	11.5473	12.1551	1.0526	1.7929	1.2155	67.7966
6	9.50	\$12.1247	2.6247	24.2493	12.7628	1.0526	1.8825	1.2763	67.7966
7	21.6247		3.8371	25.4618	13.4010	1.0526	1.9766	1.3401	67.7966
8	21.6247		5.1102	26.7349	14.0710	1.0526	2.0755	1.4071	67.7966
9	21.6247		6.4470	28.0717	14.7746	1.0526	2.1792	1.4775	67.7966
10	21.6247		7.8506	29.4752	15.5133	1.0526	2.2882	1.5513	67.7966

NOTES:  
Assumptions made in this case are as follows:  
a) Original issue price = \$10  
b) Flotation cost = 5%  
c)  $k = D/P + g = 10\% + 5\% = 15\%$   
d)  $r = 15.5263\%$   
e) Year 6 issue price = \$12.7628  
f) Year 6 new common stock =  $\$12.7628(1 - F)$   
=  $\$12.7628(0.95)$   
= \$12.1247



Table 3

Case 3: Company Sells Additional Stock at the Beginning of  
Year 6 Incurring Different Flotation Costs

Beginning of Year									
Year	Common Stock (1)	New Issue (1a)	Retained Earnings (2)	Total Equity (3)	Stock Price (4)	Market- Book Ratio (5)	EPS (6)	DPS (7)	Payout Ratio (8)
1	\$ 9.5000		\$0.0000	\$ 9.5000	\$10.0000	1.0526x	\$1.4750	\$1.0000	67.7966%
2	9.5000		0.4750	9.9750	10.5000	1.0526	1.5488	1.0500	67.7966
3	9.5000		0.9738	10.4738	11.0250	1.0526	1.6262	1.1025	67.7966
4	9.5000		1.4974	10.9974	11.5763	1.0526	1.7075	1.1576	67.7966
5	9.5000		2.0473	11.5473	12.1551	1.0526	1.7929	1.2155	67.7966
6	9.5000	\$12.3799	2.6247	24.5046	12.7628	1.0526	1.8889	1.2763	67.7566
7	21.8799		3.8499	25.7298	13.4010	1.0526	1.9833	1.3401	67.5676
8	21.8799		5.1364	27.0163	14.0710	1.0526	2.0825	1.4071	67.5676
9	21.8799		6.4872	28.3671	14.7746	1.0526	2.1866	1.4775	67.5676
10	21.8799		7.9056	29.7855	15.5133	1.0526	2.2960	1.5513	67.5676

NOTES:

Assumptions made in this case are as follows:

- a) Original issue price = \$10
- b) Year 1 Flotation cost = 5%
- c)  $k = D/P + g = 10\% + 5\% = 15\%$
- d)  $r_1 = 15.5263\%$
- e) Year 6 issue price = \$12.7628
- f) Year 6 flotation cost = 3%
- g) Year 6 new common stock =  $\$12.7628(1 - F)$   
=  $\$12.7628(0.97)$   
= \$12.3799
- h) Additional issue  $r = 15.3093\%$

sary if investors are to receive the 15 per cent DCF return on their investment. The stock price grows at 5 per cent throughout the ten-year period.

The fact that the company must continue to earn the flotation-adjusted cost of equity, even as retained earnings build up to a larger and larger proportion of total common equity, is counterintuitive, and so it deserves further discussion. Here are two comments:

1) *Demonstration that a weighted average cost rate is inappropriate.* It has been suggested that the authorized return on equity should be a weighted average of the flotation-adjusted cost rate,  $r = 15.5263$  per cent, and the DCF cost rate,  $k = 15$  per cent, with the weights being based on common equity and accumulated retained earnings, respectively. When we programmed our model to reflect these conditions, we obtained the results shown in Table 4. A problem obviously exists - if dividends are to grow at the 5 per cent rate that investors expect, and if earnings are based on a weighted average of  $k$  and  $r$ , then a higher and higher percentage of earnings will have to be paid out. Thus, the payout ratio will rise. In Year 34 the payout ratio will exceed 100 per cent, so retained earnings will start to decline. Retained earnings actually go negative in Year 45, and Total Common Equity goes negative in Year 46, which means the company is officially bankrupt. This example demonstrates, in yet another way, that the flotation-adjusted cost of equity must be earned on all common equity if investors are to receive the DCF return to which they are entitled under prudent management. The example also demonstrates that, if investors were informed that the regulatory treatment implied in Table 4 were going to be

employed, they would not invest in the company in the first place.

2) *Logical explanation.* To understand *why* the Equation 5 value must be applied to all common equity, retained earnings as well as equity raised by selling stock, one must trace through the valuation process. Notice that, in Year 1, investors require a return of 15 per cent on their \$10 investment, or \$1.50. However, the company earns only \$1.4750, of which it pays out one dollar as a dividend and retains 47.5 cents. To give the investor the fifty-cent increase in market value (or capital gain) needed to add to the one dollar dividend to produce the \$1.50, or 15 per cent, total DCF return, the 47.5 cents must earn more than 15 per cent. Specifically, it must earn the flotation adjusted cost of equity,  $r = 15.5263$  per cent. This same thought process can be continued in other years, ad infinitum, and the ultimate conclusion is that both the original common equity and all retained earnings must earn  $r = 15.5263$  per cent.

If the preceding paragraph is not clear, we can put it another way. The investor expects and is entitled to earn, under prudent management, a return of 15 per cent on his or her investment. Thus, dividends plus capital gains must total 15 per cent, or \$1.50 in the first year. Ten per cent, or one dollar, will come from dividends, so 5 per cent, or 50 cents, must come from capital gains. To obtain a capital gain yield of 50 cents from 47.5 cents of retained earnings, the retained earnings must earn a return greater than  $k = 15$  per cent; specifically, the retained earnings must be allowed to earn  $r = 15.5263$  per cent. (If the 47.5 cents earned 15 per cent, then it would be worth exactly 47.5 cents, not 50 cents.) In Year 2, retained earnings will rise by



5 per cent from 47.5 cents to 49.875 cents; the capital gains then must rise from 50 cents to  $.50(1.05) = 52.5$  cents; the only way this can happen is for the second-year retained earnings to be allowed to earn  $r = 15.5263$  per cent; and so on.

**The Effect of the Payout Ratio on the Flotation Cost Adjustment**

Even though fair regulation requires that retained earnings be allowed to earn the flotation adjusted cost of equity, the level of retained earnings as affected by the payout ratio does have a material effect on the size of the adjustment.

To illustrate this point, assume (1) that two utilities both have a 15 per cent market cost of equity, that is,  $k = 15$  per cent; (2) that both companies sell at a price of \$20; but (3) that one company has a policy of paying out 25 per cent of its earnings and retaining 75 per cent, while the other has the reverse dividend policy. Assume further that both companies earn 15 per cent on their \$20 market value, so earnings per share are  $.15(\$20) = \$3$ . The high payout company has a dividend of  $.75(\$3) = \$2.25$ , while the low payout company has a dividend of  $.25(\$3) = 75$  cents. At the same time, the low payout company, which plows most of its earnings back into the business, will have a growth rate of  $g = .75(15 \text{ per cent}) = 11.25$  per cent, while the high payout company will have  $g = .25(15 \text{ per cent}) = 3.75$  per cent.

Under these conditions, the following situation would exist for the two illustrative companies:

Low payout Company:  $k = \frac{D_1}{P_0} + g = \frac{\$0.75}{\$20} + 11.25\%$   
 $= 3.75\% + 11.25\% = 15\%$

High payout Company:  $k = \frac{D_1}{P_0} + g = \frac{\$2.25}{\$20} + 3.75\%$   
 $= 11.25\% + 3.75\% = 15\%$

Applying the adjustment formula,

$$r = \frac{\text{Expected dividend yield}}{1 - F} + g.$$

we find this situation, assuming that issuance costs are 5 per cent:

High payout Company:  $r = \frac{11.25\%}{0.95} + 3.75\%$   
 $= 11.842\% + 3.75\% = 15.592\%$

Low payout Company:  $r = \frac{3.75\%}{0.95} + 11.25\%$   
 $= 3.947\% + 11.25\% = 15.197\%$   
 Difference = 0.395%

Thus, we see that the company which retains most of its earnings, and which consequently has more retained

**Table 4**

Case 4: Company Earns Weighted Average k

Year	Common Stock (1)	Retained Earnings (2)	Total Equity (3)	EPS (4)	DPS (5)	Payout Rate (6)	Weighted k (7)
1	\$9.5000	\$ 0.0000	\$ 9.5000	\$1.4750	\$1.0000	67.7966%	0.1553
2	9.5000	0.4750	9.9750	1.5463	1.0500	67.9062	0.1550
3	9.5000	0.9713	10.4713	1.6207	1.1025	68.0267	0.1548
4	9.5000	1.4894	10.9894	1.6984	1.1576	68.1591	0.1545
5	9.5000	2.0302	11.5302	1.7795	1.2155	68.3047	0.1543
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
33	9.5000	23.2219	32.7219	4.9583	4.7649	96.1006	0.1515
34	9.5000	23.4152	32.9152	4.9873	5.0032	100.3188	0.1515
35	9.5000	23.3993	32.8993	4.9849	5.2533	105.3852	0.1515
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
45	9.5000	-2.3443	7.1557	1.1234	8.2791	736.9935	0.1570
46	The company goes bankrupt.						

NOTES:

- 1) Assumptions made in this case are as follows:
  - a) Issue price = \$10
  - b) Flotation cost = 5%
  - c)  $k = D/P + g = 10\% + 5\% = 15\%$
  - d)  $r = 15.5263\%$
- 2) The dividend in Year 45 cannot grow by the 5 per cent growth rate, because if it did total equity would become negative. Therefore, the Year 45 dividend is calculated as the remaining portion of total equity + earnings in Year 45:  $\$7.1557 + \$1.1234 = \$8.2791$ .

**Table 5**

Case 5: Company Sells Additional Stock and k Changes

Beginning of Year

Year	Common Stock (1)	New Issue (1a)	Retained Earnings (2)	Total Equity (3)	Stock Price (4)	Market-Book Ratio (5)	EPS (6)	DPS (7)	Payout Ratio (8)
1	\$ 9.5000		\$0.0000	\$ 9.5000	\$10.0000	1.0526x	\$1.4750	\$1.0000	67.7966%
2	9.5000		0.4750	9.9750	10.5000	1.0526	1.5488	1.0500	67.7966
3	9.5000		0.9738	10.4738	11.0250	1.0526	1.6262	1.1025	67.7966
4	9.5000		1.4974	10.9974	11.5763	1.0526	1.7075	1.1576	67.7966
5	9.5000		2.0473	11.5473	12.1551	1.0526	1.7929	1.2155	67.7966
6	9.5000	\$12.3799	2.6247	24.5046	12.7628	1.0526	1.8889	1.2763	67.5676
7	21.8799		3.8499	25.7298	13.4010	1.0526	1.9833	1.3401	67.5676
8	21.8799		5.1364	27.0163	14.0710	1.0526	1.8123	1.4071	77.6398
9	21.8799		5.9469	27.8268	14.4931	1.0526	1.8667	1.4493	77.6398
10	21.8799		6.7817	28.6616	14.9279	1.0526	1.9227	1.4928	77.6398

NOTES:

Assumptions made in this case are as follows:

- a) Original issue price = \$10
- b) Year 1 flotation cost = 5%
- c) Issue 1  $r = 15.5263\%$
- d) Year 6 issue price = \$12.7628
- e) Year 6 flotation cost = 3%
- f) Year 6 new common stock =  $\$12.7628(1 - F)$   
=  $\$12.7628(0.97)$   
= \$12.3799
- g) Additional issue  $r = 15.3093\%$
- h) Years 1-7,  $k = D/P + g = 10\% + 5\% = 15\%$
- i) Years 8-10,  $k = D/P + g = 10\% + 3\% = 13\%$

**Table 6**

Case 6: Company Sells Additional Stock and k Changes

Beginning of Year

Year	Common Stock (1)	New Issue (1a)	Retained Earnings (2)	Total Equity (3)	Stock Price (4)	Market-Book Ratio (5)	EPS (6)	DPS (7)	Payout Ratio (8)
1	\$ 9.5000		\$0.0000	\$ 9.5000	\$10.0000	1.0526x	\$1.4750	\$1.0000	67.7966%
2	9.5000		0.4750	9.9750	10.5000	1.0526	1.5488	1.0500	67.7966
3	9.5000		0.9738	10.4738	11.0250	1.0526	1.6262	1.1025	67.7966
4	9.5000		1.4974	10.9974	11.5763	1.0526	1.7075	1.1576	67.7966
5	9.5000		2.0473	11.5473	12.1551	1.0526	1.7929	1.2155	67.7966
6	9.5000	\$12.3799	2.6247	24.5046	12.7628	1.0526	1.8889	1.2763	67.5676
7	21.8799		3.8499	25.7298	13.4010	1.0526	1.9833	1.3401	67.5676
8	21.8799		5.1364	27.0163	14.0710	1.0526	1.8011	1.1257	62.5000
9	21.8799		5.9469	27.3671	14.7746	1.0526	1.8911	1.1820	62.5000
10	21.8799		6.7817	29.7855	15.5133	1.0526	1.9857	1.2411	62.5000

NOTES:

Assumptions made in this case are as follows:

- a) Original issue price = \$10
- b) Year 1 flotation cost = 5%
- c) Issue 1  $r = 15.5263\%$
- d) Year 6 issue price = \$12.7628
- e) Year 6 flotation cost = 3%
- f) Year 6 new common stock =  $\$12.7628(1 - F)$   
=  $\$12.7628(0.97)$   
= \$12.3799
- g) Additional issue  $r = 15.3093\%$
- h) Years 1-7,  $k = D/P + g = 10\% + 5\% = 15\%$
- i) Years 8-10,  $k = D/P + g = 10\% + 3\% = 13\%$



earnings and a smaller dollar amount of flotation costs, also has the lower flotation-adjusted cost of equity. This demonstrates that the issuance cost adjustment formula is itself adjusted to reflect the extent to which a company finances by retaining earnings rather than by selling new common stock.

### Changes in the DCF Cost of Equity

We also analyzed the effects of changes in the DCF cost of equity over time. While a change in the DCF  $k$  causes a change in earnings, dividends, and the growth rate, the flotation adjustment *process* is not affected - Equation 5 still produces a fair rate of return on book value. This is demonstrated in Tables 5 and 6. It should be noted that the effects of the adjustment as derived by Equation 5 do vary with the level of the DCF cost and with the split between dividend yield and growth. In Case 5, we analyze the effects of a change in the growth rate with the dividend yield held constant, while in Case 6, reversing them, we analyze the effects of a change in the dividend yield with the growth rate held constant. Both cases use Case 3 as their base case. In each instance, a new value for  $r$ , based on Equation 5, can be established, and this return on book value permits investors to earn their new DCF cost of equity.

### Capitalizing Flotation Costs

Bierman and Hass, almost as an afterthought toward the end of their article, suggested that utilities should be allowed to record the *gross amount* of equity sales and to earn a DCF return on gross equity capital. This would amount to capitalizing flotation costs. These capitalized costs could then be amortized over some prescribed period or else be kept on the books indefinitely.

To show this, we set up computer models using our various cases but capitalizing flotation costs. One can see that earnings, dividends, and stock prices are all exactly like those shown in our tables. Thus, capitalizing flotation costs produces exactly the same results as Equation 5.

Capitalizing flotation costs has much to recommend it, for it would eliminate the confusion that has existed. However, a fundamental problem exists for any company that has incurred flotation costs in the past, that is, for virtually the entire utility industry: How would the fact that past flotation costs were not capitalized be dealt with? In other words, capitalizing flotation costs would be an excellent procedure for a new, start-up, company, but such a plan would not be feasible for an existing company without somehow adjusting for past costs. Such an adjustment could be made, but a discussion of it goes beyond the scope of this article.

### Conclusion

The proper treatment of equity flotation costs has caused much confusion. Had such costs been either capitalized in the past or else expensed on an incurred basis, there would be no problem, but since neither of these practices has generally been followed, the DCF return must be adjusted to produce a fair rate of return on book equity.

Further, the adjustment is always required, irrespective of whether or not a company has plans to sell new stock in the future, and the adjusted return must be earned on total equity, including retained earnings. Otherwise, it would be impossible for investors to earn the cost of equity, even under prudent and efficient management.

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### **Alternative Sources of Equity**

A second controversy is whether a flotation cost allowance should be allowed because a company can always obtain equity from sources other than a public issue of common stock, such as a rights issue for example. There are several sources of equity capital available to a firm, including: public common stock issues, conversions of convertible preferred stock, dividend reinvestment plans, employees' savings plans, warrants, and stock dividend programs. Each carries its own set of administrative costs and flotation cost components, including discounts, commissions, corporate expenses, offering spread, and market pressure.

Equity capital raised through a public issue is typically more expensive than alternate sources of equity. Rights issues, when available, are less expensive, but direct costs still would be incurred. Of course, a rights issue assumes that a willing underwriter and a willing market could be found for such offerings in the first place, an unlikely event in public capital markets for small unproven companies. Internal sources of equity, including dividend reinvestment and/or employee stock option plans, are also typically less expensive, unless a discount on the purchase price is inherent in the plan, in which case they are often equivalent to a public issue. Direct costs are also incurred in an employee stock savings plan and/or a shareholder dividend reinvestment plan.

The flotation cost allowance is still warranted, however, because it is a composite factor that reflects the historical mix of all these sources of equity. The flotation cost allowance applicable to all the company's book equity is actually a weighted average of the current allowances required for each past financing, that is, the flotation cost allowance factor is a build-up of historical flotation cost adjustments associated and traceable to each component of equity source. However, it is impractical and prohibitive to start from the inception of a company and source all present equity from various equity vintages and types of equity capital raised by the company. One way of circumventing the problem of vintaging each form of equity is to source book equity by broad categories of equity, such as dividend reinvestment plan equity, stock option equity, and public issue equity, and calculate a weighted average flotation factor. That is also onerous and cumbersome. A practical solution is to rely on the results of the empirical studies discussed earlier that quantify the average flotation cost factor of a large sample of utility stock offerings.

### **Efficient Markets**

A third controversy centers around the argument that the omission of flotation cost is justified on the grounds that, in an efficient market, the stock price already reflects any accretion or dilution resulting from new issuances of securities and that a flotation cost adjustment results in a double counting effect. The simple fact of the matter is that whatever stock price is set by the



market, the company issuing stock will always net an amount less than the stock price due to the presence of intermediation and flotation costs. As a result, the company must earn slightly more on its reduced rate base in order to produce a return equal to that required by shareholders.

Existing shareholders are made worse off when a company issues new stock below the market price, irrespective of how "efficient" that stock price may be. As seen in an earlier example, the new issue results in a transfer of wealth from existing to new shareholders. This is true regardless of the degree of efficiency of the market.

It has also been argued that a flotation cost allowance is inequitable since it results in a windfall gain to shareholders. This argument is erroneous. As stated previously, the company's common equity account is credited by an amount less than the market value of the issue, so that the company must earn slightly more on its reduced rate base in order to produce a return equal to that required by shareholders. Moreover, existing shareholders are made worse off when a company issues new stock below the market price.

The suggestion that the flotation cost allowance is unwarranted because investors factor this shortcoming in the stock price implies that it is appropriate to use a deficient model because such a deficiency is reflected in stock prices. In other words, it is appropriate to use a deficient model because investors are aware of this. Such circular reasoning could be used to justify any regulatory policy. For example, under this reasoning, it would be appropriate to authorize a return on equity of 1% because investors reflect this fact in the stock price. This is clearly illogical and erroneous. Any regulatory policy, as irrational as it may be, can be justified using this argument.

### **Absence of Imminent Stock Issues**

Another controversy is whether the flotation cost allowance should still be applied when the utility is not contemplating an imminent common stock issue. Some argue that flotation costs are real and should be recognized in calculating the fair return on equity, but only at the time when the expenses are incurred. In other words, the flotation cost allowance should not continue indefinitely, but should be made in the year in which the sale of securities occurs, with no need for continuing compensation in future years. This argument implies that the company has already been compensated for these costs and/or the initial contributed capital was obtained freely, devoid of any flotation costs, which is an unlikely assumption, and certainly not applicable to most utilities. If the flotation costs of past stock issues have been fully recovered, the argument has merit. If that assumption is not met, the argument is without merit. The flotation cost adjustment cannot be strictly forward-looking unless all past flotation costs associated with past issues have been recovered.

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(rate base) of \$95 to provide investors with a \$10 return on the money actually invested. This is because only the net proceeds from an equity issue are added to the rate base on which the investor earns.

Here is another example that illustrates the fact that existing shareholders are made worse off when a company issues new stock below the market price. Before the issue, let us say there are 100 shares trading at \$10.00 per share. The company issues an additional 25 shares at \$5.00. Company value must increase by  $25 \times \$5 = \$125$ . Therefore, after the issue each share is worth:

$$\frac{(100 \times \$10) + \$125}{(100 + 25)} = \$1,125/125 = \$9.00$$

New shareholders gain  $25 \times \$4.00 = \$100$  while old shareholders lose  $100 \times \$1.00 = \$100$ . Thus, the new issue results in a transfer of wealth from existing to new shareholders.

## 10.2 Magnitude of Flotation Costs

The flotation cost allowance requires an estimated adjustment to the return on equity of approximately 5% to 10%, depending on the size and risk of the issue. A more precise figure can be obtained by surveying empirical studies on utility security offerings.<sup>2</sup>

According to empirical studies by Lee et al. (1996), Borum and Malley (1986), Logue and Jarrow (1978), Pettway (1984), Pettway and Radcliffe (1985), Eckbo and Masulis (1987), Bhagat and Frost (1986), Mikkelson and Partch (1986) and Smith (1977, 1986), underwriting costs and expenses average 4%–5.5% of gross proceeds for utility stock offerings. The more recent study by Lee et al. (1996) finds an average flotation cost of 4.92% for utility common stock offerings, and finds that flotation costs increase progressively for smaller size issues.

As far as the market pressure effect is concerned, empirical studies clearly show that the market pressure effect is real, tangible, and measurable. All the studies support the idea that the announcement of the sale of large blocks of stock produces a decline in a company's stock price, as one would expect

<sup>2</sup> The common practice of issuing common equity shares by public utilities is through a firm public underwriting. In recent years, this practice has given way to shelf registrations. Shelf registrations are cheaper than firm underwritings and will over time decrease the average cost of issuing equity, as the lower marginal cost of bought deals gradually lowers the historical average cost of raising equity. "Bought deals," which is a uniquely Canadian practice, bear strong resemblance to the shelf registration procedure in the U.S.

**Application of Yankee Gas Services Company for a Rate Increase, DPUC Docket No. 04-06-01  
Direct Testimony of George J. Eckenroth (Jul. 2, 2004) at Exhibit GJE-11.1**

**All Secondary Utility Equity Offerings Since 1/1/2001 \$100MM to \$500MM**

Stock Ticker Symbol	Filing date	Pricing date	Issuer	Amount (\$MM)	Gross Spread (%)	Industry	Bookrunner
GXP	04 Jun 2004	08 Jun 2004	Great Plains Energy Inc	150.0	3.50	Utility-Electric Power	ML
WR	17 Mar 2004	25 Mar 2004	Westar Energy Inc	249.3	3.50	Utility-Electric Power	SSB, LEHMAN, WCHV
UGI	22 Jan 2004	18 Mar 2004	UGI Corp	249.7	4.38	Utility-Diversified	CSFB
HE	09 Mar 2004	10 Mar 2004	Hawaiian Electric Industries Inc	103.7	4.00	Utility-Electric Power	ML
PNY	12 Jan 2004	20 Jan 2004	Piedmont Natural Gas Co Inc	180.6	3.51	Utility-Gas Distribution	ML
WPS	13 Nov 2003	19 Nov 2003	WPS Resources Corp	173.1	3.50	Utility-Diversified	AGEDW
SRE	07 Oct 2003	08 Oct 2003	Sempra Energy	462.0	3.00	Utility-Diversified	SSB, JPMHQ, MS
PEG	30 Sep 2003	01 Oct 2003	Public Service Enterprise Group Inc - PSEG	367.1	3.00	Utility-Electric Power	SSB, MS
OGE	19 Aug 2003	21 Aug 2003	OGE Energy Corp	115.0	3.66	Utility-Electric Power	LEHMAN
VVC	31 Jul 2003	07 Aug 2003	Vectren Corp	169.7	3.50	Utility-Diversified	GS
LNT	25 Jun 2003	01 Jul 2003	Alliant Energy Corp	332.1	4.00	Utility-Diversified	BOFA, ML
ATO	17 Jun 2003	18 Jun 2003	Atmos Energy Corp	103.8	4.00	Utility-Gas Distribution	ML
AES	16 Jun 2003	17 Jun 2003	AES Corp	346.2	3.25	Utility-Electric Power	BOFA, LEHMAN
SUG	30 May 2003	05 Jun 2003	Southern Union Co	174.8	3.50	Utility-Gas Distribution	JPMHQ, ML
PPL	14 May 2003	15 May 2003	PPL Corp	270.0	3.25	Utility-Electric Power	MS, SSB, JPMHQ
BKH	21 Apr 2003	24 Apr 2003	Black Hills Corp	124.2	4.75	Utility-Electric Power	CSFB, LEHMAN
ATG	31 Jan 2003	11 Feb 2003	AGL Resources Inc	141.7	3.50	Utility-Gas Distribution	MS, BOFA
AEE	13 Jan 2003	14 Jan 2003	Ameren Corp	222.8	3.26	Utility-Electric Power	GS
PNW	16 Dec 2002	17 Dec 2002	Pinnacle West Capital Corp	206.5	3.50	Utility-Electric Power	SSB, CSFB
POM	09 Dec 2002	09 Dec 2002	Pepco Holdings Inc	110.0	3.90	Utility-Electric Power	ML
GXP	14 Nov 2002	21 Nov 2002	Great Plains Energy Inc	151.8	3.75	Utility-Electric Power	ML
PEG	11 Nov 2002	12 Nov 2002	Public Service Enterprise Group Inc - PSEG	458.0	3.25	Utility-Electric Power	JPMHQ, ML, MS
TE	08 Oct 2002	10 Oct 2002	TECO Energy Inc	213.2	3.00	Utility-Electric Power	MS
SCG	30 Sep 2002	09 Oct 2002	SCANA Corp	150.6	3.25	Utility-Electric Power	UBSW, BOFA
PSC	08 Jul 2002	19 Sep 2002	Philadelphia Suburban Corp	180.4	4.27	Utility-Water Supply	ALEX, UBSW
AEE	03 Sep 2002	04 Sep 2002	Ameren Corp	338.1	3.26	Utility-Electric Power	GS
ILA	19 Jun 2002	27 Jun 2002	Aquila Inc	281.3	3.25	Utility-Electric Power	CSFB
DQE	12 Jun 2002	20 Jun 2002	Duquesne Light Holdings Inc	232.9	3.75	Utility-Electric Power	LEHMAN
DTE	14 Jun 2002	19 Jun 2002	DTE Energy Co	273.6	3.25	Utility-Electric Power	SSB, UBSW
FPL	03 Jun 2002	06 Jun 2002	FPL Group Inc	325.5	3.00	Utility-Electric Power	GS, ML
TE	30 May 2002	04 Jun 2002	TECO Energy Inc	357.1	3.00	Utility-Electric Power	UBSW, CSFB
AEE	19 Feb 2002	26 Feb 2002	Ameren Corp	227.1	3.49	Utility-Electric Power	GS
ILA	22 Jan 2002	24 Jan 2002	Aquila Inc	287.5	3.25	Utility-Electric Power	SSB, UBSW
LNT	25 Oct 2001	08 Nov 2001	Alliant Energy Corp	273.7	3.75	Utility-Diversified	ML
SRP	24 Jul 2001	09 Aug 2001	Sierra Pacific Resources	353.6	3.75	Utility-Electric Power	ML
ORN	11 May 2001	31 May 2001	Orion Power Holdings Inc	355.6	4.25	Utility-Electric Power	GS
ALE	09 May 2001	23 May 2001	ALLETE Inc	153.9	4.00	Utility-Electric Power	UBSW
BKH	22 Mar 2001	18 Apr 2001	Black Hills Corp	175.9	5.50	Utility-Electric Power	CSFB
NRG	16 Feb 2001	07 Mar 2001	NRG Energy Inc	496.8	4.52	Utility-Electric Power	CSFB, ML
TE	20 Feb 2001	06 Mar 2001	TECO Energy Inc	239.3	3.00	Utility-Electric Power	CSFB
ILA	23 Feb 2001	05 Mar 2001	Aquila Inc	342.2	2.76	Utility-Electric Power	ML
VVC	19 Jan 2001	08 Feb 2001	Vectren Corp	134.5	3.48	Utility-Diversified	ML
			<b>Mean</b>	<b>244.16</b>	<b>3.60</b>		
			<b>Median</b>	<b>230.00</b>	<b>3.50</b>		

**Notes**

1. Source: Equidesk
2. Excludes Block Trades
3. Includes all utility marketed offerings between \$100MM - \$500MM. Offering amount includes proceeds raised through exercise of greenshoe (where applicable)
4. U.S. offerings only

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Application of Yankee Gas Services Company for a Rate Increase, DPUC Docket No. 04-06-01  
Direct Testimony of George J. Eckenroth (Jul. 2, 2004) at Exhibit GJE-11.1  
Updated Through April 2005  
All Secondary Utility Equity Offerings Since 1/1/2001 \$100MM to \$500MM

Stock					Amount	Gross		
Ticker Symbol	Filing date	Pricing date	Issuer		(\$MM)	Spread (%)	Industry	Bookrunner
VVC	19 Jan 2001	08 Feb 2001	Vectren Corp		134.5	3.48	Utility-Diversified	ML
ILA	23 Feb 2001	05 Mar 2001	Aquila Inc		342.2	2.76	Utility-Electric Power	ML
TE	20 Feb 2001	06 Mar 2001	TECO Energy Inc		239.3	3.00	Utility-Electric Power	CSFB
NRG	16 Feb 2001	07 Mar 2001	NRG Energy Inc		496.8	4.52	Utility-Electric Power	CSFB, ML
BKH	22 Mar 2001	18 Apr 2001	Black Hills Corp		175.9	5.50	Utility-Electric Power	CSFB
ALE	09 May 2001	23 May 2001	ALLETE Inc		153.9	4.00	Utility-Electric Power	UBSW
ORN	11 May 2001	31 May 2001	Orion Power Holdings Inc		355.6	4.25	Utility-Electric Power	GS
SRP	24 Jul 2001	09 Aug 2001	Sierra Pacific Resources		353.6	3.75	Utility-Electric Power	ML
LNT	25 Oct 2001	08 Nov 2001	Alliant Energy Corp		273.7	3.75	Utility-Diversified	ML
ILA	22 Jan 2002	24 Jan 2002	Aquila Inc		287.5	3.25	Utility-Electric Power	SSB, UBSW
AEE	19 Feb 2002	26 Feb 2002	Ameren Corp		227.1	3.49	Utility-Electric Power	GS
TE	30 May 2002	04 Jun 2002	TECO Energy Inc		357.1	3.00	Utility-Electric Power	UBSW, CSFB
FPL	03 Jun 2002	06 Jun 2002	FPL Group Inc		325.5	3.00	Utility-Electric Power	GS, ML
DTE	14 Jun 2002	19 Jun 2002	DTE Energy Co		273.6	3.25	Utility-Electric Power	SSB, UBSW
DQE	12 Jun 2002	20 Jun 2002	Duquesne Light Holdings Inc		232.9	3.75	Utility-Electric Power	LEHMAN
ILA	19 Jun 2002	27 Jun 2002	Aquila Inc		281.3	3.25	Utility-Electric Power	CSFB
AEE	03 Sep 2002	04 Sep 2002	Ameren Corp		338.1	3.26	Utility-Electric Power	GS
PSC	08 Jul 2002	19 Sep 2002	Philadelphia Suburban Corp		180.4	4.27	Utility-Water Supply	ALEX, UBSW
SCG	30 Sep 2002	09 Oct 2002	SCANA Corp		150.6	3.25	Utility-Electric Power	UBSW, BOFA
TE	08 Oct 2002	10 Oct 2002	TECO Energy Inc		213.2	3.00	Utility-Electric Power	MS
PEG	11 Nov 2002	12 Nov 2002	Public Service Enterprise Group Inc - PSEG		458.0	3.25	Utility-Electric Power	JPMHQ, ML, MS
GXP	14 Nov 2002	21 Nov 2002	Great Plains Energy Inc		151.8	3.75	Utility-Electric Power	ML
POM	09 Dec 2002	09 Dec 2002	Pepco Holdings Inc		110.0	3.90	Utility-Electric Power	ML
PNW	16 Dec 2002	17 Dec 2002	Pinnacle West Capital Corp		206.5	3.50	Utility-Electric Power	SSB, CSFB
AEE	13 Jan 2003	14 Jan 2003	Ameren Corp		222.8	3.26	Utility-Electric Power	GS
ATG	31 Jan 2003	11 Feb 2003	AGL Resources Inc		141.7	3.50	Utility-Gas Distribution	MS, BOFA
BKH	21 Apr 2003	24 Apr 2003	Black Hills Corp		124.2	4.75	Utility-Electric Power	CSFB, LEHMAN
PPL	14 May 2003	15 May 2003	PPL Corp		270.0	3.25	Utility-Electric Power	MS, SSB, JPMHQ
SUG	30 May 2003	05 Jun 2003	Southern Union Co		174.8	3.50	Utility-Gas Distribution	JPMHQ, ML
AES	16 Jun 2003	17 Jun 2003	AES Corp		346.2	3.25	Utility-Electric Power	BOFA, LEHMAN
ATO	17 Jun 2003	18 Jun 2003	Atmos Energy Corp		103.8	4.00	Utility-Gas Distribution	ML
LNT	25 Jun 2003	01 Jul 2003	Alliant Energy Corp		332.1	4.00	Utility-Diversified	BOFA, ML
VVC	31 Jul 2003	07 Aug 2003	Vectren Corp		169.7	3.50	Utility-Diversified	GS
OGE	19 Aug 2003	21 Aug 2003	OGE Energy Corp		115.0	3.66	Utility-Electric Power	LEHMAN
PEG	30 Sep 2003	01 Oct 2003	Public Service Enterprise Group Inc - PSEG		367.1	3.00	Utility-Electric Power	SSB, MS
SRE	07 Oct 2003	08 Oct 2003	Sempra Energy		462.0	3.00	Utility-Diversified	SSB, JPMHQ, MS
WPS	13 Nov 2003	19 Nov 2003	WPS Resources Corp		173.1	3.50	Utility-Diversified	AGEDW
PNY	12 Jan 2004	20 Jan 2004	Piedmont Natural Gas Co Inc		180.6	3.51	Utility-Gas Distribution	ML
PNY	12 Jan 2004	20 Jan 2004	Piedmont Natural Gas Co Inc		180.6	3.51	Utility - Gas Distribution	ML
HE	09 Mar 2004	10 Mar 2004	Hawaiian Electric Industries Inc		103.7	4.00	Utility-Electric Power	ML
HE	09 Mar 2004	10 Mar 2004	Hawaiian Electric Industries Inc		103.7	4.00	Utility - Electric Power	ML
UGI	22 Jan 2004	18 Mar 2004	UGI Corp		249.7	4.38	Utility-Diversified	CSFB
UGI	22 Jan 2004	18 Mar 2004	UGI Corp		249.7	4.38	Utility - Diversified	CSFB
WR	17 Mar 2004	25 Mar 2004	Westar Energy Inc		249.3	3.50	Utility-Electric Power	SSB, LEHMAN, WCHV
WR	17 Mar 2004	25 Mar 2004	Westar Energy Inc		249.3	3.50	Utility - Electric Power	CITI, LEH, WCHV
GXP	04 Jun 2004	08 Jun 2004	Great Plains Energy Inc		150.0	3.50	Utility-Electric Power	ML
GXP	04 Jun 2004	08 Jun 2004	Great Plains Energy Inc		150.0	3.50	Utility - Electric Power	ML
AEE	30 Jun 2004	30 Jun 2004	Ameren Corp		458.9	3.00	Utility - Electric Power	GS
ATO	07 Jul 2004	13 Jul 2004	Atmos Energy Corp		246.2	4.00	Utility - Gas Distribution	ML
SUG	20 Jul 2004	26 Jul 2004	Southern Union Co		237.2	3.50	Utility - Gas Distribution	JPM, ML
ILA	16 Aug 2004	18 Aug 2004	Aquila Inc		117.3	3.88	Utility - Electric Power	LEH
POM	07 Sep 2004	09 Sep 2004	Pepco Holdings Inc		287.8	3.50	Utility - Electric Power	ML, CSFB
CMS	04 Oct 2004	07 Oct 2004	CMS Energy Corp		298.3	3.50	Utility - Electric Power	CITI, JPM, ML
ATO	14 Oct 2004	21 Oct 2004	Atmos Energy Corp		398.5	4.00	Utility - Gas Distribution	ML
ATG	15 Nov 2004	18 Nov 2004	AGL Resources Inc		342.4	3.00	Utility - Gas Distribution	MS, JPM
IDA	07 Dec 2004	09 Dec 2004	Idacorp Inc		120.8	4.00	Utility - Electric Power	MS
SUG	07 Feb 2005	07 Feb 2005	Southern Union Co		343.0	3.04	Utility - Gas Distribution	ML, JPM
PNM	18 Mar 2005	23 Mar 2005	PNM Resources Inc		104.6	3.25	Utility - Electric Power	MS, BOFA, WCHV
CMS	28 Mar 2005	30 Mar 2005	CMS Energy Corp		281.8	3.50	Utility - Electric Power	CITI, JPM, DB, WCHV
PNW	26 Apr 2005	27 Apr 2005	Pinnacle West Capital Corp		256.0	3.25	Utility - Electric Power	LEH
<b>Mean</b>					<b>244.68</b>	<b>3.59</b>		

Notes

1. Source: Exhibit GJE-11.1, Equidest
2. Excludes Block Trades
3. Includes all utility marketed offerings between \$100MM - \$500MM. Offering amount includes proceeds raised through exercise of greenshoe (where applicable)
4. U.S. offerings only

# Value Line Forecast for the U.S. Economy

	ACTUAL					Estimated				
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>GROSS DOMESTIC PRODUCT AND ITS COMPONENTS (2009 CHAIN WEIGHTED \$)</b>										
<b>BILLIONS OF DOLLARS</b>										
Final Sales	14979	15292	15521	15882	16263	16598	17069	17513	17933	18345
Total Consumption	10264	10413	10565	10876	11212	11525	11869	12225	12567	12894
Nonresidential Fixed Investment	1803	1964	2033	2148	2199	2186	2273	2386	2482	2581
Structures	375	423	428	465	443	421	442	464	483	497
Equipment & Software	848	939	982	1026	1073	1051	1087	1142	1199	1247
Residential Fixed Investment	385	437	488	487	541	571	602	638	664	690
Exports	1898	1963	2032	2087	2093	2085	2140	2226	2326	2442
Imports	2358	2410	2436	2529	2642	2673	2793	2932	3050	3172
Federal Government	1236	1214	1143	1117	1118	1126	1136	1125	1114	1108
State & Local Governments	1761	1728	1714	1721	1763	1784	1799	1817	1836	1845
Gross Domestic Product	15518	16155	16692	17393	18037	18518	19346	20306	21292	22326
Real GDP (2009 Chain Weighted \$)	15021	15355	15612	15982	16397	16634	17028	17487	17942	18391
<b>PRICES AND WAGES-ANNUAL RATES OF CHANGE</b>										
GDP Deflator	2.0	1.8	1.6	1.8	1.1	1.6	2.1	2.2	2.2	2.3
CPI-All Urban Consumers	3.1	2.1	1.5	1.6	0.4	1.4	2.5	2.5	2.6	2.7
PPI-Finished Goods	6.0	1.9	1.2	1.9	-3.2	0.7	3.0	2.5	2.6	2.8
Employment Cost Index—Total Comp.	2.1	1.9	1.9	2.1	1.9	2.4	2.8	3.1	3.2	3.2
Productivity	0.5	0.9	0.0	0.7	0.5	0.2	1.1	1.7	1.5	1.5
<b>PRODUCTION AND OTHER KEY MEASURES</b>										
Industrial Prod. (% Change)	3.3	2.8	1.9	3.7	-1.6	-0.2	2.1	3.0	2.8	2.8
Factory Operating Rate (%)	73.9	74.5	74.1	75.3	75.5	75.1	75.2	75.5	75.3	75.0
Nonfarm Inven. Change (2009 Chain Weighted \$)	39.7	72.7	54.3	65.0	88.1	17.3	21.3	55.0	50.0	45.0
Housing Starts (Mill. Units)	0.61	0.78	0.93	1.00	1.11	1.18	1.37	1.50	1.55	1.55
Existing House Sales (Mill. Units)	4.28	4.66	5.07	4.92	5.23	5.46	5.53	5.55	5.50	5.45
Total Light Vehicle Sales (Mill. Units)	12.7	14.4	15.5	16.4	17.4	17.5	17.9	17.8	17.5	17.3
National Unemployment Rate (%)	8.9	8.1	7.4	6.2	5.3	4.9	4.7	4.7	4.8	4.8
Federal Budget Surplus (Unified, FY, \$Bill)	-1297	-1089	-680	-483	-479	-535	-550	-500	-600	-600
Price of Oil (\$Bbl., U.S. Refiners' Cost)	101.75	101.00	100.47	92.23	48.41	41.05	49.50	49.00	55.00	63.00
<b>MONEY AND INTEREST RATES</b>										
3-Month Treasury Bill Rate (%)	0.1	0.1	0.1	0.1	0.1	0.3	0.9	1.6	2.3	2.8
Federal Funds Rate (%)	0.1	0.1	0.1	0.1	0.1	0.4	1.0	1.7	2.7	3.0
10-Year Treasury Note Rate (%)	2.8	1.8	2.4	2.5	2.2	1.8	2.3	2.8	3.5	3.7
Long-Term Treasury Bond Rate (%)	3.9	2.9	3.5	3.3	2.9	2.6	3.3	3.6	4.2	4.4
AAA Corporate Bond Rate (%)	4.6	3.7	4.2	4.2	3.9	3.7	4.4	4.8	5.2	5.3
Prime Rate (%)	3.3	3.3	3.3	3.3	3.3	3.6	4.6	3.5	3.5	4.0
<b>INCOMES</b>										
Personal Income (% Change)	6.1	5.0	1.1	4.4	3.9	3.2	4.9	5.0	5.0	5.0
Real Disp. Inc. (% Change)	2.4	3.1	-1.4	2.7	3.1	2.1	2.7	3.0	3.0	2.8
Personal Savings Rate (%)	5.7	7.6	4.8	4.8	5.8	5.7	5.6	6.0	6.3	6.5
After-Tax Profits (\$Bill)	1473	1683	1693	1694	1588	1670	1785	1839	1968	2066
Yr-to-Yr % Change	0.6	17.9	0.6	0.1	-6.3	5.2	6.9	3.0	7.0	5.0
<b>COMPOSITION OF REAL GDP-ANNUAL RATES OF CHANGE</b>										
Gross Domestic Product	1.6	2.2	1.7	2.4	2.6	1.4	2.4	2.7	2.6	2.5
Final Sales	1.7	2.1	1.5	2.3	2.4	2.1	2.8	2.6	2.4	2.3
Total Consumption	2.3	1.5	1.5	2.9	3.1	2.8	3.0	3.0	2.8	2.6
Nonresidential Fixed Investment	7.7	9.0	3.5	5.7	2.4	-0.6	3.9	5.0	4.0	4.0
Structures	2.3	12.9	1.2	8.5	-4.7	-4.9	5.0	5.0	4.0	3.0
Equipment & Software	13.6	10.8	4.6	4.5	4.5	-2.0	3.4	5.0	5.0	4.0
Residential Fixed Investment	0.5	13.5	11.7	-0.3	11.3	5.5	5.5	6.0	4.0	4.0
Exports	6.9	3.4	3.5	2.7	0.3	-0.4	2.7	4.0	4.5	5.0
Imports	5.5	2.2	1.1	3.8	4.5	1.2	4.5	5.0	4.0	4.0
Federal Government	-2.7	-1.9	-5.8	-2.3	0.1	0.8	0.9	-1.0	-1.0	-0.5
State & Local Governments	-3.3	-1.9	-0.8	0.4	2.4	1.2	0.9	1.0	1.0	0.5

Long Label	2006	2007	2008	2009	2010	2011	2012	2013
Rate on Aa-rated public utility bonds Source: Hist	5.84	5.94	6.19	5.75	5.23	4.78	3.83	4.24
Rate on 90-day prime commercial paper Source:	5.03	4.99	2.12	0.26	0.23	0.17	0.19	0.11
Chained price index--gross domestic product Sou	94.81	97.34	99.22	100.00	101.23	103.32	105.22	106.94
Consumer price index, all-urban Source: BLS Unit	2.02	2.07	2.15	2.15	2.18	2.25	2.30	2.33
Rate on 3-month eurodollar deposits Source: Reu	5.19	5.30	2.91	0.69	0.34	0.34	0.43	0.27



Long Label	2014	2015	2016	2017	2018	2019	2020	2021
Rate on Aa-rated public utility bonds Source: Hist	4.19	3.99	4.46	4.88	5.31	5.62	5.62	5.62
Rate on 90-day prime commercial paper Source:	0.10	0.17	0.64	1.56	2.58	3.11	3.11	3.11
Chained price index--gross domestic product Sou	108.69	109.78	111.34	113.39	115.70	118.07	120.61	123.25
Consumer price index, all-urban Source: BLS Unit	2.37	2.37	2.39	2.44	2.51	2.57	2.64	2.71
Rate on 3-month eurodollar deposits Source: Reu	0.23	0.32	0.82	1.68	2.74	3.29	3.29	3.29

Long Label	2022	2023	2024	2025	2026
Rate on Aa-rated public utility bonds Source: Hist	5.62	5.62	5.62	5.62	5.62
Rate on 90-day prime commercial paper Source:	3.11	3.11	3.11	3.11	3.11
Chained price index--gross domestic product Sou	125.90	128.47	131.04	133.68	136.39
Consumer price index, all-urban Source: BLS Unit	2.78	2.85	2.92	2.99	3.06
Rate on 3-month eurodollar deposits Source: Reu	3.29	3.29	3.29	3.29	3.29

Description	2011	2012	2013	2014	2015	2016
Yield on 10-year treasury notes, percent per annum, FRB	2.79	1.80	2.35	2.54	2.14	2.22
Yield on 30-year treasury bonds, percent per annum, FRB	3.91	2.92	3.45	3.34	2.84	2.94
Gross domestic product, billions of dollars, annual rate, BEA	15,517.93	16,155.25	16,663.15	17,348.08	17,937.85	18,624.11
Chained price index--gross domestic product, 2009=100, BEA	103.32	105.22	106.94	108.69	109.78	111.34

Description	2017	2018	2019	2020	2021	2022
Yield on 10-year treasury notes, percent per annum, FRB	2.57	3.13	3.65	3.65	3.65	3.65
Yield on 30-year treasury bonds, percent per annum, FRB	3.20	3.62	4.11	4.11	4.11	4.11
Gross domestic product, billions of dollars, annual rate, BEA	19,502.87	20,418.76	21,340.36	22,324.95	23,313.83	24,348.32
Chained price index--gross domestic product, 2009=100, BEA	113.39	115.70	118.07	120.61	123.25	125.90

Description	2023	2024	2025	2026	2027	2028
Yield on 10-year treasury notes, percent per annum, FRB	3.65	3.65	3.65	3.65	3.65	3.65
Yield on 30-year treasury bonds, percent per annum, FRB	4.11	4.11	4.11	4.11	4.11	4.11
Gross domestic product, billions of dollars, annual rate, BEA	25,405.18	26,479.81	27,604.97	28,792.35	30,006.02	31,287.92
Chained price index--gross domestic product, 2009=100, BEA	128.47	131.04	133.68	136.39	139.25	142.10

Description	2029	2030	2031	2032	2033	2034
Yield on 10-year treasury notes, percent per annum, FRB	3.65	3.65	3.65	3.65	3.65	3.65
Yield on 30-year treasury bonds, percent per annum, FRB	4.11	4.11	4.11	4.11	4.11	4.11
Gross domestic product, billions of dollars, annual rate, BEA	32,631.04	34,034.73	35,506.25	37,024.23	38,629.46	40,337.13
Chained price index--gross domestic product, 2009=100, BEA	144.98	147.97	151.10	154.32	157.64	161.04

Description	2035	2036	2037	2038	2039	2040
Yield on 10-year treasury notes, percent per annum, FRB	3.65	3.65	3.65	3.65	3.65	3.65
Yield on 30-year treasury bonds, percent per annum, FRB	4.11	4.11	4.11	4.11	4.11	4.11
Gross domestic product, billions of dollars, annual rate, BEA	42,122.80	43,962.83	45,865.63	47,873.36	49,949.79	52,090.46
Chained price index--gross domestic product, 2009=100, BEA	164.49	168.05	171.68	175.41	179.25	183.18



Description	2041	2042	2043	2044	2045	2046
Yield on 10-year treasury notes, percent per annum, FRB	3.65	3.65	3.65	3.65	3.65	3.65
Yield on 30-year treasury bonds, percent per annum, FRB	4.11	4.11	4.11	4.11	4.11	4.11
Gross domestic product, billions of dollars, annual rate, BEA	54,318.06	56,658.69	59,116.80	61,691.34	64,347.09	67,142.48
Chained price index--gross domestic product, 2009=100, BEA	187.24	191.43	195.73	200.16	204.69	209.36

Indicators	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
<b>Real Gross Domestic Product</b>	<b>15,962</b>	<b>16,349</b>	<b>16,841</b>	<b>17,335</b>	<b>17,740</b>	<b>18,155</b>	<b>18,555</b>	<b>18,928</b>	<b>19,337</b>	<b>19,811</b>	<b>20,287</b>
<b>Components of Real Gross Domestic Product</b>											
Real Consumption	10,876	11,221	11,577	11,961	12,283	12,606	12,861	13,106	13,368	13,665	13,990
Real Investment	2,718	2,842	2,996	3,201	3,315	3,400	3,513	3,593	3,699	3,837	3,959
Real Government Spending	2,838	2,860	2,919	2,935	2,946	2,956	2,967	2,968	2,983	3,007	3,034
Real Exports	2,086	2,119	2,193	2,291	2,382	2,489	2,615	2,757	2,906	3,068	3,225
Real Imports	2,529	2,662	2,815	3,030	3,165	3,274	3,374	3,465	3,582	3,723	3,874
<b>Energy Intensity</b>											
<b>(thousand Btu per 2009 dollar of GDP)</b>											
Delivered Energy	4.52	4.38	4.30	4.22	4.17	4.10	4.03	3.96	3.88	3.81	3.73
Total Energy	6.15	5.92	5.79	5.69	5.60	5.52	5.42	5.33	5.22	5.12	5.00
<b>Price Indices</b>											
GDP Chain-type Price Index (2009=1.000)	1.087	1.098	1.119	1.142	1.165	1.188	1.213	1.242	1.270	1.295	1.319
<b>Consumer Price Index (1982-84=1.00)</b>											
All-urban	2.37	2.37	2.39	2.45	2.52	2.59	2.65	2.72	2.80	2.86	2.92
Energy Commodities and Services	2.43	2.02	1.82	1.95	2.09	2.28	2.41	2.52	2.61	2.70	2.78
<b>Wholesale Price Index (1982=1.00)</b>											
All Commodities	2.05	1.91	1.89	1.95	2.01	2.08	2.14	2.19	2.24	2.29	2.33
Fuel and Power	2.10	1.60	1.49	1.64	1.78	1.96	2.10	2.18	2.26	2.36	2.45
Metals and Metal Products	2.15	2.01	1.97	2.03	2.08	2.11	2.15	2.20	2.24	2.29	2.32
Industrial Commodities excluding Energy	1.98	1.94	1.96	2.01	2.05	2.09	2.13	2.18	2.22	2.26	2.30
<b>Interest Rates (percent, nominal)</b>											
Federal Funds Rate	0.09	0.13	0.89	1.88	2.79	3.33	3.32	3.22	3.03	3.02	3.13
10-Year Treasury Note	2.54	2.14	2.57	2.72	3.27	3.86	3.83	3.77	3.64	3.60	3.62
AA Utility Bond Rate	4.19	4.01	4.53	4.74	5.30	5.87	5.87	5.74	5.49	5.35	5.34

Indicators	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
<b>Real Gross Domestic Product</b>	<b>20,765</b>	<b>21,227</b>	<b>21,699</b>	<b>22,179</b>	<b>22,638</b>	<b>23,113</b>	<b>23,588</b>	<b>24,054</b>	<b>24,551</b>	<b>25,074</b>	<b>25,598</b>
<b>Components of Real Gross Domestic Product</b>											
Real Consumption	14,348	14,695	15,036	15,401	15,747	16,092	16,446	16,800	17,155	17,517	17,881
Real Investment	4,068	4,165	4,257	4,341	4,422	4,520	4,619	4,693	4,796	4,921	5,051
Real Government Spending	3,056	3,083	3,115	3,149	3,183	3,222	3,252	3,285	3,320	3,358	3,396
Real Exports	3,374	3,525	3,684	3,850	4,012	4,178	4,355	4,536	4,722	4,913	5,105
Real Imports	4,032	4,186	4,333	4,497	4,656	4,824	5,003	5,171	5,345	5,529	5,721
<b>Energy Intensity</b>											
<b>(thousand Btu per 2009 dollar of GDP)</b>											
Delivered Energy	3.65	3.57	3.50	3.42	3.36	3.29	3.24	3.18	3.13	3.08	3.04
Total Energy	4.89	4.78	4.68	4.57	4.48	4.39	4.32	4.25	4.18	4.12	4.06
<b>Price Indices</b>											
GDP Chain-type Price Index (2009=1.000)	1.344	1.371	1.398	1.426	1.455	1.486	1.518	1.552	1.586	1.622	1.659
<b>Consumer Price Index (1982-84=1.00)</b>											
All-urban	2.99	3.05	3.12	3.19	3.27	3.35	3.43	3.51	3.60	3.69	3.78
Energy Commodities and Services	2.87	2.97	3.06	3.14	3.25	3.34	3.45	3.56	3.69	3.81	3.92
<b>Wholesale Price Index (1982=1.00)</b>											
All Commodities	2.37	2.41	2.45	2.50	2.55	2.59	2.65	2.70	2.76	2.82	2.87
Fuel and Power	2.53	2.60	2.67	2.74	2.83	2.91	3.00	3.10	3.21	3.30	3.39
Metals and Metal Products	2.35	2.38	2.42	2.46	2.50	2.55	2.59	2.64	2.69	2.75	2.80
Industrial Commodities excluding Energy	2.33	2.37	2.41	2.44	2.48	2.53	2.57	2.62	2.67	2.72	2.76
<b>Interest Rates (percent, nominal)</b>											
Federal Funds Rate	3.22	3.26	3.21	3.21	3.24	3.24	3.25	3.25	3.23	3.25	3.23
10-Year Treasury Note	3.66	3.69	3.68	3.70	3.74	3.77	3.79	3.81	3.82	3.84	3.82
AA Utility Bond Rate	5.41	5.52	5.55	5.59	5.68	5.73	5.78	5.83	5.85	5.88	5.85

<b>Indicators</b>	<b>2036</b>	<b>2037</b>	<b>2038</b>	<b>2039</b>	<b>2040</b>
<b>Real Gross Domestic Product</b>	<b>26,140</b>	<b>26,688</b>	<b>27,255</b>	<b>27,821</b>	<b>28,397</b>
<b>Components of Real Gross Domestic Product</b>					
Real Consumption	18,262	18,648	19,053	19,466	19,870
Real Investment	5,174	5,294	5,415	5,532	5,661
Real Government Spending	3,434	3,473	3,514	3,555	3,602
Real Exports	5,299	5,501	5,702	5,908	6,113
Real Imports	5,905	6,094	6,284	6,484	6,683
<b>Energy Intensity</b>					
<b>(thousand Btu per 2009 dollar of GDP)</b>					
Delivered Energy	2.99	2.95	2.91	2.87	2.83
Total Energy	3.99	3.94	3.88	3.82	3.77
<b>Price Indices</b>					
GDP Chain-type Price Index (2009=1.000)	1.695	1.733	1.771	1.809	1.848
<b>Consumer Price Index (1982-84=1.00)</b>					
All-urban	3.88	3.97	4.07	4.17	4.27
Energy Commodities and Services	4.05	4.17	4.32	4.46	4.61
<b>Wholesale Price Index (1982=1.00)</b>					
All Commodities	2.92	2.98	3.04	3.10	3.16
Fuel and Power	3.48	3.58	3.69	3.81	3.92
Metals and Metal Products	2.85	2.90	2.96	3.01	3.06
Industrial Commodities excluding Energy	2.81	2.86	2.91	2.96	3.01
<b>Interest Rates (percent, nominal)</b>					
Federal Funds Rate	3.22	3.20	3.18	3.10	3.08
10-Year Treasury Note	3.81	3.79	3.78	3.72	3.72
AA Utility Bond Rate	5.85	5.80	5.79	5.73	5.71

**October 28, 2016**

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The Median of Estimated  
**PRICE-EARNINGS RATIOS**  
of all stocks with earnings

**18.4**

<b>26 Weeks Ago</b>	<b>Market Low</b>	<b>Market High</b>
18.9	3-9-09 10.3	8-15-16 18.8

The Median of Estimated  
**DIVIDEND YIELDS**  
(next 12 months) of all dividend  
paying stocks under review

**2.2%**

<b>26 Weeks Ago</b>	<b>Market Low</b>	<b>Market High</b>
2.2%	3-9-09 4.0%	8-15-16 2.2%

The Estimated Median Price  
**APPRECIATION POTENTIAL**  
of all 1700 stocks in the Value Line  
universe in the hypothesized  
economic environment 3 to 5 years hence

**40%**

<b>26 Weeks Ago</b>	<b>Market Low</b>	<b>Market High</b>
45%	3-9-09 185%	8-15-16 40%

**ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER**

Numeral in parenthesis after the industry is rank for probable performance (next 12 months).

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\*Reviewed in this week's issue.

In three parts: This is Part 1, the Summary & Index. Part 2 is Selection & Opinion. Part 3 is Ratings & Reports. Volume LXXII, No. 11.  
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# Index to Stocks

Prices quoted are as of October 18, 2016.  
All shares are traded on the New York Stock Exchange except where noted.

**PAGE NUMBERS**  
Bold type refers to  
Ratings and Reports

NAME OF STOCK	Ticker Symbol	RANKS										Industry Rank			LATEST RESULTS			Do Options Trade?	
		Recent Price		Safety		Technical		3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd		Year Ago
		Timeliness	Beta	Timeliness	Beta	Timeliness	Beta												
1702 <b>AAON, Inc.</b> (NDQ)	AAON	29.20	▼4	3	3	1.25	35- 50 (20- 70%)	28.6	0.9	1.02	.26	68	6/30	.27	.20	9/30	.11	.11	YES
702 AAR Corp.	AIR	31.77	2	3	3	1.25	30- 45 (N- 40%)	23.9	0.9	1.33	.30	59	8/31	.29	.23	12/31	.075	.075	YES
1965 AB InBev ADR	BUD	127.96	-	1	-	.95	130- 155 (N- 20%)	39.1	3.4	3.27	4.40	38	6/30	.09	1.16	9/30	NIL	NIL	YES
1737 ABB Ltd. ADR	ABB	22.45	1	3	2	1.20	30- 40 (35- 80%)	23.1	3.3	.97	.74	36	6/30	.19	.26	9/30	.73	.18	YES
380 ABM Industries Inc.	ABM	38.12	3	3	1	.80	40- 65 (5- 70%)	23.4	1.7	1.63	.66	69	7/31	.54	.45	12/31	.165	.16	YES
1414 ACCO Brands	ACCO	9.21	3	4	1	1.25	11- 19 (20-105%)	10.5	NIL	.88	NIL	20	6/30	.25	.24	9/30	NIL	NIL	YES
2602 ACI Worldwide (NDQ)	ACIW	19.73	5	3	5	1.10	25- 35 (25- 75%)	43.8	NIL	.45	NIL	64	6/30	d.15	.23	9/30	NIL	NIL	YES
1215 AES Corp.	AES	11.87	2	3	2	1.15	16- 25 (35-110%)	74.2	3.7	.16	.44	26	6/30	d.73	.10	12/31	◆.11	.21	YES
153 AGCO Corp.	AGCO	52.21	3	3	5	1.25	45- 65 (N- 25%)	20.2	1.0	2.59	.52	55	6/30	1.02	1.25	9/30	.13	.12	YES
2386 A.H. Belo	AHC	7.15	-	4	-	.90	7- 11 (N- 55%)	25.5	4.5	.28	.32	-	6/30	.03	d.03	12/31	.08	.08	YES
739 AK Steel Holding	AKS	4.63	3	5	4	1.90	7- 13 (50-180%)	NMF	NIL	d.07	NIL	7	6/30	.08	d.36	9/30	NIL	NIL	YES
2302 AMC Entertainment Hldgs.	AMC	31.60	▼4	3	3	1.10	35- 50 (10- 60%)	31.9	2.5	.99	.80	85	6/30	.24	.45	9/30	.20	.20	YES
2330 AMC Networks (NDQ)	AMCX	49.26	5	3	4	.95	115- 175 (135-255%)	8.0	NIL	6.16	NIL	76	6/30	1.05	1.14	9/30	NIL	NIL	YES
1635 AMN Healthcare	AHS	34.13	4	3	3	1.15	40- 60 (15- 75%)	15.9	NIL	2.15	NIL	78	6/30	.53	.32	9/30	NIL	NIL	YES
1564 ASA Gold & Precious	ASA	13.58	-	3	1	.95	16- 25 (20- 85%)	NMF	0.3	d.02	.04	3	8/31	15.36(q)	8.89(q)	9/30	NIL	NIL	YES
920 AT&T Inc.	T	39.36	3	1	3	.70	45- 55 (15- 40%)	13.7	5.0	2.88	1.95	71	6/30	.72	.69	9/30	.48	.47	YES
921 ATN International (NDQ)	ATNI	65.72	3	3	5	.90	75- 110 (15- 65%)	27.8	2.1	2.36	1.36	71	6/30	.47	.59	12/31	▲.34	.32	YES
1319 AVX Corp.	AVX	13.75	2	3	3	1.05	12- 18 (N- 30%)	18.3	3.2	.75	.44	56	6/30	.19	.21	9/30	.105	.105	YES
2133 Aaron's Inc.	AAN	23.42	3	3	3	1.05	35- 55 (50-135%)	9.8	0.4	2.39	.10	57	6/30	.59	.61	12/31	.025	.023	YES
2454 197 Abaxis, Inc. (NDQ)	ABAX	52.61	4	3	3	1.05	55- 80 (5- 80%)	39.0	0.9	1.35	.48	39	6/30	.30	.31	9/30	.12	.11	YES
198 Abbott Labs.	ABT	41.17	2	1	4	1.10	50- 60 (20- 45%)	18.4	2.5	2.24	1.04	39	9/30	◆.59	.54	12/31	.26	.24	YES
1606 AbbVie Inc.	ABBV	61.55	4	3	2	1.10	95- 145 (55-135%)	12.3	3.7	5.00	2.28	45	6/30	1.26	1.08	12/31	.57	.51	YES
848 2200 Abercrombie & Fitch	ANF	15.39	3	3	3	1.30	35- 50 (125-225%)	22.3	5.4	▲.69	.83	63	7/31	d.19	d.01	9/30	.20	.20	YES
423 Aberdeen Australia Fd. (ASE)	IAF	5.55	-	3	2	1.05	9- 13 (60-135%)	NMF	4.5	NMF	.25	-	7/31	6.60(q)	6.96(q)	9/30	.038	.067	YES
1203 Aberdeen Asia-Pac. Fd.(ASE)	FAX	4.90	-	4	2	.70	4- 7 (N- 45%)	NMF	8.6	NMF	.42	-	4/30	5.68(q)	6.14(q)	9/30	.105	.105	YES
424 Aberdeen Japan Equity	JEQ	8.06	-	3	3	.90	10- 16 (25-100%)	NMF	0.6	NMF	.05	-	4/30	8.55(q)	9.08(q)	9/30	NIL	NIL	YES
171 ABIOMED Inc. (NDQ)	ABMD	129.07	3	3	4	1.10	110- 160 (N- 25%)	NMF	NIL	1.20	NIL	48	6/30	.29	.20	9/30	NIL	NIL	YES
2603 Accenture Plc	ACN	117.53	3	1	3	1.00	100- 120 (N- N%)	21.0	2.1	5.59	2.42	64	8/31	1.31	1.15	12/31	▲1.21	1.10	YES
2006 Activision Blizzard (NDQ)	ATVI	44.18	2	3	3	1.00	30- 40 (N- N%)	53.9	0.6	.82	.28	44	6/30	.17	.29	9/30	NIL	NIL	YES
154 Actuant Corp.	ATU	22.26	2	3	4	1.35	25- 40 (10- 80%)	18.0	0.2	1.24	.04	55	8/31	.30	.37	12/31	.04	.04	YES
1302 Acuity Brands	AYI	246.48	3	3	2	1.30	180- 270 (N- 10%)	29.7	0.2	8.30	.52	27	8/31	2.21	1.63	9/30	.13	.13	YES
1204 Adams Divers. Equity Fd	ADX	12.97	-	2	3	1.00	20- 25 (55- 95%)	NMF	1.5	NMF	.20	-	6/30	15.10(q)	16.19(q)	9/30	.05	.05	YES
1424 2580 Adobe Systems (NDQ)	ADBE	108.42	2	3	3	1.15	115- 175 (125- 225%)	51.6	NIL	2.10	NIL	14	8/31	.54	.34	9/30	NIL	NIL	YES
940 ADTRAN, Inc. (NDQ)	ADTN	18.60	1	3	3	1.00	25- 40 (35-115%)	27.4	1.9	.68	.36	37	9/30	◆.26	.14	12/31	◆.09	.09	YES
2119 Advance Auto Parts	AAP	142.99	5	2	3	.90	160- 215 (10- 50%)	19.3	0.2	▼7.39	.24	95	6/30	1.90	2.27	12/31	.06	.06	YES
2455 1350 Advanced Energy (NDQ)	AEIS	46.83	4	3	3	1.20	50- 75 (5- 60%)	16.4	NIL	2.86	NIL	75	6/30	.73	.43	9/30	NIL	NIL	YES
1351 Advanced Micro Dev. (NDQ)	AMD	6.73	3	5	3	1.50	4- 8 (N- 20%)	NMF	NIL	d.20	NIL	75	6/30	d.05	d.17	9/30	NIL	NIL	YES
438 Advisory Board (NDQ)	ABCO	43.52	1	3	4	.75	45- 70 (5- 60%)	45.3	NIL	.96	NIL	74	6/30	.18	.20	9/30	NIL	NIL	YES
1234 AECOM	ACM	27.94	3	3	2	1.40	40- 60 (45-115%)	8.6	NIL	3.25	NIL	35	6/30	.81	.74	9/30	NIL	NIL	YES
1102 Aegion Corp. (NDQ)	AEGN	18.77	3	3	5	1.50	25- 40 (35-115%)	15.3	NIL	1.23	NIL	89	6/30	.23	.35	9/30	NIL	NIL	YES
1552 AEGON	AEG	4.15	1	3	3	1.45	6- 9 (45-115%)	8.8	7.0	.47	.29	22	6/30	d.22	.19	9/30	.147	.144	YES
1738 Aerojet Rocketdyne	AJRD	17.25	2	3	2	1.10	30- 40 (75-130%)	20.5	NIL	.84	NIL	36	6/30	.09	NA	9/30	NIL	NIL	YES
703 AeroVironment (NDQ)	AVAV	22.51	▲1	3	3	1.05	30- 45 (35-100%)	NMF	NIL	.10	NIL	59	7/31	d.51	d.30	9/30	NIL	NIL	YES
793 Aetna Inc.	AET	111.43	4	2	2	.90	135- 180 (20- 60%)	13.6	0.9	8.18	1.00	70	6/30	2.21	2.05	9/30	.25	.25	YES
2533 Affiliated Managers	AMG	141.39	4	3	3	1.40	210- 310 (50-120%)	15.4	NIL	9.16	NIL	58	6/30	1.97	2.31	9/30	NIL	NIL	YES
1553 Aflac Inc.	AFL	70.30	3	3	2	1.10	70- 105 (N- 50%)	10.3	2.4	6.84	1.72	22	6/30	1.71	1.50	9/30	.41	.39	YES
113 Agilent Technologies	A	45.44	2	3	3	1.25	60- 85 (30- 85%)	22.1	1.0	2.06	.46	23	7/31	.49	.44	12/31	.115	.10	YES
1565 Agnico Eagle Mines	AEM	48.01	2	3	2	.75	50- 75 (5- 55%)	87.3	0.8	.55	.40	3	6/30	.10	.11	9/30	▲.10	.08	YES
1246 1595 Agrum, Inc. (NDQ)	AGU	89.96	-	3	-	1.10	110- 165 (20- 85%)	17.0	4.1	5.28	3.65	4	6/30	4.08	4.71	12/31	.875	.875	YES
2442 Air Products & Chem.	APD	133.82	-	1	-	1.05	180- 220 (35- 65%)	17.1	2.6	7.82	3.52	88	6/30	1.92	1.65	12/31	.86	.81	YES
2534 Aircastle Ltd.	AYR	19.72	3	3	4	1.20	25- 35 (25- 75%)	10.2	4.9	1.94	.96	58	6/30	.31	.51	9/30	.24	.22	YES
2454 1811 Akamai Technologies (NDQ)	AKAM	55.92	3	3	5	1.35	100- 150 (80-170%)	28.2	NIL	1.98	NIL	65	6/30	.42	.37	9/30	NIL	NIL	YES
302 Alaska Air Group	ALK	72.11	5	3	5	1.15	80- 120 (10- 65%)	10.2	1.5	7.04	1.10	92	6/30	2.12	1.76	9/30	.275	.20	YES
1703 Albany Int'l 'A'	AIN	41.55	3	3	3	1.25	45- 70 (10- 70%)	20.4	1.6	2.04	.68	68	6/30	4.48	d.07	12/31	.17	.17	YES
1607 Albany Molecular (NDQ)	AMRI	16.44	1	4	5	1.20	20- 30 (20- 80%)	NMF	NIL	.09	NIL	45	6/30	d.61	.07	9/30	NIL	NIL	YES

★★ Supplementary Report in this week's issue.  
▲ Arrow indicates the direction of a change. When it appears with the Latest Dividend, the arrow signals that a change in the regular payment rate has occurred in the latest quarter.

For Timeliness, 3-5 year Target Price Range, or Estimated Earnings 12 months to 3-31-17, the arrow indicates a change since the preceding week. When a diamond ◆ (indicating a new figure) appears alongside the latest quarterly earnings

results, the rank change probably was primarily caused by the earnings report. In other cases, the change is due to the dynamics of the ranking system and could simply be the result of the improvement or weakening of other stocks.

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			RANKS			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS					Do Options Trade?
		Timeliness	Safety	Technical	Beta	Qtr. Ended	Earnings Per sh.						Year Ago	Qtr. Ended	Latest Div'd	Year Ago		
																	Qtr. Ended	
2443 Albemarle Corp.	ALB	81.66	3 3 3	1.35	80- 120	(N- 45%)	20.3	1.5	4.03	1.22	88	6/30	d27.8	.46	9/30	.305	.29	YES
2030 1581 Alcoa Inc.	AA	26.51	- 3 -	1.50	40- 60	(50-125%)	17.3	1.4	1.53	.36	2	9/30	.32	.21	12/31	.09	.09	YES
2455 199 Alere Inc.	ALR	42.40	- 3 -	1.15	45- 70	(5- 65%)	18.1	NIL	2.34	NIL	39	6/30	.42	.53	9/30	NIL	NIL	YES
1608 Alexion Pharmac.	(NDQ) ALXN	121.34	2 3 4	1.10	185- 275	(50-125%)	27.3	NIL	4.44	NIL	45	6/30	.51	.83	9/30	NIL	NIL	YES
2623 Alibaba Group Hldg Ltd.	BABA	103.34	- 3 -	NMF	120- 180	(15- 75%)	41.3	NIL	2.50	NIL	32	6/30	.44	.39	9/30	NIL	NIL	YES
200 Align Techn.	(NDQ) ALGN	90.41	4 3 3	1.10	90- 140	(N- 55%)	37.4	NIL	2.42	NIL	39	6/30	.62	.39	9/30	NIL	NIL	YES
1944 Alimentation Couche-Tard(TSE)	ATDB.TO	67.13	5 3 3	.60	90- 130	(35- 95%)	21.7	0.5	3.10	.35	79	7/31	.74	.67	9/30	1.155	.11	YES
754 Alleghany Corp.	Y	524.98	2 1 3	8.0	515- 625	(N- 20%)	20.3	NIL	25.90	NIL	46	6/30	1.50	6.01	9/30	NIL	NIL	YES
1582 Allegheny Techn.	ATI	16.92	1 4 4	1.85	19- 30	(10- 75%)	NMF	1.9	d.16	.32	2	6/30	d.21	d.15	9/30	.08	.18	YES
303 Allegiant Travel	(NDQ) ALGT	154.45	4 3 5	.75	160- 245	(5- 60%)	12.4	1.8	12.46	2.80	92	6/30	3.68	3.19	9/30	.70	.30	YES
1320 Allegion plc	ALLE	67.90	4 3 3	1.10	75- 115	(10- 70%)	19.5	0.7	3.49	.48	56	6/30	.99	.71	9/30	.12	.10	YES
1609 Allergan plc	AGN	227.94	▲ 4 3 4	.90	310- 470	(35-105%)	15.3	NIL	14.86	NIL	45	6/30	3.35	4.41	9/30	NIL	NIL	YES
902 ALLETE	ALE	58.99	3 2 2	.75	50- 65	(N- 10%)	18.6	3.6	3.17	2.13	16	6/30	.50	.46	9/30	.52	.505	YES
439 Alliance Data Sys.	ADS	211.07	4 3 4	1.05	270- 410	(30- 95%)	12.2	NIL	17.26	NIL	74	6/30	3.68	3.32	9/30	NIL	NIL	YES
1583 Alliance Resource	(NDQ) ARLP	23.55	3 3 5	1.15	35- 55	(50-135%)	8.1	7.4	2.89	1.75	2	6/30	.82	.76	9/30	438	.675	YES
2535 AllianceBernstein Hldg.	AB	21.80	3 3 3	1.10	30- 45	(40-105%)	11.5	8.9	1.90	1.93	58	6/30	.40	.49	9/30	.40	.48	YES
903 Alliant Energy	LNT	37.38	2 2 2	.75	30- 40	(N- 5%)	19.2	3.2	1.95	1.18	16	6/30	.37	.30	12/31	.294	.275	YES
975 Allison Transmission	ALSN	27.65	3 3 2	1.05	30- 45	(10- 65%)	24.3	2.2	1.14	.61	93	6/30	.36	.30	9/30	.15	.15	YES
818 Allscripts Healthcare	(NDQ) MDRX	13.24	3 3 4	1.05	17- 25	(30- 90%)	21.7	NIL	.61	NIL	11	6/30	.14	.12	9/30	NIL	NIL	YES
755 Allstate Corp.	ALL	69.29	3 1 3	.85	95- 115	(35- 65%)	13.4	1.9	5.18	1.32	46	6/30	.62	.63	12/31	.33	.30	YES
1837 826 Alnylam Pharmac.	(NDQ) ALNY	38.07	2 4 4	1.35	65- 105	(70-175%)	NMF	NIL	d4.74	NIL	40	6/30	d1.05	d.85	9/30	NIL	NIL	YES
2624 Alphabet Inc.	(NDQ) GOOG	795.26	3 2 3	1.00	885-1200	(10- 50%)	28.0	NIL	28.38	NIL	32	6/30	7.00	4.93	9/30	NIL	NIL	YES
1704 Altra Industrial Motion	(NDQ) AIMC	29.00	3 3 3	1.40	30- 40	(5- 40%)	21.2	2.1	1.37	.60	68	6/30	.36	.37	12/31	.15	.15	YES
1991 Altria Group	MO	62.66	▼ 3 2 3	.60	60- 80	(N- 30%)	20.3	3.9	3.09	2.44	15	6/30	.84	.74	12/31	▲.61	.565	YES
2625 Amazon.com	(NDQ) AMZN	817.65	▲ 4 3 3	1.10	600- 900	(N- 10%)	NMF	NIL	5.78	NIL	32	6/30	1.78	.19	9/30	NIL	NIL	YES
2604 Amdocs Ltd.	(NDQ) DOX	59.61	2 1 3	.85	60- 70	(N- 15%)	20.9	1.3	2.85	.78	64	6/30	.70	.69	9/30	.195	.17	YES
2658 794 Amedisys, Inc.	(NDQ) AMED	46.12	2 4 2	1.30	35- 60	(N- 30%)	26.1	NIL	1.77	NIL	70	6/30	.42	.43	9/30	NIL	NIL	YES
904 Ameren Corp.	AEE	48.91	3 2 2	.70	40- 55	(N- 10%)	18.7	3.6	2.62	1.76	16	6/30	.61	.40	12/31	▲.44	.425	YES
922 America Movil	AMX	11.91	2 3 5	1.10	15- 25	(25-110%)	13.7	2.5	.87	.30	71	6/30	.13	.27	9/30	.151	.164	YES
304 American Airlines	(NDQ) AAL	39.35	4 3 4	1.30	50- 75	(25- 90%)	7.3	1.0	5.36	.40	92	6/30	1.68	2.41	9/30	.10	.10	YES
976 Amer. Axle	AXL	17.47	4 4 4	1.45	25- 40	(45-130%)	5.4	NIL	3.22	NIL	93	6/30	.90	.75	9/30	NIL	NIL	YES
2650 Amer. Capital, Ltd.	(NDQ) ACAS	16.91	- 4 -	1.15	15- 25	(N- 50%)	10.6	NIL	1.59	NIL	1	6/30	.47	.22	9/30	NIL	NIL	YES
2201 Amer. Eagle Outfitters	AEO	17.14	2 3 1	.90	20- 30	(15- 75%)	12.9	2.9	1.33	.50	63	7/31	.23	.17	12/31	1.125	1.125	YES
905 Amer. Elec. Power	AEP	63.37	2 2 3	.65	55- 75	(N- 20%)	15.5	3.7	4.08	2.36	16	6/30	1.07	.88	9/30	.56	.53	YES
★ ★ 2536 Amer. Express	AXP	60.08	4 1 3	1.05	80- 95	(35- 65%)	10.8	2.1	5.55	1.28	58	6/30	2.10	1.42	12/31	▲.32	.29	YES
756 Amer. Financial Group	AFG	75.97	3 2 3	.90	75- 100	(N- 30%)	13.2	1.6	5.74	1.25	46	6/30	1.28	1.28	12/31	▲.313	.28	YES
2537 Amer. Int'l Group	AIG	60.49	3 3 3	1.15	65- 95	(5- 55%)	12.7	2.1	4.75	1.28	58	6/30	.98	1.39	9/30	.32	.28	YES
339 American Railcar	(NDQ) ARII	39.05	5 3 3	1.40	30- 50	(N- 30%)	10.0	4.1	3.90	1.60	91	6/30	1.02	1.54	9/30	.40	.40	YES
1781 Amer. States Water	AWR	38.14	3 2 3	.70	40- 50	(5- 30%)	22.4	2.5	1.70	.94	43	6/30	.45	.41	9/30	.224	.224	YES
586 Amer. Tower 'A'	AMT	114.15	3 2 3	.90	130- 175	(15- 55%)	43.9	2.1	2.60	2.40	77	6/30	.37	.30	12/31	▲.55	.46	YES
556 Amer. Vanguard Corp.	AVD	15.55	3 3 2	.95	13- 19	(N- 20%)	31.1	0.3	.50	.04	62	6/30	.11	.03	12/31	.01	NIL	YES
1782 Amer. Water Works	AWK	72.42	4 3 3	.65	60- 90	(N- 25%)	25.1	2.2	2.89	1.57	43	6/30	.77	.68	9/30	.375	.34	YES
1103 Amer. Woodmark	(NDQ) AMWD	77.60	4 3 3	1.20	80- 120	(5- 55%)	17.6	NIL	4.40	NIL	89	7/31	1.32	.92	9/30	NIL	NIL	YES
2538 Ameriprise Fin'l	AMP	97.13	4 3 4	1.30	145- 220	(50-125%)	10.5	3.1	9.26	3.00	58	6/30	1.97	2.23	9/30	.75	.67	YES
201 AmerisourceBergen	ABC	81.09	4 1 4	.80	110- 130	(35- 60%)	14.3	1.7	5.67	1.36	39	6/30	1.37	1.20	9/30	.34	.29	YES
1739 Ametek, Inc.	AME	45.65	4 2 4	1.10	50- 70	(10- 55%)	18.9	0.8	2.41	.36	36	6/30	.59	.64	9/30	.09	.09	YES
827 Amgen	(NDQ) AMGN	162.80	4 1 2	.95	205- 250	(25- 55%)	14.3	2.6	11.38	4.30	40	6/30	2.84	2.57	12/31	◆1.00	.79	YES
1384 Amkor Technology	(NDQ) AMKR	9.39	2 5 3	1.35	9- 16	(N- 70%)	20.9	NIL	.45	NIL	67	6/30	.02	.04	9/30	NIL	NIL	YES
1321 Amphenol Corp.	APH	63.21	4 3 3	1.05	50- 70	(N- 10%)	23.8	1.0	2.66	.64	56	9/30	◆.73	.65	3/31	▲.16	.14	YES
757 AmTrust Financial Svcs.(NDQ)	AFSI	27.33	3 3 5	.85	30- 45	(10- 65%)	8.8	2.5	3.09	.68	46	6/30	.78	.42	12/31	▲.17	.15	YES
2402 Anadarko Petroleum	APC	62.97	2 3 5	1.60	65- 95	(5- 50%)	NMF	0.3	d2.72	.20	9	6/30	d1.36	.12	9/30	.05	.27	YES
2459 1352 Analog Devices	(NDQ) ADI	62.14	3 2 3	1.10	65- 85	(5- 35%)	19.4	2.7	3.20	1.68	75	7/31	.82	.77	9/30	.42	.40	YES
114 Analogic Corp.	(NDQ) ALOG	83.05	3 3 1	.90	90- 130	(10- 55%)	27.9	0.5	2.98	.40	23	7/31	.70	.86	12/31	.10	.10	YES
172 AngioDynamics	(NDQ) ANGO	16.93	▼ 2 3 3	.90	15- 25	(N- 50%)	NMF	NIL	d1.08	NIL	48	8/31	.04	d.02	9/30	NIL	NIL	YES
1566 AngloGold Ashanti ADS	AU	14.13	2 4 1	.80	20- 35	(40-150%)	22.8	NIL	.62	NIL	3	6/30	1.13(p)	d.03	9/30	NIL	NIL	YES
1322 Anixter Int'l	AXE	60.90	1 3 4	1.20	75- 110	(25- 80%)	14.1	NIL	4.33	NIL	56	6/30	1.12	1.14	9/30	NIL	NIL	YES
1512 Annaly Capital Mgmt.	NLY	10.10	2 3 3	.60	12- 18	(20- 80%)	8.6	11.9	1.17	1.20	50	6/30	.29	.41	12/31	.264	.30	YES
2581 ANSYS, Inc.	(NDQ) ANSS	91.39	3 2 2	1.10	90- 125	(N- 35%)	24.5	NIL	3.73	NIL	14	6/30	.93	.85	9/30	NIL	NIL	YES
523 Antero Resources Corp.	AR	27.44	▲ 2 4 4	1.35	35- 55	(30-100%)	50.8	NIL	.54	NIL	13	6/30	.14	.06	9/30	NIL	NIL	YES
795 Anthem, Inc.	ANTM	123.15	3 2 4	.80	140- 185	(15- 50%)	12.0	2.1	10.27	2.60	70	6/30	2.91	3.13	9/30	.65	.625	YES
2539 Aon plc	AON	110.59	5 1 2	.95	140- 175	(25- 60%)	19.5	1.2	5.67									



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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Safety			Technical			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS						
		Timeliness	Safety	Beta	Timeliness	Safety	Beta	Qtr. Ended	Earnings Per sh.	Year Ago						Qtr. Ended	Latest Div'd	Year Ago				
																			Qtr. Ended	Latest Div'd		
2120 Asbury Automotive	ABG	54.70	4	3	4	1.20	95-	140	(75-155%)	8.8	NIL	6.25	NIL	95	6/30	1.65	1.52	9/30	NIL	NIL	YES	
1424 2202 Ascena Retail Group (NDQ)	ASNA	5.00	3	3	2	1.10	18-	25	(260-400%)	12.8	NIL	▼.39	NIL	63	7/31	0.07	d1.98	9/30	NIL	NIL	YES	
557 Ashland Global Hldgs. Ashland Inc.	ASH	113.96	4	3	1	1.20	110-	170	(N- 50%)	15.8	1.4	7.21	1.59	62	6/30	1.95	1.91	9/30	.39	.39	YES	
NAME CHANGED TO ASHLAND GLOBAL HLDGS.																						
2020 Aspen Insurance Hldgs.	AHL	49.58	3	2	5	.85	45-	60	(N- 20%)	11.7	1.8	4.22	.88	33	6/30	.89	.62	9/30	.22	.21	YES	
775 Assoc. Banc-Corp	ASB	19.35	3	3	2	1.15	25-	35	(30- 80%)	15.1	2.3	1.28	.44	19	6/30	.31	.31	9/30	.11	.10	YES	
2540 Assurant Inc.	AIZ	91.30	4	2	3	1.90	55-	80	(N- N%)	12.2	2.2	7.51	2.00	58	6/30	2.70	.47	9/30	.50	.30	YES	
2021 Assured Guaranty	AGO	29.66	3	3	3	1.50	30-	45	(N- 50%)	10.1	1.9	2.95	.55	33	6/30	1.03	1.96	9/30	.13	.12	YES	
155 Astec Inds. (NDQ)	ASTE	59.10	2	3	3	1.20	50-	75	(N- 25%)	24.5	0.7	2.41	.40	55	6/30	.79	.51	9/30	.10	.10	YES	
1502 Astoria Financial	AF	14.23	-	3	-	1.10	14-	20	(N- 40%)	24.5	1.1	.58	.16	29	6/30	.16	.17	9/30	.04	.04	YES	
1610 AstraZeneca PLC (ADS)	AZN	31.27	3	2	1	1.90	35-	45	(10- 45%)	27.4	4.5	1.14	1.40	45	6/30	NIL	.28	9/30	.45	.45	YES	
704 Astronics Corp.(*) (NDQ)	ATRO	36.51	4	3	4	1.15	45-	65	(25- 80%)	18.4	NIL	1.98	NIL	59	6/30	.50	.58	9/30	NIL	NIL	YES	
819 athenahealth (NDQ)	ATHN	123.54	3	3	5	1.15	155-	235	(25- 90%)	NMF	NIL	.24	NIL	11	6/30	d.05	.24	9/30	NIL	NIL	YES	
305 Atlas Air Worldwide (NDQ)	AAWW	42.00	▲	1	3	5	1.40	50-	80	(20- 90%)	11.3	NIL	3.73	NIL	92	6/30	d.28	1.13	9/30	NIL	NIL	YES
544 Atmos Energy	ATO	72.17	▲	1	3	1	.75	90-	110	(25- 50%)	20.6	2.5	3.50	1.80	41	6/30	.69	.55	9/30	.42	.39	YES
2582 Autodesk, Inc. (NDQ)	ADSK	70.13	3	3	3	1.35	40-	60	(N- N%)	NMF	NIL	d.68	NIL	14	7/31	d.44	d1.18	9/30	NIL	NIL	YES	
977 Autoliv, Inc.	ALV	99.15	3	3	3	1.20	105-	155	(5- 55%)	14.9	2.4	6.64	2.38	93	6/30	1.68	1.55	12/31	.58	.56	YES	
2605 Automatic Data Proc. (NDQ)	ADP	87.38	2	1	2	.95	110-	130	(25- 50%)	24.8	2.6	3.52	2.27	64	6/30	.62	.55	12/31	.53	.49	YES	
2121 AutoNation, Inc.	AN	47.90	4	3	4	1.00	65-	95	(35-100%)	10.8	NIL	4.45	NIL	95	6/30	1.08	1.00	9/30	NIL	NIL	YES	
2122 AutoZone Inc.	AZO	753.80	4	3	3	.70	635-	955	(N- 25%)	17.7	NIL	42.62	NIL	95	8/31	14.30	12.75	9/30	NIL	NIL	YES	
1514 AvalonBay Communities	AVB	168.77	4	2	3	.75	195-	265	(15- 55%)	22.6	3.4	7.47	5.73	50	6/30	1.44	1.29	12/31	1.35	1.25	YES	
558 Avery Dennison	AVY	76.44	3	3	3	1.05	70-	100	(N- 30%)	19.1	2.2	4.01	1.70	62	6/30	1.09	.91	9/30	.41	.37	YES	
457 1324 Avigilon Corp. (TSE)	AVO.TO	8.34	4	3	3	1.00	25-	35	(200-320%)	12.3	NIL	.68	NIL	56	6/30	.08	.15	9/30	NIL	NIL	YES	
2163 Avis Budget Group (NDQ)	CAR	32.05	5	4	3	1.60	45-	80	(40-150%)	9.2	NIL	3.48	NIL	61	6/30	.63	.84	9/30	NIL	NIL	YES	
2225 Avista Corp.	AVA	40.37	3	2	2	.70	30-	45	(N- 10%)	19.6	3.5	2.06	1.41	31	6/30	.43	.40	9/30	.343	.33	YES	
1325 Avnet, Inc.	AVT	41.83	3	3	4	1.20	45-	65	(10- 55%)	10.4	1.6	4.01	.68	56	6/30	.86	1.16	9/30	.17	.17	YES	
1007 Avon Products	AVP	6.62	1	4	4	1.50	9-	15	(35-125%)	25.5	NIL	.26	NIL	21	6/30	.06	.06	9/30	NIL	.06	YES	
559 Axalta Coating	AXTA	26.28	4	3	2	1.05	35-	55	(35-110%)	22.3	NIL	1.18	NIL	62	6/30	.20	d.11	9/30	NIL	NIL	YES	
843 Axiall Corp.	AXLL						SEE FINAL SUPPLEMENT - PAGE 843															
2022 AXIS Capital Hldgs.	AXS	56.72	3	2	3	.75	40-	55	(N- N%)	15.2	2.5	3.73	1.40	33	6/30	.51	.93	12/31	.35	.29	YES	
2658 1903 B&G Foods	BGS	48.90	4	3	3	.70	35-	55	(N- 10%)	24.2	3.4	2.02	1.68	49	6/30	.48	.33	12/31	.42	.35	YES	
2502 BB&T Corp.	BBT	37.89	3	2	2	1.05	40-	55	(5- 45%)	13.5	3.2	2.81	1.20	51	9/30	♦.73	.64	9/30	.30	.27	YES	
1026 BCE Inc.	BCE	46.17	2	3	2	.70	40-	60	(N- 30%)	20.3	4.5	2.27	2.10	30	6/30	.69	.90	12/31	.512	.484	YES	
705 B/E Aerospace (NDQ)	BEAV	51.06	-	3	-	NMF	65-	100	(25- 95%)	15.0	1.7	3.40	.87	59	6/30	.84	.75	9/30	.21	.19	YES	
1791 BGC Partners (NDQ)	BGCP	8.85	3	3	3	1.15	12-	18	(35-105%)	9.1	7.2	.97	.64	47	6/30	.19	.18	9/30	.16	.14	YES	
1584 BHP Billiton Ltd. ADR	BHP	34.49	1	3	5	1.40	30-	45	(N- 30%)	NMF	1.7	.22	.60(h)	2	6/30	d.28(p)	d.29(p)	9/30	.28	1.24	YES	
351 BJ's Restaurants (NDQ)	BJRI	35.42	4	3	4	.90	95-	145	(170-310%)	18.4	NIL	1.93	NIL	87	6/30	.56	.47	9/30	NIL	NIL	YES	
776 BOK Financial (NDQ)	BOKF	69.83	2	3	2	1.00	70-	105	(N- 50%)	15.7	2.5	4.46	1.72	19	6/30	1.00	1.15	9/30	.43	.42	YES	
502 BP PLC ADR	BP	35.98	3	3	4	1.20	50-	75	(40-110%)	66.6	6.7	5.4	2.40	18	6/30	d.46	d1.91	9/30	.60	.60	YES	
1027 BT Group ADR(g)	BT	23.85	3	3	2	1.00	30-	50	(25-110%)	10.6	4.2	2.25	1.00	30	6/30	.45	.48	9/30	.643	.653	YES	
1216 BWX Technologies	BWXT	38.52	-	3	-	NMF	30-	50	(N- 30%)	23.5	0.9	1.64	.36	26	6/30	.55	NIL	9/30	.09	.06	YES	
1235 Babcock & Wilcox Enter.	BW	15.64	-	3	-	NMF	25-	35	(60-125%)	20.9	NIL	.75	NIL	35	6/30	d.20	.27	9/30	NIL	NIL	YES	
115 Badger Meter	BMI	30.70	-	3	-	1.00	35-	50	(15- 65%)	26.0	1.5	1.18	.46	23	9/30	♦.30	.29	9/30	▲.115	.10	YES	
2626 Baidu, Inc. (NDQ)	BIDU	175.65	3	3	3	1.25	140-	215	(N- 20%)	29.2	NIL	6.01	NIL	32	6/30	.99	1.64	9/30	NIL	NIL	YES	
2416 Baker Hughes	BHI	51.60	1	3	4	1.40	50-	75	(N- 45%)	NMF	1.3	d1.63	.68	5	6/30	d.90	d.43	9/30	.17	.17	YES	
560 Balchem Corp. (NDQ)	BCPC	75.96	3	3	4	1.00	65-	100	(N- 30%)	35.7	0.4	2.13	.34	62	6/30	.44	.47	9/30	NIL	NIL	YES	
1174 Ball Corp.	BLL	80.92	▼	4	2	3	60-	80	(N- N%)	16.2	0.6	5.00	.52	82	6/30	2.54	1.13	9/30	.13	.13	YES	
2503 BancorpSouth	BXS	23.25	▲	3	1	1.15	30-	40	(30- 70%)	14.4	2.2	1.61	.50	51	6/30	.37	.41	12/31	▲.125	.10	YES	
2504 Bank of America	BAC	16.26	▲	3	4	1.45	18-	25	(10- 55%)	11.5	1.9	1.41	.31	51	9/30	♦.41	.35	9/30	▲.075	.05	YES	
2505 Bank of Hawaii	BOH	73.25	3	2	3	.95	65-	90	(N- 25%)	18.5	2.6	3.97	1.92	51	6/30	1.03	.95	9/30	.48	.45	YES	
2506 Bank of Montreal (TSE)	BMO.TO	85.20(b)	3	2	2	.70	80-	110	(N- 30%)	12.5	4.1	6.80	3.52	51	7/31	1.86(b)	1.80(b)	12/31	.86(b)	.82(b)	YES	
2507 Bank of New York Mellon	BK	40.03	▲	3	2	1.20	60-	95	(50-135%)	12.4	1.9	3.23	.76	51	6/30	.76	.77	9/30	▲.19	.17	YES	
2508 Bank of Nova Scotia (TSE)	BNS.TO	70.78(b)	2	1	2	.75	70-	85	(N- 20%)	11.9	4.2	5.97	3.00	51	7/31	1.54(b)	1.45(b)	12/31	▲.74(b)	.70(b)	YES	
173 Bard (C.R.)	BCR	223.42	3	1	3	.80	220-	265	(N- 20%)	21.5	0.5	10.41	1.05	48	6/30	2.54	2.27	12/31	♦.26	.24	YES	
458 2164 Barnes & Noble	BKS	10.50	-	4	-	NMF	12-	20	(15- 90%)	35.0	5.7	▼.30	.60	61	7/31	d.20	d.27	12/31	.15	.15	YES	
1741 Barnes Group	B	39.22	3	2	2	1.15	55-	80	(40-105%)	15.3	1.3	2.56	.52	36	6/30	.63	.61	12/31	♦.13	.12	YES	
1567 Barrick Gold	ABX	16.37	2	3	2	.85	15-	25	(N- 55%)	27.7	0.5	.59	.08	3	6/30	.14	NIL	9/30	.02	.02	YES	
1147 Bassett Furniture (NDQ)	BSET	23.93	5	3	4	.95	40-	60	(65-150%)	16.0	1.7	1.50	.40	96	8/31							

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	RANKS			3-5 year Target Price and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS									
			Timeliness	Safety	Technical						Beta	Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago			
																		Options		
2541 BlackRock, Inc.	BLK	356.59	3	2	2	1.20	455- 615	(30- 70%)	17.8	2.6	20.08	9.16	58	9/30	5.26	5.00	9/30	2.29	2.18	YES
2653 Blackstone Group LP	BX	23.61	▲1	3	3	1.40	45- 70	(90-195%)	9.9	6.1	2.39	1.44	1	6/30	.44	.43	9/30	▲.36	.74	YES
845 2542 Block (H&R)	HRB	23.09	3	3	5	.85	35- 50	(50-115%)	13.2	3.8	1.75	.88	58	7/31	d.55	d.35	12/31	.22	.20	YES
352 Bloomin' Brands (NDQ)	BLMN	17.18	3	3	3	1.05	35- 50	(105-190%)	11.7	1.6	1.47	.28	87	6/30	.30	.26	9/30	.07	.06	YES
1246 1904 Blue Buffalo Pet Prod. (NDQ)	BUFF	25.02	-	3	-	NMF	20- 30	(N- 20%)	32.5	NIL	.77	NIL	49	6/30	.18	.13	9/30	NIL	NIL	YES
2627 Blue Nile (NDQ)	NILE	35.14	3	3	3	1.00	35- 55	(N- 55%)	37.0	NIL	.95	NIL	32	6/30	.18	.20	9/30	NIL	NIL	YES
614 Boardwalk Pipeline	BWP	16.74	2	4	3	.80	20- 35	(20-110%)	14.8	2.4	1.13	.40	6	6/30	.26	.16	9/30	.10	.10	YES
353 Bob Evans Farms (NDQ)	BOBE	39.80	3	3	4	.90	50- 75	(25- 90%)	17.7	3.4	2.25	1.36	87	7/31	.48	.51	9/30	.34	.31	YES
2455 706 Boeing	BA	131.50	3	1	5	1.05	160- 195	(20- 45%)	14.2	3.5	9.52	4.69	59	6/30	2.17	1.59	9/30	1.09	.91	YES
1107 Boise Cascade	BCC	23.83	3	3	3	1.30	30- 45	(25- 90%)	13.9	NIL	1.72	NIL	89	6/30	.49	.51	9/30	NIL	NIL	YES
707 Bombardier Inc. 'B' (TSE) BBDB.TO	BBDB	1.77b	2	5	2	1.05	2- 4	(15-125%)	NMF	NIL	d.12	NIL	59	6/30	d.06(b)	.05(b)	9/30	NIL	NIL	YES
381 Booz Allen Hamilton	BAH	30.09	4	3	3	1.00	25- 35	(N- 15%)	17.7	2.0	1.70	.61	69	6/30	.45	.43	9/30	.15	.13	YES
978 BorgWarner	BWA	33.64	4	3	4	1.40	55- 85	(65-155%)	10.2	1.5	3.30	.52	93	6/30	.84	.76	9/30	.13	.13	YES
2461 1966 Boston Beer 'A'	SAM	158.10	4	3	4	.90	255- 380	(60-140%)	24.1	NIL	6.57	NIL	38	6/30	2.06	2.18	9/30	NIL	NIL	YES
1515 Boston Properties	BXP	127.18	3	3	1	.90	125- 190	(N- 50%)	46.8	2.2	2.72	2.75	50	6/30	.63	.52	9/30	.65	.65	YES
176 Boston Scientific	BSX	23.12	3	3	3	1.00	30- 45	(30- 95%)	27.5	NIL	.84	NIL	48	6/30	.19	.15	9/30	NIL	NIL	YES
2357 Boyd Gaming	BYD	19.04	5	5	3	1.70	25- 45	(30-135%)	15.2	NIL	1.25	NIL	80	6/30	.16	.24	9/30	NIL	NIL	YES
1742 Brady Corp.	BRC	34.10	2	3	2	1.15	30- 50	(N- 45%)	19.6	2.4	1.74	.82	36	7/31	.48	.28	12/31	▲.205	.203	YES
1999 Bridgepoint Education	BPI	6.76	2	4	3	1.40	9- 14	(35-105%)	29.4	NIL	.23	NIL	25	6/30	.12	.16	9/30	NIL	NIL	YES
457 1706 Briggs & Stratton	BGG	18.95	3	3	4	1.10	20- 30	(5- 60%)	14.8	3.0	1.28	.56	68	6/30	.46	.51	12/31	▲.14	.135	YES
354 Brinker Int'l	EAT	50.25	5	3	3	.85	60- 85	(20- 70%)	13.9	2.7	3.61	1.36	87	6/30	1.24	.94	9/30	▲.34	.32	YES
382 Brink's (The) Co.	BCO	36.99	▲2	3	3	1.20	30- 45	(N- 20%)	32.4	1.1	1.14	.40	69	6/30	.13	.22	12/31	◆.10	.10	YES
2030 1612 Bristol-Myers Squibb	BMJ	50.05	2	1	3	.80	80- 100	(60-100%)	19.3	3.0	2.59	1.52	45	6/30	.69	d.08	12/31	.38	.38	YES
229 306 Bristol Group	BRS	11.59	1	4	4	1.30	13- 20	(10- 75%)	NMF	2.4	d.75	.28	92	6/30	d1.17	d.27	9/30	.07	.34	YES
1992 Brit. Amer Tobac. ADR (ASE)	BTI	118.76	2	2	2	.90	135- 185	(15- 55%)	19.2	3.6	6.20	4.25	15	6/30	2.95(p)	3.16(p)	9/30	NIL	NIL	YES
1353 Broadcom Ltd. (NDQ)	AVGO	172.17	1	3	3	1.20	170- 255	(N- 50%)	60.8	1.2	2.83	2.04	75	7/31	d.72	.85	9/30	▲.51	.40	YES
440 Broadridge Fin'l	BR	65.50	▼4	2	2	.95	55- 75	(N- 15%)	24.7	2.0	2.65	1.32	74	6/30	1.40	1.35	12/31	▲.33	.30	YES
843 1396 Brocade Communic. (NDQ)	BRCD	8.74	▲4	3	4	1.05	10- 15	(15- 70%)	12.0	2.5	.73	.22	83	6/30	.17	.21	12/31	.055	.045	YES
796 Brookdale Senior Living	BKD	15.48	▲1	4	3	1.55	20- 35	(30-125%)	NMF	NIL	d.74	NIL	70	6/30	d.19	d.46	9/30	NIL	NIL	YES
383 Brookfield Asset Mgmt.	BAM	36.00	4	3	3	1.20	45- 65	(25- 80%)	24.5	1.4	1.47	.52	69	6/30	.15	.62	9/30	.13	.12	YES
1743 Brookfield Infrastruc.	BIP	33.99	3	2	3	.95	35- 45	(5- 30%)	33.0	4.6	1.03	1.57	36	6/30	.39	.01	9/30	▲.393	.353	YES
1707 Brooks Automation (NDQ)	BRKS	13.30	3	3	3	1.20	14- 20	(5- 50%)	21.8	3.0	.61	.40	68	6/30	.16	.15	9/30	.10	.10	YES
2543 Brown & Brown	BRO	37.34	3	2	2	.90	45- 60	(20- 60%)	19.9	1.4	1.88	.54	58	6/30	.47	.43	12/31	▲.135	.12	YES
1967 Brown-Forman 'B'	BFB	45.38	3	1	4	.85	60- 75	(30- 65%)	25.2	1.5	1.80	.70	38	7/31	.36	.38	9/30	.17	.17	YES
116 Bruker Corp. (NDQ)	BRKR	21.67	3	3	3	1.30	25- 40	(15- 85%)	33.9	0.7	.64	.16	23	6/30	.09	.13	9/30	.04	NIL	YES
2303 Brunswick Corp.	BC	48.34	5	3	5	1.45	70- 105	(45-115%)	13.3	1.4	3.64	.66	85	6/30	1.19	1.05	12/31	▲.165	.15	YES
615 Buckeye Partners L.P.	BPL	70.01	3	3	2	1.00	95- 145	(35-105%)	16.3	7.1	4.29	4.98	6	6/30	1.07	.72	9/30	▲1.213	1.163	YES
2203 Buckle (The), Inc.	BKE	21.30	2	3	3	1.00	35- 50	(65-135%)	9.4	5.1	2.27	1.08	63	7/31	.32	.29	12/31	.25	.23	YES
355 Buffalo Wild Wings (NDQ)	BWLD	138.90	4	3	3	.85	185- 275	(35-100%)	23.1	NIL	6.02	NIL	87	6/30	1.27	1.12	9/30	NIL	NIL	YES
1905 Bunge Ltd.	BG	59.33	3	3	3	.85	75- 115	(25- 95%)	11.9	3.0	5.00	1.76	49	6/30	.81	.50	9/30	▲.42	.38	YES
2135 Burlington Stores	BURL	76.26	4	4	1	1.05	65- 110	(N- 45%)	24.8	NIL	3.07	NIL	57	7/31	.39	.19	9/30	NIL	NIL	YES
2583 CA, Inc.	CA	32.16	2	2	2	1.10	35- 45	(10- 40%)	17.4	3.2	1.85	1.02	14	6/30	.47	.47	9/30	.255	.25	YES
2606 CACI Int'l	CACI	100.30	4	3	3	1.05	85- 130	(N- 30%)	16.4	NIL	6.10	NIL	64	6/30	1.75	1.68	9/30	NIL	NIL	YES
708 CAE Inc. (TSE) CAE.TO	CAE	19.09	3	3	3	.80	19- 30	(N- 55%)	19.1	1.7	1.00	.32	59	6/30	.26(b)	.17(b)	9/30	▲.08(b)	.075(b)	YES
1792 CBOE Holdings (NDQ)	CBOE	65.01	3	3	3	.75	60- 90	(N- 40%)	24.5	1.5	2.65	1.00	47	6/30	.62	.54	9/30	▲.25	.23	YES
384 CBRE Group	CBG	26.65	4	3	4	1.35	45- 70	(70-165%)	11.2	NIL	2.39	NIL	69	6/30	.52	.42	9/30	NIL	NIL	YES
2331 CBS Corp. 'B'	CBS	55.10	3	3	3	1.20	60- 90	(10- 65%)	13.3	1.3	4.13	.72	76	6/30	.93	.67	12/31	▲.18	.15	YES
1636 CDI Corp.	CDI	6.06	-	4	-	1.20	5- 8	(N- 30%)	NMF	NIL	d.88	NIL	78	6/30	d.39	NIL	9/30	NIL	.13	YES
2609 CDW Corp. (NDQ)	CDW	44.28	5	3	3	1.00	50- 80	(15- 80%)	14.6	1.0	3.04	.43	64	6/30	.70	.63	9/30	.108	.068	YES
441 CEB Inc.	CEB	54.25	▲3	3	3	1.20	65- 100	(20- 85%)	30.5	3.2	1.78	1.76	74	6/30	.24	.69	9/30	.413	.375	YES
1354 CEVA, Inc. (NDQ)	CEVA	30.85	2	4	3	1.25	30- 50	(N- 60%)	49.8	NIL	.62	NIL	75	6/30	.13	.01	9/30	NIL	NIL	YES
1596 CF Industries	CF	23.46	2	3	4	1.40	30- 40	(30- 70%)	27.9	5.8	.84	1.35	4	6/30	.20	1.49	12/31	.30	.30	YES
385 C.H. Robinson (NDQ)	CHRW	68.80	3	2	3	.85	95- 125	(40- 80%)	18.5	2.5	3.72	1.72	69	6/30	1.00	.94	9/30	.43	.38	YES
2544 CIT Group	CIT	36.62	4	3	4	1.20	45- 65	(25- 75%)	11.2	1.6	3.27	.60	58	6/30	.90	.66	12/31	◆.15	.15	YES
1793 CME Group (NDQ)	CME	104.09	2	2	2	.80	90- 120	(N- 15%)	23.9	2.3	4.36	2.40	47	6/30	.95	.78	9/30	.60	.50	YES
906 CMS Energy Corp.	CMS	41.42	3	2	3	.65	30- 45	(N- 10%)	19.6	3.1	2.11	1.30	16	6/30	.45	.25	9/30	.31	.29	YES
761 CNA Fin'l (NDQ)	CNA	35.71	1	2	5	.95	55- 75	(55-110%)	11.9	2.8	3.01	1.00	46	6/30	.74	.49	9/30	.25	.25	YES
2607 CSG Systems Int'l	CSGS	39.46	3	3	1	.90	35- 50	(N- 25%)	21.8	1.9	1.81	.74	64	6/30	.33	.39	9/30			



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NAME OF STOCK	Ticker Symbol	Recent Price			Timeliness	Safety		Technical		3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS							
		TSE	CMO	CNI		CNQ	CP	CTCA	Beta						Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago		
																						1
2509	Can. Imperial Bank (TSE)	CM.TO	101.07b	3	1	2	.75	105-125	(5-25%)	10.6	4.8	9.52	4.84	51	7/31	3.61(b)	2.42(b)	12/31	1.21(b)	1.12(b)	YES	
341	Can. National Railway	CNI	66.95	4	2	3	1.00	65-90	(N-35%)	18.9	1.7	3.55	1.17	91	6/30	8.87	.82	9/30	.27	.225	YES	
2404	Can. Natural Res. (TSE)	CNQ.TO	42.46	3	3	3	1.35	40-60	(N-40%)	NMF	2.2	d.05	.94	9	6/30	d.19	.16	12/31	.23	.23	YES	
342	Can. Pacific Railway	CP	153.43	4	3	3	1.15	175-265	(15-75%)	18.7	1.0	8.20	1.56	91	9/30	2.13	1.93	9/30	▲.36	.252	YES	
2136	Canadian Tire Corp. 'A' (TSE)	CTCA.TO	130.95	4	1	2	.65	165-200	(25-55%)	14.4	1.8	9.10	2.38	57	6/30	2.46	2.15	12/31	.575	.525	YES	
1983	Canon Inc. ADR(g)	CAJ	29.24	2	2	4	.85	45-65	(55-120%)	16.7	4.5	1.75	1.33	52	6/30	.48	.52	9/30	.745	.628	YES	
203	Cantel Medical Corp.	CMN	76.11	▼	4	3	3	1.05	55-85	(N-10%)	45.3	0.2	1.68	.14	39	7/31	.39	.32	3/31	▲.07	.06	YES
2545	Capital One Fin'l	COF	71.99	3	3	4	1.15	70-105	(N-45%)	10.2	2.2	7.05	1.60	58	6/30	1.69	1.48	9/30	.40	.40	YES	
1503	Capitol Fed. Fin'l (NDQ)	CFFN	14.10	3	2	2	1.70	13-18	(N-30%)	23.1	2.4	.61	.34	29	6/30	.15	.14	12/31	◆.085	.085	YES	
2417	CARBO Ceramics	CRR	10.56	1	4	3	1.45	30-50	(185-375%)	NMF	NIL	d3.08	NIL	5	6/30	d.88	d.74	9/30	NIL	.10	YES	
204	Cardinal Health	CAH	75.73	3	1	3	.85	115-145	(50-90%)	17.3	2.5	4.39	1.86	39	6/30	1.02	.88	12/31	.449	.387	YES	
2000	Career Education (NDQ)	CECO	6.88	3	5	3	1.30	6-11	(N-60%)	NMF	NIL	d.09	NIL	25	6/30	1.17	d.31	9/30	NIL	NIL	YES	
1744	Carlisle Cos.	CSL	105.55	4	3	3	1.10	100-150	(N-40%)	18.0	1.3	5.85	1.40	36	6/30	1.75	1.43	9/30	▲.35	.30	YES	
2123	CarMax, Inc.	KMX	51.04	4	3	2	1.15	65-100	(25-95%)	15.7	NIL	3.25	NIL	95	8/31	.88	.82	9/30	NIL	NIL	YES	
2305	Carmike Cinemas (NDQ)	CKEC	32.80	-	4	-	1.15	35-55	(5-70%)	82.0	NIL	.40	NIL	85	6/30	d.07	d.06	9/30	NIL	NIL	YES	
2306	Carnival Corp.	CCL	46.52	3	3	5	1.00	60-90	(30-95%)	13.2	3.0	3.52	1.40	85	8/31	1.92	1.75	9/30	.35	.30	YES	
741	Carpenter Technology	CRS	38.45	3	3	3	1.45	60-90	(55-135%)	23.2	1.9	1.66	.72	7	6/30	.35	.44	12/31	.18	.18	YES	
1832	Carriage Services	CSV	23.92	▼	4	3	2	.85	25-40	(5-65%)	16.7	0.8	1.43	.20	34	6/30	.30	.24	9/30	▲.05	.025	YES
2102	Carter's Inc.	CRI	85.92	5	3	2	.75	120-180	(40-110%)	16.8	1.5	5.11	1.32	86	6/30	.71	.68	9/30	.33	.22	YES	
1036	1946 Casey's Gen'l Stores (NDQ)	CASY	116.53	5	3	2	.75	100-150	(N-30%)	20.3	0.8	5.75	.98	79	7/31	1.70	1.57	12/31	.24	.22	YES	
843	2546 Cash Amer. Int'l	CSH						SEE FINAL SUPPLEMENT - PAGE 843														
2456	156 Caterpillar Inc.	CAT	87.22	3	2	3	1.20	85-115	(N-30%)	24.2	3.5	3.61	3.08	55	6/30	1.09	1.27	12/31	◆.77	.77	YES	
2204	Cato Corp.	CATO	29.74	4	3	4	1.00	35-55	(20-85%)	12.6	4.4	2.36	1.32	63	7/31	.57	.56	9/30	.33	.30	YES	
1355	Cavium Inc. (NDQ)	CAVM	54.31	▲	3	4	1.45	80-120	(45-120%)	32.3	NIL	1.68	NIL	75	6/30	.29	.41	9/30	NIL	NIL	YES	
2307	Edcor Fair L.P.	FUN	58.03	5	3	3	1.90	65-95	(10-65%)	16.0	5.7	3.63	3.32	85	6/30	1.03	1.02	9/30	.825	.75	YES	
2446	Celanese Corp.	CE	69.37	5	3	4	1.45	85-125	(25-80%)	10.6	2.1	6.52	1.44	88	9/30	◆1.67	1.49	9/30	.36	.30	YES	
1328	Celastica Inc.	CLS	10.42	2	3	3	1.10	12-18	(15-75%)	12.0	NIL	.87	NIL	56	6/30	.25	.14	9/30	NIL	NIL	YES	
1613	Celgene Corp. (NDQ)	CELG	100.06	3	3	3	1.10	145-220	(45-120%)	18.2	NIL	5.51	NIL	45	6/30	.75	.43	9/30	NIL	NIL	YES	
1108	CEMEX ADS	CX	8.73	3	4	3	1.70	9-15	(5-70%)	32.3	NIL	.27	NIL	89	6/30	.14	.09	9/30	NIL	NIL	YES	
503	Genovus Energy (TSE)	CVE.TO	20.29	2	3	3	1.10	25-35	(25-70%)	NMF	1.0	d.76	.20	18	6/30	d.32	.15	9/30	.05	.16	YES	
797	Centene Corp.	CNC	61.41	4	3	2	.95	90-135	(45-120%)	12.4	NIL	4.96	NIL	70	6/30	.98	.72	9/30	NIL	NIL	YES	
907	CenterPoint Energy	CNP	22.51	2	3	3	.80	20-30	(N-35%)	22.5	4.7	1.00	1.06	16	6/30	d.01	.18	9/30	.258	.248	YES	
425	Central Europe/Russia	CEE	18.92	-	4	2	1.10	25-40	(30-110%)	NMF	2.6	NMF	.50	-	4	30	22.26(q)	25.59(q)	9/30	NIL	NIL	YES
1188	Central Garden & Pet (NDQ)	CENT	26.09	3	3	3	.80	20-30	(N-15%)	24.2	NIL	1.08	NIL	28	6/30	.51	.38	9/30	NIL	NIL	YES	
1028	CenturyLink Inc.	CTL	27.90	3	3	4	.95	35-50	(25-80%)	11.2	7.7	2.50	2.16	30	6/30	.63	.26	9/30	.54	.54	YES	
1036	205 Cepheid (NDQ)	CPHD	52.82	-	4	-	1.15	25-45	(N-N)	NMF	NIL	d.47	NIL	39	6/30	d.14	d.23	9/30	NIL	NIL	YES	
820	Cerner Corp. (NDQ)	CERN	61.15	3	2	2	1.00	70-90	(15-45%)	25.3	NIL	2.42	NIL	11	6/30	.58	.52	9/30	NIL	NIL	YES	
206	Charles River	CRL	81.08	3	3	3	1.05	90-130	(10-60%)	24.1	NIL	3.37	NIL	39	6/30	.73	1.02	9/30	NIL	NIL	YES	
729	Chart Industries (NDQ)	GTLS	32.79	1	3	3	1.75	45-65	(35-100%)	27.3	NIL	1.20	NIL	17	6/30	.68	.56	9/30	NIL	NIL	YES	
1018	Charter Commun. (NDQ)	CHTR	259.95	3	3	2	.95	195-290	(N-10%)	62.9	NIL	4.13	NIL	73	6/30	.99	d1.21	9/30	NIL	NIL	YES	
1814	Check Point Software (NDQ)	CHKP	77.23	3	2	4	.90	90-120	(15-55%)	19.1	NIL	4.05	NIL	65	6/30	.95	.88	9/30	NIL	NIL	YES	
356	Chesapeake Factory (NDQ)	CAKE	50.93	4	2	3	.85	55-75	(10-45%)	18.3	1.9	2.79	.96	87	6/30	.78	.69	9/30	▲.24	.20	YES	
1745	Chemed Corp.	CHE	141.37	3	3	3	1.80	145-215	(15-55%)	21.5	0.7	6.57	1.04	36	6/30	1.48	1.55	9/30	▲.26	.24	YES	
777	Chemical Financial (NDQ)	CHFC	43.50	3	3	3	1.00	45-65	(5-50%)	15.3	2.5	2.85	1.08	19	6/30	.67	.54	9/30	▲.27	.26	YES	
229	Chemours Co. (The)	CC	15.86	-	4	-	NMF	17-25	(5-60%)	15.3	1.1	1.04	.18	62	6/30	.27	d.10	9/30	.03	NIL	YES	
1647	563 Chemtura Corp.	CHMT	32.85	-	3	-	1.50	40-60	(20-85%)	18.0	NIL	1.82	NIL	62	6/30	.40	.29	9/30	NIL	NIL	YES	
603	Cheniere Energy	LNG	41.61	2	4	3	1.55	60-100	(45-140%)	NMF	NIL	d2.79	NIL	8	6/30	d1.31	d.52	9/30	NIL	NIL	YES	
525	Chesapeake Energy	CHK	6.52	2	5	3	1.90	6-10	(N-55%)	NMF	NIL	d3.56	NIL	13	6/30	d2.48	d6.27	9/30	NIL	NIL	YES	
545	Chesapeake Utilities	CPK	62.10	4	2	3	.60	70-90	(15-45%)	19.8	2.0	3.13	1.24	41	6/30	.52	.35	12/31	.305	.288	YES	
2659	504 Chevron Corp.	CVX	101.79	▲	2	3	1.15	115-140	(15-40%)	73.2	4.2	1.39	4.28	18	6/30	d.78	.30	9/30	1.07	1.07	YES	
1236	Chicago Bridge & Iron	CBI	27.73	4	3	3	1.60	65-95	(135-245%)	5.9	1.0	4.74	.28	35	6/30	1.17	1.55	9/30	.07	.07	YES	
843	2205 Chico's FAS	CHS	11.92	2	3	3	1.00	20-30	(70-150%)	17.3	2.9	.69	.35	63	7/31	.17	.02	9/30	.08	.078	YES	
2206	Children's Place (NDQ)	PLCE	72.50	4	3	1	.65	75-110	(5-50%)	15.2	1.1	▲4.78	.80	63	7/31	d.01	d.33	12/31	.20	.15	YES	
979	China Auto. Sys. (NDQ)	CAAS	3.90	-	4	-	1.40	8-13	(105-235%)	5.5	NIL	.71	NIL	93	6/30	.17	.24	9/30	NIL	NIL	YES	
426	China Fund (The)	CHN	16.35	-	3	2	.85	20-35	(20-115%)	NMF	1.5	NMF	.25	-	4	30	16.71(q)	25.15(q)	9/30	NIL	NIL	YES
357	Chipotle Mex. Grill	CMG	393.96	3	3	4	1.00	595-890	(50-125%)	46.7	NIL	8.44	NIL	87	6/30	.87	4.45	9/30	NIL	NIL	YES	
2358	Choice Hotels Int'l	CHH	45.85	3	3	3	.95															

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NAME OF STOCK	Ticker Symbol	Recent Price			Safety			Technical			3-5 year Target Price and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS					
		Timeliness	Safety	Beta	Timeliness	Safety	Beta	Qtr. Ended	Earnings Per sh.	Year Ago						Qtr. Ended	Latest Div'd	Year Ago	Qtr. Ended		Year Ago
																			Qtr. Ended	Latest Div'd	
2458 1968 Coca-Cola	KO	41.97	2 1 3	.70	45- 55	(5- 30%)	22.0	3.5	1.91	1.46	38	6/30	.60	.63	12/31	.35	.66	YES			
1969 Coca-Cola Bottling (NDO)	COKE	142.40	3 3 4	.75	160- 240	(10- 70%)	33.3	0.7	4.28	1.00	38	6/30	2.03	1.92	12/31	♦.25	.25	YES			
1970 Coca-Cola European Part.	CCE	38.03	- 3 -	NMF	45- 70	(20- 85%)	17.4	2.0	2.19	.75	38	6/30	.64	.58	12/31	.191	NIL	YES			
1019 Cogeco Communic. (TSE)	CCA.TO	63.10	5 3 5	.60	65- 95	(5- 50%)	12.0	2.5	5.28	1.56	73	5/31	1.28	1.30	9/30	.39	.35	YES			
2659 117 Cognex Corp. (NDO)	CGNX	52.24	3 3 3	1.30	45- 70	(N- 35%)	33.1	0.6	1.58	.30	23	6/30	.50	.49	9/30	.075	.07	YES			
1838 2610 Cognizant Technology (NDO)	CTSH	50.22	▼ 4 2 4	1.05	80- 105	(60-110%)	14.6	NIL	3.45	NIL	64	6/30	.87	.79	9/30	NIL	NIL	YES			
118 Coherent, Inc. (NDO)	COHR	103.08	3 3 3	1.20	75- 115	(N- 10%)	25.6	NIL	4.03	NIL	23	6/30	.76	.53	9/30	NIL	NIL	YES			
1746 Colfax Corp. (NDO)	CFX	29.00	▲ 3 3 3	1.35	40- 60	(40-105%)	20.0	NIL	1.45	NIL	36	6/30	.32	.50	9/30	NIL	NIL	YES			
1191 Colgate-Palmolive	CL	71.93	2 1 2	.75	85- 100	(20- 40%)	25.8	2.3	2.79	1.62	28	6/30	.67	.63	12/31	.39	.38	YES			
2103 Columbia Sportswear (NDO)	COLM	60.11	4 3 4	1.15	45- 70	(N- 15%)	22.3	1.3	2.70	.76	86	6/30	d.12	d.09	9/30	.17	.15	YES			
1708 Columbus McKinnon (NDO)	CMCO	17.79	3 3 4	1.25	25- 40	(40-125%)	11.1	0.9	1.60	.16	68	6/30	.34	.36	9/30	.04	.04	YES			
1020 Comcast Corp. (NDO)	CMCSA	64.88	5 2 3	.95	80- 105	(25- 60%)	18.6	1.7	3.49	1.10	73	6/30	.83	.84	12/31	.275	.25	YES			
778 Comerica Inc. (NDO)	CMA	50.05	▲ 2 3 3	1.25	50- 75	(N- 50%)	17.2	1.8	2.91	.92	19	9/30	♦.84	.74	12/31	▲ .23	.21	YES			
779 Commerce Bancshs. (NDO)	CBSH	48.52	2 1 2	.90	45- 60	(N- 25%)	17.6	1.9	2.75	.90	19	9/30	♦.68	.63	9/30	.225	.214	YES			
743 Commercial Metals	CMC	15.69	3 3 3	1.40	20- 30	(25- 90%)	11.8	3.1	1.33	.48	7	5/31	.31	.58	9/30	.12	.12	YES			
980 Commercial Vehicle (NDO)	CVGI	5.31	- 5 -	1.55	5- 8	(N- 50%)	33.2	NIL	.16	NIL	93	6/30	.10	.12	9/30	NIL	NIL	YES			
945 CommScope Holding (NDO)	COMM	31.46	▼ 4 3 3	1.20	45- 70	(45-125%)	12.0	NIL	2.62	NIL	37	6/30	.74	.49	9/30	NIL	NIL	YES			
1425 799 Community Health	CYH	10.53	- 4 -	1.35	20- 35	(90-230%)	7.4	NIL	1.43	NIL	70	6/30	.09	1.14	9/30	NIL	NIL	YES			
1598 Compass Minerals Int'l	CMP	72.55	2 3 4	.85	80- 120	(10- 65%)	26.5	3.9	2.74	2.85	4	6/30	.18	.39	9/30	.695	.66	YES			
230 821 Computer Prog. & Sys.(NDO)	CPSI	26.21	1 3 5	.85	40- 60	(55-130%)	23.2	5.2	1.13	1.36	11	6/30	.15	.52	9/30	▼.34	.64	YES			
2611 Computer Sciences	CSC	54.70	- 3 -	NMF	40- 60	(N- 10%)	18.2	1.0	3.00	.56	64	6/30	.53	.55	12/31	.14	.14	YES			
946 Comtech Telecom. (NDO)	CMTL	10.88	▲ 1 4 3	1.20	25- 35	(130-220%)	NMF	11.0	NIL	1.20	37	7/31	.14	.34	12/31	.30	.30	YES			
1649 1909 ConAgra Foods	CAG	48.38	- 1 -	.70	50- 65	(5- 35%)	20.3	2.1	2.38	1.00	49	8/31	.61	.41	12/31	.25	.25	YES			
527 Concho Resources	CXO	136.55	3 3 2	1.50	110- 170	(N- 25%)	NMF	NIL	.55	NIL	13	6/30	.26	.38	9/30	NIL	NIL	YES			
177 CONMED Corp. (NDO)	CNMD	40.35	3 3 4	.95	40- 60	(55-130%)	26.0	2.0	1.55	.80	48	6/30	.36	.36	12/31	.20	.20	YES			
1425 2170 Conn's, Inc. (NDO)	CONN	8.98	2 4 4	1.55	11- 19	(20-110%)	NMF	NIL	▼d.24	NIL	61	7/31	d.04	.45	9/30	NIL	NIL	YES			
1785 Conn. Water Services (NDO)	CTWS	51.36	3 3 3	1.60	40- 55	(N- 5%)	23.1	2.2	2.22	1.13	43	6/30	.89	.77	9/30	.283	.268	YES			
2405 ConocoPhillips	COP	40.65	3 3 3	1.35	45- 70	(10- 70%)	NMF	2.5	d2.33	1.00	9	6/30	d.79	.07	12/31	.25	.74	YES			
1586 CONSOL Energy	CNX	18.63	2 4 3	1.50	30- 50	(60-170%)	NMF	NIL	d.53	NIL	2	6/30	d.21	d.37	9/30	NIL	.01	YES			
1030 Consol. Communic. (NDO)	CNSL	24.66	3 3 3	.85	25- 40	(N- 60%)	72.5	6.3	.34	1.55	30	6/30	d.11	d.32	12/31	.387	.387	YES			
141 Consol. Edison	ED	73.24	3 1 3	.55	65- 80	(N- 10%)	17.2	3.7	4.25	2.74	12	6/30	.78	.74	9/30	.67	.65	YES			
1786 Consolidated Water (NDO)	CWCO	10.89	▲ 2 3 1	.95	20- 30	(85-175%)	17.3	2.8	.63	.30	43	6/30	.15	.15	12/31	.075	.075	YES			
1971 Constellation Brands	STZ	167.20	3 3 3	.95	150- 225	(N- 35%)	25.9	1.0	6.45	1.64	38	8/31	1.77	1.56	12/31	.40	.31	YES			
2171 Container Store Group	TCS	4.88	3 5 2	1.30	8- 15	(65-205%)	16.3	NIL	▲.30	NIL	61	6/30	d.04	NA	9/30	NIL	NIL	YES			
2406 Continental Resources	CLR	51.56	2 3 2	1.80	40- 60	(N- 15%)	NMF	NIL	d.95	NIL	9	6/30	d.24	NIL	9/30	NIL	NIL	YES			
387 Convergys Corp.	CVG	29.97	3 3 3	1.10	30- 45	(N- 50%)	15.3	1.2	1.96	.36	69	6/30	.41	.33	12/31	.09	.08	YES			
207 Cooper Cos. (NDO)	COO	180.68	▼ 3 2 1	.85	190- 255	(5- 40%)	24.5	NIL	7.38	.06	39	7/31	1.29	.91	9/30	.03	.03	YES			
981 Cooper Tire & Rubber	CTB	35.98	4 3 5	1.20	40- 60	(10- 65%)	8.9	1.2	4.05	.42	93	6/30	1.77	1.03	9/30	.105	.105	YES			
982 Cooper-Standard Holdings	CPS	95.31	5 3 3	.95	115- 170	(20- 80%)	11.0	NIL	8.70	NIL	93	6/30	2.20	1.98	9/30	NIL	NIL	YES			
2659 307 Copa Holdings, S.A.	CPA	92.01	3 3 3	1.25	70- 110	(N- 20%)	16.5	2.2	5.56	2.04	92	6/30	1.29	1.46	9/30	.51	.84	YES			
2124 Copart, Inc. (NDO)	CPRT	54.12	4 2 3	.90	55- 75	(N- 40%)	22.6	NIL	2.40	NIL	95	7/31	.59	.44	12/31	NIL	NIL	YES			
844 1947 Core-Mark Holding (NDO)	CORE	35.35	3 3 3	.75	30- 50	(N- 40%)	24.5	1.0	1.44	.36	79	6/30	.35	.29	9/30	.08	.065	YES			
442 CoreLogic	CLGX	38.77	▼ 4 3 1	1.20	45- 70	(15- 80%)	17.1	NIL	2.27	NIL	74	6/30	.65	.55	9/30	NIL	NIL	YES			
2418 Core Laboratories	CLB	111.99	1 3 4	1.15	140- 210	(25- 90%)	60.5	2.0	1.85	2.20	5	6/30	.38	.81	12/31	.55	.55	YES			
1815 Cornerstone OnDemand(NDO)	CSOD	40.60	3 4 2	1.20	50- 80	(25- 95%)	NMF	NIL	.01	NIL	65	6/30	NIL	d.16	9/30	NIL	NIL	YES			
1304 Corning Inc.	GLW	23.61	3 3 3	1.20	25- 35	(5- 50%)	32.3	2.3	.73	.54	27	6/30	d.39	.36	12/31	.135	.12	YES			
463 1517 Corrections Corp. Amer.	CXW				SEE LATEST REPORT																
443 CoStar Group (NDO)	CSGP	209.75	3 3 3	1.10	230- 345	(10- 65%)	47.5	NIL	4.42	NIL	74	6/30	.91	.08	9/30	NIL	NIL	YES			
2137 Costco Wholesale (NDO)	COST	149.11	▼ 4 1 3	.75	180- 225	(20- 50%)	26.8	1.2	5.56	1.80	57	8/31	1.77	1.73	12/31	♦.45	.40	YES			
1972 Cott Corp.	COT	13.79	4 3 2	.90	13- 19	(N- 40%)	39.4	1.7	.35	.24	38	6/30	.06	.02	9/30	.06	.06	YES			
1008 Coty Inc.	COTY	23.43	- 3 -	.80	25- 40	(5- 70%)	17.9	1.2	1.31	.28	21	6/30	.13	.08	9/30	.275	NIL	YES			
1218 Covanta Holding Corp.	CVA	15.20	3 3 4	.90	20- 30	(30- 95%)	NMF	6.6	d.11	1.00	26	6/30	d.23	d.05	12/31	.25	.25	YES			
358 Cracker Barrel (NDO)	CBRL	132.09	5 2 1	.75	120- 160	(N- 20%)	16.1	3.5	8.20	4.65	87	7/31	2.12	1.97	12/31	1.15	1.10	YES			
626 1973 Craft Brew Alliance	BREW	18.05	2 4 1	1.20	20- 35	(10- 95%)	46.3	NIL	.39	NIL	38	6/30	.12	.07	9/30	NIL	NIL	YES			
1747 Crane Co. (NDO)	CR	60.63	2 3 2	1.20	65- 100	(5- 65%)	14.2	2.2	4.27	1.32	36	6/30	1.21	1.06	9/30	.33	.33	YES			
2547 Crawford & Co. 'B'	CRDB	11.57	2 4 3	1.40	11- 18	(N- 55%)	16.5	1.7	.70	.20	58	6/30	.14	.06	9/30	.05	.05	YES			
2659 1397 Cray Inc. (NDO)	CRAY	21.33	4 4 4	1.20	40- 65	(90-205%)	18.1	NIL	1.18	NIL	83	6/30	d.29	.30	9/30	NIL	NIL	YES			
★ 1357 Cree, Inc. (NDO)	CREE	25.20	- 3 -	1.45	35- 55	(40-120%)	NMF	NIL	.04	NIL	75	9/30	NIL	d.24	9/30	NIL	NIL	YES			
2155 Crows, Inc. (NDO)	CROX	8.08	1 4 4	1.10	15- 25	(85-210%)	NMF	NIL	▼.05	NIL	81	6/30	.13	.30	9/30	NIL	NIL	YES			
1637 Cross Country Health. (NDO)	CCRN	12.79	▲ 2 4 4	1.20	14- 25	(10- 95%)	NMF	NIL	d.14	NIL	78	6/30	d.54	.08	9/30	NIL	NIL	YES			
589 Crown Castle Int'l	CCI	91.82	3 3 3	.85	110- 165	(20- 80%)	63.8	4.1	1.44	3.78	77	6/30	.22	.43	9/30	.885	.82	YES			
1178 Crown Holdings</																					



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NAME OF STOCK	Ticker Symbol	Recent Price			Safety	Technical	Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS						
		Timeliness	↓	↑									Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago	
																			↓
983 Dana Inc.	DAN	14.29	4	3	3	1.65	25- 40 (75-180%)	7.7	1.7	1.86	.24	93	6/30	.53	.42	9/30	.06	.06	YES
1036 1748 Danaher Corp.	DHR	76.43	2	2	2	NMF	100- 140 (30- 85%)	19.3	0.7	3.97	.50	36	6/30	1.25	1.08	12/31	▼.125	.135	YES
359 Darden Restaurants	DRI	63.03	3	3	5	.85	65- 95 (5- 50%)	15.8	3.6	3.99	2.24	87	8/31	.88	.68	12/31	.56	.55	YES
415 Darling Ingredients	DAR	13.49	▼3	3	2	1.20	18- 25 (35- 85%)	21.8	NIL	NIL	NIL	24	6/30	.19	.06	9/30	NIL	NIL	YES
DaVita Healthcare							NAME CHANGED TO DAVITA INC.												
800 DaVita Inc.	DVA	62.51	4	2	4	.90	95- 130 (50-110%)	16.4	NIL	3.82	NIL	70	6/30	1.01	.95	9/30	NIL	NIL	YES
1910 Dean Foods	DF	16.73	4	4	4	.95	20- 35 (20-110%)	10.6	2.2	1.58	.36	49	6/30	.38	.33	9/30	.09	.07	YES
2156 Deckers Outdoor	DECK	56.24	3	3	3	1.05	95- 140 (70-150%)	13.1	NIL	4.30	NIL	81	6/30	d1.84	d1.43	9/30	NIL	NIL	YES
626 158 Deere & Co.	DE	86.61	2	1	4	1.00	90- 105 (5- 20%)	23.5	2.8	3.69	2.40	55	7/31	1.55	1.53	12/31	.60	.60	YES
984 Delphi Automotive PLC	DLPH	64.11	3	3	3	1.25	75- 110 (15- 70%)	11.1	1.9	5.80	1.24	93	6/30	.94	1.21	9/30	.29	.25	YES
308 Delta Air Lines	DAL	39.46	5	3	5	1.25	60- 85 (50-115%)	6.7	2.1	5.88	.81	92	9/30	◆1.70	1.74	9/30	▲.203	.135	YES
2378 Deluxe Corp.	DLX	65.47	4	3	2	1.25	65- 95 (5- 55%)	13.4	1.8	4.87	1.20	54	6/30	1.18	1.11	12/31	◆.30	.30	YES
2407 Denbury Resources	DNR	2.77	▲2	5	3	2.00	4- 8 (45-190%)	NMF	NIL	d.17	NIL	9	6/30	.08	.13	9/30	NIL	.062	YES
179 Dentsply Sirona (NDQ)	XRAY	59.06	2	2	1	1.00	70- 95 (20- 60%)	21.0	0.5	2.81	.31	48	6/30	.76	.73	12/31	.078	.073	YES
1206 Deutsche High Income	KHI	9.25	2	4	2	.70	7- 11 (N- 25%)	NMF	6.6	NMF	.61	-	5/31	9.06(q)	9.84(q)	9/30	.114	.153	YES
1031 Deutsche Telekom ADR (PNK)	DTEGY	15.97	4	2	3	1.00	19- 25 (20- 55%)	22.8	3.9	.70	.63	30	6/30	.14	.20	9/30	NIL	NIL	YES
528 Devon Energy	DVN	41.90	3	3	3	1.55	45- 65 (5- 55%)	NMF	0.6	.41	.24	13	6/30	.06	.78	12/31	.06	.24	YES
2001 DeVry Education Group	DV	22.23	▲2	3	4	1.15	30- 50 (35-125%)	9.1	1.7	2.45	.38	25	6/30	.65	.57	12/31	.18	.18	YES
209 DexCom Inc. (NDQ)	DXCM	82.52	3	4	1	1.00	55- 95 (N- 15%)	NMF	NIL	d.10	NIL	39	6/30	d.24	d.05	9/30	NIL	NIL	YES
1974 Diageo plc	DEO	108.15	2	1	2	.90	110- 135 (N- 20%)	22.1	3.2	4.90	3.45	38	6/30	1.45(p)	2.67(p)	9/30	NIL	NIL	YES
2419 Diamond Offshore	DO	16.97	3	3	4	1.15	35- 55 (105-225%)	22.3	NIL	.76	NIL	5	6/30	.16	.66	9/30	NIL	.125	YES
2408 Diamondback Energy (NDQ)	FANG	99.71	3	3	3	1.60	90- 130 (N- 30%)	NMF	NIL	.76	NIL	9	6/30	d2.17	d3.45	9/30	NIL	NIL	YES
330 Diana Shipping	DSX	2.50	-	4	-	1.45	3- 5 (20-100%)	NMF	NIL	d1.49	NIL	53	6/30	d.41	d.19	9/30	NIL	NIL	YES
2172 Dick's Sporting Goods	DKS	55.80	3	3	2	.95	55- 85 (N- 50%)	17.6	1.1	3.17	.63	61	7/31	.82	.77	9/30	.151	.138	YES
1415 Diebold, Inc.	DBD	22.80	1	3	3	1.15	35- 50 (55-120%)	12.7	1.8	1.80	.40	20	6/30	.43	.44	12/31	▼.10	.287	YES
1519 Digital Realty Trust	DLR	96.57	2	3	3	.80	85- 125 (N- 30%)	75.4	3.9	1.28	3.81	50	6/30	.19	.86	9/30	.88	.85	YES
709 DigitalGlobe, Inc.	DGI	26.50	3	3	2	1.15	25- 35 (N- 30%)	NMF	NIL	.09	NIL	59	6/30	.17	.09	9/30	NIL	NIL	YES
2138 Dillard's, Inc.	DDS	58.15	4	3	4	1.05	70- 100 (20- 70%)	10.1	0.5	5.78	.28	57	7/31	.35	.75	12/31	.07	.07	YES
360 DineEquity Inc.	DIN	78.38	4	3	4	.95	80- 115 (N- 45%)	13.7	4.7	5.73	3.68	87	6/30	1.45	1.41	9/30	.92	.875	YES
967 Diplomat Pharmacy	DPLP	28.40	3	4	3	1.25	40- 65 (40-130%)	30.5	NIL	.93	NIL	84	6/30	.14	.05	9/30	NIL	NIL	YES
2548 Discover Fin'l Svcs.	DFS	54.81	3	3	1	1.05	75- 110 (35-100%)	9.5	2.2	5.80	1.20	58	6/30	1.47	1.33	12/31	◆.30	.28	YES
2332 Discovery Commun. (NDQ)	DISCA	25.21	3	3	5	1.15	55- 80 (120-215%)	13.1	NIL	1.93	NIL	76	6/30	.66	.44	9/30	NIL	NIL	YES
1021 Dish Network 'A' (NDQ)	DISH	56.62	2	3	5	1.15	40- 60 (N- 5%)	17.4	NIL	3.25	NIL	73	6/30	.88	.70	9/30	NIL	NIL	YES
230 2333 Disney (Walt)	DIS	91.17	3	1	4	1.00	105- 130 (15- 45%)	15.3	1.6	5.97	1.42	76	6/30	1.59	1.45	9/30	.71	.66	YES
2009 Dolby Labs.	DLB	51.46	2	3	3	.90	45- 65 (N- 25%)	27.5	0.9	1.87	.48	44	6/30	.62	.34	9/30	.12	.10	YES
627 2139 Dollar General	DG	68.69	4	3	2	.75	100- 150 (45-120%)	15.4	1.7	4.46	1.15	57	7/31	1.08	.95	9/30	.25	.22	YES
2140 Dollar Tree, Inc. (NDQ)	DLTR	76.25	3	2	2	.75	110- 150 (45- 95%)	19.6	NIL	3.90	NIL	57	7/31	.72	d.46	9/30	NIL	NIL	YES
142 Dominion Resources	D	73.37	2	2	2	.70	80- 110 (10- 50%)	18.7	4.0	3.92	2.97	12	6/30	.73	.70	9/30	.70	.648	YES
361 Domino's Pizza	DPZ	159.45	4	3	4	.90	105- 160 (N- N%)	36.6	1.0	4.36	1.52	87	9/30	◆.96	.67	12/31	◆.38	.31	YES
1163 Domtar Corp.	UFS	37.47	2	3	5	1.15	60- 90 (60-140%)	11.7	4.4	3.19	1.66	42	6/30	.29	.60	12/31	.415	.40	YES
1710 Donaldson Co.	DCI	36.41	2	2	2	1.10	35- 50 (N- 35%)	23.6	1.9	1.54	.70	68	7/31	.44	.41	12/31	.175	.17	YES
1840 2379 Donnelley (R.R) & Sons(NDQ)	RRD						SEE LATEST REPORT												
985 Dorman Products (NDQ)	DORM	62.84	4	3	2	.90	65- 100 (5- 60%)	21.0	NIL	2.99	NIL	93	6/30	.75	.65	9/30	NIL	NIL	YES
159 Douglas Dynamics	PLOW	32.05	5	3	3	1.00	30- 45 (N- 40%)	19.5	2.9	1.64	.94	55	6/30	.71	.57	9/30	.235	.223	YES
1711 Dover Corp.	DOV	67.54	2	2	2	1.20	75- 105 (10- 55%)	19.8	2.6	3.41	1.76	68	9/30	◆.83	1.16	9/30	▲.44	.42	YES
1599 Dow Chemical	DOW	53.69	-	3	-	1.40	65- 100 (20- 85%)	14.9	3.7	3.61	1.96	4	6/30	.95	.91	12/31	.46	.42	YES
1975 Dr Pepper Snapple	DPS	87.66	3	2	3	.70	85- 115 (N- 30%)	19.5	2.5	4.49	2.18	38	6/30	1.39	1.14	9/30	.53	.48	YES
626 2334 DreamWorks Animation	DWA						SEE FINAL SUPPLEMENT - PAGE 626												
986 Drew Industries	DW	90.26	4	3	3	1.00	125- 185 (40-105%)	17.2	1.3	5.24	1.20	93	6/30	1.51	.85	9/30	.30	NIL	YES
2420 Dril-Quip, Inc.	DRQ	53.30	3	3	4	1.30	100- 150 (90-180%)	24.0	NIL	2.22	NIL	5	6/30	.96	1.01	9/30	NIL	NIL	YES
2456 1600 Du Pont	DD	69.50	-	1	-	1.10	70- 85 (N- 20%)	21.5	2.3	3.24	1.62	4	6/30	1.24	1.08	9/30	.38	.38	YES
143 Duke Energy	DUK	77.90	2	2	2	.60	80- 105 (5- 35%)	17.1	4.4	4.55	3.45	12	6/30	.95	.87	9/30	▲.855	.825	YES
1520 Duke Realty Corp.	DRE	25.88	4	3	3	1.05	30- 40 (15- 55%)	52.8	2.8	.49	.72	50	6/30	.31	.16	9/30	.18	.17	YES
444 Dun & Bradstreet	DNB	125.71	2	3	1	1.15	115- 175 (N- 40%)	16.8	1.5	7.47	1.93	74	6/30	1.37	1.21	12/31	◆.483	.463	YES
362 Dunkin' Brands Group (NDQ)	DNKN	50.06	4	3	3	.70	75- 110 (50-120%)	22.2	2.6	2.25	1.29	87	6/30	.57	.50	9/30	.30	.265	YES
923 Dycem Inds.	DY	85.07	5	3	3	1.25	110- 160 (30- 90%)	16.2	NIL	5.24	NIL	71	7/31	1.64	.97	9/30	NIL	NIL	YES
730 Dynamic Materials (NDQ)	BOOM	9.92	-	5	-	1.25	10- 19 (N- 90%)	43.1	0.8	.23	.08	17	6/30	d.05	d.10	12/31	.02	.02	YES
1794 E*Trade Fin'l (NDQ)	ETFC	28.42	4	3	3	1.50	30- 50 (5- 75%)	18.1	NIL	1.57	NIL	47	6/30	.48	.25	9/30	NIL	NIL	YES
1035 EMC Corp.	EMC						SEE FINAL SUPPLEMENT - PAGE 1035												
529 EOG Resources	EOG	93.13	2	3	2	1.45	55- 80 (N- N%)	NMF	0.8	d.97	.71	13	6/30	d.38	.28	12/31	.168	.168	YES
530 EQT Corp.	EQT	65.61	2	3	1	1.05	80- 120 (20- 85%)	NMF	0.2	d.37	.12	13	6/30	d.35	.01	12/31	◆.03	.03	YES
1109 Eagle Materials	EXP	78.43	3	3	3	1.40	90- 140 (15- 80%)	18.7	0.5	4.20	.40	89	6/30	.93	.75	12/31	.10	.10	YES
2629 EarthLink Hldgs. (NDQ)	ELNK	6.18	3																

PAGE NUMBERS

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			RANKS			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS					
		Timeliness	Safety	Beta	Qtr. Ended	Earnings Per sh.	Year Ago						Qtr. Ended	Latest Div'd	Year Ago			
																Qtr. Ended	Latest Div'd	Year Ago
1305 Emerson Electric	EMR	49.88	- 1 -	1.10	65- 80	(30- 60%)	16.2	3.8	3.08	1.90	27	6/30	.80	.84	9/30	.475	.47	YES
1948 Empire Company Ltd.	(TSE)EMPA.TO	19.60	3 2 4	.50	25- 35	(30- 80%)	10.6	2.1	1.85	.42	79	7/31	.27	.44	12/31	.103	.10	YES
909 Empire Dist. Elec.	EDE	34.27	- 2 -	.75	20- 30	(N- N%)	25.6	3.1	1.34	1.05	16	6/30	.21	.15	9/30	.26	.26	YES
1038 605 Enbridge Inc.	(TSE)ENB.TO	58.16	5 2 2	.85	50- 70	(N- 20%)	24.1	3.6	2.41	2.12	8	6/30	.50	.60	9/30	.53	.465	YES
531 Encana Corp.	ECA	11.12	3 5 3	1.55	9- 17	(N- 55%)	NMF	0.5	.04	.06	13	6/30	.10	d.20	9/30	.015	.07	YES
231 1614 Endo Int'l plc	(NDQ)ENDP	19.85	3 3 4	.90	45- 65	(125-225%)	4.2	NIL	4.77	NIL	45	6/30	.86	1.20	9/30	NIL	NIL	YES
1816 Endurance Int'l Group	(NDQ)EIGI	8.00	4 4 5	1.05	10- 17	(25-115%)	NMF	NIL	d.46	NIL	65	6/30	d.21	d.02	9/30	NIL	NIL	YES
2023 2023 Endurance Specialty	(NDQ)ENH	91.88	- 2 -	.80	60- 80	(N- N%)	14.8	1.7	6.22	1.52	33	6/30	1.14	1.68	9/30	.38	.35	YES
532 Energen Corp.	EGN	56.25	3 3 2	1.55	40- 60	(N- 5%)	NMF	NIL	d.90	NIL	13	6/30	d.28	d1.52	9/30	NIL	.02	YES
1193 Energizer Holdings	ENR	48.77	- 3 -	NMF	40- 60	(N- 25%)	20.8	2.1	2.34	1.00	28	6/30	.32	d.32	9/30	.25	.25	YES
617 Energy Transfer	ETP	36.44	2 3 3	1.10	45- 70	(25- 90%)	24.6	11.6	1.48	4.22	6	6/30	.26	.38	9/30	1.055	1.035	YES
1220 EnerNOC, Inc.	(NDQ)ENOC	5.36	▲1 5 3	1.60	9- 16	(70-200%)	NMF	NIL	d2.59	NIL	26	6/30	NIL	d.64	9/30	NIL	NIL	YES
533 EnerSys Corp.	(TSE)ERF.TO	9.67	▼2 5 3	1.75	9- 17	(N- 75%)	NMF	1.2	d1.51	.12	13	6/30	d.77	d1.52	9/30	.03	.15	YES
1221 EnerSys	ENS	66.15	3 3 2	1.25	70- 110	(5- 65%)	15.6	1.1	4.25	.70	26	6/30	1.02	1.03	9/30	.175	.175	YES
618 EnLink Midstream Part.	ENLK	18.36	1 3 3	1.35	18- 30	(N- 65%)	NMF	8.5	.09	1.56	6	6/30	d.07	.12	9/30	.39	.385	YES
2663 1750 EnPro Industries	NPO	56.26	3 3 3	1.20	100- 150	(80-165%)	29.5	1.5	1.91	.84	36	6/30	.60	.69	9/30	.21	.20	YES
2921 Ensco plc	ESV	8.47	2 4 5	1.45	13- 20	(55-135%)	9.8	0.5	.86	.04	5	6/30	.51	1.15	9/30	.01	.15	YES
910 Entergy Corp.	ETR	74.93	3 3 2	.65	70- 105	(N- 40%)	10.6	4.6	7.07	3.48	16	6/30	3.16	.83	9/30	.85	.83	YES
619 Enterprise Products	EPD	27.03	3 3 4	1.10	45- 65	(65-140%)	21.3	6.1	1.27	1.65	6	6/30	.27	.28	9/30	▲.40	.38	YES
2335 Envision Communic.	EVC	7.06	3 5 1	1.45	9- 16	(25-125%)	19.1	1.7	.37	.12	76	6/30	.06	.06	9/30	.031	.025	YES
801 Envision Healthcare	EVHC	21.83	- 3 -	1.10	60- 90	(175-310%)	14.9	NIL	1.47	NIL	70	6/30	.34	.37	9/30	NIL	NIL	YES
445 Equifax, Inc.	EFX	130.28	4 2 3	1.00	145- 195	(10- 50%)	23.6	1.0	5.52	1.32	74	6/30	1.43	1.15	9/30	.33	.29	YES
1817 Equinix, Inc.	(NDQ)EQIX	365.94	3 3 2	1.05	215- 325	(N- N%)	NMF	1.9	3.30	7.00	65	6/30	.56	1.03	9/30	1.75	1.69	YES
1521 Equity Residential	EQR	61.08	5 3 4	.80	65- 95	(5- 55%)	38.4	3.5	1.59	2.12	50	6/30	.59	.78	12/31	.504	.553	YES
2030 947 Ericsson ADR(g)	(NDQ)ERIC	5.47	▲1 3 4	1.20	10- 14	(85-155%)	11.6	8.4	.47	.46	37	6/30	.07	.10	9/30	NIL	NIL	YES
764 Erie Indemnity	(NDQ)ERIE	104.72	2 2 3	.75	75- 105	(N- N%)	27.9	2.8	3.76	2.92	46	6/30	1.17	1.07	9/30	.73	.681	YES
1749 ESCO Technologies	ESE	44.90	2 3 2	1.05	50- 80	(10- 80%)	21.3	0.7	2.11	.32	36	6/30	.49	.41	12/31	.08	.08	YES
1417 Essendant Inc.	(NDQ)ESND	18.27	2 3 4	1.10	30- 45	(65-145%)	8.1	3.1	2.25	.56	20	6/30	.55	.82	3/31	.14	.14	YES
1522 Essex Property Trust	ESS	207.70	3 3 2	.80	230- 350	(10- 70%)	70.9	3.3	2.93	6.79	50	6/30	1.10	.70	12/31	1.60	1.44	YES
231 711 Esterline Technologies	ESL	73.00	2 3 3	1.35	90- 135	(25- 85%)	14.3	NIL	5.09	NIL	59	6/30	1.38	1.33	9/30	NIL	NIL	YES
1149 Ethan Allen Interiors	ETH	31.90	▼4 3 2	1.25	40- 60	(25- 90%)	14.9	2.1	2.14	.68	96	6/30	.57	.43	12/31	.17	.14	YES
427 European Equity Fund	EEA	7.74	- 3 3	1.05	10- 16	(30-105%)	NMF	1.3	NMF	.10	-	6/30	8.68(q)	9.33(q)	9/30	.02	NIL	YES
2024 Everest Re Group Ltd.	RE	195.34	4 1 3	.75	205- 250	(5- 30%)	11.5	2.5	17.06	4.80	33	6/30	3.17	4.68	9/30	1.15	.95	YES
144 Eversource Energy	ES	54.13	3 1 3	.70	55- 65	(N- 20%)	17.9	3.5	3.03	1.87	12	6/30	.64	.65	9/30	.445	.418	YES
145 Exelon Corp.	EXC	33.09	2 3 2	.70	30- 50	(N- 50%)	14.8	3.9	2.24	1.28	12	6/30	.43	.74	9/30	.318	.31	YES
2631 Expedia Inc.	(NDQ)EXPE	122.83	3 3 4	1.25	170- 255	(40-110%)	49.9	0.8	2.46	1.04	32	6/30	.21	.89	9/30	▲.26	.24	YES
389 Expeditors Int'l	(NDQ)EXPD	49.42	3 2 3	1.00	85- 115	(70-135%)	20.0	1.6	2.47	.80	69	6/30	.63	.61	9/30	NIL	NIL	YES
628 2209 Express, Inc.	EXPR	11.71	3 3 4	1.10	20- 30	(70-155%)	11.3	NIL	1.04	NIL	63	7/31	.13	.25	9/30	NIL	NIL	YES
968 Express Scripts	(NDQ)ESRX	70.31	4 3 3	1.00	105- 155	(50-120%)	15.3	NIL	4.59	NIL	84	6/30	1.13	.88	9/30	NIL	NIL	YES
2360 Extended Stay America	STAY	13.70	3 3 4	1.15	20- 30	(45-120%)	15.4	5.5	.89	.76	80	6/30	.30	.29	9/30	.19	.17	YES
1523 Extra Space Storage	EXR	76.19	3 3 3	.80	110- 165	(45-115%)	32.6	4.2	2.34	3.18	50	6/30	.66	.47	9/30	.78	.59	YES
1398 Extreme Networks	(NDQ)EXTR	4.13	4 4 4	1.05	5- 9	(20-120%)	12.9	NIL	.32	NIL	83	6/30	.10	.10	9/30	NIL	NIL	YES
2657 505 Exxon Mobil Corp.	XOM	86.77	2 1 3	.95	100- 120	(15- 40%)	31.3	3.5	3.02	1.88	18	6/30	.41	1.00	9/30	.75	.73	YES
2550 EZCORP, Inc.	(NDQ)EZPW	10.89	- 4 -	1.40	4- 7	(N- N%)	NMF	NIL	d.07	NIL	58	6/30	.05	d.01	9/30	NIL	NIL	YES
948 F5 Networks	(NDQ)FFIV	117.56	3 3 2	1.15	135- 200	(15- 70%)	21.3	NIL	5.51	NIL	37	6/30	1.37	1.29	9/30	NIL	NIL	YES
119 FARO Technologies	(NDQ)FARO	34.75	3 3 4	1.40	50- 75	(45-115%)	31.3	NIL	1.11	NIL	23	6/30	.20	.24	9/30	NIL	NIL	YES
1424 120 FEI Company	FEIC		SEE FINAL SUPPLEMENT - PAGE 1424															
1306 FLIR Systems	(NDQ)FLIR	29.31	3 3 2	.95	35- 55	(20- 90%)	17.7	1.7	1.66	.51	27	6/30	.34	.36	9/30	.12	.11	YES
1601 FMC Corp.	FMC	47.22	2 3 2	1.25	40- 65	(N- 40%)	16.7	1.5	2.82	.69	4	6/30	.69	.66	12/31	.165	.165	YES
2422 FMC Technologies	FTI	31.15	- 3 -	1.25	35- 50	(10- 60%)	33.5	NIL	.93	NIL	5	6/30	.18	.52	9/30	NIL	NIL	YES
1194 FTD Companies	(NDQ)FTD	20.32	3 3 3	1.10	25- 40	(25- 95%)	32.3	NIL	.63	NIL	28	6/30	.43	.61	9/30	NIL	NIL	YES
390 FTI Consulting	FCN	43.88	2 3 3	1.00	50- 70	(15- 60%)	18.4	NIL	2.38	NIL	69	6/30	.66	.50	9/30	NIL	NIL	YES
2457 2632 Facebook Inc.	(NDQ)FB	128.57	3 3 3	.90	155- 235	(20- 85%)	39.2	NIL	3.28	NIL	32	6/30	.71	.25	9/30	NIL	NIL	YES
446 FactSet Research	FDS	155.84	4 2 1	1.00	160- 215	(5- 40%)	23.7	1.3	6.58	2.03	74	8/31	1.69	1.48	9/30	.50	.44	YES
2613 Fair Isaac	FICO	122.13	4 3 1	1.20	100- 150	(N- 25%)	34.2	0.1	3.57	.08	64	6/30	1.08	.62	9/30	.02	.02	YES
1424 Fairchild Semic.	FCS		SEE FINAL SUPPLEMENT - PAGE 1424															
1138 Fastenal Co.	(NDQ)FAST	38.16	3 2 3	1.00	50- 65	(30- 70%)	21.7	3.1	1.76	1.20	72	9/30	.44	.47	12/31	.30	.28	YES
988 Federal-Mogul Hldgs.	(NDQ)FDML	9.20	- 4 -	1.75	17- 30	(85-225%)	8.8	NIL	1.04	NIL	93	6/30	.28	.28	9/30	NIL	NIL	YES
1524 Federal Rlty. Inv. Trust	FRT	147.10	2 2 2	.75	140- 190	(N- 30%)	46.4	2.7	3.17	3.96	50	6/30	.77	.46	12/31	▲.98	.94	YES
160 Federal Signal	FSS	12.99	▲3 3 4	1.20	19- 30	(45-130%)	16.9	2.2	.77	.28	55	6/30	.17	.29	9/30	.07	.06	YES
2551 Federated Investors	FII	27.78	2 3 1	1.20	35- 50	(25- 80%)	13.9	3.6	2.00	1.00	58	6/30	.51	.40	9/30	.25	.25	YES
1427 309 FedEx Corp.	FDX	170.74	4 1 3	1.10	235- 290	(40- 70%)	14.8	0.9	11.55	1.								



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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			RANKS			3-5 year Target Price Range and % appreciation	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?					
		Timeliness	Safety	Technical	Beta	Qtr. Ended	Earnings Per sh.						Year Ago	Qtr. Ended	Latest Div'd		Year Ago				
																		Qtr. Ended	Earnings Per sh.	Year Ago	
2614	Fiserv Inc. (NDQ)	FISV	100.06	3	2	3	.90	85- 115	(N- 15%)	21.8	NIL	4.59	64	6/30	1.08	.95	9/30	NIL	NIL	YES	
1330	Fitbit Inc.	FIT	13.54	-	4	-	NMF	35- 55	(160-305%)	10.7	NIL	1.27	56	6/30	1.12	.21	9/30	NIL	NIL	YES	
2141	Five Below, Inc. (NDQ)	FIVE	36.38	3	3	1	.90	65- 95	(80-160%)	27.4	NIL	1.33	57	7/31	.18	.13	9/30	NIL	NIL	YES	
2554	FleetCor Technologies	FLT	173.56	4	3	3	1.05	195- 295	(10- 70%)	25.5	NIL	6.80	58	6/30	1.56	1.48	9/30	NIL	NIL	YES	
1331	Flextronics Int'l (NDQ)	FLEX	13.94	3	3	4	1.15	15- 25	(10- 80%)	13.3	NIL	1.05	56	6/30	.21	.19	9/30	NIL	NIL	YES	
238	1911 Flowers Foods	FLO	15.47	3	3	5	.75	20- 35	(30-125%)	16.1	4.1	.96	.64	6/30	.26	.25	9/30	.16	.145	YES	
1712	Flowserve Corp.	FLS	42.93	2	3	3	1.30	50- 75	(15- 75%)	17.1	1.8	2.51	.76	6/30	.57	.80	12/31	.19	.18	YES	
1237	Fluor Corp.	FLR	50.53	3	3	4	1.35	65- 95	(30- 90%)	15.2	1.7	3.33	.84	6/30	.72	1.00	12/31	.21	.21	YES	
1504	Flushing Financial (NDQ)	FFIC	22.75	3	3	2	.90	20- 30	(N- 30%)	10.3	3.1	2.21	.71	29	6/30	1.05	.51	9/30	.17	.16	YES
628	2211 Foot Locker	FL	67.89	4	3	3	.90	70- 105	(5- 55%)	14.0	1.6	4.86	1.10	63	7/31	.94	.84	12/31	.275	.25	YES
2465	105 Ford Motor	F	11.89	3	3	3	1.25	16- 25	(35-110%)	6.7	5.0	1.77	.60	60	6/30	.52	.54	12/31	◆.15	.15	YES
1526	Forest City Realty	FCEA	21.59	-	4	-	1.30	20- 35	(N- 60%)	80.0	1.1	.27	.24	50	6/30	1.10	1.28	9/30	.06	NIL	YES
447	Forrester Research (NDQ)	FORR	37.90	▼	2	2	.75	40- 60	(5- 60%)	30.8	2.0	1.23	.74	74	6/30	.46	.40	9/30	.18	.17	YES
2031	2587 Fortinet Inc. (NDQ)	FTNT	30.99	1	3	1	1.25	55- 80	(75-160%)	NMF	NIL	1.17	NIL	14	6/30	d.01	NIL	9/30	NIL	NIL	YES
1751	Fortis Inc. (TSE)	FTS.TO	42.46	3	2	3	.65	50- 70	(20- 65%)	19.0	3.8	2.23	1.60	36	6/30	.46	.44	12/31	▲.40	.375	YES
121	Fortive Corp.	FTV	49.09	-	3	-	NMF	45- 65	(N- 30%)	20.3	0.6	2.42	.28	23	6/30	.69	NA	/	NIL	NIL	YES
2654	Fortress Investment	FIG	5.13	3	3	4	1.35	12- 18	(135-250%)	5.2	7.0	.99	.36	1	6/30	.26	.30	9/30	.09	.08	YES
1150	Fortune Brands Home	FBHS	54.81	4	3	3	1.25	70- 100	(30- 80%)	19.1	1.2	2.87	.64	96	6/30	.82	.59	12/31	.16	.16	YES
320	Forward Air (NDQ)	FWRD	41.91	3	3	3	1.05	65- 100	(55-140%)	17.3	1.1	2.42	.48	94	6/30	.57	.51	9/30	.12	.12	YES
2173	Fossil Group (NDQ)	FOSL	28.02	2	3	4	1.35	55- 80	(95-185%)	13.5	NIL	2.08	NIL	61	6/30	.12	1.12	9/30	NIL	NIL	YES
2212	Francesca's Hldgs. (NDQ)	FRAN	16.81	3	3	5	.90	25- 35	(60-120%)	15.5	NIL	1.02	NIL	63	7/31	.27	.22	9/30	NIL	NIL	YES
1569	Franco-Nevada Corp.	FNV	55.03	3	3	1	.75	60- 95	(N- 45%)	69.5	1.3	.95	.88	3	6/30	.24	.14	9/30	.22	.21	YES
1307	Franklin Electric (NDQ)	FELE	38.20	3	3	2	1.25	40- 60	(5- 55%)	20.4	1.0	1.87	.40	27	6/30	.50	.33	9/30	.10	.098	YES
2555	Franklin Resources (NDQ)	BEN	34.23	▲	2	3	1.30	55- 75	(60-120%)	11.8	2.4	2.90	.81	58	6/30	.77	.82	12/31	.18	.15	YES
2142	Fred's Inc. (NDQ)	FRED	8.83	▲	2	3	1.05	14- 20	(60-125%)	NMF	2.7	▼d.39	.24	57	7/31	d.18	d.13	9/30	.06	.06	YES
1587	Freep't-McMoran Inc.	FCX	9.72	1	4	3	1.80	25- 35	(155-260%)	16.5	NIL	.59	NIL	2	6/30	NIL	.13	9/30	NIL	.05	YES
1912	Fresh Del Monte Prod.	FDP	62.20	3	3	4	.85	45- 65	(N- 5%)	15.8	1.0	3.93	.60	49	6/30	1.86	1.21	9/30	▲.15	.125	YES
1032	Frontier Commun. (NDQ)	FTR	4.08	2	4	2	1.15	5- 8	(25- 95%)	NMF	10.3	d.10	.42	30	6/30	d.02	.03	9/30	.105	.105	YES
331	Frontline Ltd. (NDQ)	FRO	7.56	3	5	5	1.70	12- 20	(60-165%)	7.2	10.6	1.05	.80	53	6/30	.25	.24	9/30	▼.20	NIL	YES
1223	FuelCell Energy (NDQ)	FCEL	4.90	3	5	4	1.60	4- 8	(N- 65%)	NMF	NIL	d1.51	NIL	26	7/31	d.38	d.29	9/30	NIL	NIL	YES
1984	FUJIFILM Hldgs. ADR(g)/PNK	FUJIY	38.40	4	3	3	.95	45- 65	(15- 70%)	20.2	1.9	1.90	.72	52	6/30	.24	.41	9/30	.315	.29	YES
566	Fuller (H.B.)	FUL	44.03	3	3	2	1.20	50- 70	(15- 60%)	16.4	1.3	2.68	.56	62	8/31	.64	.52	12/31	◆.14	.13	YES
844	2104 G-III Apparel Group (NDQ)	GIII	27.94	4	3	4	1.10	55- 80	(95-185%)	12.5	NIL	2.24	NIL	86	7/31	d.03	.27	9/30	NIL	NIL	YES
391	G&K Services (NDQ)	GK	94.80	-	3	-	1.05	60- 90	(N- N%)	24.5	1.6	3.87	1.56	69	6/30	1.00	.83	9/30	▲.39	.37	YES
343	GATX Corp.	GATX	44.08	3	3	4	1.15	50- 75	(15- 70%)	8.7	3.6	5.08	1.60	91	6/30	1.49	1.03	9/30	.40	.38	YES
2460	2174 GNC Holdings	GNC	19.40	3	3	4	1.00	▼ 30- 45	(55-130%)	6.4	4.1	▼3.01	.80	61	6/30	.94	.79	9/30	.20	.18	YES
1207	Gabelli Equity	GAB	5.30	-	3	3	1.10	7- 10	(30- 90%)	NMF	0.9	NMF	.05	-	6/30	5.77(q)	6.59(q)	6/30	.01	.01	YES
2556	Gallagher (Arthur J.)	AJG	50.02	3	1	2	.90	60- 75	(20- 50%)	17.3	3.0	2.89	1.52	58	6/30	.84	.81	9/30	.38	.37	YES
844	2175 GameStop Corp.	GME	24.82	▲	3	4	.95	50- 75	(100-200%)	6.1	6.0	4.07	1.48	61	7/31	.27	.24	9/30	.37	.36	YES
2387	Gannett Co.	GCI	10.64	-	3	-	NMF	20- 30	(90-180%)	10.2	6.1	1.04	.65	-	6/30	.10	.43	12/31	◆.16	.16	YES
2031	2213 Gap (The), Inc.	GPS	25.91	3	3	4	1.00	▲ 25- 40	(N- 55%)	13.0	3.6	1.99	.92	63	7/31	.60	.53	9/30	.23	.23	YES
1308	Garmin Ltd. (NDQ)	GRMN	48.64	2	2	3	1.00	45- 60	(N- 25%)	19.0	4.3	2.56	2.07	27	6/30	.87	.72	9/30	.51	.51	YES
448	Gartner Inc.	IT	88.13	3	2	3	.90	125- 165	(40- 85%)	31.6	NIL	2.79	NIL	74	6/30	.71	.65	9/30	NIL	NIL	YES
332	GasLog Ltd.	GLOG	16.55	2	4	4	1.65	15- 25	(N- 50%)	87.1	3.4	.19	.56	53	6/30	d.01	NIL	9/30	.14	.14	YES
1224	Generac Holdings	GNRC	36.62	3	3	3	1.00	60- 95	(65-160%)	22.9	NIL	1.60	NIL	26	6/30	.31	.21	9/30	NIL	NIL	YES
1208	Gen'l Amer. Invest	GAM	31.82	-	3	3	1.05	45- 70	(40-120%)	NMF	1.8	NMF	.56	-	6/30	37.94(q)	40.72(q)	9/30	NIL	NIL	YES
1309	Gen'l Cable	BGC	14.25	3	4	2	1.70	18- 30	(25-110%)	14.8	5.1	.96	.72	27	6/30	.30	.36	9/30	.18	.18	YES
924	Gen'l Commun. 'A' (NDQ)	GNCMA	14.80	3	4	5	1.05	20- 35	(35-135%)	NMF	NIL	.10	NIL	71	6/30	d.01	d.41	9/30	NIL	NIL	YES
712	Gen'l Dynamics	GD	151.88	3	1	2	.95	130- 160	(N- 5%)	15.7	2.0	9.66	3.04	59	6/30	2.44	2.27	12/31	.76	.69	YES
2457	1752 Gen'l Electric	GE	28.98	2	3	2	1.10	35- 55	(20- 90%)	18.5	3.2	1.57	.92	36	6/30	.36	.31	9/30	.23	.23	YES
1528	General Growth Prop.	GGP	26.23	3	3	1	1.00	30- 45	(15- 70%)	34.1	3.1	.77	.81	50	6/30	.19	.44	12/31	▲.20	.19	YES
1913	Gen'l Mills	GIS	61.91	3	1	1	.70	70- 85	(15- 35%)	20.5	3.1	3.02	1.94	49	8/31	.78	.79	12/31	.48	.44	YES
106	General Motors	GM	31.40	4	3	4	1.25	40- 60	(25- 90%)	5.3	4.8	5.92	1.52	60	6/30	1.86	1.28	9/30	.38	.36	YES
844	2157 Genesco Inc.	GCO	54.05	3	3	5	.95	80- 115	(50-115%)	13.9	NIL	▼3.88	NIL	81	7/31	.34	.36	9/30	NIL	NIL	YES
344	Genessee & Wyoming	GWR	69.11	▲	3	4	1.35	75- 115	(10- 65%)	19.0	NIL	3.63	NIL	91	6/30	.93	.93	9/30	NIL	NIL	YES
210	Genomic Health (NDQ)	GHDX	29.82	1	3	4	.90	25- 40	(N- 35%)	NMF	NIL	d.36	NIL	39	6/30	d.18	d.29	9/30	NIL	NIL	YES
392	Genpact Limited	G	23.65	4	3	3	.85	30- 45	(25- 90%)	18.8	NIL	1.26	NIL	69	6/30	.31	.28	9/30	NIL	NIL	YES



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NAME OF STOCK	Ticker Symbol	Recent Price			Safety			Technical			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS						Do Options Trade?		
		Timeliness	Safety	Beta	Timeliness	Safety	Beta	Qtr. Ended	Earnings Per sh.	Year Ago						Qtr. Ended	Latest Div'd	Year Ago						
																			Qtr. Ended	Earnings Per sh.	Year Ago		Qtr. Ended	Latest Div'd
1713	Graco Inc.	GGG	71.38	3	3	3	1.20	85-	130	(20-80%)	21.0	1.8	3.40	1.32	68	6/30	.89	.85	12/31	.33	.30	YES		
1753	Graham Hldgs.	GHC	461.51	-	3	-	NMF	560-	840	(20-80%)	15.4	1.0	29.91	4.84	36	6/30	7.97	6.71	12/31	1.21	1.15	YES		
1310	Grainger (W.W.)	GWV	205.86	▲3	1	2	.90	275-	335	(35-65%)	17.7	2.4	11.62	4.88	27	9/30	◆3.06	3.03	9/30	1.22	1.17	YES		
1238	Granite Construction	GVA	44.57	3	3	2	1.25	50-	80	(10-80%)	23.1	1.2	1.93	.52	35	6/30	.35	.24	12/31	.13	.13	YES		
1179	Graphic Packaging	GPK	13.68	5	3	1	1.15	19-	30	(40-120%)	14.1	1.5	.97	.20	82	6/30	.24	.19	12/31	.05	.05	YES		
2337	Gray Television	GTN	9.70	4	4	4	1.55	16-	25	(65-160%)	9.9	NIL	.98	NIL	76	6/30	.24	.17	9/30	NIL	NIL	YES		
911	G't Plains Energy	GXP	27.73	3	3	3	.75	25-	35	(N-25%)	20.8	4.0	1.33	1.10	16	6/30	.20	.28	9/30	.263	.245	YES		
1225	Green Plains Inc. (NDQ)	GPPE	26.05	3	4	3	1.70	25-	35	(N-35%)	28.0	1.8	.93	.48	26	6/30	.21	.19	9/30	.12	.12	YES		
345	Greenbrier (The) Cos.	GBX	35.55	5	4	4	2.00	30-	45	(N-25%)	8.7	2.4	4.09	.84	91	5/31	1.12	1.33	9/30	▲.21	.15	YES		
1804	Greenhill & Co.	GHL	22.95	1	3	4	1.40	40-	60	(75-160%)	12.7	7.8	1.81	1.80	10	6/30	.62	.30	9/30	.45	.45	YES		
2025	Greenlight Capital Re (NDQ)	GLRE	20.48	1	3	3	.90	30-	40	(45-95%)	23.5	NIL	.87	NIL	33	6/30	d1.69	d1.06	9/30	NIL	NIL	YES		
1180	Greif, Inc.	GEF	48.21	2	3	2	1.25	45-	70	(N-45%)	18.3	3.5	2.63	1.68	82	7/31	.91	.60	12/31	.42	.42	YES		
1754	Griffon Corp.	GFF	16.40	4	3	2	1.20	25-	35	(50-115%)	18.4	1.2	.89	.20	36	6/30	.26	.23	9/30	.05	.04	YES		
2125	Group 1 Automotive	GPI	61.61	▼5	3	5	1.30	100-	145	(60-135%)	8.0	1.6	7.66	.96	95	6/30	2.16	1.98	9/30	.23	.21	YES		
2633	Groupon, Inc. (NDQ)	GRPN	5.07	3	5	2	1.40	3-	6	(N-20%)	NMF	NIL	d.27	NIL	32	6/30	d.10	d.03	9/30	NIL	NIL	YES		
627	2106	Guess Inc.	GES	13.72	2	3	3	1.20	25-	35	(80-155%)	16.5	6.6	.83	.90	86	7/31	.14	.21	9/30	.225	.45	YES	
1646	334	GulfMark Offshore	GLF					SEE FINAL SUPPLEMENT - PAGE 1646																
	802	HCA Holdings	HCA	82.02	5	3	3	1.05	85-	125	(5-50%)	12.5	NIL	6.56	NIL	70	6/30	1.66	1.36	9/30	NIL	NIL	YES	
	1529	HCP Inc.	HCP	36.69	-	3	-	.80	45-	65	(25-75%)	16.5	6.4	2.22	2.33	50	6/30	.64	.36	9/30	.575	.585	YES	
1037	1110	HD Supply Holdings (NDQ)	HDS	32.19	4	3	2	1.40	40-	60	(25-85%)	12.2	NIL	2.64	NIL	89	7/31	.85	.56	9/30	NIL	NIL	YES	
1426	1151	HNI Corp.	HNI	37.65	5	3	1	1.35	70-	100	(85-165%)	12.8	2.9	2.95	1.10	96	6/30	.68	.53	9/30	.275	.265	YES	
	1399	HP Inc.	HPQ	14.21	-	3	-	NMF	14-	20	(N-40%)	9.7	3.5	1.47	.50	83	7/31	.49	.47	12/31	.124	.176	YES	
	2515	HSBC Holdings PLC	HSBC	38.33	1	3	4	1.10	40-	60	(5-55%)	10.0	5.2	3.85	2.00	51	6/30	.60	1.10	12/31	.50	1.00	YES	
	2176	HSN, Inc. (NDQ)	HSNI	38.05	4	3	3	1.05	65-	100	(70-165%)	12.6	3.7	▼3.01	1.40	61	6/30	.50	.78	9/30	.35	.35	YES	
	211	Haemonetics Corp.	HAE	34.47	2	3	3	.85	35-	50	(N-45%)	24.6	NIL	1.40	NIL	39	6/30	.25	.35	9/30	NIL	NIL	YES	
459	1914	Hain Celestial Group (NDQ)	HAIN	35.82	3	3	4	.90	45-	70	(25-95%)	17.6	NIL	2.03	NIL	49	3/31	.49	.45	9/30	NIL	NIL	YES	
	2423	Halliburton Co.	HAL	47.07	2	3	3	1.50	50-	75	(5-60%)	NMF	1.5	d.22	.72	5	9/30	◆.01	d.06	9/30	.18	.18	YES	
	783	Hancock Holding (NDQ)	HBHC	32.28	1	3	2	1.10	35-	55	(10-70%)	13.8	3.0	2.34	.96	19	9/30	◆.59	.52	9/30	.24	.24	YES	
	2107	Hanesbrands, Inc.	HBI	24.40	4	3	4	1.05	35-	55	(45-125%)	12.5	1.8	1.95	.44	86	6/30	.51	.50	9/30	.11	.10	YES	
	765	Hanover Insurance	THG	78.76	4	2	4	.90	90-	120	(15-46%)	13.2	2.3	5.98	1.84	46	6/30	1.24	1.56	9/30	.46	.41	YES	
	2310	Harley-Davidson	HOG	54.19	4	3	3	1.15	75-	115	(40-110%)	13.4	2.6	4.04	1.40	85	9/30	◆.64	.69	9/30	.35	.31	YES	
	1311	Harman Int'l	HAR	79.79	▲3	3	4	1.55	150-	225	(90-180%)	15.4	1.8	5.19	1.40	27	6/30	1.01	1.01	9/30	.35	.35	YES	
1647	949	Harmonic, Inc. (NDQ)	HLIT	5.55	-	3	-	1.35	6-	10	(10-80%)	30.8	NIL	1.18	NIL	37	6/30	NIL	.05	9/30	NIL	NIL	YES	
	1333	Harris Corp.	HRS	90.39	3	2	3	1.05	95-	130	(5-45%)	15.6	2.4	5.80	2.14	56	6/30	1.45	1.32	9/30	▲.53	.50	YES	
	393	Harsco Corp.	HSC	9.90	2	4	4	1.60	10-	16	(N-60%)	20.6	NIL	.48	NIL	69	6/30	.15	.08	9/30	NIL	2.05	YES	
	2394	Harte-Hanks	HHS	1.52	-	5	-	1.05	4-	7	(165-360%)	15.2	NIL	.10	NIL	66	6/30	d.11	d.07	9/30	NIL	.085	YES	
	2558	Hartford Fin'l Svcs.	HIG	43.25	3	3	5	1.30	50-	70	(15-60%)	12.1	1.9	3.58	.84	58	6/30	.31	.91	12/31	.21	.21	YES	
★★	2311	Hasbro, Inc. (NDQ)	HAS	81.45	3	3	3	.90	75-	110	(N-35%)	18.4	2.5	4.42	2.04	85	9/30	◆2.03	1.58	9/30	.51	.46	YES	
2032	2177	Haverty Furniture	HVT	18.25	3	3	3	.90	▼	30-	50	(65-175%)	14.1	2.6	1.29	.48	61	6/30	.24	.21	9/30	▲.12	.10	YES
	2229	Hawaiian Elec.	HE	28.95	1	2	3	.70	▲	25-	30	(N-50%)	13.0	4.3	2.22	1.24	31	6/30	.41	.33	9/30	.31	.31	YES
	310	Hawaiian Hldgs. (NDQ)	HA	49.10	5	4	3	1.15	35-	60	(N-20%)	10.2	NIL	4.80	NIL	92	9/30	◆1.91	1.13	9/30	NIL	NIL	YES	
	731	Haynes International (NDQ)	HAYN	35.40	3	3	4	1.35	45-	65	(25-85%)	24.1	2.5	1.47	.88	17	6/30	.22	.62	9/30	.22	.22	YES	
	1111	Headwaters Inc.	HW	17.35	5	4	4	1.55	20-	35	(15-100%)	15.9	NIL	1.09	NIL	89	6/30	.23	.31	9/30	NIL	NIL	YES	
	1530	Healthcare R'lty Trust	HR	32.45	▼3	3	2	.75	35-	50	(10-55%)	61.2	3.7	.53	1.20	50	6/30	.12	.18	9/30	.30	.30	YES	
	394	Healthcare Svcs. (NDQ)	HCSG	37.49	3	2	3	.85	35-	50	(N-35%)	34.1	2.1	1.10	.79	69	9/30	◆.27	.23	12/31	▲.185	.18	YES	
	803	HealthSouth Corp.	HLS	40.26	3	3	2	1.15	45-	70	(10-75%)	16.2	2.4	2.49	.96	70	6/30	.65	.47	12/31	▲.24	.23	YES	
232	804	Healthways Inc. (NDQ)	HWAY	25.92	1	4	3	.85	35-	55	(35-110%)	13.7	NIL	1.89	NIL	70	6/30	.54	.01	9/30	NIL	NIL	YES	
	321	Heartland Express (NDQ)	HTLD	18.16	3	2	3	.85	25-	30	(40-65%)	25.2	0.4	.72	.08	94	6/30	.20	.27	12/31	.02	.04	YES	
	713	HEICO Corp.	HEI	67.53	4	3	2	.95	80-	120	(20-80%)	27.5	0.3	2.46	.18	59	7/31	.62	.51	9/30	.08	.07	YES	
	1638	Heidrick & Struggles (NDQ)	HSII	20.30	3	3	5	1.05	25-	40	(25-95%)	18.8	2.6	1.08	.52	78	6/30	.35	.27	9/30	.13	.13	YES	
	1010	Helen of Troy Ltd. (NDQ)	HELE	82.45	4	3	3	1.00	75-	115	(N-40%)	13.2	NIL	6.25	NIL	21	8/31	1.31	1.12	9/30	NIL	NIL	YES	
	2424	Helix Energy Solutions	HLX	9.53	2	4	5	1.95	11-	19	(15-100%)	NMF	NIL	d.02	NIL	5	6/30	d.10	d.03	9/30	NIL	NIL	YES	
	2425	Helmerich & Payne	HP	67.17	2	3	3	1.50	55-	80	(N-20%)	NMF	4.2	d1.47	2.80	5	6/30	d.47	.27	12/31	.70	.688	YES	
	2615	Henry (Jack) & Assoc. (NDQ)	JKHY	82.52	3	2	2	.85	65-	85	(N-50%)	27.1	1.4	3.04	1.12	64	6/30	.84	.75	9/30	.28	.25	YES	
	1915	Herbalife, Ltd.	HLF	62.03	4	3	3	1.35																

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			RANKS			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?			
		Timeliness	Safety	Technical	Beta	Qtr. Ended	Earnings Per sh.						Year Ago	Qtr. Ended	Latest Div'd		Year Ago		
																		Qtr. Ended	Earnings Per sh.
784 Huntington Bancshs. (NDO)	HBAN	9.80	3 3 4	1.15	11- 17	(10- 75%)	13.2	3.3	3.74	.32	19	6/30	.19	.23	12/31	.07	.06	YES	
714 Huntington Ingalls	HII	160.58	5 3 3	1.05	150- 225	(N- 40%)	16.3	1.2	9.83	2.00	59	6/30	2.80	3.22	9/30	.50	.40	YES	
2449 Huntsman Corp.	HUN	15.78	3 4 2	1.75	25- 45	(60-185%)	8.5	3.2	1.86	.50	88	6/30	.36	.12	9/30	.125	.125	YES	
396 Huron Consulting (NDO)	HURN	55.80	3 3 1	1.00	55- 80	(N- 45%)	22.5	NIL	2.48	NIL	69	6/30	.77	.62	9/30	NIL	NIL	YES	
508 Husky Energy (TSE)	HSE.TO	15.70	▲ 2 3 4	1.05	20- 30	(25- 90%)	NMF	NIL	d.43	NIL	18	6/30	d.20	.10	9/30	NIL	.30	YES	
2362 Hyatt Hotels	H	50.39	▲ 3 3 2	1.15	60- 90	(20- 80%)	33.6	NIL	1.50	NIL	80	6/30	.64	.28	9/30	NIL	NIL	YES	
2634 IAC/InterActiveCorp (NDO)	IAC	64.62	2 3 5	1.10	80- 120	(25- 85%)	42.8	NIL	1.51	NIL	32	6/30	d.05	.68	9/30	NIL	.34	YES	
182 ICU Medical (NDO)	ICUI	144.09	3 3 4	.80	110- 165	(N- 15%)	39.0	NIL	3.69	NIL	48	6/30	.98	.83	9/30	NIL	NIL	YES	
449 IHS Markit (NDO)	INFO	37.30	- 3 -	1.00	45- 65	(20- 75%)	66.6	NIL	.56	NIL	74	8/31	d.09	.25	9/30	NIL	NIL	YES	
123 II-VI Inc. (NDO)	IIVI	25.75	3 3 4	1.10	25- 35	(N- 35%)	24.5	NIL	1.05	NIL	23	6/30	.23	.27	9/30	NIL	NIL	YES	
2314 ILG, Inc. (NDO)	ILG	16.44	3 3 4	1.10	25- 35	(50-115%)	15.1	2.9	1.09	.48	85	6/30	.36	.29	9/30	.12	.12	YES	
1837 IMS Health Hldgs. (NDO)	IMS				SEE FINAL SUPPLEMENT - PAGE 1837														
1387 IPG Photonics Corp. (NDO)	IPGP	82.58	3 3 4	1.40	105- 160	(25- 95%)	17.1	NIL	4.83	NIL	67	6/30	1.25	1.15	9/30	NIL	NIL	YES	
★ 912 ITC Holdings	ITC				SEE FINAL SUPPLEMENT - PAGE 2238														
1756 ITT Inc.	ITT	34.02	4 3 3	1.20	45- 70	(30-105%)	13.9	1.5	2.45	.50	36	6/30	.67	.69	12/31	.124	.118	YES	
2108 Ixonix Brand Group (NDO)	ICON	7.89	3 4 4	1.25	▲ 11- 18	(40-130%)	8.8	NIL	▼.90	NIL	86	6/30	.27	.45	9/30	NIL	NIL	YES	
2230 IDACORP, Inc.	IDA	75.79	3 2 3	.75	55- 80	(N- 5%)	18.9	2.9	4.00	2.20	31	6/30	1.12	1.31	9/30	.51	.47	YES	
★ 1714 IDEX Corp.	IEX	86.79	▼ 5 2 1	1.10	105- 145	(20- 65%)	22.7	1.6	3.83	1.36	68	9/30	◆.92	.85	12/31	.34	.32	YES	
2661 214 IDEXX Labs. (NDO)	IDXX	112.57	4 3 3	.90	100- 150	(N- 35%)	46.7	NIL	2.41	NIL	39	6/30	.74	.60	9/30	NIL	NIL	YES	
2032 732 Illinois Tool Works (NDO)	ITW	115.08	▼ 4 1 2	1.05	115- 145	(N- 25%)	20.0	2.3	5.76	2.60	17	6/30	1.46	1.30	12/31	▲.65	.55	YES	
215 ILMN Inc. (NDO)	ILMN	145.22	4 3 4	.85	205- 310	(40-115%)	43.1	NIL	3.37	NIL	39	6/30	.82	.69	9/30	NIL	NIL	YES	
2312 IMAX Corp. (NDO)	IMAX	30.14	3 3 5	1.15	60- 85	(100-180%)	29.0	NIL	1.04	NIL	85	6/30	.11	.34	9/30	NIL	NIL	YES	
2012 Immersion Corp. (NDO)	IMMR	7.76	2 4 4	1.15	9- 15	(15- 95%)	NMF	NIL	d.21	NIL	44	6/30	d.22	.05	9/30	NIL	NIL	YES	
509 Imperial Oil Ltd. (ASE)	IMO	32.51	1 2 4	1.20	40- 55	(25- 70%)	39.6	1.4	.82	.46	18	6/30	.01	.38	9/30	▲.116	.094	YES	
831 Incyte Corp. (NDO)	INCY	88.78	3 4 5	1.25	90- 150	(N- 70%)	NMF	NIL	.68	NIL	40	6/30	.18	.06	9/30	NIL	NIL	YES	
428 India Fund (The)	IFN	24.66	- 3 3 1	1.00	30- 50	(20-105%)	NMF	0.6	NMF	.15	-	6/30	27.97(q)	29.48(q)	9/30	.037	.10	YES	
950 Infina Corp. (NDO)	INFN	8.78	4 4 4	1.30	15- 20	(70-130%)	NMF	NIL	.02	NIL	37	6/30	.08	.13	9/30	NIL	NIL	YES	
1425 592 Infoblox Inc. (NDO)	BLOX	26.35	- 4 -	1.05	30- 50	(15- 90%)	NMF	NIL	d.43	NIL	77	7/31	d.18	d.08	9/30	NIL	NIL	YES	
★ 2616 Infosys Ltd. ADR	INFY	15.91	3 2 4	.90	30- 40	(90-150%)	15.2	2.6	1.05	.42	64	9/30	◆.24	.23	9/30	NIL	NIL	YES	
1757 Ingersoll-Rand	IR	64.96	3 3 3	1.20	75- 110	(15- 70%)	15.7	2.5	4.15	1.60	36	6/30	1.38	1.20	12/31	▲.40	.29	YES	
1949 Ingles Markets (NDO)	IMKTA	39.80	4 3 4	.75	35- 55	(N- 40%)	13.7	1.7	2.90	.66	79	6/30	.63	.68	12/31	.165	.165	YES	
1401 Ingram Micro 'A'	IM	36.10	- 3 -	1.05	40- 60	(10- 65%)	13.6	NIL	2.65	NIL	83	6/30	.61	.55	9/30	NIL	.10	YES	
1918 Ingredion Inc. (NDO)	INGR	134.80	3 3 3	.95	115- 175	(N- 30%)	20.1	1.5	6.72	2.03	49	6/30	1.72	1.47	12/31	▲.50	.45	YES	
568 Inospec Inc. (NDO)	IOSP	61.96	5 3 3	1.15	55- 80	(N- 30%)	16.9	1.1	3.66	.70	62	6/30	1.18	1.40	9/30	NIL	NIL	YES	
2663 2180 Insight Enterprises (NDO)	NSIT	32.91	3 3 3	1.30	35- 50	(5- 50%)	13.1	NIL	2.52	NIL	61	6/30	.96	.67	9/30	NIL	NIL	YES	
1639 Insperity Inc. (NDO)	NSP	75.15	3 3 4	1.00	85- 130	(15- 75%)	25.7	1.3	2.92	1.00	78	6/30	.45	.29	9/30	.25	.22	YES	
183 Insulet Corp. (NDO)	PODD	39.72	3 3 2	1.10	35- 55	(N- 40%)	NMF	NIL	d.43	NIL	48	6/30	d.08	d.27	9/30	NIL	NIL	YES	
1334 Integer Holdings (NDO)	ITGR	19.54	▲ 3 3 3	1.10	45- 70	(130-260%)	6.8	NIL	2.86	NIL	56	6/30	.56	.64	9/30	NIL	NIL	YES	
184 Integra LifeSciences (NDO)	IART	81.63	2 3 3	.95	80- 115	(N- 40%)	40.0	NIL	2.04	NIL	48	6/30	.32	.35	9/30	NIL	NIL	YES	
1359 Integrated Device (NDO)	IDTI	20.15	4 3 4	1.30	30- 45	(50-125%)	14.9	NIL	1.35	NIL	75	6/30	.34	.29	9/30	NIL	NIL	YES	
★ 1360 Intel Corp. (NDO)	INTC	37.75	4 1 3	1.05	45- 55	(20- 45%)	14.8	2.8	2.55	1.04	75	9/30	◆.80	.64	12/31	.26	.24	YES	
926 Inteliquent Inc. (NDO)	IQNT	16.89	3 3 5	1.35	25- 40	(50-135%)	13.1	3.8	1.29	.64	71	6/30	.26	.32	9/30	.16	.15	YES	
1011 Inter Parfums (NDO)	IPAR	31.55	1 3 1	1.15	30- 50	(N- 60%)	27.0	2.0	1.17	.63	21	6/30	.19	.14	12/31	.15	.13	YES	
832 Intercept Pharm. (NDO)	ICPT	140.81	3 4 4	1.55	215- 360	(55-155%)	NMF	NIL	d12.72	NIL	40	6/30	d3.14	d1.99	9/30	NIL	NIL	YES	
1795 Intercontinental Exch. (NDO)	ICE	267.65	4 2 1	.80	375- 510	(40- 90%)	19.1	1.3	14.02	3.40	47	6/30	3.43	2.90	9/30	.85	.75	YES	
593 InterDigital Inc. (NDO)	IDCC	78.65	4 3 3	.90	70- 105	(N- 35%)	25.7	1.5	3.06	1.20	77	6/30	1.14	.89	12/31	▲.30	.20	YES	
1152 Interface Inc. 'A' (NDO)	TILE	16.20	4 3 4	1.25	20- 30	(25- 85%)	13.6	1.5	1.19	.24	96	6/30	.32	.33	9/30	▲.06	.05	YES	
★ 1402 Int'l Business Mach. (NDO)	IBM	150.72	3 1 2	.90	175- 215	(15- 45%)	12.2	3.8	12.31	5.70	83	9/30	◆2.98	3.02	9/30	1.40	1.30	YES	
569 Int'l Flavors & Frag. (NDO)	IFF	130.00	4 1 3	.90	115- 140	(N- 10%)	23.3	2.0	5.58	2.56	62	6/30	1.47	1.36	12/31	▲.64	.56	YES	
1165 Int'l Paper (NDO)	IP	47.03	3 3 1	1.15	70- 110	(50-135%)	20.2	3.9	2.33	1.85	42	6/30	.10	.54	12/31	▲.463	.44	YES	
2313 Int'l Speedway 'A' (NDO)	ISCA	31.55	3 3 4	1.05	35- 50	(10- 60%)	20.1	1.3	1.57	.41	85	8/31	.05	d.08	9/30	NIL	NIL	YES	
2395 Interpublic Group (NDO)	IPG	22.57	3 3 3	1.15	30- 45	(35-100%)	22.6	2.9	1.00	.66	66	6/30	.38	.29	9/30	.15	.12	YES	
1247 1361 Intersil Corp. 'A' (NDO)	ISIL	22.06	- 3 -	1.15	18- 25	(N- 15%)	31.1	2.2	.71	.48	75	6/30	.17	.16	9/30	.12	.12	YES	
2588 Intuit Inc. (NDO)	INTU	107.15	3 2 3	1.10	135- 180	(25- 70%)	25.8	1.1	4.16	1.20	14	7/31	.08	d.05	9/30	.30	.25	YES	
185 Intuitive Surgical (NDO)	ISRG	721.73	3 3 3	.85	625- 940	(N- 30%)	39.3	NIL	18.36	NIL	48	9/30	◆5.31	4.40	9/30	NIL	NIL	YES	
216 Invacare Corp. (NDO)	IVC	10.35	2 4 4	1.25	17- 30	(65-190%)	NMF	0.5	d1.00	.05	39	6/30	d.33	d.23	9/30	.013	.013	YES	
2559 Invesco Ltd. (NDO)	IVZ	29.59	3 3 4	1.40	45- 70	(50-135%)	12.2	3.8	2.43	1.12	58	6/30	.54	.60	9/30	.28	.27	YES	
1796 Investment Techn. (NDO)	ITG	16.08	2 3 4	1.25	40- 55	(150-240%)	NMF	1.7	.13	.28	47	6/30	d.02	.32	9/30	.07	.07	YES	
2661 1505 Investors Bancorp (NDO)	ISBC	11.81	4 3 3	.85	13- 20	(10- 70%)	19.4	2.0	.61	.24	29	6/30	.15	.13	9/30	.06	.05	YES	
833 Ionis Pharm. (NDO)	IONS	28.62	▲ 1 4 4	1.20	45- 75	(55-160%)	NMF	NIL	d.98	NIL	40	6/30	d.47	.29	9/30	NIL	NIL	YES	
927 Iridium Communications (NDO)	IRDM	8.40	3 4 5	.90	8- 14	(N- 65%)	9.3	NIL	.90	NIL	71	6/30	.22	.21	9/30	NIL	NIL	YES	
1335 iRobot Corp. (NDO)	IRBT	44.91	3 3																



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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price				RANKS				3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS					
		Timeliness	Safety	Technical	Beta	Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended						Latest Div'd	Year Ago				
																	Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended
163 Joy Global	JOY	27.81	- 4	- 1.60	25- 40	(N- 45%)	71.3	0.1	.39	.04	55	7/31	.10	.54	12/31	.01	.20	YES		
952 Juniper Networks	JNPR	22.85	4 3 4	1.30	30- 50	(30-120%)	14.3	1.8	1.60	.42	37	6/30	.39	.41	9/30	.10	.10	YES		
2126 KAR Auction Svcs.	KAR	43.77	4 3 3	1.00	45- 70	(5- 60%)	24.9	2.8	1.76	1.22	95	6/30	.44	.41	12/31	.29	.27	YES		
1127 KB Home	KBH	15.93	3 4 3	1.75	20- 35	(25-120%)	11.1	0.6	1.43	.10	90	8/31	.42	.23	12/31	.025	.025	YES		
1240 KBR, Inc.	KBR	14.82	2 3 3	1.60	18- 25	(20- 70%)	11.4	2.2	1.30	.32	35	6/30	.32	.43	12/31	.08	.08	YES		
2656 KKR & Co. L.P.	KKR	13.72	1 3 3	1.40	30- 45	(120-230%)	4.4	4.7	3.15	.64	1	6/30	.23	.88	9/30	.16	.42	YES		
124 KLA-Tencor	(NDQ) KLAC	72.09	3 3 3	1.15	80- 120	(10- 65%)	13.9	3.0	5.19	2.16	23	6/30	1.77	.99	9/30	.52	.52	YES		
1758 Kadant Inc.	KAI	51.31	5 3 2	1.10	55- 80	(5- 55%)	16.9	1.5	3.03	.76	36	6/30	.88	.78	12/31	.19	.17	YES		
1759 Kaman Corp.	KAMN	42.26	2 3 1	1.00	50- 70	(20- 65%)	17.0	1.7	2.49	.72	36	6/30	.64	.63	12/31	.18	.18	YES		
346 Kansas City South'n	KSU	92.58	3 3 3	1.15	105- 160	(15- 75%)	18.9	1.4	4.91	1.32	91	9/30	1.12	1.21	12/31	.33	.33	YES		
2661 Kate Spade & Co.	KATE	17.61	3 3 4	1.55	30- 50	(70-185%)	25.9	NIL	3.78	NIL	86	6/30	.11	.08	9/30	NIL	NIL	YES		
1920 Kellogg	K	75.36	2 1 1	1.65	85- 105	(15- 40%)	20.4	2.8	3.70	2.09	49	6/30	.91	.92	9/30	.52	.50	YES		
1640 Kelly Services 'A'	(NDQ) KELYA	18.72	3 3 2	1.20	25- 35	(35- 85%)	13.8	1.6	1.36	.30	78	6/30	.23	.18	9/30	.075	.05	YES		
2561 Kemper Corp.	KMPR	38.70	2 3 3	1.00	40- 60	(5- 55%)	28.7	2.5	1.35	.96	58	6/30	.09	.13	9/30	.24	.24	YES		
733 Kennametal Inc.	KMT	28.15	3 3 3	1.35	30- 45	(5- 60%)	23.7	2.8	1.19	.80	17	6/30	.44	.46	9/30	.20	.20	YES		
2517 KeyCorp	KEY	12.63	3 3 4	1.15	14- 20	(10- 60%)	14.2	2.8	.89	.35	51	6/30	.23	.27	9/30	.085	.075	YES		
1153 Kimball Int'l	(NDQ) KBAL	12.82	- 3	- 1.05	17- 25	(35- 95%)	16.6	1.9	.77	.24	96	6/30	.17	.12	12/31	.06	.055	YES		
1195 Kimberly-Clark	KMB	120.54	2 1 2	.65	130- 160	(10- 35%)	21.9	3.1	5.50	3.68	28	6/30	1.56	d.83	12/31	.92	.88	YES		
1533 Kimco Realty	KIM	28.00	3 3 2	.95	30- 40	(5- 45%)	32.6	3.9	.86	1.08	50	6/30	.46	.27	12/31	.255	.24	YES		
606 Kinder Morgan Inc.	KMI	20.18	- 3	- 1.20	35- 55	(75-175%)	27.6	2.5	.73	.50	8	6/30	.15	.15	9/30	.125	.49	YES		
1571 Kinross Gold	KGC	3.75	2 5 3	1.00	3- 6	(N- 60%)	25.0	NIL	.15	NIL	3	6/30	d.01	d.01	9/30	NIL	NIL	YES		
335 Kirby Corp.	KEX	58.19	3 3 4	1.15	75- 110	(30- 90%)	24.9	NIL	2.34	NIL	53	6/30	.72	1.04	9/30	NIL	NIL	YES		
324 Knight Transportation	KNX	27.24	5 3 3	1.05	35- 50	(30- 85%)	22.5	0.9	1.21	.24	94	6/30	.31	.39	9/30	.06	.06	YES		
1418 Knoll Inc.	KNL	20.59	3 3 1	1.15	30- 45	(45-120%)	11.8	2.9	1.74	.60	20	6/30	.44	.36	9/30	.15	.12	YES		
953 Knowles Corp.	KN	14.60	3 3 4	1.65	19- 30	(30-105%)	16.0	NIL	.91	NIL	37	6/30	.13	.08	9/30	NIL	NIL	YES		
232 Kohl's Corp.	KSS	43.04	1 2 4	.95	70- 95	(65-120%)	12.1	4.9	3.56	2.12	57	7/31	.77	.66	9/30	.50	.45	YES		
430 Korea Fund	KF	34.39	- 3	.95	50- 75	(45-120%)	NMF	NIL	NMF	NIL	-	6/30	36.68(q)	44.80(q)	9/30	NIL	NIL	YES		
1641 Korn/Ferry Int'l	KFY	20.92	4 3 4	1.30	40- 60	(90-185%)	10.0	1.9	2.10	.47	78	7/31	.52	.47	12/31	.10	.10	YES		
1921 Kraft Heinz Co.	(NDQ) KHC	88.93	- 2	- NMF	85- 115	(N- 30%)	25.8	2.7	3.45	2.43	49	6/30	.85	.61	9/30	.575	.55	YES		
2454 Krispy Kreme	KKD				SEE FINAL SUPPLEMENT - PAGE 2454															
1950 Kroger Co.	KR	30.64	5 2 4	.80	40- 55	(30- 80%)	14.1	1.7	2.17	.51	79	7/31	.47	.44	12/31	.12	.105	YES		
570 Kronos Worldwide	KRO	7.70	2 4 3	1.60	8- 12	(5- 55%)	59.2	7.8	.13	.60	62	6/30	.01	d1.38	9/30	.15	.15	YES		
1388 Kulicke & Soffa	(NDQ) KLIC	12.93	3 3 3	1.20	16- 25	(25- 95%)	14.7	NIL	.88	NIL	67	6/30	.45	.33	9/30	NIL	NIL	YES		
1986 Kyocera Corp. ADR(g)	KYO	48.57	3 2 3	1.00	70- 90	(45- 85%)	22.1	1.8	2.20	.88	52	6/30	.46	.77	9/30	.491	.484	YES		
2214 L Brands	LB	72.09	4 3 4	1.00	75- 110	(5- 55%)	18.3	3.3	3.93	2.40	63	7/31	.87	.68	9/30	.60	.50	YES		
715 L-3 Communic.	LLL	149.22	2 2 3	1.00	120- 165	(N- 10%)	19.0	1.9	7.87	2.80	59	6/30	1.88	1.46	12/31	.70	.65	YES		
994 LKQ Corp.	(NDQ) LKQ	32.93	4 3 1	1.05	50- 75	(50-130%)	17.1	NIL	1.93	NIL	93	6/30	.55	.39	9/30	NIL	NIL	YES		
1797 LPL Financial Hldgs.	(NDQ) LPLA	30.70	2 3 4	1.00	50- 70	(65-130%)	16.7	3.3	1.84	1.00	47	6/30	.53	.51	9/30	.25	.25	YES		
1760 LSB Inds.	LXU	6.22	1 5 3	1.65	15- 30	(140-380%)	NMF	NIL	d.45	NIL	36	6/30	.20	.02	9/30	NIL	NIL	YES		
2363 La Quinta Hldgs.	LQ	10.91	- 3	- NMF	20- 35	(85-220%)	19.5	NIL	.56	NIL	80	6/30	.21	d.04	9/30	NIL	NIL	YES		
628 La-Z-Boy Inc.	LZB	24.99	5 3 2	1.20	40- 60	(60-140%)	13.9	1.6	1.80	.40	96	7/31	.28	.27	9/30	.10	.10	YES		
806 Laboratory Corp.	LH	138.31	3 1 3	.85	165- 200	(20- 45%)	15.3	NIL	9.03	NIL	70	6/30	2.31	2.09	9/30	NIL	NIL	YES		
1839 Lam Research	(NDQ) LRCX	99.47	4 3 3	1.15	75- 110	(N- 10%)	17.4	1.2	5.71	1.20	67	6/30	1.46	.74	9/30	.30	.30	YES		
2396 Lamar Advertising	(NDQ) LAMR	64.55	4 3 3	1.15	80- 115	(25- 80%)	21.1	5.0	3.06	3.25	66	6/30	.84	.61	9/30	.76	.69	YES		
1922 Lancaster Colony	(NDQ) LANC	134.82	2 1 3	.75	95- 115	(N- 7%)	29.0	1.6	4.65	2.12	49	6/30	1.12	.93	9/30	.50	.46	YES		
125 Landauer, Inc.	LDR	44.60	1 3 2	1.00	50- 75	(10- 70%)	23.6	2.5	1.89	1.10	23	6/30	.58	.42	12/31	.275	.275	YES		
2364 Las Vegas Sands	LVS	57.45	3 3 3	1.40	70- 105	(20- 85%)	26.1	5.0	2.20	2.88	80	6/30	.41	.59	9/30	.72	.65	YES		
1362 Lattice Semiconductor	(NDQ) LSCC	6.41	3 4 3	1.30	10- 16	(55-150%)	20.7	NIL	.31	NIL	75	6/30	NIL	d.07	9/30	NIL	NIL	YES		
1012 Lauder (Estee)	EL	87.67	4 2 3	.95	95- 130	(10- 50%)	28.3	1.4	3.10	1.20	21	6/30	.25	.40	9/30	.30	.24	YES		
2562 Lazard Ltd.	LAZ	34.75	3 3 3	1.50	55- 85	(60-145%)	11.2	4.4	3.10	1.52	58	6/30	.61	2.82	9/30	.38	.35	YES		
995 Lear Corp.	LEA	112.84	5 3 3	1.25	155- 230	(35-105%)	8.3	1.1	13.55	1.20	93	6/30	3.66	2.81	9/30	.30	.25	YES		
1155 Leggett & Platt	LEG	45.77	4 2 1	1.10	55- 70	(20- 55%)	18.2	3.0	2.52	1.36	96	6/30	.66	.53	12/31	.34	.32	YES		
2563 Legg Mason	LM	31.70	1 3 3	1.40	70- 105	(120-230%)	13.3	2.8	2.39	.88	58	6/30	.31	.84	12/31	.22	.20	YES		
399 Leidos Hldgs.	LDOS	41.70	- 3	- 1.00	45- 70	(10- 70%)	12.9	3.1	3.23	1.28	69	6/30	.68	.73	9/30	.32	.32	YES		
1128 Lennar Corp.	LEN	41.91	5 3 3	1.40	55- 85	(30-105%)	10.6	0.4	3.96	.16	90	8/31	1.01	.96	12/31	.04	.04	YES		
1715 Lennox Int'l	LII	151.71	4 3 3	1.10	145- 215	(N- 40%)	22.2	1.1	6.83	1.72	68	9/30	2.33	1.82	12/31	.43	.36	YES		
1761 Leucadia National	LUK	18.96	1 3 4	1.35	30- 50	(60-165%)	37.2	1.3	.51	.25	36	6/30	.15	.04	9/30	.063	.063	YES		
595 Level 3 Communic.	LVLTL	47.07	5 4 3	1.25	55- 90	(15- 90%)	26.3	NIL	1.79	NIL	77	6/30	.41	d.04	9/30	NIL	NIL	YES		
1419 Lexmark Int'l 'A'	LXK	39.95	- 3	- 1.15	35- 50	(N- 25%)	13.8	3.6	2.90	1.44	20	6/30	.67	.97	9/30	.36	.36	YES		
1209 Liberty All-Star	USA	5.07	- 2	- 3.10	7- 10	(40- 95%)	NMF	9.5	NMF	.48	-	6/30	5.96(q)	6.65(q)	9/30	.12	.14	YES		
1023 Liberty Global plc	(NDQ) LBTYA	31.24	3 3 4	1.20	35- 55	(10- 75%)	48.1	NIL	.65	NIL	73	6/30	.23	d.53	9/30	NIL	NIL	YES		
235 Liberty Interactive	(NDQ) QVCA	18.78	4 3 3	1.05	40-															

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			RANKS			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?			
		Timeliness	Safety	Technical	Beta	Qtr. Ended	Earnings Per sh.						Year Ago	Qtr. Ended	Latest Div'd		Year Ago		
																		Qtr. Ended	Earnings Per sh.
1037 2215 lululemon athletica (NDQ)	LULU	56.30	3 3 1	1.05	85-130	(50-130%)	25.0	NIL	2.25	NIL	63	7/31	.38	.34	9/30	NIL	NIL	YES	
1141 Lumber Liquidators	LL	18.97	- 5 -	1.60	25-50	(30-165%)	NMF	NIL	d.80	NIL	72	6/30	d.45	d.75	9/30	NIL	NIL	YES	
2182 Luxottica Group ADR(g)	LUX	46.71	3 3 4	.95	70-105	(50-125%)	23.1	2.1	2.02	.99	61	6/30	1.23(p)	.72	9/30	NIL	NIL	YES	
571 LyondellBasell Inds.	LYB	80.18	5 3 5	1.40	105-155	(30-95%)	8.2	4.2	9.78	3.40	62	6/30	2.56	2.82	9/30	.85	.78	YES	
2518 M&T Bank Corp.	MTB	115.27	2 2 3	.95	140-190	(20-65%)	14.3	2.4	8.07	2.80	51	9/30	d.210	1.92	9/30	.70	.70	YES	
1129 M.D.C. Holdings	MDC	24.37	3 3 3	1.40	30-45	(25-85%)	11.3	4.1	2.15	1.00	90	6/30	.55	.41	9/30	.25	.25	YES	
534 MDU Resources	MDU	25.04	2 2 3	1.00	30-40	(20-60%)	21.2	3.0	1.18	.75	13	6/30	.24	.15	9/30	.188	.183	YES	
1210 MFS Multimarket	MMT	5.90	- 4 3	.60	5-8	(N-35%)	NMF	8.1	NMF	.48	-	4/30	6.64(q)	7.21(q)	9/30	.135	.14	YES	
913 MGE Energy (NDQ)	MGEE	55.81	1 1 3	.70	95-55	(N-N%)	24.0	2.2	2.33	1.23	16	6/30	.47	.39	9/30	▲.308	.295	YES	
2565 MGIC Investment	MTG	8.44	5 5 4	2.00	16-30	(90-255%)	6.9	NIL	1.23	NIL	58	9/30	d.25	.29	9/30	NIL	NIL	YES	
2365 MGM Resorts Int'l	MGM	25.86	3 4 3	1.65	25-40	(N-55%)	34.0	NIL	.76	NIL	80	6/30	.83	.17	9/30	NIL	NIL	YES	
1390 MKS Instruments (NDQ)	MKSI	48.95	▼ 3 3 3	1.05	50-70	(N-45%)	26.9	1.4	1.82	.68	67	6/30	.37	.62	9/30	.17	.17	YES	
2426 MRC Global	MRC	15.91	2 4 3	1.40	18-30	(15-90%)	NMF	NIL	d.30	NIL	5	6/30	d.21	.22	9/30	NIL	NIL	YES	
1718 MSA Safety	MSA	57.00	2 3 3	1.25	55-85	(N-50%)	23.7	2.4	2.41	1.34	68	6/30	.77	.62	9/30	.33	.32	YES	
1719 MSC Industrial Direct	MSM	71.04	▼ 2 2 2	.95	100-135	(40-90%)	18.6	2.4	3.81	1.72	68	5/31	1.05	1.03	9/30	.43	.40	YES	
2340 MSG Networks	MSGN	18.65	- 3 -	NMF	30-45	(60-140%)	8.9	NIL	2.09	NIL	76	6/30	.57	.60	9/30	NIL	NIL	YES	
126 MTS Systems (NDQ)	MTSC	46.13	2 3 4	1.05	55-80	(20-75%)	27.6	2.6	1.67	1.20	23	6/30	.46	.72	9/30	.30	.30	YES	
717 MacDonald Dettwiler (TSE)	MDA.TO	79.76	3 2 3	.75	90-125	(15-55%)	20.5	1.9	3.90	1.48	59	6/30	.69	1.20	9/30	.37	.37	YES	
1535 Macerich Comp. (The)	MAC	76.50	3 3 2	.90	80-120	(5-55%)	57.1	3.7	1.34	2.84	50	6/30	.31	.09	9/30	.68	.65	YES	
1536 Mack-Cali R'ty	CLI	26.59	1 3 3	.90	20-35	(N-30%)	NMF	2.3	.14	.60	50	6/30	.54	.40	12/31	.15	.15	YES	
400 Macquarie Infrastructure	MIC	83.20	3 3 3	.95	75-115	(N-40%)	68.2	6.4	1.22	5.32	69	6/30	.24	d.80	9/30	▲1.25	1.11	YES	
232 2144 Macy's Inc.	M	35.20	4 3 4	1.05	40-60	(15-70%)	10.4	4.3	3.40	1.53	57	7/31	.54	.64	9/30	▲.378	.36	YES	
2158 Madden (Steven) Ltd. (NDQ)	SHOO	33.24	3 3 4	1.00	35-55	(5-65%)	16.5	NIL	2.02	NIL	81	6/30	.42	.40	9/30	NIL	NIL	YES	
2341 Madison Square Garden	MSG	164.64	- 3 -	NMF	200-300	(20-80%)	NMF	NIL	d.56	NIL	76	6/30	d2.39	NA	12/31	NIL	NIL	YES	
620 Magellan Midstream	MMP	71.48	3 3 3	1.00	90-135	(25-90%)	19.9	4.8	3.59	3.43	6	6/30	.82	.78	9/30	▲.82	.74	YES	
997 Magna Int'l 'A'	MGA	40.12	4 3 4	1.30	75-110	(85-175%)	7.5	2.5	5.33	1.00(h)	93	6/30	1.41	1.19	9/30	.25	.22	YES	
2026 Maiden Hldgs. Ltd. (NDQ)	MHL	13.80	▲ 3 3 4	.90	19-30	(40-115%)	7.6	4.3	1.82	.59	33	6/30	.39	.27	12/31	.14	.13	YES	
2662 1618 Mallinckrodt plc	MNK	64.17	4 3 3	1.30	115-175	(80-175%)	11.7	NIL	5.48	NIL	45	6/30	1.79	.47	9/30	NIL	NIL	YES	
★ 2617 Manhattan Assoc. (NDQ)	MANH	59.01	4 3 3	1.10	65-95	(N-60%)	34.7	NIL	1.70	NIL	64	9/30	▲.47	.38	9/30	NIL	NIL	YES	
929 Manitoba Telecom Svcs.(TSE)	MBT.TO	37.12	- 3 -	.60	25-40	(N-10%)	36.4	3.5	1.02	1.30	71	6/30	.15	.13	9/30	.325	.325	YES	
164 Manitowoc Co.	MTW	4.65	- 4 -	NMF	6-9	(30-95%)	33.2	1.7	.14	.08	55	6/30	.04	.22	9/30	NIL	NIL	YES	
1642 ManpowerGroup Inc.	MAN	71.77	3 3 5	1.45	90-135	(25-90%)	11.8	2.5	6.07	1.78	78	6/30	1.60	1.33	9/30	NIL	NIL	YES	
2618 ManTech Int'l 'A' (NDQ)	MANT	39.18	2 3 3	1.05	35-50	(N-30%)	26.8	2.1	1.46	.84	64	6/30	.39	.33	9/30	.21	.21	YES	
1556 Manulife Fin'l	MFC	14.68	3 3 5	1.35	17-25	(15-70%)	10.8	3.9	1.36	.57	22	6/30	.31	.29	9/30	.143	.129	YES	
2409 Marathon Oil Corp.	MRO	14.20	2 3 3	1.70	19-30	(35-110%)	NMF	1.4	d1.28	.20	9	6/30	d.23	.23	9/30	.05	.21	YES	
510 Marathon Petroleum	MPC	42.73	3 3 4	1.40	50-70	(15-65%)	12.6	3.5	3.40	1.48	18	6/30	1.51	1.51	9/30	▲.36	.32	YES	
2366 Marcus Corp.	MCS	25.27	4 3 3	1.00	25-40	(N-60%)	24.1	1.8	1.05	.45	80	6/30	.34	NA	9/30	.113	.105	YES	
2183 MarineMax	HZO	20.85	3 4 3	1.25	25-40	(20-90%)	20.9	NIL	1.00	NIL	61	6/30	.57	.53	9/30	NIL	NIL	YES	
766 Markel Corp.	MKL	911.44	3 1 3	.75	860-1050	(N-15%)	31.1	NIL	29.30	NIL	46	6/30	4.18	6.27	9/30	NIL	NIL	YES	
1798 MarketAxess Holdings (NDQ)	MKTX	154.75	3 3 1	.85	125-190	(N-25%)	45.4	0.7	3.41	1.04	47	6/30	.88	.64	9/30	.26	.20	YES	
2367 Marriott Int'l	MAR	67.83	3 3 4	1.15	95-145	(40-115%)	17.6	1.8	3.85	1.20	80	6/30	.96	.87	9/30	.30	.25	YES	
2566 Marsh & McLennan	MMC	65.14	4 1 2	.90	75-90	(15-40%)	18.9	2.1	3.44	1.36	58	6/30	.90	.77	12/31	.34	.31	YES	
1112 Martin Marietta	MLM	178.21	3 3 3	1.15	210-320	(20-80%)	23.1	0.9	7.71	1.68	89	6/30	1.90	1.22	9/30	▲.42	.40	YES	
954 Marvell Technology (NDQ)	MRVL	13.01	1 3 3	1.05	14-20	(10-55%)	24.1	1.8	.54	.24	37	7/31	.18	.07	12/31	.06	.12	YES	
1113 Masco Corp.	MAS	33.47	3 3 3	1.40	35-50	(5-50%)	20.7	1.2	1.62	.40	89	6/30	.46	.38	12/31	▲.10	.095	YES	
218 Masimo Corp. (NDQ)	MASI	59.08	3 3 3	1.10	55-85	(N-45%)	29.2	NIL	2.02	NIL	39	6/30	.57	.36	9/30	NIL	NIL	YES	
1156 Masonite Int'l	DOOR	59.70	▼ 4 3 2	.95	50-70	(N-15%)	28.7	NIL	2.08	NIL	96	6/30	1.06	.43	9/30	NIL	NIL	YES	
233 1241 MasTec	MTZ	29.70	3 4 3	1.45	30-50	(N-70%)	17.2	NIL	1.73	NIL	35	6/30	.33	1.0	9/30	NIL	NIL	YES	
2567 MasterCard Inc.	MA	101.73	3 1 3	1.05	115-140	(15-40%)	27.2	0.7	3.74	.76	58	6/30	.89	.81	12/31	.19	.16	YES	
1588 Materion Corp.	MTRN	29.55	3 3 4	1.40	30-45	(N-50%)	20.0	1.3	1.48	.38	2	6/30	.31	.43	9/30	.095	.09	YES	
336 Matson, Inc.	MATX	40.38	5 3 5	1.15	45-70	(10-75%)	19.0	1.9	2.12	.76	53	6/30	.42	.56	9/30	▲.19	.18	YES	
★ 2315 Mattel, Inc. (NDQ)	MAT	30.71	2 2 2	.85	35-45	(15-45%)	22.3	4.9	1.38	1.52	85	6/30	d.06	d.04	9/30	.38	.38	YES	
1834 Matthews Int'l (NDQ)	MATW	59.59	▼ 3 3 2	1.10	55-85	(N-45%)	17.8	1.0	3.35	.60	34	6/30	.97	.88	9/30	.15	.13	YES	
1246 Mattress Firm Hldg.	MFRM																		
1364 Maxim Integrated (NDQ)	MXIM	38.90	▼ 3 3 3	1.05	45-65	(15-65%)	20.4	3.4	1.91	1.32	75	6/30	.49	.43	12/31	▲.30	.28	YES	
401 MAXIMUS Inc.	MMS	54.18	3 3 2	.95	75-115	(40-110%)	18.0	0.3	3.01	.18	69	6/30	.75	.62	12/31	◆.045	.045	YES	
1923 McCormick & Co.	MKC	94.85	2 1 2	.75	90-110	(N-15%)	24.6	1.8	3.86	1.72	49	8/31	1.03	.85	12/31	.43	.40	YES	
1762 McDermott Int'l	MDR	5.39	3 5 3	1.80	6-10	(10-85%)	NMF	NIL	.01	NIL	36	6/30	.07	.04	9/30	NIL	NIL	YES	
2459 365 McDonald's Corp.	MCD	111.25	2 1 3	.75	110-135	(N-20%)	19.5	3.4	5.70	3.76	87	6/30	1.45	1.26	12/31	▲.94	.89	YES	
219 McKesson Corp.	MCK	162.10	3 1 3	.95	275-335	(70-105%)	11.7	0.7	13.90	1.12	39	6/30	3.50	3.14	12/31	.28	.28	YES	
1924 Mead Johnson Nutrition	MJN	80.11	1 2 4	.90	95-130	(20-60%)	23.3	2.1	3.44	1.65	49	6/30	.83	.80	12/31	.413	.413	YES	
2342 Media General	MEG	17.65	- 5 -	1.10	17-30	(N-70%)	15.3	NIL	1.15	NIL	76	6/30	.14	.01	9/30	NIL	NIL	YES</	



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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Safety	Technical	Beta	3-5 year Target Price and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS								
		Timeliness	↓	↑									Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago			
																			4	3	4
127 Mettler-Toledo Int'l	MTD	410.07	▼	4	3	4	1.15	320- 480	(N- 15%)	29.2	NIL	14.04	NIL	23	6/30	2.93	2.73	9/30	NIL	NIL	YES
431 Mexico Fund	MXF	16.47	-	4	2	1.10	18- 30	(10- 80%)	NMF	0.3	NMF	.05	-	-	7/31	18.39(q)	21.13(q)	9/30	NIL	NIL	YES
2110 Michael Kors Hldgs.	KORS	47.52	3	3	4	1.00	75- 110	(60-130%)	10.4	NIL	4.55	NIL	86	6/30	.83	.87	9/30	NIL	NIL	YES	
2184 Michaels Cos. (The)	MIK	23.53	4	3	2	1.10	35- 55	(50-135%)	11.9	NIL	1.98	NIL	61	7/31	.17	.17	9/30	NIL	NIL	YES	
1366 Microchip Technology	MCHP	58.86	4	2	2	1.10	60- 80	(N- 35%)	17.8	2.4	3.30	1.44	75	6/30	.84	.69	9/30	.36	.358	YES	
1367 Micon Technology	MU	17.41	4	3	4	1.70	17- 25	(N- 45%)	NMF	NIL	d.35	NIL	75	8/31	d.16	.42	9/30	NIL	NIL	YES	
1368 Microsemi Corp.	MSSC	37.92	5	3	2	1.30	60- 85	(60-125%)	11.2	NIL	3.38	NIL	75	6/30	.73	.68	9/30	NIL	NIL	YES	
2590 Microsoft Corp.	MSFT	57.66	2	1	3	1.00	65- 80	(15- 40%)	20.0	2.7	2.88	1.56	14	6/30	.69	.62	12/31	▲.36	.36	YES	
232 1720 Middleby Corp. (The)	MIDD	117.68	4	3	1	1.10	115- 170	(N- 45%)	23.6	NIL	4.99	NIL	68	6/30	1.28	1.00	9/30	NIL	NIL	YES	
1787 Middlesex Water	MSEX	33.79	3	2	2	.70	25- 35	(N- 5%)	23.6	2.4	1.43	.80	43	6/30	.36	.31	9/30	.199	.193	YES	
1427 1157 Miller (Herman)	MLHR	27.30	4	3	1	1.20	35- 55	(30-100%)	11.7	2.5	2.34	.68	96	8/31	.60	.56	9/30	.148	.14	YES	
573 Minerals Techn.	MTX	68.65	5	3	3	1.35	85- 125	(25- 80%)	15.0	0.3	4.58	.20	62	6/30	1.20	1.18	9/30	.05	.05	YES	
402 Mobile Mini	MINI	28.80	3	3	4	1.30	45- 65	(55-125%)	21.8	2.8	1.32	.82	69	6/30	.25	.28	9/30	.206	.187	YES	
999 Modine Mfg.	MOD	10.65	4	4	1	1.45	12- 20	(15- 90%)	13.3	NIL	.80	NIL	93	6/30	.21	.14	9/30	NIL	NIL	YES	
1158 Mohawk Inds.	MHK	195.57	4	3	1	1.25	220- 325	(10- 65%)	15.6	NIL	12.52	NIL	96	6/30	3.47	2.69	9/30	NIL	NIL	YES	
1976 Molson Coors Brewing	TAP	110.11	-	2	-	.90	95- 130	(N- 20%)	32.7	1.5	3.37	1.64	38	6/30	.81	1.23	9/30	.41	.41	YES	
845 1925 Mondelez Int'l	MDLZ	42.12	4	2	3	1.05	45- 65	(5- 55%)	21.8	1.9	1.93	.78	49	6/30	.44	.47	12/31	▲.19	.17	YES	
1369 Monolithic Power Systems	MPWR	76.98	3	3	3	1.25	85- 125	(10- 60%)	57.9	1.0	1.33	.80	75	6/30	.27	.19	9/30	.20	.20	YES	
2128 Monro Muffler Brake	MNRO	59.80	▲	3	5	8.0	65- 95	(10- 60%)	27.8	1.1	2.15	.68	95	6/30	.50	.57	9/30	.17	.15	YES	
1247 2450 Monsanto Co.	MON	102.67	-	2	-	1.00	140- 190	(35- 85%)	21.0	2.3	4.89	2.40	88	8/31	.07	d.03	9/30	.54	.49	YES	
1977 Monster Beverage	MNST	146.72	3	3	3	.90	120- 180	(N- 25%)	41.3	NIL	3.55	NIL	38	6/30	.90	1.26	9/30	NIL	NIL	YES	
233 2357 Monster Worldwide	MWW	3.46	-	5	-	1.50	5- 8	(45-130%)	18.2	NIL	1.19	NIL	66	6/30	d.02	d.02	9/30	NIL	NIL	YES	
451 Moody's Corp.	MCO	107.80	3	3	3	1.20	95- 145	(N- 35%)	22.6	1.4	4.77	1.48	74	6/30	1.30	1.29	12/31	◆.37	.34	YES	
718 Moog Inc. 'A'	MOGA	57.63	3	3	4	1.25	75- 115	(30-100%)	15.8	NIL	3.64	NIL	59	6/30	1.00	.94	9/30	NIL	NIL	YES	
1806 Morgan Stanley	MS	32.32	▲	3	4	1.60	60- 90	(85-180%)	9.9	2.5	3.25	.80	10	9/30	◆.80	.49	12/31	◆.20	.15	YES	
1602 Mosaic Company	MOS	23.39	2	3	3	1.35	35- 55	(50-135%)	37.7	5.3	6.22	1.23	4	6/30	d.03	1.08	12/31	◆.275	.275	YES	
955 Motorola Solutions	MSI	73.80	4	1	2	.90	105- 125	(40- 70%)	15.8	2.4	4.62	1.80	37	6/30	1.03	.68	12/31	.41	.34	YES	
630 2185 Movado Group	MOV	22.10	3	3	4	1.25	45- 65	(105-195%)	14.8	2.4	▲1.49	.52	61	7/31	.27	.50	9/30	.13	.11	YES	
734 Mueller Inds.	MLI	31.13	3	3	1	1.15	35- 55	(10- 75%)	16.4	1.3	1.90	.40	17	6/30	.49	.59	9/30	.10	.075	YES	
1721 Mueller Water Prod.	MWA	12.49	3	3	3	1.30	15- 20	(20- 60%)	23.1	1.0	.54	.12	68	6/30	.18	.15	9/30	.03	.02	YES	
511 Murphy Oil Corp.	MUR	28.20	2	3	3	1.45	50- 70	(75-150%)	NMF	3.5	d1.44	1.00	18	6/30	.02	d.51	12/31	.25	.35	YES	
2186 Murphy USA Inc.	MUSA	69.23	4	3	2	.90	85- 125	(25- 80%)	14.6	NIL	4.73	NIL	61	6/30	1.17	.56	9/30	NIL	NIL	YES	
1763 Myers Inds.	MYE	12.50	3	3	3	1.15	17- 25	(35-100%)	18.1	4.5	.69	.56	36	6/30	.19	.35	12/31	.135	.135	YES	
2032 1621 Mylan N.V.	MYL	37.39	3	3	4	1.15	80- 120	(115-220%)	10.1	NIL	3.72	NIL	45	6/30	.33	.32	9/30	NIL	NIL	YES	
233 836 Myriad Genetics	MYGN	19.91	3	3	4	.85	35- 55	(75-175%)	15.7	NIL	1.27	NIL	40	6/30	.32	.26	9/30	NIL	NIL	YES	
845 1114 NCI Bldg. Sys.	NCS	14.35	3	4	2	1.35	20- 35	(40-145%)	17.5	NIL	.82	NIL	89	7/31	.32	.10	9/30	NIL	NIL	YES	
1338 NCR Corp.	NCR	30.29	3	3	2	1.40	50- 75	(65-150%)	10.0	NIL	3.04	NIL	56	6/30	.72	.66	9/30	NIL	NIL	YES	
735 NN Inc.	NNBR	18.04	▼	4	4	1.60	30- 45	(65-150%)	9.9	1.6	1.83	.28	17	6/30	.46	.36	9/30	.07	.07	YES	
1226 NRG Energy	NRG	11.70	2	3	4	1.15	15- 25	(30-115%)	NMF	1.0	d.59	.12	26	6/30	d.61	d.06	12/31	◆.03	.145	YES	
1131 NVR, Inc.	NVR	1602.40	4	2	1	.95	1530-2070	(N- 30%)	15.4	NIL	104.21	NIL	90	6/30	22.01	21.91	9/30	NIL	NIL	YES	
1649 1371 NXP Semiconductors NV	NXPI	101.65	4	3	3	1.40	130- 190	(30- 85%)	16.4	NIL	6.21	NIL	75	6/30	1.39	1.44	9/30	NIL	NIL	YES	
2427 Nabors Inds.	NBR	13.14	3	4	5	1.85	16- 25	(20- 90%)	NMF	1.8	d1.46	.24	NIL	5	6/30	d.26	d.14	9/30	.06	.06	YES
1799 Nasdaq, Inc.	NDAQ	66.21	3	3	2	1.00	70- 100	(5- 50%)	17.2	1.9	3.84	1.28	47	6/30	.91	.83	9/30	.32	.25	YES	
2519 Nat'l Bank of Canada	NA.TO	45.68b	3	2	2	.75	55- 75	(20- 65%)	9.9	5.0	4.60	2.28	51	7/31	1.31(b)	1.28(b)	12/31	.55(b)	.52(b)	YES	
627 1978 National Beverage	FIZZ	49.50	3	3	3	.80	30- 50	(N- N%)	29.1	NIL	1.70	NIL	38	7/31	.62	.37	9/30	NIL	NIL	YES	
2398 National CineMedia	NCOM	14.10	3	3	3	.95	20- 35	(40-150%)	17.6	6.2	.80	.88	66	6/30	.11	.17	9/30	.22	.22	YES	
535 National Fuel Gas	NFG	52.93	1	3	1	1.05	80- 115	(50-115%)	NMF	3.1	.07	1.62	13	6/30	.10	d3.44	12/31	.405	.395	YES	
128 National Instruments	NATI	27.77	2	3	4	1.10	35- 55	(25-100%)	33.9	2.9	.82	.80	23	6/30	.15	.19	9/30	.20	.19	YES	
2428 National Oilwell Varco	NOV	36.66	1	3	4	1.25	35- 55	(N- 50%)	NMF	0.5	d1.24	.20	5	6/30	d.30	.77	9/30	.05	.46	YES	
1764 National Presto Ind.	NPK	85.90	3	3	3	.95	75- 110	(N- 30%)	15.4	5.9	5.56	5.05	36	6/30	1.19	1.31	9/30	NIL	NIL	YES	
1589 Natural Resource	NRP	30.18	-	5	-	1.35	45- 80	(50-165%)	4.0	6.0	7.51	1.80	NIL	2	6/30	3.82	2.82	9/30	.45	.90	YES
1646 221 Natus Medical	BABY	39.70	4	3	2	1.05	45- 65	(15- 65%)	27.8	NIL	1.43	NIL	39	9/30	◆.40	.33	9/30	NIL	NIL	YES	
2187 Nautilus Inc.	NLS	20.50	4	4	1	1.10	20- 35	(N- 70%)	17.1	NIL	1.20	NIL	61	6/30	.12	.07	9/30	NIL	NIL	YES	
2568 Navient Corp.	NAVI	13.61	-	3	-	NMF	20- 30	(45-120%)	7.3	4.7	1.87	.64	58	9/30	◆.50	.47	12/31	.16	.16	YES	
403 Navistar Int'l	NAV	22.36	3	5	4	2.00	14- 25	(N- 10%)	55.9	NIL	4.20	NIL	65	7/31	d.42	d.37	9/30	NIL	NIL	YES	
1167 Neenah Paper	NP	80.65	4	3	3	1.05	85- 130	(5- 60%)	18.6	1.6	4.34	1.32	42	6/30	1.19	.97	9/30	.33	.30	YES	
1622 Nektar Therapeutics	NKTR	14.08	▼	5	1	1.15	14- 25	(N- 80%)	NMF	NIL	d1.21	NIL	45	6/30	d.36	d.40	9/30	NIL	NIL	YES	
1926 Nestle SA ADS	NSRGY	75.63	2	1	1	.75	85- 100	(10- 30%)	24.4	3.1	3.10	2.32	49	6/30	1.35						

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RANKS

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Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			RANKS			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?			
		Timeliness	Safety	Technical	Beta	Qtr. Ended	Earnings Per sh.						Year Ago	Qtr. Ended	Latest Div'd		Year Ago		
																		Qtr. Ended	Earnings Per sh.
547 NiSource Inc.	NI	23.06	- 3	-	NMF	18- 25	22.2	2.9	1.04	.66	41	6/30	.09	d.23	12/31	.165	.155	YES	
108 Nissan Motor ADR(g)	NSANY	19.22	▲ 3	3	1	1.05	7.7	4.2	2.50	.80	60	6/30	.64	.67	9/30	NIL	.265		
2429 Noble Corp. plc	NE	5.77	2	4	4	1.60	NMF	1.4	0.32	.08	5	6/30	.01	.64	9/30	.02	.375	YES	
2410 Noble Energy	NBL	35.09	1	3	4	1.45	NMF	1.1	0.88	.40	9	6/30	d.73	d.28	9/30	.10	.18	YES	
958 Nokia Corp. ADR	NOK	5.02	3	3	3	1.30	22.8	3.4	.22	.17	37	6/30	.03	.10	9/30	.29	NIL	YES	
1722 Nordson Corp.	NDSN	96.29	3	3	2	1.30	20.1	1.2	4.80	1.11	68	7/31	1.47	1.14	9/30	▲.27	.24	YES	
2145 Nordstrom, Inc.	JWN	53.27	3	3	4	1.00	18.8	2.8	2.84	1.51	57	7/31	.67	.93	9/30	.37	.37	YES	
347 Norfolk Southern	NSC	94.98	3	2	3		16.8	2.5	5.66	2.36	91	6/30	1.36	1.41	9/30	.59	.59	YES	
785 Northern Trust Corp.	NTRS	70.95	3	3	4	1.10	16.3	2.1	4.34	1.52	19	9/30	◆1.08	.96	3/31	◆.38	.36	YES	
1227 Northland Power	NPI.TO	23.60	3	3	3	.70	28.8	4.6	.82	1.08	26	6/30	.20	.50	9/30	.27	.27	YES	
719 Northrop Grumman	NOC	219.44	5	1	4	.90	19.9	1.6	11.02	3.60	59	6/30	2.85	2.74	9/30	.90	.80	YES	
1507 Northwest Bancshares	NWBI	15.60	1	2	3	.75	26.4	3.8	.59	.60	29	6/30	d.07	.17	9/30	.15	.14	YES	
548 Northwest Nat. Gas	NWN	59.37	3	1	2	.65	26.7	3.2	2.22	1.88	41	6/30	.07	.08	12/31	▲.47	.468	YES	
2231 NorthWestern Corp.	NWE	56.10	3	3	3	.70	15.1	3.7	▲3.71	2.06	31	6/30	.73	.38	9/30	.50	.48	YES	
2316 Norwegian Cruise Line	NCLH	38.25	4	3	5	1.15	10.4	NIL	3.68	NIL	85	6/30	.64	.69	9/30	NIL	NIL	YES	
1623 Novartis AG ADR	NVS	76.31	2	1	3	.85	23.5	3.6	3.25	2.72	45	6/30	.76	.77	9/30	NIL	NIL	YES	
1624 Novo Nordisk ADR(g)	NVO	40.56	3	2	3	.90	16.9	2.7	2.40	1.10	45	6/30	.59	.47	9/30	▲453	NIL	YES	
1013 Nu Skin Enterprises	NUS	63.72	▼ 3	4	3	1.20	21.0	2.4	3.03	1.51	21	6/30	.79	.75	9/30	.355	.35	YES	
2591 Nuance Communic.	NUAN	13.79	1	3	3	1.10	NMF	NIL	.02	NIL	14	6/30	d.04	d.13	9/30	NIL	NIL	YES	
745 Nucor Corp.	NUE	47.15	2	3	2	1.25	19.4	3.2	2.43	1.50	7	6/30	.73	.39	12/31	.375	.373	YES	
1927 NutriSystem Inc.	NTRI	30.70	2	3	3	1.00	26.5	2.3	1.16	.70	49	6/30	.54	.41	9/30	.175	.175	YES	
188 NuVasive, Inc.	NUVA	67.65	3	3	3	1.15	52.9	NIL	1.28	NIL	48	6/30	.57	.20	9/30	NIL	NIL	YES	
1211 Nuveen Muni Value Fund	NUV	10.00	-	1	3	.40	NMF	4.0	NMF	.40	-	4/30	10.48(q)	10.29(q)	9/30	.098	.098	YES	
1370 NVIDIA Corp.	NVDA	66.61	3	3	3	1.10	38.3	0.7	1.74	.46	75	7/31	.40	.05	9/30	.115	.098	YES	
914 OGE Energy	OGE	30.68	2	2	3	.90	16.9	4.0	1.82	1.22	16	6/30	.35	.44	12/31	▲.303	.275	YES	
461 129 OSI Systems	OSIS	65.86	3	3	4	.95	31.4	NIL	2.10	NIL	23	6/30	.30	1.09	9/30	NIL	NIL	YES	
2411 Oasis Petroleum	OAS	10.57	3	5	4	2.05	NMF	NIL	d.52	NIL	9	6/30	d.11	.38	9/30	NIL	NIL	YES	
512 Occidental Petroleum	OXY	72.57	2	3	2	1.20	NMF	4.2	.11	3.04	18	6/30	d.18	.21	3/31	.76	.75	YES	
2430 Oceaneering Int'l	OII	26.64	2	3	4	1.30	26.1	4.1	1.02	1.08	5	6/30	.23	.72	9/30	.27	.27	YES	
1420 Office Depot	ODP	3.25	4	4	2	1.55	8.3	3.1	.39	.10	20	6/30	.03	.06	9/30	▲.025	NIL	YES	
2431 Oil States Int'l	OIS	32.12	-	3	-	NMF	NMF	NIL	d1.06	NIL	5	6/30	d.22	.15	9/30	NIL	NIL	YES	
325 Old Dominion Freight	ODFL	70.01	4	3	3	1.05	19.4	NIL	3.60	NIL	94	6/30	.98	1.00	9/30	NIL	NIL	YES	
786 Old Nat'l Bancorp	ONB	13.87	3	3	2	1.10	13.1	3.7	1.06	.52	19	6/30	.31	.22	9/30	.13	.12	YES	
768 Old Republic	ORI	18.32	3	3	3	1.10	13.4	4.1	1.37	.75	46	6/30	.34	.32	9/30	.188	.185	YES	
1603 Olin Corp.	OLN	21.12	-	3	-	1.20	17.7	3.8	1.19	.80	4	6/30	.24	.32	9/30	.20	.20	YES	
222 Omnicell, Inc.	OMCL	35.65	2	3	1	.95	99.0	NIL	.36	NIL	39	6/30	d.03	.24	9/30	NIL	NIL	YES	
2399 Omnicom Group	OMC	80.87	3	2	2	1.00	16.7	2.8	4.85	2.30	66	9/30	◆1.06	.97	12/31	▲.55	.50	YES	
1643 On Assignment	ASGN	36.55	4	3	3	1.40	18.9	NIL	1.93	NIL	78	6/30	.48	.28	9/30	NIL	NIL	YES	
1372 ON Semiconductor	ON	11.67	4	3	3	1.45	13.3	NIL	.88	NIL	75	6/30	.21	.22	9/30	NIL	NIL	YES	
2637 1-800-FLOWERS.COM	FLWS	9.06	4	4	3	1.15	13.9	NIL	.65	NIL	32	6/30	d.17	d.16	9/30	NIL	NIL	YES	
607 ONEOK Inc.	OKE	50.03	1	3	3	1.30	27.8	5.1	1.80	2.54	8	6/30	.41	.36	9/30	.615	.605	YES	
621 ONEOK Partners L.P.	OKS	41.87	2	3	3	1.00	18.0	7.5	2.33	3.16	6	6/30	.54	.44	9/30	.79	.79	YES	
1248 1822 Open Text Corp.	OTEX	64.39	▲ 4	3	2	.95	25.8	1.4	2.50	.92	65	6/30	.70	.56	9/30	.23	.20	YES	
1625 Opko Health	OPK	9.40	▲ 3	3	4	1.10	NMF	NIL	d.03	NIL	45	6/30	.02	d.09	9/30	NIL	NIL	YES	
2592 Oracle Corp.	ORCL	38.42	3	1	2	1.05	13.9	1.7	2.76	.64	14	8/31	.55	.53	12/31	.15	.15	YES	
234 720 Orbital ATK	OA	77.64	-	3	-	NMF	14.2	1.5	5.46	1.20	59	6/30	1.23	.89	9/30	.30	.26	YES	
130 Orbotech Ltd.	ORBK	27.75	▼ 4	3	3	.90	15.3	NIL	1.81	NIL	23	6/30	.30	.30	9/30	NIL	NIL	YES	
2129 O'Reilly Automotive	ORLY	278.07	3	2	3	.75	25.0	NIL	11.11	NIL	95	6/30	2.65	2.29	9/30	NIL	NIL	YES	
1228 Ormat Technologies	ORA	48.02	3	3	3	1.00	27.3	1.1	1.76	.54	26	6/30	.49	.28	9/30	.07	.06	YES	
166 Oshkosh Corp.	OSK	53.30	2	3	2	1.35	17.5	1.4	3.05	.76	55	6/30	1.13	1.13	9/30	.19	.17	YES	
915 Otter Tail Corp.	OTTR	34.20	3	2	2	.85	21.1	3.7	1.62	1.26	16	6/30	.41	.36	9/30	.313	.308	YES	
1646 404 Outerwall Inc.	OUTR						SEE FINAL SUPPLEMENT - PAGE 1646												
2638 Overstock.com	OSTK	14.85	3	4	4	1.10	64.6	NIL	.23	NIL	32	6/30	d.04	.07	9/30	NIL	NIL	YES	
223 Owens & Minor	OMI	33.29	2	2	4	.95	16.2	3.1	2.05	1.03	39	6/30	.45	.39	9/30	.255	.253	YES	
1115 Owens Corning	OC	52.12	5	3	3	1.30	14.8	1.4	3.51	.72	89	6/30	1.19	.77	12/31	.18	.17	YES	
847 1181 Owens-Illinois	OI	17.37	2	3	3	1.50	7.3	NIL	2.37	NIL	82	6/30	.65	.60	9/30	NIL	NIL	YES	
2111 Oxford Inds.	OXM	65.18	4	3	3	1.20	16.3	1.7	3.99	1.08	86	7/31	1.48	1.32	12/31	.27	.25	YES	
513 PBF Energy	PBF	21.07	3	3	4	1.40	8.4	5.7	2.50	1.20	18	6/30	1.06	1.57	9/30	.30	.30	YES	
2188 PC Connection	CXNX	25.66	4	3	3	1.00	13.2	NIL	1.95	NIL	61	6/30	.47	.44	9/30	NIL	NIL	YES	
537 PDC Energy	PDCE	63.28	3	3	2	1.80	NMF	NIL	d2.88	NIL	13	6/30	d2.04	d1.17	9/30	NIL	NIL	YES	
234 1626 PDL BioPharma	PDLI	3.19	3	5	4	.95	15.2	NIL	.21	NIL	45	6/30	.03	.48	9/30	▼NIL	.15	YES	
2232 PG&E Corp.	PCG	60.93	2	3	3	.65	17.3	3.3	3.53	2.04	31	6/30	.46	.83	12/31	.49	.455	YES	
2520 PNC Financial Serv.	PNC	89.86	3	2	4	1.05	12.3	2.4	7.32	2.20	51	9/30	◆1.84	1.90	12/31	.55	.51	YES	
2233 PNM Resources	PNM	32.30	5	3	3	.75	18.9	2.7	1.71	.88	31	6/30	.40	.40	12/31	.22	.20	YES	
2033 2451 PPG Inds.	PPG	92.81	4	1	3	1.15	15.1	1.7	6.16	1.60	88	6/30	1.37	1.23	9/30	.40	.36	YES	
148 PPL Corp.	PPL	33.41	-	2	-	.70	11.8	4.7	2.84	1.57	12	6/30	.71	.37	9/30	.38	.373	YES	
2593 PTC Inc.	PTC	46.13	2	3	3	1.30	63.2	NIL	.73	NIL	14	6/30	.03	.15	9/30	NIL	NIL	YES	
2112 PVH Corp.	PVH	1																	



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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Timeliness	Safety	Technical	Beta	3-5 year Target Price and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS					Do Options Trade?				
		Qtr. Ended	Earnings Per sh.	Year Ago										Qtr. Ended	Latest Div'd	Year Ago							
																	Qtr. Ended	Earnings Per sh.		Year Ago	Qtr. Ended	Latest Div'd	Year Ago
1229	Pattern Energy Group (NDQ)	PEGI	22.38	3	3	2	1.30	25- 35	(10- 55%)	NMF	7.1	.07	1.60	26	6/30	d.04	.21	12/31	▲.40	.378	YES		
224	Patterson Cos. (NDQ)	PDCO	44.58	2	2	3	.90	60- 85	(35- 90%)	17.8	2.2	2.50	1.00	39	7/31	.40	.20	12/31	.24	.22	YES		
2619	Paychex, Inc. (NDQ)	PAYX	56.14	3	1	2	.90	65- 75	(15- 35%)	25.6	3.3	2.19	1.87	64	8/31	.60	.58	12/31	.46	.42	YES		
1823	Paylocity Holding Corp (NDQ)	PCTY	44.36	5	4	3	1.30	45- 70	(N- 60%)	NMF	NIL	d.01	NIL	65	6/30	d.11	d.09	9/30	NIL	NIL	YES		
2569	PayPal Holdings (NDQ)	PYPL	39.83	-	2	-	NMF	40- 50	(N- 25%)	32.6	NIL	1.22	NIL	58	6/30	.27	.25	9/30	NIL	NIL	YES		
608	Pembina Pipeline Corp.(TSE)	PPL.TO	40.92	2	3	3	.90	40- 60	(N- 45%)	35.0	4.7	1.17	1.92	8	6/30	.25	.09	9/30	.48	.458	YES		
2369	Penn Nat'l Gaming (NDQ)	PENN	13.27	4	3	4	1.20	25- 40	(90-200%)	14.9	NIL	.89	NIL	80	6/30	.38	.19	9/30	NIL	NIL	YES		
2146	Penney (J.C.) (NDQ)	JCP	8.48	3	5	1	1.30	11- 20	(30-135%)	29.2	NIL	▲.29	NIL	57	7/31	d.05	d.44	9/30	NIL	NIL	YES		
1537	Penn. R.E.I.T. (NDQ)	PEI	21.48	2	3	1	1.25	20- 35	(N- 65%)	NMF	4.1	.13	.87	50	6/30	.06	d.51	9/30	.21	.21	YES		
2130	Penske Auto (NDQ)	PAG	45.32	5	3	3	1.25	50- 75	(10- 65%)	11.4	2.7	3.97	1.22	95	6/30	1.10	1.05	12/31	▲.29	.25	YES		
1767	Pentair plc (NDQ)	PNR	59.44	3	3	2	1.15	75- 110	(25- 85%)	17.4	2.3	3.41	1.36	36	6/30	1.11	1.08	12/31	.34	.32	YES		
1508	People's United Fin'l (NDQ)	PBCT	15.64	3	2	2	.90	19- 25	(20- 60%)	17.0	4.3	.92	.68	29	6/30	.23	.20	9/30	.17	.168	YES		
1979	PepsiCo, Inc. (NDQ)	PEP	106.95	2	1	3	.75	120- 145	(10- 35%)	22.0	2.8	4.86	3.04	38	9/30	1.37	1.35	9/30	.753	.703	YES		
1953	Performance Food Group (NDQ)	PFPG	24.79	-	3	-	NMF	20- 30	(N- 20%)	27.9	NIL	.89	NIL	79	6/30	.29	.39	9/30	NIL	NIL	YES		
131	PerkinElmer Inc. (NDQ)	PKI	52.49	4	3	3	1.10	60- 95	(15- 80%)	18.5	0.5	2.84	.28	23	6/30	.67	.60	9/30	.07	.07	YES		
234	1628	Perrigo Co. plc (NDQ)	PRGO	88.24	4	3	5	80	160- 240	(80-170%)	12.5	0.7	7.05	.61	45	6/30	1.93	NA	9/30	.145	.125	YES	
2113	Perry Ellis Int'l (NDQ)	PERY	18.95	3	4	3	1.30	25- 45	(30-135%)	9.3	NIL	2.04	NIL	86	7/31	.15	.31	9/30	NIL	NIL	YES		
970	PetMed Express (NDQ)	PETS	20.85	2	3	3	.90	19- 30	(N- 45%)	18.1	3.7	1.15	.78	84	6/30	.32	.29	9/30	.19	.18	YES		
514	Petroleo Brasileiro ADR (NDQ)	PBR	11.77	1	5	3	1.75	17- 30	(45-155%)	49.0	NIL	.24	NIL	18	6/30	NIL	.04	9/30	NIL	NIL	YES		
629	1629	Pfizer, Inc. (NDQ)	PFE	32.69	1	1	1	.85	40- 50	(20- 55%)	19.7	3.7	1.66	1.20	45	6/30	.33	.42	12/31	.30	.28	YES	
971	PharMerica Corp. (NDQ)	PMC	27.74	3	4	4	1.05	30- 50	(10- 80%)	18.7	NIL	1.48	NIL	84	6/30	.30	.27	9/30	NIL	NIL	YES		
1988	Philips Electronics NV(g) (NDQ)	PHG	29.24	2	3	3	1.20	35- 50	(20- 70%)	41.8	3.2	.70	.94	52	6/30	.28	.28	9/30	NIL	NIL	YES		
1993	Philip Morris Int'l (NDQ)	PM	96.56	▲	2	2	.80	90- 120	(N- 25%)	20.3	4.3	4.75	4.16	15	9/30	▲1.25	1.25	12/31	▲1.04	1.02	YES		
515	Phillips 66 (NDQ)	PSX	79.59	3	3	5	1.30	85- 125	(5- 55%)	21.6	3.3	3.68	2.62	18	6/30	.93	1.84	12/31	.63	.56	YES		
1391	Photronics Inc. (NDQ)	PLAB	10.00	4	4	3	1.00	12- 20	(20-100%)	18.9	NIL	.53	NIL	67	7/31	.12	.17	9/30	NIL	NIL	YES		
1837	549	Piedmont Natural Gas (NDQ)	PNY					SEE FINAL SUPPLEMENT - PAGE 1837															
1038	2190	Pier 1 Imports (NDQ)	PIR	4.40	3	4	4	1.35	8- 13	(80-195%)	22.0	6.4	▼.20	.28	61	8/31	d.05	.04	12/31	.07	.07	YES	
1928	Pilgrim's Pride Corp. (NDQ)	PPC	20.93	3	3	4	1.05	25- 35	(20- 65%)	9.9	NIL	2.12	NIL	49	6/30	.60	.93	9/30	NIL	NIL	YES		
2370	Pinnacle Entertain. (NDQ)	PNK	12.46	-	4	-	NMF	17- 30	(35-140%)	NMF	NIL	d.03	NIL	80	6/30	d2.67	.41	9/30	NIL	NIL	YES		
1929	Pinnacle Foods (NDQ)	PF	51.44	4	3	3	.85	40- 60	(N- 15%)	23.1	2.2	2.23	1.14	49	6/30	.42	.37	12/31	▲.285	.255	YES		
2234	Pinnacle West Capital (NDQ)	PNW	75.12	3	1	3	.70	65- 80	(N- 5%)	18.3	3.5	4.11	2.62	31	6/30	1.08	1.10	9/30	.625	.595	YES		
2412	Pioneer Natural Res. (NDQ)	PXD	184.03	2	3	3	1.45	145- 220	(N- 20%)	NMF	NIL	d.08	.08	9	6/30	d.22	.10	12/31	.04	.04	YES		
1807	Piper Jaffray Cos. (NDQ)	PJC	51.00	3	3	4	1.30	50- 75	(N- 45%)	14.2	NIL	3.68	NIL	10	6/30	.88	1.09	9/30	NIL	NIL	YES		
1421	Pitney Bowes (NDQ)	PBI	17.22	2	3	3	1.15	20- 30	(15- 75%)	9.4	4.4	1.83	.75	20	6/30	.39	.45	9/30	.188	.187	YES		
622	Plains All Amer. Pipe. (NDQ)	PAA	32.46	1	3	5	1.20	40- 60	(25- 85%)	41.6	6.8	7.8	2.20	6	6/30	d.20	d.06	12/31	▼.55	.70	YES		
461	2317	Planet Fitness (NDQ)	PLNT	19.45	-	3	-	NMF	30- 40	(55-105%)	26.3	NIL	.74	NIL	85	6/30	.11	.32	9/30	NIL	NIL	YES	
1339	Plantronics Inc. (NDQ)	PLT	51.34	2	3	3	1.05	50- 75	(N- 45%)	20.1	1.2	2.55	.60	56	6/30	.68	.52	9/30	.15	.15	YES		
1248	576	Platform Specialty (NDQ)	PAH	7.49	3	4	3	2.00	17- 25	(125-235%)	10.9	NIL	.69	NIL	62	6/30	.16	d.06	9/30	NIL	NIL	YES	
1340	Plexus Corp. (NDQ)	PLXS	45.58	2	3	2	1.15	45- 70	(N- 55%)	14.7	NIL	3.10	NIL	56	6/30	.82	.69	9/30	NIL	NIL	YES		
1248	2318	Polaris Inds. (NDQ)	PII	77.54	3	3	4	1.20	140- 210	(80-170%)	12.3	2.8	6.29	2.20	85	6/30	1.09	1.49	9/30	.55	.53	YES	
1646	959	Polycom, Inc. (NDQ)	PLCM					SEE FINAL SUPPLEMENT - PAGE 1646															
577	PolyOne Corp. (NDQ)	POL	30.73	3	3	3	1.35	45- 70	(45-130%)	13.2	1.8	2.32	.54	62	6/30	.63	.57	3/31	▲.135	.12	YES		
2319	Pool Corp. (NDQ)	POOL	93.36	3	3	3	1.95	70- 105	(N- 10%)	28.1	1.3	3.32	1.24	85	6/30	1.98	1.75	9/30	.31	.26	YES		
368	Popeyes LA Kitchen (NDQ)	PLKI	51.71	3	3	3	.70	60- 90	(15- 75%)	23.4	NIL	2.21	NIL	87	6/30	.47	.44	9/30	NIL	NIL	YES		
2521	Popular Inc. (NDQ)	BPOP	37.86	▼	4	1	1.45	45- 80	(20-110%)	11.0	1.6	3.44	.60	51	6/30	.85	5.79	12/31	.15	.15	YES		
2235	Portland General (NDQ)	POR	41.77	3	2	3	.70	30- 45	(N- 10%)	18.8	3.2	2.22	1.32	31	6/30	.42	.44	9/30	▲.32	.30	YES		
746	POSCO ADR(g) (NDQ)	PKX	52.91	2	3	3	1.10	75- 115	(40-115%)	18.9	3.4	2.80	1.80	7	6/30	1.39(p)	1.27(p)	9/30	.333	.416	YES		
1930	Post Holdings (NDQ)	POST	81.36	3	2	2	1.00	70- 110	(N- 35%)	31.8	NIL	2.56	NIL	49	6/30	.62	.55	9/30	NIL	NIL	YES		
1246	1604	Potash Corp. (NDQ)	POT	16.08	-	3	-	1.15	20- 35	(25-120%)	26.8	2.5	.60	.40	4	6/30	.18	.50	12/31	▼.10	.38	YES	
369	Potbelly Corp. (NDQ)	PBPB	13.11	3	4	3	.85	16- 25	(20- 90%)	29.8	NIL	.44	NIL	87	6/30	.13	.10	9/30	NIL	NIL	YES		
1168	Potlatch Corp. (NDQ)	PCH	38.80	1	3	3	.95	45- 65	(15- 70%)	NMF	3.9	.35	1.50	42	6/30	d.77	.02	9/30	.375	.375	YES		
1558	Power Financial (TSE)	PWF.TO	31.25	3	3	4	.90	30- 45	(N- 45%)	11.0	5.0	2.84	1.57	22	6/30	.71	.86	12/31	.393	.373	YES		
1392	Power Integrations (NDQ)	POWI	63.00	3	3	3	1.05	55- 85	(N- 35%)	38.0	0.8	1.66	.52	67	6/30	.38	.29	9/30	.13	.12	YES		
578	Praxair Inc. (NDQ)	PX	118.49	3	1	2	.95	135- 165	(15- 40%)	20.9	2.7	5.66	3.15	62	6/30	1.39	1.06	9/30	.75	.715	YES		
1574	Pretium Resources (NDQ)	PVG	9.80	2	5	2	.55	16- 30	(65-205%)	NMF	NIL	d.27	NIL	3	6/30	d.05	d.01	9/30	NIL	NIL	YES		
2570	Price (T. Rowe) Group (NDQ)	TROW	65.21	4	2	3	1.10	85- 115	(30- 75%)	14.0	3.4	4.66	2.22	58	6/30	1.15	1.24	9/30	.54	.52	YES		
2640	Priceline Group (The) (																						



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NAME OF STOCK	Ticker Symbol	Recent Price			Safety	Technical	Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS					Do Options Trade?		
		Timeliness	↓	↓									Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd		Year Ago	
																				↓
1424 539 Questar Corp.	STR						SEE FINAL SUPPLEMENT - PAGE 1424													
811 Quintiles IMS Hldgs.	Q	76.33	-	3	-	.90	80-125 (5-65%)	19.5	NIL	3.91	NIL	70	6/30	.93	.78	9/30	NIL	NIL	YES	
NAME CHANGED TO QUINTILES IMS HLDGS.																				
1723 RBC Bearings (NDQ)	ROLL	71.39	4	3	2	1.05	70-110 (N-55%)	21.0	NIL	3.40	NIL	68	6/30	.77	.78	9/30	NIL	NIL	YES	
770 RLI Corp.	RLI	68.04	2	2	3	.85	45-60 (N-N%)	32.9	NIL	2.07	.80	46	6/30	.61	.77	9/30	.20	.19	YES	
2432 RPC Inc.	RES	18.64	▼	3	4	1.55	17-25 (N-35%)	NMF	NIL	d.75	NIL	5	6/30	d.23	d.16	9/30	NIL	NIL	YES	
580 RPM Int'l	RPM	48.01	3	3	2	1.10	55-80 (15-65%)	17.6	2.5	2.73	1.20	62	8/31	.83	.74	12/31	▲.30	.275	YES	
846 1824 Rackspace Hosting	RAX	31.79	-	3	-	1.25	50-70 (55-120%)	36.5	NIL	.87	NIL	65	6/30	.28	.20	9/30	NIL	NIL	YES	
235 2114 Ralph Lauren	RL	97.64	2	3	3	1.15	130-195 (35-100%)	18.1	2.1	5.40	2.05	86	6/30	1.06	1.09	12/31	.50	.50	YES	
1374 Rambus Inc. (NDQ)	RMBS	11.70	3	4	1	1.45	18-30 (55-155%)	18.9	NIL	.62	NIL	75	6/30	.15	.13	9/30	NIL	NIL	YES	
2413 Range Resources Corp.	RRC	38.07	2	3	3	1.20	35-55 (N-45%)	NMF	0.2	d.35	.08	9	6/30	d.14	.01	9/30	.02	.04	YES	
1808 Raymond James Fin'l	RJF	58.45	3	3	3	1.25	60-90 (N-55%)	15.8	1.4	3.70	.80	10	6/30	.87	.91	12/31	.20	.18	YES	
1169 Rayonier Inc.	RYN	26.04	4	3	2	1.00	20-30 (N-15%)	21.5	3.8	1.21	1.00	42	6/30	.89	d.01	9/30	.25	.25	YES	
721 Raytheon Co.	RTN	137.63	▼	3	1	.85	120-145 (N-55%)	17.8	2.1	7.72	2.93	59	6/30	2.38	1.65	12/31	▲.733	.67	YES	
1768 Realogy Holdings	RLGY	24.37	3	3	4	1.15	50-70 (105-185%)	14.4	1.5	1.69	.36	36	6/30	.63	.66	9/30	▲.09	NIL	YES	
1540 Realty Income Corp.	O	62.66	2	2	3	1.70	60-80 (N-30%)	47.1	3.9	1.33	2.42	50	6/30	.27	.25	12/31	▲.606	.572	YES	
2595 Red Hat, Inc.	RHT	77.50	3	3	3	1.20	90-130 (15-70%)	55.4	NIL	1.40	NIL	14	8/31	.32	.28	9/30	NIL	NIL	YES	
370 Red Robin Gourmet (NDQ)	RRGB	42.65	4	3	3	1.00	95-145 (125-240%)	11.8	NIL	3.61	NIL	87	6/30	.75	.78	9/30	NIL	NIL	YES	
1724 Regal Beloit	RBC	59.75	3	3	4	1.20	75-110 (25-85%)	12.5	1.6	4.77	.96	68	6/30	1.26	1.53	12/31	.24	.23	YES	
2320 Regal Entertainment	REG	22.69	3	3	3	.85	30-40 (30-75%)	21.8	3.9	1.04	.88	85	6/30	.21	.34	9/30	.22	.22	YES	
838 Regeneron Pharm. (NDQ)	REGN	371.53	4	3	4	1.10	470-705 (25-90%)	54.6	NIL	6.80	NIL	40	6/30	1.69	1.69	9/30	NIL	NIL	YES	
2522 Regions Financial	RF	10.25	3	3	3	1.40	12-18 (15-75%)	12.2	2.6	.84	.27	51	9/30	◆.24	.19	3/31	◆.065	.06	YES	
1014 Regis Corp.	RGS	12.07	1	3	3	1.00	11-16 (N-35%)	86.2	NIL	.14	NIL	21	6/30	.12	d.05	9/30	NIL	NIL	YES	
1560 Reinsurance Group	RGA	110.03	3	2	3	1.00	105-140 (N-25%)	11.5	1.5	9.56	1.68	22	6/30	2.68	1.94	9/30	▲.41	.37	YES	
747 Reliance Steel	RS	70.96	▼	3	2	1.35	70-110 (N-55%)	15.5	2.4	4.57	1.70	7	6/30	1.38	1.21	9/30	▲.425	.40	YES	
2027 RenaissanceRe Hldgs.	RNR	123.34	3	2	3	.65	105-145 (N-20%)	15.4	1.0	7.99	1.24	33	6/30	1.55	2.18	9/30	.31	.30	YES	
2032 2148 Rent-A-Center (NDQ)	RCII	9.26	2	3	4	1.10	20-30 (115-225%)	7.9	3.5	▼1.17	.32	57	6/30	.41	.50	12/31	.08	.24	YES	
416 Republic Services	RSG	50.24	▼	3	2	.75	45-60 (N-20%)	22.8	2.5	2.20	1.28	24	6/30	.55	.54	9/30	.30	.28	YES	
225 ResMed Inc.	RMD	64.99	3	3	3	.90	70-105 (10-60%)	23.8	2.0	2.73	1.32	39	6/30	.59	.61	9/30	▲.33	.30	YES	
405 Resources Connection (NDQ)	REC	14.59	3	3	5	1.20	25-35 (70-140%)	16.6	3.0	.88	.44	69	8/31	.15	.20	9/30	▲.11	.10	YES	
371 Restaurant Brands Int'l	QSR	44.83	-	3	-	NMF	50-75 (10-65%)	30.5	1.5	1.47	.66	87	6/30	.38	.16	9/30	▲.15	.10	YES	
1159 Restoration Hardware	RH	30.00	3	4	3	1.05	45-80 (50-165%)	16.7	NIL	1.80	NIL	96	7/31	.44	.71	9/30	NIL	NIL	YES	
1015 Revlon Inc.	REV	35.15	4	3	3	1.05	30-50 (N-40%)	23.9	NIL	1.47	NIL	21	6/30	.21	.41	9/30	NIL	NIL	YES	
1725 Rexnord Corp.	RXN	19.11	2	3	3	1.15	35-50 (85-160%)	19.1	NIL	1.00	NIL	68	6/30	.18	.20	9/30	NIL	NIL	YES	
1994 Reynolds American	RAI	47.27	2	2	3	.65	45-65 (N-40%)	20.3	3.9	2.33	1.84	15	9/30	◆.60	.46	12/31	▲.46	.36	YES	
540 Rice Energy	RICE	25.50	▼	3	3	1.65	30-45 (20-75%)	NMF	NIL	d1.15	NIL	13	6/30	d1.07	d.51	9/30	NIL	NIL	YES	
1590 Rio Tinto plc	RIO	32.55	2	3	4	1.45	40-60 (25-85%)	16.3	4.9	2.00	1.60	2	6/30	.87(p)	1.59(p)	9/30	.45	1.049	YES	
972 Rite Aid Corp.	RAD	7.02	-	5	-	.95	8-15 (15-115%)	41.3	NIL	.17	NIL	84	8/31	.01	.02	9/30	NIL	NIL	YES	
1644 Robert Half Int'l	RHI	38.06	4	2	5	1.15	65-85 (70-125%)	13.6	2.4	2.79	.91	78	6/30	.71	.67	9/30	.22	.20	YES	
1314 Rockwell Automation	ROK	115.97	3	3	2	1.15	100-145 (N-25%)	21.0	2.8	5.52	3.19	27	6/30	1.46	1.52	9/30	.725	.65	YES	
722 Rockwell Collins	COL	84.10	3	1	5	1.00	115-140 (35-65%)	14.6	1.6	5.75	1.32	59	6/30	1.63	1.33	9/30	.33	.33	YES	
132 Rofin-Sinar Techn. (NDQ)	RSTI	32.25	-	3	-	1.15	30-45 (N-40%)	20.9	NIL	1.54	NIL	23	6/30	.40	.41	9/30	NIL	NIL	YES	
1769 Rogers Communications(TSE)	RCIB.TO	54.54	3	3	3	.55	55-85 (N-55%)	18.2	3.5	2.99	1.92	36	9/30	◆.83	.91	9/30	.48	.48	YES	
235 1341 Rogers Corp.	ROG	57.20	▼	4	3	1.15	70-100 (20-75%)	16.5	NIL	3.46	NIL	56	6/30	.78	.67	9/30	NIL	NIL	YES	
406 Rollins, Inc.	ROL	28.26	4	2	2	.95	35-45 (25-60%)	34.9	1.6	.81	.44	69	6/30	.22	.21	9/30	.10	.08	YES	
1726 Roper Tech.	ROP	172.52	4	1	2	1.00	185-225 (5-30%)	25.6	0.7	6.75	1.20	68	6/30	1.56	1.70	12/31	.30	.25	YES	
2003 Rosetta Stone	RST	7.38	2	4	1	.65	10-17 (35-130%)	NMF	NIL	d1.46	NIL	25	6/30	d.30	d.36	9/30	NIL	NIL	YES	
2216 Ross Stores (NDQ)	ROST	63.55	4	2	3	.85	60-80 (N-25%)	22.5	0.9	2.82	.59	63	7/31	.71	.63	9/30	.135	.118	YES	
NAME CHANGED TO TIVO CORP.																				
2433 Rowan Cos. plc	RDC	14.09	3	3	4	1.35	35-50 (150-255%)	9.0	NIL	1.57	NIL	5	6/30	.75	.70	9/30	NIL	.10	YES	
2523 Royal Bank of Canada (TSE)	RY.TO	83.53b	4	1	3	.75	95-115 (15-40%)	12.3	4.1	6.78	3.42	51	7/31	1.88(b)	1.66(b)	12/31	▲.83(b)	.79(b)	YES	
2321 Royal Caribbean	RCL	70.05	4	3	5	1.30	110-165 (55-135%)	11.3	2.7	6.19	1.92	85	6/30	1.06	.84	12/31	▲.48	.375	YES	
516 Royal Dutch Shell 'B'	RDSB	53.83	3	2	4	1.15	80-105 (50-95%)	26.1	7.0	2.06	3.76	18	6/30	.30	1.24	9/30	.94	.94	YES	
1575 Royal Gold (NDQ)	RGLD	68.87	1	3	2	.95	90-135 (30-95%)	47.2	1.4	1.46	.96	3	6/30	.32	.23	12/31	.23	.22	YES	
1212 Royce Value Trust	RVT	12.26	-	3	3	1.10	15-20 (20-65%)	NMF	1.1	NMF	.14	-	6/30	14.05(q)	15.85(q)	12/31	NIL	NIL	YES	
372 Ruby Tuesday	RT	3.10	-	4	-	1.00	10-16 (225-415%)	51.7	NIL	.06	NIL	87	8/31	d.11	d.03	9/30	NIL	NIL	YES	
748 Russel Metals (TSE)	RUS.TO	20.77	1	3	3	1.00	25-35 (20-70%)	18.5	7.3	1.12	1.52	7	6/30	.27	.27	9/30	.38	.38	YES	
326 Ryder System	R	62.94	4	3	3	1.35	105-155 (65-145%)	10.4	2.8	6.08	1.76	94	6/30	1.56	1.65	12/31	.44	.41	YES	
1541 Ryman Hospitality	RHP	50.25	3	3	3	1.20	60-95 (20-90%)	17.4	6.3	2.89	3.15	50	6/30	1.00	.80	12/31	.75	.70	YES	
453 S&P Global	SPGI	122.89	4	2	2	1.15	140-190 (15-55%)	23.1	1.2	5.32	1.50	74	6/30	1.44	1.21	9/30	.36	.33	YES	
2596 SAP SE	SAP	87.66	3	2	2	1.05	90-120 (5-35%)	26.6	1.5	3.30	1.30	14	6/30	.76	.67	9/30	NIL	NIL	YES	
596 SBA Communications (NDQ)	SBAC	111.35	4	3	3	.95	115-170 (5-55%)	NMF	NIL	.43	NIL	77	6/30	.01	.10	9/30	NIL	NIL	YES	
2620 SEI Investments (NDQ)	SEIC	44																		

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Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Timeliness	Safety	Technical	Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?			
		Qtr. Ended	Earnings Per sh.	Year Ago										Qtr. Ended	Latest Div'd	Year Ago				
2382	SCHL	38.01	3	3	2	1.00	30- 45	(N- 20%)	20.9	1.6	1.82	.60	54	8/31	d1.15	d1.42	12/31	.15	.15	YES
581	SHLM	27.90	2	3	4	1.40	45- 65	(60-135%)	13.4	2.9	2.08	.82	62	5/31	.53	d.34	12/31	♦.205	.205	YES
1800	SCHW	32.21	3	3	3	1.30	35- 50	(10- 55%)	25.6	0.9	1.26	.28	47	9/30	♦.35	.28	9/30	.07	.06	YES
1995	SWM	37.75	4	3	3	.75	40- 60	(5- 60%)	12.1	4.2	3.11	1.60	15	6/30	.85	.76	9/30	.40	.38	YES
407	SAIC	67.60	4	3	3	.95	55- 80	(N- 20%)	20.5	1.8	3.30	1.24	69	7/31	.85	.66	12/31	.31	.31	YES
1039	SGMS	12.70	5	5	5	1.75	15- 30	(20-135%)	NMF	NIL	d3.03	NIL	80	6/30	d.59	d.93	9/30	NIL	NIL	YES
1198	SMG	86.64	5	3	4	.90	60- 90	(N- 5%)	23.8	2.4	3.64	2.05	28	6/30	2.16	2.14	9/30	▲.50	.47	YES
2344	SSP	14.11	1	3	3	1.20	25- 35	(75-150%)	15.0	NIL	.94	NIL	76	6/30	.14	d.15	9/30	NIL	NIL	YES
2345	SNI	61.69	3	2	3	1.00	110- 150	(80-145%)	11.9	1.6	5.18	1.00	76	6/30	1.58	1.49	9/30	.25	.23	YES
629	SEAC	2.66	4	4	4	.80	4- 6	(50-125%)	NMF	NIL	d1.84	NIL	44	7/31	d.77	d.16	9/30	NIL	NIL	YES
1841	SDRL	2.32	3	5	3	1.75	8- 15	(245-545%)	2.8	NIL	.84	NIL	5	6/30	.44	.77	9/30	NIL	NIL	YES
1409	STX	35.34	3	3	3	1.40	30- 45	(N- 5%)	11.6	7.1	3.04	2.52	83	9/30	♦.99	.54	3/31	♦.63	.63	YES
1183	SEE	44.21	3	3	3	1.05	45- 70	(N- 60%)	24.7	1.4	1.79	.64	82	6/30	.25	.13	12/31	.16	.13	YES
2149	SHLD	10.99	3	5	3	NMF	20- 35	(80-220%)	NMF	NIL	▲d7.94	NIL	57	7/31	d2.03	d2.40	9/30	NIL	NIL	YES
839	SGEN	50.73	2	4	3	1.20	35- 60	(N- 20%)	NMF	NIL	d1.10	NIL	40	6/30	d.23	d.38	9/30	NIL	NIL	YES
1426	SEAS	13.60	3	3	5	1.00	20- 35	(45-155%)	20.0	NIL	.68	NIL	85	6/30	.21	.22	12/31	▼.10	.21	YES
236	SEM	13.40	3	3	4	1.15	13- 20	(N- 50%)	13.8	NIL	.97	NIL	70	6/30	.23	.28	9/30	NIL	NIL	YES
771	SIGI	40.15	4	3	2	.95	35- 55	(N- 35%)	14.9	1.5	2.69	.60	46	6/30	.72	.62	9/30	.15	.14	YES
2236	SRE	105.06	▼3	2	2	.80	115- 155	(10- 50%)	25.8	3.1	4.08	3.22	31	6/30	.06	1.03	12/31	.755	.70	YES
1375	SMTC	24.85	2	3	2	1.20	25- 40	(N- 60%)	36.0	NIL	.69	NIL	75	7/31	.14	NIL	9/30	NIL	NIL	YES
1841	SNMX	2.72	4	4	4	1.55	8- 14	(195-415%)	NMF	NIL	d.20	NIL	40	6/30	d.05	d.06	9/30	NIL	NIL	YES
133	ST	37.18	4	3	3	1.30	55- 80	(50-115%)	12.4	NIL	2.99	NIL	23	6/30	.73	.73	9/30	NIL	NIL	YES
1933	SXT	72.52	2	2	2	1.10	55- 75	(N- 5%)	21.6	1.5	3.35	1.08	49	6/30	.84	.80	9/30	.27	.27	YES
1835	SCI	26.53	4	3	3	1.05	30- 45	(15- 70%)	25.0	2.0	1.06	.52	34	6/30	.08	.25	9/30	.13	.12	YES
408	SERV	35.42	▼4	3	2	.90	50- 75	(40-110%)	17.9	NIL	1.98	NIL	69	6/30	.63	.55	9/30	NIL	NIL	YES
2621	NOW	76.16	1	4	3	1.20	45- 75	(N- N%)	NMF	NIL	d1.04	NIL	64	6/30	d.30	d.40	9/30	NIL	NIL	YES
373	SHAK	31.95	2	3	3	NMF	30- 50	(N- 55%)	59.2	NIL	.54	NIL	87	6/30	.14	.09	9/30	NIL	NIL	YES
1024	SJRB	26.38b	2	4	4	.60	25- 35	(N- 35%)	21.6	4.5	1.22	1.20	73	5/31	1.1(b)	.42(b)	12/31	.296(b)	.296(b)	YES
930	SHEN	26.55	3	3	3	1.05	35- 55	(30-105%)	27.4	1.0	.97	.26	71	6/30	.27	.21	12/31	▲.25	.24	YES
1142	SHW	270.85	3	1	2	.95	305- 375	(15- 40%)	21.4	1.3	12.68	3.60	72	6/30	3.99	3.70	12/31	♦.84	.67	YES
1771	SIEGY	115.96	3	3	3	1.15	145- 220	(25- 90%)	13.5	3.3	8.60	3.81	36	6/30	1.84	1.65	9/30	NIL	NIL	YES
237	SWIR	13.45	4	4	3	1.20	30- 50	(125-270%)	NMF	NIL	d.02	NIL	77	6/30	.02	.12	9/30	NIL	NIL	YES
2524	SBNY	115.50	4	3	4	1.00	140- 210	(20- 80%)	13.6	NIL	8.48	NIL	51	6/30	1.90	1.77	9/30	NIL	NIL	YES
629	SIG	80.40	5	3	4	1.05	140- 210	(75-160%)	10.7	1.4	7.50	1.12	61	7/31	1.14	1.28	12/31	.26	.22	YES
1184	SLGN	51.15	3	3	4	.85	55- 85	(10- 65%)	17.9	1.3	2.86	.68	82	6/30	.55	.70	9/30	.17	.16	YES
1376	SLAB	58.40	1	3	3	1.05	45- 70	(N- 20%)	49.9	NIL	1.17	NIL	75	6/30	.37	.17	9/30	NIL	NIL	YES
1576	SLW	24.08	1	3	1	1.20	25- 35	(5- 45%)	29.0	0.8	.83	.20	3	6/30	.14	.13	9/30	.05	.05	YES
1543	SLG	198.44	4	2	2	.85	200- 270	(N- 35%)	32.3	3.4	6.15	6.83	50	6/30	1.45	1.52	9/30	▲1.65	1.55	YES
1117	SSD	43.36	3	3	2	1.10	40- 60	(N- 40%)	25.4	1.7	1.71	.72	89	6/30	.54	.43	9/30	▲.18	.16	YES
2346	SBGI	26.50	4	4	3	1.30	45- 75	(70-185%)	7.9	2.7	3.37	.72	76	6/30	.52	.48	9/30	.18	.165	YES
2347	SIRI	4.10	4	4	3	1.10	10- 16	(145-290%)	24.1	NIL	.17	NIL	76	6/30	.03	.02	9/30	NIL	NIL	YES
2323	SIX	51.09	3	3	3	.95	50- 75	(N- 45%)	28.2	4.5	1.81	2.32	85	6/30	.64	.67	9/30	.58	.52	YES
2160	SKX	22.67	5	3	4	1.25	35- 55	(55-145%)	12.1	NIL	1.87	NIL	81	6/30	.48	.52	9/30	NIL	NIL	YES
1837	SKUL	SEE FINAL SUPPLEMENT - PAGE 1837																		
312	SKYW	28.65	3	3	3	1.35	25- 40	(N- 40%)	10.9	0.7	2.63	.20	92	6/30	.77	.61	12/31	.05	.04	YES
2462	SWKS	77.65	5	3	5	1.40	100- 150	(30- 95%)	17.1	1.4	4.54	1.12	75	6/30	.97	1.06	9/30	▲.28	.26	YES
1954	SFS	13.10	3	3	5	1.00	17- 25	(30- 90%)	27.3	NIL	.48	NIL	79	6/30	.10	.14	9/30	NIL	NIL	YES
2324	SWHC	26.25	4	3	2	1.10	18- 25	(N- N%)	13.8	NIL	1.90	NIL	85	7/31	.57	.26	9/30	NIL	NIL	YES
1727	AOS	49.20	4	3	4	1.20	35- 50	(N- N%)	26.3	1.0	1.87	.48	68	6/30	.49	.40	12/31	.12	.095	YES
630	SNCR	132.22	2	1	2	.70	155- 190	(15- 45%)	20.2	2.3	6.55	3.00	49	7/31	1.59	1.32	9/30	▲.75	.67	YES
★	SNA	149.56	▼4	2	4	1.10	155- 210	(5- 40%)	16.3	1.6	9.19	2.44	68	6/30	2.36	2.03	9/30	.61	.53	YES
1935	LNCE	35.57	3	3	3	.80	35- 50	(N- 40%)	25.2	1.8	1.41	.64	49	6/30	.28	.27	9/30	.16	.16	YES
1981	SODA	24.57	3	4	1	1.20	25- 45	(N- 85%)	22.5	NIL	1.09	NIL	38	6/30	.37	.05	9/30	NIL	NIL	YES
2641	SOHU	42.21	1	3	4	1.30	25- 35	(N- N%)	NMF	NIL	d2.32	NIL	32	6/30	d1.64	d.71	9/30	NIL	NIL	YES
2665	SCTY	20.14	4	4	4	1.65	35- 55	(75-175%)	NMF	NIL	d3.73	NIL	26	6/30	d.56	d.23	9/30	NIL	NIL	YES
2131	SAH	18.95	4	3	5	1.15	30- 45	(60-135%)	8.8	1.1	2.16	.20	95	6/30	.50	.46	12/31	.05	.025	YES
374	SONC	25.52	3	3	5	1.00	30- 45	(20- 75%)	18.2	2.2	1.40	.56	87	5/31	.43	.38	9/30	.11	.09	YES
1185	SON	50.60	3	2	2	1.00	50- 70	(N- 40%)	18.3	2.9	2.77	1.48	82	6/30	.73	.68	12/31	♦.37	.35	YES
1989	SNE	33.50	3	3	3	1.20	30- 50	(N- 50%)	37.2	0.6	.90	.19	52	6/30	.16	.58	9/30	NIL	NIL	YES
229	BID	36.58	2	3	2	1.45	40- 65	(10- 80%)	15.9	NIL	2.30	NIL	61	6/30	1.51	1.04	9/30	NIL	.10	YES
550	SJI	28.61	▼2	2																



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Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Timeliness	Safety	Technical	Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS					Do Options Trade?	
		Qtr. Ended	Earnings Per sh.	Year Ago										Qtr. Ended	Latest Div'd	Year Ago				
																	Qtr. Ended	Earnings Per sh.		Year Ago
1424 375 Starbucks Corp. (NDQ)	SBUX	52.61	3	1	2	.95	70-90	(35-70%)	25.9	1.8	2.03	.96	87	6/30	.49	.42	9/30	.20	.16	YES
2372 Starwood Hotels	HOT						SEE FINAL SUPPLEMENT - PAGE 1424													
2348 Starz (NDQ)	STRA	30.52	-	3	-	1.10	35-55	(15-80%)	13.5	NIL	2.26	NIL	76	6/30	.54	.59	9/30	NIL	NIL	YES
2525 State Street Corp.	STT	69.77	3	3	3	1.20	65-100	(N-45%)	13.7	2.2	5.09	1.56	51	6/30	1.47	.93	12/31	▲.38	.34	YES
750 Steel Dynamics (NDQ)	STLD	24.23	3	3	3	1.45	30-40	(25-65%)	11.3	2.3	2.14	.56	7	6/30	.58	.13	12/31	.14	.138	YES
1160 Steelcase, Inc. 'A'	SCS	13.40	4	3	3	1.20	20-30	(50-125%)	12.8	3.6	1.05	.48	96	8/31	.32	.35	12/31	.12	.113	YES
2150 Stein Mart (NDQ)	SMRT	6.09	3	3	3	.95	12-18	(95-195%)	14.5	4.9	▼.42	.30	57	7/31	.06	.10	12/31	▲.075	.075	YES
2665 417 Stericycle Inc. (NDQ)	SRCL	74.85	3	2	3	.85	120-160	(60-115%)	18.6	NIL	4.03	NIL	24	6/30	.89	1.14	9/30	NIL	NIL	YES
190 STERIS plc	STE	69.29	3	2	3	1.00	85-115	(25-65%)	17.3	1.6	4.00	1.12	48	6/30	.79	.62	9/30	▲.28	.25	YES
1809 Stifel Financial Corp.	SF	38.40	2	3	4	1.30	55-85	(45-120%)	14.6	NIL	2.63	NIL	10	6/30	.69	.71	9/30	NIL	NIL	YES
1577 Stillwater Mining	SWC	12.45	2	4	2	1.55	13-20	(5-60%)	69.2	NIL	.18	NIL	3	6/30	.01	.06	9/30	NIL	NIL	YES
1378 STMicroelectronics	STM	8.26	3	3	3	1.45	13-20	(55-140%)	41.3	2.9	2.0	.24	75	6/30	.03	.04	9/30	.06	.10	YES
1836 StoneMor Partners L.P. (NDQ)	STON	24.78	1	3	4	.60	20-30	(N-20%)	NMF	10.7	d.52	2.64	34	6/30	d.26	d.16	9/30	.66	.65	YES
1344 Stratasy Ltd. (NDQ)	SSYS	20.39	2	3	4	1.35	30-45	(45-120%)	NMF	NIL	d1.36	NIL	56	6/30	d.36	d.55	9/30	NIL	NIL	YES
2004 Strayer Education (NDQ)	STRA	45.31	2	4	4	1.20	60-100	(30-120%)	14.4	NIL	3.14	NIL	25	6/30	.72	1.11	9/30	NIL	NIL	YES
191 Stryker Corp.	SYK	114.81	2	1	3	.95	110-135	(N-20%)	23.3	1.3	4.93	1.52	48	6/30	1.00	1.03	12/31	.38	.385	YES
2326 Sturm, Ruger & Co.	RGR	58.45	4	3	3	1.00	50-80	(N-35%)	14.6	2.8	4.01	1.66	85	6/30	1.22	.91	9/30	▲.49	.36	YES
623 Suburban Propane	SPH	33.71	1	3	3	.85	30-50	(N-50%)	21.9	10.5	1.54	3.55	6	6/30	d.49	d.67	9/30	.888	.888	YES
517 Suncof Energy (TSE)	SU.TO	37.96	2	3	4	1.20	40-65	(5-70%)	NMF	3.1	.13	1.16	18	6/30	d.46	.50	9/30	.29	.29	YES
624 Sunoco Logistics Part.	SXL	26.89	2	3	3	1.30	40-55	(50-105%)	24.0	7.4	1.12	2.00	6	6/30	.34	.83	9/30	▲.50	.438	YES
236 1231 SunPower Corp. (NDQ)	SPWR	8.54	1	4	4	1.90	25-45	(195-425%)	NMF	NIL	d1.13	NIL	26	6/30	d.51	.04	9/30	NIL	NIL	YES
2526 SunTrust Banks	STI	45.36	4	3	3	1.25	50-75	(10-65%)	12.2	2.3	3.71	1.06	51	6/30	.95	.90	9/30	▲.26	.24	YES
2436 Superior Energy Svcs.	SPN	18.07	2	4	3	1.70	15-25	(N-40%)	NMF	NIL	d2.31	NIL	5	6/30	d.53	d.31	9/30	NIL	.08	YES
1001 Superior Inds. Int'l	SUP	27.26	▼	4	1	1.10	30-45	(10-65%)	14.3	2.6	1.91	.72	93	6/30	.52	.24	12/31	.18	.18	YES
★★ 1957 SUPERVALU INC.	SUV	5.02	-	5	-	1.15	8-16	(60-220%)	9.1	NIL	.55	NIL	79	6/30	◆.11	.11	9/30	NIL	NIL	YES
192 SurModics, Inc. (NDQ)	SRDX	28.50	▼	2	3	.80	30-45	(5-60%)	32.0	NIL	.89	NIL	48	6/30	.30	.30	9/30	NIL	NIL	YES
327 Swift Transportation	SWFT	20.00	5	4	3	1.75	30-50	(50-150%)	14.1	NIL	1.42	NIL	94	6/30	.34	.37	9/30	NIL	NIL	YES
433 Swiss Helvetia Fund	SWZ	10.48	-	3	3	.90	11-16	(5-55%)	NMF	0.5	NMF	.05	-	6/30	◆11.99(q)	13.56(q)	9/30	NIL	.001	YES
2597 Symantec Corp. (NDQ)	SYMC	24.22	-	3	-	1.10	30-40	(25-65%)	22.0	1.2	1.10	.30	14	6/30	.29	.26	9/30	.075	.15	YES
961 Synaptics (NDQ)	SYNA	65.90	4	3	3	1.15	105-155	(60-135%)	15.7	NIL	4.19	NIL	37	6/30	.46	1.57	9/30	NIL	NIL	YES
2014 Synchronoss Techn. (NDQ)	SNCR	36.72	5	3	2	1.55	65-95	(75-160%)	14.3	NIL	2.56	NIL	44	6/30	.57	.56	9/30	NIL	NIL	YES
2573 Synchrony Financial	SYF	26.64	-	3	-	NMF	40-60	(50-125%)	10.1	1.0	2.65	.52	58	6/30	.58	.65	9/30	▲.13	NIL	YES
1648 409 SYNEX Corp.	SNX	104.71	4	3	3	1.10	85-130	(N-25%)	15.9	2.0	6.58	1.00	69	8/31	1.73	1.47	12/31	▲.25	.20	YES
2598 Synopsys, Inc. (NDQ)	SNPS	59.62	3	1	3	.95	60-75	(N-25%)	19.2	NIL	3.11	NIL	14	7/31	.76	.63	9/30	NIL	NIL	YES
2527 Synovus Financial	SNV	32.28	3	3	3	1.20	50-75	(55-130%)	16.6	1.5	1.95	.48	51	9/30	◆.51	.42	9/30	.12	.10	YES
1936 Synutra Int'l (NDQ)	SYUT	4.76	-	5	-	1.25	6-12	(25-150%)	15.9	NIL	.30	NIL	49	6/30	NIL	.13	9/30	NIL	NIL	YES
1958 Sysco Corp.	SYU	48.27	2	1	1	.75	50-60	(5-25%)	21.4	2.6	2.26	1.27	79	6/30	.64	.52	12/31	.31	.30	YES
932 T-Mobile US (NDQ)	TMUS	47.35	5	3	3	1.00	50-75	(5-60%)	39.1	NIL	1.21	NIL	71	6/30	.25	.42	9/30	NIL	NIL	YES
789 TCF Financial	TCB	14.43	3	3	3	1.20	20-30	(40-110%)	12.4	2.1	1.16	.30	19	6/30	.31	.29	9/30	.075	.05	YES
1801 TD Ameritrade Holding (NDQ)	AMTD	36.23	3	3	4	1.20	40-55	(10-50%)	20.9	1.9	1.73	.68	47	6/30	.45	.36	9/30	.17	.15	YES
1345 TE Connectivity	TEL	61.29	3	3	3	1.20	75-115	(20-90%)	14.2	2.4	4.31	1.48	56	6/30	1.08	.90	9/30	.37	.33	YES
2218 TJX Companies	TJX	73.16	4	1	3	.85	95-115	(30-55%)	20.7	1.4	3.54	1.04	63	7/31	.84	.80	12/31	.26	.21	YES
1134 TRI Pointe Group	TPH	12.71	4	3	3	1.35	20-35	(55-175%)	9.0	NIL	1.42	NIL	90	6/30	.46	.34	9/30	NIL	NIL	YES
1578 Tahoe Resources	TAHO	11.79	3	4	1	1.20	19-30	(60-155%)	13.6	2.0	.87	.24	3	6/30	.19	.08	12/31	.06	.06	YES
1039 2219 Tailored Brands	TLRD	15.81	3	4	4	1.25	35-60	(120-280%)	9.5	4.6	1.66	.72	63	7/31	.99	.98	12/31	.18	.18	YES
434 Taiwan Fund	TWN	16.94	-	4	3	.85	20-35	(20-105%)	NMF	NIL	NMF	NIL	-	2/28	16.80(q)	20.99(q)	9/30	NIL	NIL	YES
1379 Taiwan Semic. ADR	TSM	30.86	5	2	3	.95	35-50	(15-60%)	15.7	3.0	1.97	.94	75	9/30	◆.59	.46	9/30	.94	.73	YES
2015 Take-Two Interactive (NDQ)	TTWO	45.09	4	3	3	1.10	35-55	(N-20%)	69.4	NIL	.65	NIL	44	6/30	d.46	d.81	9/30	NIL	NIL	YES
2151 Target Corp.	TGT	67.36	3	1	4	.80	90-110	(35-65%)	13.5	3.6	4.99	2.40	57	7/31	1.23	1.21	12/31	.60	.56	YES
1841 724 TASER Int'l (NDQ)	TASR	22.63	3	4	3	1.20	35-60	(55-165%)	61.2	NIL	.37	NIL	59	6/30	.07	.11	9/30	NIL	NIL	YES
109 Tata Motors ADR	TTM	41.06	4	3	2	1.40	45-70	(10-70%)	14.9	0.5	2.75	.20	60	6/30	.49	.59	9/30	.015	NIL	YES
1135 Taylor Morrison Home	TMHC	17.46	3	3	3	1.45	25-35	(45-100%)	10.0	NIL	1.74	NIL	90	6/30	.37	.15	9/30	NIL	NIL	YES
1841 1645 Team Health Hldgs.	TMH	40.25	-	3	-	1.05	60-85	(50-110%)	14.0	NIL	2.88	NIL	78	6/30	.66	.69	9/30	NIL	NIL	YES
1410 Tech Data (NDQ)	TECD	80.57	▼	4	3	1.00	75-115	(N-45%)	13.5	NIL	5.95	NIL	83	7/31	1.42	1.40	9/30	NIL	NIL	YES
1592 Teck Resources Ltd. 'B'(TSE)	TCKB.TO	27.10b	2	4	3	1.60	25-40	(N-50%)	58.9	0.4	.46	.10	2	6/30	.03(b)	.11(b)	9/30	NIL(b)	.15(b)	YES
337 Teekay Corp.	TK	7.92	4	5	5	1.70	20-35	(155-340%)	24.0	2.8	.33	.22	53	6/30	.01	.27	12/31	.055	.55	YES
2349 TEGNA Inc.	TGNA	20.03	-	3	-	1.40	35-55	(75-175%)	9.9	2.8	2.03	.56	76	6/30	.45	.18	9/30	.14	.14	YES
725 Teledyne Technologies	TDY	105.12	3	3	2	1.05	100-150	(N-45%)	19.8	NIL	5.30	NIL	59	6/30	1.32	1.34	9/30	NIL	NIL	YES
193 Teleflex Inc.	TFX	167.59	3	2	2	.85	145-200	(N-20%)	29.9	0.8	5.60	1.36	48	6/30	1.25	.93	9/30	.34	.34	YES
1033 Telefonica SA ADR(g)	TEF	9.73	2</																	

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			RANKS			3-5 year Target Price and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS					
		Timeliness	Safety	Technical	Beta	Qtr. Ended	Earnings Per sh.						Year Ago	Qtr. Ended	Latest Div'd	Year Ago		
																	Qtr. Ended	Latest Div'd
134 Thermo Fisher Sci.	TMO	151.67	2 2 3	1.05	150-200	(N-30%)	28.1	0.4	5.40	.60	23	6/30	1.30	1.27	9/30	.15	.15	YES
2028 Third Point Reinsurance	TPRE	12.35	1 3 4	.90	17-25	(40-100%)	6.2	NIL	1.99	NIL	33	6/30	.51	.15	9/30	NIL	NIL	YES
454 Thomson Reuters (TSE)	TRI.TO	52.26	3 2 3	.75	45-60	(N-15%)	24.7	2.6	2.12	1.36	74	6/30	.50	.52	9/30	.34	.335	YES
2327 Thor Inds.	THO	81.78	4 3 3	1.15	75-110	(N-35%)	14.3	1.6	5.72	1.32	85	7/31	1.57	1.31	12/31	▲.33	.30	YES
2660 1346 3D Systems	DDD	14.14	▼2 3 4	1.50	19-30	(35-110%)	NMF	NIL	d.14	NIL	56	6/30	d.04	d.12	9/30	NIL	NIL	YES
2460 1774 3M Company	MMM	169.95	▼3 1 1	.95	195-240	(15-40%)	20.4	2.6	8.35	4.44	36	6/30	2.08	2.02	9/30	1.11	1.025	YES
237 2438 Tidewater Inc.	TDW	2.97	- 5 -	1.40	190-190	(235-540%)	NMF	NIL	d3.40	NIL	5	6/30	d1.12	.18	9/30	NIL	.25	YES
2193 Tiffany & Co.	TIF	72.04	2 3 4	1.10	90-135	(25-85%)	19.2	2.6	3.76	1.84	61	7/31	.84	.86	12/31	.45	.40	YES
1143 Tile Shop Hldgs. (NDQ)	TTS	18.15	2 4 3	1.15	13-20	(N-35%)	37.8	NIL	.48	NIL	72	9/30	◆.09	.07	9/30	NIL	NIL	YES
2220 Tilly's, Inc.	TLYS	9.29	3 3 3	.90	12-18	(30-95%)	30.0	NIL	▲.31	NIL	63	7/31	.05	.02	9/30	NIL	NIL	YES
2383 Time Inc.	TIME	13.30	- 3 -	NMF	25-35	(90-165%)	8.5	5.7	1.56	.76	54	6/30	.22	.27	9/30	.19	.19	YES
2350 Time Warner	TWX	79.51	5 3 3	1.05	105-155	(30-95%)	14.6	2.0	5.44	1.61	76	6/30	1.20	1.16	9/30	.403	.35	YES
737 Timken Co.	TKR	34.65	3 3 4	1.30	40-60	(15-75%)	17.9	3.0	1.94	1.04	17	6/30	.55	.57	9/30	.26	.26	YES
457 1003 Titan Int'l	TWI	10.25	1 4 3	1.75	8-13	(N-25%)	NMF	0.2	d.43	.02	93	6/30	d.04	.01	9/30	.005	.005	YES
2016 TiVo Corp. (NDQ)	TIVO	19.65	- 3 -	1.50	25-40	(25-105%)	89.3	NIL	.22	NIL	44	6/30	d.11	.38	9/30	NIL	NIL	YES
1035 TiVo Inc.	TIVO.D	SEE FINAL SUPPLEMENT - PAGE 1035																
1136 Toll Brothers	TOL	28.61	4 3 3	1.35	40-60	(40-110%)	10.6	NIL	2.70	NIL	90	7/31	.61	.36	9/30	NIL	NIL	YES
1937 Tootsie Roll Ind.	TR	35.73	3 1 3	.85	35-45	(N-25%)	31.9	1.0	1.12	.36	49	6/30	.18	.18	12/31	.09	.087	YES
1561 Torchmark Corp.	TMK	64.31	3 1 3	.95	70-90	(10-40%)	14.3	0.9	4.51	.56	22	6/30	1.15	1.00	12/31	.14	.135	YES
1731 Toro Co.	TTC	47.18	5 3 3	.95	35-50	(N-5%)	22.2	1.3	2.13	.60	68	7/31	.50	.47	12/31	.15	.125	YES
2528 Toronto-Dominion (TSE)	TD.TO	58.93b	3 2 3	1.70	65-85	(10-45%)	12.6	3.9	4.69	2.28	51	7/31	1.24(b)	1.19(b)	12/31	.55(b)	.51(b)	YES
519 Total ADR	TOT	48.54	▲2 2 4	1.20	65-85	(35-75%)	12.5	5.7	3.88	2.76	18	6/30	.86	1.29	9/30	.692	.676	YES
2574 Total System Svcs.	TSS	48.31	3 2 3	.95	55-70	(15-45%)	22.1	0.8	2.19	.40	58	6/30	.38	.45	12/31	.10	.10	YES
111 Toyota Motor ADR(g)	TM	115.05	4 2 3	1.00	150-200	(30-75%)	12.0	3.5	9.60	4.00	60	6/30	3.54	3.36	9/30	NIL	NIL	YES
1035 1144 tractor Supply (NDQ)	TSCO	65.27	4 3 4	.95	85-125	(30-90%)	19.7	1.5	3.31	.96	72	6/30	1.16	1.12	9/30	.24	.20	YES
1232 TransAlta Corp. (TSE)	TA.TO	5.99b	2 3 3	.85	9-16	(50-165%)	NMF	2.7	.03	.16	26	6/30	.02(b)	d.47(b)	3/31	◆.04(b)	.18(b)	YES
610 TransCanada Corp.	TRP	47.27	2 2 2	1.00	60-85	(25-80%)	27.6	4.8	1.71	2.26	8	6/30	.41	.43	9/30	.565	.375	YES
726 TransDigm Group	TDG	282.08	4 3 3	.95	230-350	(N-25%)	26.0	NIL	10.86	NIL	59	6/30	2.52	1.75	9/30	NIL	NIL	YES
2439 Transocean Ltd.	RIG	9.90	3 5 3	1.50	12-20	(20-100%)	NMF	NIL	d.13	NIL	5	6/30	.21	1.11	9/30	NIL	.15	YES
455 TransUnion	TRU	32.93	- 3 -	NMF	30-45	(N-35%)	50.7	NIL	.65	NIL	74	6/30	.09	d.02	9/30	NIL	NIL	YES
★ 772 Travelers Cos.	TRV	115.18	4 1 3	.85	130-160	(15-40%)	11.8	2.3	9.75	2.68	46	6/30	2.20	2.52	9/30	.67	.61	YES
582 Tredgar Corp.	TG	18.25	2 3 2	1.45	20-30	(10-65%)	22.0	2.7	.83	.50	62	6/30	.10	.02	12/31	.11	.11	YES
1938 TreeHouse Foods	THS	88.60	3 3 3	.65	100-150	(15-70%)	26.7	NIL	3.32	NIL	49	6/30	.54	.66	9/30	NIL	NIL	YES
1118 Trex Co.	TREX	58.74	4 3 3	1.30	55-80	(N-35%)	29.8	NIL	1.97	NIL	89	6/30	.79	.59	9/30	NIL	NIL	YES
1213 Tri-Continental	TY	20.93	- 2 3 -	.95	25-35	(20-65%)	NMF	3.8	NMF	.80	-	6/30	24.08(q)	24.89(q)	9/30	.234	.195	YES
2351 Tribune Media Co.	TRCO	34.24	3 3 3	1.20	55-80	(60-135%)	16.1	2.9	2.13	1.00	76	6/30	.42	.29	9/30	.25	.25	YES
1775 TriMas Corp. (NDQ)	TRM	17.48	- 3 -	NMF	25-40	(45-130%)	13.7	NIL	1.28	NIL	36	6/30	.34	.30	9/30	NIL	NIL	YES
1315 Trimble Inc. (NDQ)	TRMB	29.30	1 3 3	1.30	30-45	(N-55%)	47.3	NIL	.62	NIL	27	6/30	.14	.10	9/30	NIL	NIL	YES
348 Trimble Nav. Ltd.	TRN	23.13	5 3 3	1.65	20-30	(N-30%)	11.8	1.9	1.96	.44	91	6/30	.62	1.33	12/31	.11	.11	YES
2452 Trinseo S.A.	TSE	55.95	- 3 -	NMF	75-115	(35-105%)	9.4	2.1	5.94	1.20	88	6/30	2.00	.02	12/31	.30	NIL	YES
2642 TripAdvisor, Inc. (NDQ)	TRIP	63.19	2 3 4	1.15	85-130	(35-105%)	59.1	NIL	1.07	NIL	32	6/30	.23	.40	9/30	NIL	NIL	YES
727 Triumph Group	TGI	24.25	3 3 3	1.15	45-65	(85-170%)	5.4	0.7	4.50	.16	59	6/30	1.04	1.31	9/30	.04	.04	YES
2391 tronc, Inc. (NDQ)	TRNC	17.07	- 4 -	NMF	25-45	(45-165%)	16.0	NIL	1.07	NIL	-	6/30	.12	.13	9/30	NIL	.175	YES
2657 Tumi Holdings	TUMI	SEE FINAL SUPPLEMENT - PAGE 2657																
1200 Tupperware Brands	TUP	64.57	3 3 2	1.10	85-130	(30-100%)	14.7	4.2	4.39	2.72	28	9/30	◆.96	.72	12/31	.68	.68	YES
2352 Twenty-First Century Fox(NDQ)	FOXA	24.96	3 3 5	1.10	45-65	(80-160%)	12.7	1.4	1.96	.36	76	6/30	.30	.39	12/31	▲.18	.15	YES
2033 2643 Twitter Inc.	TWTR	16.83	3 4 4	1.05	15-25	(N-50%)	NMF	NIL	d.58	NIL	32	6/30	d.15	d.21	9/30	NIL	NIL	YES
1035 Tyco Int'l plc	TYC	SEE FINAL SUPPLEMENT - PAGE 1035																
1939 Tyson Foods 'A'	TSN	71.56	5 3 3	.75	65-95	(N-35%)	15.2	1.0	4.70	.68	49	6/30	1.25	.83	12/31	.15	.15	YES
1544 UDR, Inc.	UDR	33.76	3 3 3	.80	40-60	(20-80%)	NMF	3.9	.26	1.33	50	6/30	.06	.33	12/31	.295	.278	YES
553 UGI Corp.	UGI	44.71	3 2 2	.90	30-35	(N-N%)	20.5	2.1	2.18	.95	41	6/30	.23	.03	12/31	.238	.228	YES
419 US Ecology (NDQ)	ECOL	43.10	3 3 2	.85	45-70	(5-60%)	23.2	1.7	1.86	.72	24	6/30	.37	.40	12/31	.18	.18	YES
1940 US Foods Hldg.	USFD	22.92	- 3 -	NMF	25-35	(10-55%)	15.9	NIL	1.44	NIL	49	6/30	.45	NA	9/30	NIL	NIL	YES
850 1119 USG Corp.	USG	26.46	5 5 3	1.65	30-55	(15-110%)	14.1	NIL	1.87	NIL	89	6/30	.46	.53	9/30	NIL	NIL	YES
598 Ubiquiti Networks (NDQ)	UBNT	49.53	4 3 3	.95	50-75	(N-50%)	17.8	NIL	2.79	NIL	77	6/30	.69	.49	9/30	NIL	NIL	YES
2194 Ulta Salon (NDQ)	ULTA	256.04	4 3 3	.95	▲290-435	(15-70%)	38.8	NIL	6.60	NIL	61	7/31	1.43	1.15	9/30	NIL	NIL	YES
1828 Ultimate Software Group(NDQ)	ULTI	204.05	3 3 2	1.10	255-385	(25-90%)	59.1	NIL	3.45	NIL	65	6/30	.76	.62	9/30	NIL	NIL	YES
135 Ultratech, Inc. (NDQ)	UTEK	22.90	1 3 1	1.10	25-35	(10-55%)	57.3	NIL	4.40	NIL	23	6/30	.10	.05	9/30	NIL	NIL	YES
2115 Under Armour	UA	38.30	4 3 4	1.15	▼45-70	(15-85%)	62.8	NIL	▼.61	NIL	86	6/30	.01	.04	9/30	NIL	NIL	YES
2116 Unifi, Inc.	UFI	29.18	4 3 4	1.00	35-55	(20-90%)	16.2	NIL	▼1.80	NIL	86	6/30	.56	.53	9/30	NIL	NIL	YES
411 UniFirst Corp.	UNF	130.80	3 2 3	1.00	120-165	(N-25%)	22.8	0.1	5.74	.15	69	8/31	◆1.27	1.43	9/30	.038	.038	YES
1941 Unilever PLC ADR(g)	UL	42.86	2 1 2	.90	50-60	(15-40%)	21.4	3.3	2.00	1.42	49	6/30	.98(p)	.95(p)	12/31	▲.355	.344	YES
349 Union Pacific	UNP	96.72	3 1 3	1.05	120-150	(25-55%)	18.6	2.3	5.19	2.20	91	6/30	1.17	1.30	9/30	.55	.55	YES
1411 Unisys Corp.	UIS	10.15	3 5 5															



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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Timeliness	Safety		Technical	Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS							
		Qtr. Ended	Earnings Per sh.	Year Ago		Qtr. Ended	Latest Div'd								Year Ago							
																Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago	
461 2221 Urban Outfitters (NDO)	URBN	33.26	3	3	1	3	3	.90	50- 80	(50-140%)	15.5	NIL	2.15	NIL	63	7/31	.66	.52	9/30	NIL	NIL	YES
816 VCA Inc. (NDO)	WVDF	68.99	3	3	3	1.05	65- 100	(N- 45%)	24.8	NIL	2.78	NIL	2.78	NIL	70	6/30	.78	.70	9/30	NIL	NIL	YES
227 VWR Corp. (NDO)	VWR	28.04	3	3	2	1.00	30- 50	(5- 80%)	16.0	NIL	1.75	NIL	1.75	NIL	39	6/30	.32	.14	9/30	NIL	NIL	YES
2117 V.F. Corp.	VFC	54.48	4	2	3	1.90	70- 100	(30- 85%)	16.4	2.7	3.32	1.48	86	6/30	.35	.40	9/30	.37	.32	YES		
2373 Vail Resorts	MTN	155.27	4	3	2	.90	125- 190	(N- 20%)	32.6	2.1	4.76	3.24	80	7/31	d1.80	d1.92	12/31	.81	.623	YES		
1593 Vale S.A. ADR	VALE	5.84	3	5	3	1.55	9- 16	(55-175%)	14.2	NIL	.41	NIL	2	6/30	.14	.25	9/30	NIL	NIL	YES		
238 1632 Valeant Pharm. Int'l	VRX	22.07	3	5	3	1.00	75- 135	(240-510%)	3.1	NIL	7.03	NIL	45	6/30	1.40	2.56	9/30	NIL	NIL	YES		
520 Valero Energy	VLO	55.46	4	3	5	1.30	60- 90	(10- 60%)	12.5	4.3	4.45	2.40	18	6/30	1.73	2.66	9/30	.60	.40	YES		
2029 Validus Holdings	VR	51.57	3	2	3	.70	50- 70	(N- 35%)	11.8	2.7	4.37	1.40	33	6/30	1.14	.77	9/30	.35	.32	YES		
1777 Valmont Inds.	VMI	129.35	2	3	2	1.05	125- 190	(N- 45%)	20.2	1.2	6.40	1.50	36	6/30	1.85	1.20	12/31	.375	.375	YES		
583 Valspar Corp.	VAL	105.02	-	3	-	1.00	90- 140	(N- 35%)	21.4	1.3	4.91	1.32	62	7/31	1.44	1.25	9/30	.33	.30	YES		
2575 Vantiv Inc.	VNTV	56.50	3	3	4	1.00	65- 100	(15- 75%)	34.2	NIL	1.65	NIL	58	6/30	.38	.24	9/30	NIL	NIL	YES		
194 Varian Medical Sys.	VAR	96.38	-	1	-	1.00	110- 135	(15- 40%)	21.3	NIL	4.53	NIL	48	6/30	1.04	1.13	9/30	NIL	NIL	YES		
916 Vectren Corp.	VVC	48.82	3	2	3	.75	45- 60	(N- 25%)	19.6	3.4	2.49	1.66	16	6/30	.39	.43	9/30	.40	.38	YES		
136 Veeco Instruments (NDO)	VECO	21.45	2	4	4	1.20	16- 25	(N- 15%)	NMIF	NIL	d.41	NIL	23	6/30	d.19	.20	9/30	NIL	NIL	YES		
1545 Ventas, Inc.	VTR	67.66	2	3	2	.75	65- 95	(N- 40%)	36.4	4.4	1.86	2.98	50	6/30	.42	.40	9/30	.73	.73	YES		
846 2222 Vera Bradley Inc. (NDO)	VRA	13.87	3	3	3	1.15	25- 35	(80-150%)	14.8	NIL	.94	NIL	63	7/31	.14	.15	9/30	NIL	NIL	YES		
962 Verifone Systems	PAY	15.14	3	4	3	1.45	30- 55	(100-265%)	9.5	NIL	1.60	NIL	37	7/31	.42	.47	9/30	NIL	NIL	YES		
2644 VeriSign Inc. (NDO)	VRNS	75.69	3	3	3	.85	90- 130	(20- 70%)	21.3	NIL	3.55	NIL	32	6/30	.87	.70	9/30	NIL	NIL	YES		
456 Verisk Analytics (NDO)	VRSK	80.34	4	2	3	.80	85- 115	(5- 45%)	30.0	NIL	2.68	NIL	74	6/30	.62	.90	9/30	NIL	NIL	YES		
★ 936 Verizon Communic. (NDO)	VZ	50.27	4	1	2	.70	70- 85	(40- 70%)	12.7	4.6	3.95	2.31	71	6/30	.94	1.04	9/30	.565	.55	YES		
842 Vertex Pharm. (NDO)	VRTX	82.96	3	3	3	1.00	145- 215	(75-160%)	NMIF	NIL	.02	NIL	40	6/30	d.26	d.78	9/30	NIL	NIL	YES		
1426 2353 Viacom Inc. 'B' (NDO)	VIAB	36.14	▲	3	3	1.10	85- 125	(135-245%)	8.4	2.2	4.28	.80	76	6/30	1.05	1.47	12/31	▼.20	.40	YES		
1778 Viad Corp.	VVI	35.65	3	3	3	1.00	35- 55	(N- 55%)	13.7	1.1	2.61	.40	36	6/30	1.04	1.18	12/31	.10	.10	YES		
599 ViaSat, Inc. (NDO)	VSAT	73.05	3	3	2	1.05	60- 90	(N- 25%)	NMIF	NIL	.50	NIL	77	6/30	1.04	.05	9/30	NIL	NIL	YES		
1347 Viavi Solutions (NDO)	VIAV	7.27	-	4	-	NMIF	8- 13	(10- 80%)	18.2	NIL	.40	NIL	56	6/30	.10	.13	9/30	NIL	NIL	YES		
2463 1960 Village Super Market (NDO)	VLGEA	31.90	3	3	3	.85	40- 55	(25- 70%)	16.0	3.1	2.00	1.00	79	7/31	.60	.49	12/31	.25	.25	YES		
2576 Visa Inc.	V	81.58	4	1	3	.95	95- 115	(15- 40%)	27.3	0.8	2.99	.66	58	6/30	.69	.69	12/31	▲.165	.14	YES		
1348 Vishay Intertechnology	VSH	13.95	3	3	3	1.45	12- 19	(N- 35%)	16.2	1.8	.86	.25	56	6/30	.23	.20	9/30	.063	.06	YES		
1004 Visteon Corp.	VC	65.73	-	3	-	NMIF	55- 80	(N- 35%)	27.3	NIL	2.41	NIL	93	6/30	1.22	1.36	9/30	NIL	NIL	YES		
2195 Vitamin Shoppe	VSI	26.85	3	3	4	.90	40- 65	(50-140%)	13.7	NIL	1.96	NIL	61	6/30	.44	.48	9/30	NIL	NIL	YES		
2600 VMware, Inc.	VMW	73.13	3	3	2	1.15	75- 115	(5- 55%)	16.7	NIL	4.37	NIL	14	6/30	.97	.93	9/30	NIL	NIL	YES		
937 Vodafone Group ADR(g)(NDO)	VOD	28.15	3	3	3	1.15	40- 60	(40-115%)	33.1	4.6	8.5	1.30	71	3/31	.35(p)	.43(p)	9/30	1.024	1.191	YES		
938 Vonage Holdings	VG	6.25	5	4	2	1.05	5- 8	(N- 30%)	20.8	NIL	.30	NIL	71	6/30	.08	.09	9/30	NIL	NIL	YES		
1546 Vornado R'lty Trust	VNO	96.11	3	3	2	1.00	110- 165	(15- 70%)	23.1	2.7	4.16	2.63	50	6/30	1.16	.87	9/30	.63	.63	YES		
1121 Vulcan Materials	VMC	111.62	3	3	3	1.20	110- 165	(N- 50%)	32.8	0.7	3.40	.80	89	6/30	.93	.37	12/31	◆.20	.10	YES		
1005 WABCO Hldgs. (NDO)	WBC	106.87	3	3	3	1.35	110- 160	(5- 50%)	19.6	NIL	5.44	NIL	93	6/30	1.33	1.12	9/30	NIL	NIL	YES		
1201 WD-40 Co.	WDFC	109.15	3	2	2	.75	75- 105	(N- N%)	30.6	1.6	3.57	1.80	28	5/31	.88	.75	12/31	.42	.38	YES		
917 WEG Energy Group	WEC	58.30	3	1	3	.65	50- 65	(N- 10%)	19.4	3.5	3.01	2.06	16	6/30	.57	.35	9/30	.495	.44	YES		
554 WGL Holdings Inc.	WGL	61.40	2	1	3	.75	45- 55	(N- N%)	19.2	3.2	3.20	1.95	41	6/30	.33	.22	12/31	.488	.463	YES		
1547 W.P. Carey Inc.	WPC	62.25	3	3	2	.85	75- 110	(20- 75%)	28.8	6.3	2.16	3.94	50	6/30	.48	.60	12/31	▲.985	.955	YES		
2400 WPP PLC ADR (NDO)	WPPGY	110.86	3	2	3	1.20	140- 190	(25- 70%)	17.6	2.8	6.30	3.15	66	12/31	3.80(p)	3.87(p)	9/30	2.116	2.057	YES		
542 WPX Energy	WPX	12.39	3	5	1	1.90	11- 20	(N- 60%)	NMIF	NIL	d.13	NIL	13	6/30	d.76	d.12	9/30	NIL	NIL	YES		
169 Wabash National	WNC	13.45	5	4	3	1.65	19- 30	(40-125%)	7.6	NIL	1.78	NIL	55	6/30	.55	.33	9/30	NIL	NIL	YES		
1733 Wabtec Corp.	WAB	80.81	4	3	4	1.20	85- 130	(5- 60%)	19.5	0.5	4.15	.40	68	6/30	1.05	1.04	9/30	▲.10	.08	YES		
462 2152 Wal-Mart Stores (NDO)	WMT	68.87	2	1	2	.65	80- 95	(15- 40%)	15.7	2.9	4.38	2.03	57	7/31	1.07	1.08	9/30	.50	.49	YES		
973 Walgreens Boots (NDO)	WBA	78.08	4	2	3	.90	100- 140	(30- 80%)	16.4	1.9	4.76	1.50	84	5/31	1.18	1.02	12/31	◆.375	.36	YES		
1510 Washington Federal (NDO)	WAFD	26.68	3	3	3	.95	25- 35	(N- 30%)	14.6	2.1	1.83	.56	29	9/30	◆.49	.45	9/30	.14	.13	YES		
1548 Washington R.E.I.T.	WRE	30.25	3	3	3	.85	25- 40	(N- 30%)	47.3	4.0	.64	1.20	50	6/30	.44	d.04	9/30	.30	.30	YES		
420 Waste Connections	WCN	74.55	3	2	2	.75	95- 125	(25- 70%)	27.2	0.9	2.74	.66	24	6/30	.59	.46	9/30	.145	.13	YES		
421 Waste Management	WM	62.54	3	1	3	.75	70- 85	(10- 35%)	21.5	2.7	2.91	1.68	24	6/30	.74	.67	9/30	.41	.385	YES		
137 Waters Corp.	WAT	156.74	2	2	3	1.00	130- 175	(N- 10%)	23.1	NIL	6.80	NIL	23	6/30	1.57	1.27	9/30	NIL	NIL	YES		
1145 Wattsco, Inc.	WSO	141.35	4	2	3	.95	125- 170	(N- 20%)	26.2	3.0	5.39	4.20	72	6/30	1.82	1.85	12/31	▲1.05	.70	YES		
1734 Watts Water Techn. (NDO)	WTS	62.50	3	3	2	1.20	60- 85	(N- 35%)	22.9	1.2	2.73	.74	68	6/30	.75	.69	9/30	.18	.17	YES		
2440 Weatherford Int'l plc (NDO)	WFT	5.91	1	4	4	1.80	15- 25	(155-325%)	NMIF	NIL	d.19	NIL	5	6/30	d.63	d.63	9/30	NIL	NIL	YES		
824 WebMD Health (NDO)	WBDM	50.04	▼	3	4	2.00	60- 95	(20- 90%)	27.2	NIL	1.84	NIL	11	6/30	.39	.28	9/30	NIL	NIL	YES		
2529 Webster Fin'l	WBS	37.41	3	3	3	1.20	30- 45	(N- 20%)	17.1	2.7	2.19	1.00	51	6/30	.53	.55	9/30	.25	.23	YES		
237 2196 Weight Watchers (NDO)	WTW	10.18	1	5	4	1.25	18- 35	(75-245%)	9.5	NIL	1.07	NIL										

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		RANKS										Industry Rank						Do Options Trade?				
		Recent Price			Safety		Technical			3-5 year Target Price Range and % appreciation potential		Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 3-31-17	(f) Est'd Div'd next 12 mos.	LATEST RESULTS						
NAME OF STOCK	Ticker Symbol	Timeliness			Beta										Qtr. Ended	Earns. Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago		
2465	1963	Whole Foods Market (NDQ)	WFM	28.21	4	3	3	.90	40- 55	(40- 95%)	19.5	2.1	1.45	.58	79	6/30	.37	.43	9/30	.135	.13	YES
	2384	Wiley (John) & Sons	JWA	51.30	2	3	3	.95	55- 80	(5- 55%)	17.1	2.4	3.00	1.24	54	7/31	.52	.58	12/31	.31	.30	YES
	611	Williams Cos.	WMB	29.24	▲2	3	3	1.70	30- 45	(5- 55%)	40.6	2.7	.72	.80	8	6/30	.19	.15	9/30	▼.20	.64	YES
	625	Williams Partners L.P.	WPZ	36.79	2	4	2	1.30	40- 65	(10- 75%)	21.0	9.2	1.75	3.40	6	6/30	d.49	.14	9/30	.85	.85	YES
	2198	Williams-Sonoma	WSM	46.97	4	3	4	1.05	75- 115	(60-145%)	13.3	3.2	3.53	1.52	61	7/31	.58	.58	12/31	.37	.35	YES
	1034	Windstream Hldgs. (NDQ)	WIN	8.40	-	4	-	NMF	5- 8	(N- N%)	NMF	7.1	d1.88	.60	30	6/30	.01	d1.13	12/31	.15	.15	YES
1842	2328	Winebago	WGO	28.29	3	3	3	1.20	30- 45	(5- 55%)	16.0	1.4	1.77	.40	85	8/31	◆.49	.43	12/31	◆.10	.10	YES
	791	Wintrust Financial (NDQ)	WTFC	54.51	3	3	2	1.05	55- 85	(N- 55%)	15.4	0.9	3.53	.48	19	9/30	◆.92	.69	9/30	.12	.11	YES
	2161	Wolverine World Wide	WWW	21.26	3	3	2	1.00	30- 40	(40- 90%)	15.5	1.1	1.37	.24	81	9/30	◆.49	.48	12/31	.06	.06	YES
	138	Woodward, Inc. (NDQ)	WWD	59.28	3	3	2	1.20	70- 105	(20- 75%)	19.5	0.7	3.04	.44	23	6/30	.81	.66	12/31	.11	.10	YES
	1829	Workday, Inc.	WDAY	86.54	3	3	2	1.30	110- 170	(25- 95%)	NMF	NIL	d1.74	NIL	65	7/31	d.55	d.37	9/30	NIL	NIL	YES
	612	World Fuel Services	INT	45.98	▲2	3	2	1.05	55- 80	(20- 75%)	16.7	0.5	2.75	.24	8	6/30	.43	.42	9/30	.06	.06	YES
	2354	World Wrestling Ent.	WWE	19.82	3	4	2	1.00	25- 40	(25-100%)	47.2	2.4	.42	.48	76	6/30	.01	.07	9/30	.12	.12	YES
	752	Worthington Inds.	WOR	47.69	4	3	3	1.30	45- 65	(N- 35%)	20.1	1.7	2.37	.80	7	8/31	1.02	.48	12/31	.20	.19	YES
	2374	Wyndham Worldwide	WYN	68.22	4	3	4	1.10	80- 120	(15- 75%)	12.1	2.9	5.66	2.00	80	6/30	1.39	1.31	9/30	.50	.42	YES
	2375	Wynn Resorts (NDQ)	WYNN	92.98	2	3	1	1.50	145- 220	(55-135%)	30.4	2.2	3.06	2.00	80	6/30	.69	.56	9/30	.50	.50	YES
	773	XL Group Ltd. XL Group plc	XL	34.40	3	3	4	.95	40- 55	(15- 60%)	13.6	2.3	2.53	.80	46	6/30	.37	.84	9/30	.20	.20	YES
	2645	XO Group	XOXO	18.83	3	3	3	.80	20- 30	(5- 60%)	41.8	NIL	.45	NIL	32	6/30	.15	.13	9/30	NIL	NIL	YES
	2237	Xcel Energy Inc.	XEL	40.54	2	1	3	.60	40- 45	(N- 10%)	17.9	3.5	2.27	1.42	31	6/30	.39	.39	12/31	.34	.32	YES
	139	Xcerra Corp. (NDQ)	XCRA	5.80	3	4	4	1.25	8- 13	(40-125%)	24.2	NIL	.24	NIL	23	7/31	.15	.15	9/30	NIL	NIL	YES
	1423	Xerox Corp.	XRX	9.71	-	3	-	1.25	11- 17	(15- 75%)	10.4	3.2	.93	.31	20	6/30	.20	.17	12/31	.078	.07	YES
	1382	Xilinx Inc. (NDQ)	XLNX	50.13	3	3	2	1.05	50- 75	(N- 50%)	22.8	2.6	2.20	1.32	75	6/30	.61	.55	9/30	.33	.31	YES
	1735	Xylem Inc.	XYL	49.15	2	3	2	1.05	45- 65	(N- 30%)	24.2	1.3	2.03	.62	68	6/30	.39	.41	12/31	◆.155	.141	YES
2465	2646	Yahoo! Inc. (NDQ)	YHOO	41.68	-	3	-	1.00	40- 60	(N- 45%)	NMF	NIL	d.25	NIL	32	9/30	◆.17	.08	9/30	NIL	NIL	YES
	1579	Yamana Gold	AUY	3.79	2	5	3	1.15	4- 8	(5-110%)	25.3	0.5	.15	.02	3	6/30	.01	d.01	9/30	.005	.015	YES
238	2647	Yelp, Inc.	YELP	35.80	1	4	3	1.50	20- 35	(N- N%)	NMF	NIL	d.35	NIL	32	6/30	.01	d.02	9/30	NIL	NIL	YES
	1789	York Water Co. (The) (NDQ)	YORW	30.85	3	3	3	.70	25- 35	(N- 15%)	30.9	2.0	1.00	.62	43	6/30	.23	.22	9/30	.156	.15	YES
	378	Yum! Brands	YUM	86.16	-	3	-	.95	80- 120	(N- 40%)	23.5	2.4	3.67	2.04	87	9/30	1.09	1.00	12/31	▲.51	.46	YES
	963	Zayo Group Holdings	ZAYO	31.29	-	3	-	1.05	30- 40	(N- 30%)	NMF	NIL	NIL	NIL	37	6/30	NIL	.05	9/30	NIL	NIL	YES
	601	Zebra Techn. 'A' (NDQ)	ZBRA	65.36	4	3	4	1.15	90- 140	(40-115%)	11.4	NIL	5.74	NIL	77	6/30	1.34	1.05	9/30	NIL	NIL	YES
	1830	Zendesk Inc.	ZEN	26.22	3	4	1	1.15	30- 50	(15- 90%)	NMF	NIL	d.40	NIL	65	6/30	d.28	d.25	9/30	NIL	NIL	YES
	2648	Zillow Group 'C' (NDQ)	Z	33.58	2	3	3	1.25	25- 40	(N- 20%)	NMF	NIL	d.58	NIL	32	6/30	d.87	d.22	9/30	NIL	NIL	YES
	195	Zimmer Biomet Hldgs.	ZBH	129.10	5	1	3	1.00	160- 200	(25- 55%)	15.6	0.8	8.30	1.00	48	6/30	2.02	1.16	12/31	.24	.22	YES
	2531	Zions Bancorp. (NDQ)	ZION	31.17	3	3	3	1.30	30- 45	(N- 45%)	15.9	1.1	1.96	.33	51	6/30	.44	d.01	9/30	▲.08	.06	YES
	1633	Zoetis Inc.	ZTS	51.06	▼4	3	3	1.00	50- 70	(N- 35%)	25.9	0.7	1.97	.38	45	6/30	.49	.43	12/31	.095	.083	YES
1842	2223	Zumiez Inc. (NDQ)	ZUMZ	21.80	3	3	5	1.10	▲ 30- 45	(40-105%)	26.9	NIL	▲.81	NIL	63	7/31	d.03	.12	9/30	NIL	NIL	YES
	2018	Zynga Inc. (NDQ)	ZNGA	2.82	3	5	3	1.00	4- 7	(40-150%)	NMF	NIL	d.09	NIL	44	6/30	d.01	d.03	9/30	NIL	NIL	YES

(●) All data adjusted for announced stock split or stock dividend. See back page of Ratings & Reports.  
 ◆ New figure this week.  
 (b) Canadian Funds.  
 (d) Deficit.

(f) The estimate may reflect a probable increase or decrease. If a dividend boost or cut is possible but not probable, two figures are shown, the first is the more likely.  
 (g) Dividends subject to foreign withholding tax for U.S. residents.

(h) Est'd Earnings & Est'd Dividends after conversion to U.S. dollars at Value Line estimated translation rate.  
 (j) All Index data expressed in hundreds.  
 (p) 6 months (q) Asset Value  
 N=Negative figure NA=Not available NMF=No meaningful figure



**INDUSTRIES, IN ORDER OF TIMELINESS RANK\***

Arrow (▲▼) before name indicates that a **significant change in Rank** has occurred since the preceding week.

1 Public/Private Equity	26 Power	51 Bank	76 Entertainment
2 Metals & Mining (Div.)	27 Electrical Equipment	52 Foreign Electronics	77 Wireless Networking
3 Precious Metals	28 Household Products	53 Maritime	78 Human Resources
4 Chemical (Basic)	29 Thrift	54▼ Publishing	79 Retail/Wholesale Food
5 Oilfield Svcs/Equip.	30 Telecom. Utility	55 Heavy Truck & Equip	80 Hotel/Gaming
6 Pipeline MLPs	31 Electric Utility (West)	56 Electronics	81 Shoe
7 Steel	32 Internet	57 Retail Store	82▼ Packaging & Container
8▲ Oil/Gas Distribution	33 Reinsurance	58 Financial Svcs. (Div.)	83 Computers/Peripherals
9 Petroleum (Producing)	34▼ Funeral Services	59 Aerospace/Defense	84 Pharmacy Services
10▲ Investment Banking	35 Engineering & Const	60 Automotive	85 Recreation
11 Healthcare Information	36 Diversified Co.	61 Retail (Hardlines)	86 Apparel
12 Electric Utility (East)	37 Telecom. Equipment	62 Chemical (Specialty)	87 Restaurant
13 Natural Gas (Div.)	38 Beverage	63 Retail (Softlines)	88 Chemical (Diversified)
14 Computer Software	39 Med Supp Non-Invasive	64 IT Services	89 Building Materials
15 Tobacco	40 Biotechnology	65 E-Commerce	90 Homebuilding
16 Electric Util. (Central)	41▼ Natural Gas Utility	66 Advertising	91 Railroad
17 Metal Fabricating	42 Paper/Forest Products	67 Semiconductor Equip	92 Air Transport
18 Petroleum (Integrated)	43 Water Utility	68 Machinery	93 Auto Parts
19 Bank (Midwest)	44 Entertainment Tech	69 Industrial Services	94 Trucking
20 Office Equip/Supplies	45 Drug	70 Medical Services	95 Retail Automotive
21 Toiletries/Cosmetics	46 Insurance (Prop/Cas.)	71 Telecom. Services	96 Furn/Home Furnishings
22 Insurance (Life)	47 Brokers & Exchanges	72 Retail Building Supply	
23 Precision Instrument	48 Med Supp Invasive	73 Cable TV	
24 Environmental	49 Food Processing	74 Information Services	
25▲ Educational Services	50 R.E.I.T.	75 Semiconductor	

\*Based on the Timeliness™ ranks of the stocks in the industry

**Noteworthy Rank Changes**

Listed below are some of the stocks whose Timeliness ranks have changed this week. We include mostly rank changes caused by fundamentals such as new earnings reports. Even when a significant change in earnings momentum has been forecast, the stock's rank will not be affected until the actual results, confirming that forecast, are reported. In most cases, we omit stocks that have been bumped up or down in rank by the dynamism of the ranking system.

**STOCKS MOVING UP IN TIMELINESS RANK**

Stock Name	Old Rank	New Rank	Reason for Change	Earnings Est. 12 months to 3-31-17
BancorpSouth	4	3	Earnings turnaround. Sept. quarter 40¢ vs. year ago 36¢. Our estimate was 43¢.	Under Review
Bank of America	4	3	Surprise factor, greater than average gain. Sept. quarter 41¢ vs. year ago 35¢. Our estimate was 36¢.	\$1.41
Bank of New York Mellon	4	3	Greater than average gain. Sept. quarter 90¢ vs. year ago 74¢. Our estimate was 84¢.	Under Review
Comerica Inc.	3	2	Greater than average gain. Sept. quarter 84¢ vs. year ago 74¢. Our estimate was 78¢.	2.91
East West Bancorp	4	3	Greater than average gain. Sept. quarter 76¢ vs. year ago 65¢. Our estimate was 70¢.	Under Review
Goldman Sachs (B)	3	2	Greater than average gain. Sept. period \$4.88 vs. year ago \$2.90. Our estimate was \$5.00.	17.82
Morgan Stanley	4	3	Surprise factor, earnings turnaround. Sept. quarter 80¢ vs. year ago 49¢. Our estimate was 70¢.	3.25

**STOCKS MOVING DOWN IN TIMELINESS RANK**

Stock Name	Old Rank	New Rank	Reason for Change	Earnings Est. 12 months to 3-31-17
AngioDynamics	1	2	Dynamism of the ranking system.	
Bio-Techne Corp.	1	2	Dynamism of the ranking system.	
Black Box	1	2	Dynamism of the ranking system.	
Cabot Oil & Gas 'A'	1	2	Dynamism of the ranking system.	
CLARCOR Inc.	1	2	Dynamism of the ranking system.	
Enerplus Corp.	1	2	Dynamism of the ranking system.	
Ethan Allen Interiors	3	4	Surprise factor, earnings reversal. Management forecasts 42-43¢ for the Sep. quarter vs. year ago 46¢. Our estimate was 53¢.	Under Review
Forrester Research	1	2	Dynamism of the ranking system.	
Group 1 Automotive	4	5	Decreasing profit growth. Sept. quarter \$1.96 vs. year ago \$1.91. Our estimate was \$2.05.	(A)
IDEX Corp. (B)	3	5	Decreasing profit growth. Sept. quarter 92¢ vs. year ago 85¢. Our estimate was 93¢.	Under Review
MSC Industrial Direct	1	2	Dynamism of the ranking system.	
RPC Inc.	1	2	Dynamism of the ranking system.	

**STOCKS MOVING DOWN IN TIMELINESS RANK**

Stock Name	Old Rank	New Rank	Reason for Change	Earnings Est. 12 months to 3-31-17
Reliance Steel (B)	2	3	Surprise factor, earnings reversal. Management forecasts 65-75¢ for the Dec. quarter vs. year ago 94¢. Our estimate was \$1.09.	\$4.57
South Jersey Inds.	1	2	Dynamism of the ranking system.	
SurModics, Inc.	1	2	Dynamism of the ranking system.	
Textron, Inc.	3	4	Surprise factor, earnings reversal. Sept. period 61¢ vs. year ago 63¢. Our estimate was 69¢.	Under Review
3D Systems	1	2	Dynamism of the ranking system.	

(A) New full-page report in this week's Ratings & Reports.  
(B) Supplementary report in this week's Ratings & Reports.

**TIMELY STOCKS IN TIMELY INDUSTRIES**

Page No.	Industry (Industry Rank)	RANKS				Current P/E	% Est'd Yield	Est'd. 3-5 Year Price Apprec.	Page No.	Industry (Industry Rank)	RANKS				Current P/E	% Est'd Yield	Est'd. 3-5 Year Price Apprec.		
		Recent Price	Technical	Safety	Beta						Recent Price	Technical	Safety	Beta					
<b>Public/Private Equity (INDUSTRY RANK 1)</b>								<b>Steel (INDUSTRY RANK 7)</b>											
2651	Apollo Global Mgmt	17.61	2	3	3	1.30	6.7	8.4	40-100%	740	ArcelorMittal	6.36	1	4	4	1.70	13.3	NIL	25-105%
2652	Apollo Investment	5.89	2	3	3	0.95	29.5	10.2	35- 85%	742	Cliffs Natural Res.	5.78	2	5	3	1.80	11.8	NIL	40-160%
2653	Blackstone Group LP	23.61	1	3	3	1.40	9.9	6.1	90-195%	745	Nucor Corp.	47.15	2	3	2	1.25	19.4	3.2	40-110%
2655	Gladstone Capital	8.60	2	3	3	1.05	9.7	9.8	65-135%	746	POSCO ADR	52.91	2	3	3	1.10	18.9	3.4	40-115%
2656	KKR & Co. L.P.	13.72	1	3	3	1.40	4.4	4.7	120-230%	748	Russel Metals	20.77	1	3	3	1.00	18.5	7.3	20- 70%
<b>Metals &amp; Mining (Div.) (INDUSTRY RANK 2)</b>								<b>Oil/Gas Distribution (INDUSTRY RANK 8)</b>											
1582	Allegheny Techn.	16.92	1	4	4	1.85	NMF	1.9	10- 75%	603	Cheniere Energy	41.61	2	4	3	1.55	NMF	NIL	45-140%
1584	BHP Billiton Ltd. ADR	34.49	1	3	5	1.40	NMF	1.7	N- 30%	607	ONEOK Inc.	50.03	1	3	3	1.30	27.8	5.1	N- 40%
1585	Cameco Corp.	10.50	2	3	3	1.20	11.8	3.8	90-185%	608	Pembina Pipeline Corp.	40.92	2	3	3	0.90	35.0	4.7	N- 45%
1586	CONSOL Energy	18.63	2	4	3	1.50	NMF	NIL	60-170%	610	TransCanada Corp.	47.27	2	2	2	1.00	27.6	4.8	25- 80%
1587	Freep't-McMoRan Inc.	9.72	1	4	3	1.80	16.5	NIL	155-260%	611	Williams Cos.	29.24	2	3	3	1.70	40.6	2.7	5- 55%
1590	Rio Tinto plc	32.55	2	3	4	1.45	16.3	4.9	25- 85%	612	World Fuel Services	45.98	2	3	2	1.05	16.7	0.5	20- 75%
1591	Southern Copper	26.63	1	3	4	1.25	22.4	0.9	50-105%	<b>Petroleum (Producing) (INDUSTRY RANK 9)</b>									
1592	Teck Resources Ltd. 'B'	27.10	2	4	3	1.60	58.9	0.4	N- 50%	2402	Anadarko Petroleum	62.97	2	3	5	1.60	NMF	0.3	5- 50%
<b>Precious Metals (INDUSTRY RANK 3)</b>								<b>Investment Banking (INDUSTRY RANK 10)</b>											
1565	Agnico Eagle Mines	48.01	2	3	2	0.75	87.3	0.8	5- 55%	1803	Goldman Sachs	172.63	2	2	4	1.30	9.7	1.5	40- 85%
1566	AngloGold Ashanti ADS	14.13	2	4	1	0.80	22.8	NIL	40-150%	1804	Greenhill & Co.	22.95	1	3	4	1.40	12.7	7.8	75-160%
1567	Barrick Gold	16.37	2	3	2	0.85	27.7	0.5	N- 55%	1809	Stifel Financial Corp.	38.40	2	3	4	1.30	14.6	NIL	45-120%
1568	Eldorado Gold	3.61	1	4	3	1.25	45.1	NIL	40-150%	<b>Healthcare Information (INDUSTRY RANK 11)</b>									
1570	Goldcorp Inc.	14.86	2	3	2	0.80	49.5	0.8	100-170%	821	Computer Prog. & Sys.	26.21	1	3	5	0.85	23.2	5.2	55-130%
1571	Kinross Gold	3.75	2	5	3	1.00	25.0	NIL	N- 60%	823	Quality Systems	12.27	1	3	4	0.95	49.1	NIL	45-145%
1572	Newmont Mining	36.17	2	3	1	0.85	23.2	0.6	N- 40%	<b>Electric Utility (East) (INDUSTRY RANK 12)</b>									
1573	Pan Amer. Silver	16.42	2	4	2	1.10	26.1	0.3	5- 85%	142	Dominion Resources	73.37	2	2	2	0.70	18.7	4.0	10- 50%
1574	Pretium Resources	9.80	2	5	2	0.55	NMF	NIL	65-205%	143	Duke Energy	77.90	2	2	2	0.60	17.1	4.4	5- 35%
1575	Royal Gold	68.87	1	3	2	0.95	47.2	1.4	30- 95%	145	Exelon Corp.	33.09	2	3	2	0.70	14.8	3.9	N- 50%
1576	Silver Wheaton	24.08	1	3	1	1.20	29.0	0.8	5- 45%	149	Public Serv. Enterprise	41.81	2	1	3	0.70	16.0	4.0	10- 30%
1577	Stillwater Mining	12.45	2	4	2	1.55	69.2	NIL	5- 60%	150	SCANA Corp.	70.59	2	2	2	0.70	17.3	3.4	N- 15%
1579	Yamana Gold	3.79	2	5	3	1.15	25.3	0.5	5-110%	151	Southern Co.	51.09	2	2	2	0.55	18.1	4.5	N- 15%
<b>Chemical (Basic) (INDUSTRY RANK 4)</b>								<b>Natural Gas (Div.) (INDUSTRY RANK 13)</b>											
1596	CF Industries	23.46	2	3	4	1.40	27.9	5.8	30- 70%	523	Antero Resources Corp.	27.44	2	4	4	1.35	50.8	NIL	30-100%
1597	CVR Partners, LP	4.86	2	3	3	1.15	NMF	14.0	190-310%	524	Cabot Oil & Gas 'A'	22.11	2	3	1	1.10	NMF	0.4	35-105%
1598	Compass Minerals Int'l	72.55	2	3	4	0.85	26.5	3.9	10- 65%	525	Chesapeake Energy	6.52	2	5	3	1.90	NMF	NIL	N- 55%
1601	FMC Corp.	47.22	2	3	2	1.25	16.7	1.5	N- 40%	529	EOG Resources	93.13	2	3	2	1.45	NMF	0.8	N- 8%
1602	Mosaic Company	23.39	2	3	3	1.35	37.7	5.3	50-135%	530	EQT Corp.	65.61	2	3	1	1.05	NMF	0.2	20- 85%
<b>Oilfield Svcs/Equip. (INDUSTRY RANK 5)</b>								<b>Computer Software (INDUSTRY RANK 14)</b>											
2416	Baker Hughes	51.60	1	3	4	1.40	NMF	1.3	N- 45%	2580	Adobe Systems	108.42	2	3	3	1.15	51.6	NIL	5- 60%
2417	CARBO Ceramics	10.56	1	4	3	1.45	NMF	NIL	185-375%	2583	CA, Inc.	32.16	2	2	2	1.10	17.4	3.2	10- 40%
2418	Core Laboratories	111.99	1	3	4	1.15	60.5	2.0	25- 90%	2586	FireEye Inc.	12.53	1	4	3	1.80	NMF	NIL	100-220%
2421	Enscop plc	8.47	2	4	5	1.45	9.8	0.5	55-135%	2587	Fortinet Inc.	30.99	1	3	1	1.25	NMF	NIL	75-160%
2423	Halliburton Co.	47.07	2	3	3	1.50	NMF	1.5	5- 60%	2590	Microsoft Corp.	57.66	2	1	3	1.00	20.0	2.7	15- 40%
2424	Helix Energy Solutions	9.53	2	4	5	1.95	NMF	NIL	15-100%	2591	Nuance Communic.	13.79	1	3	3	1.10	NMF	NIL	45-120%
2425	Helmerich & Payne	67.17	2	3	3	1.50	NMF	4.2	N- 20%	2593	PTC Inc.	46.13	2	3	3	1.30	63.2	NIL	N- N%
2426	MRC Global	15.91	2	4	3	1.40	NMF	NIL	15- 90%	2594	Palo Alto Networks	148.46	2	3	5	1.05	NMF	NIL	35-100%
2428	National Oilwell Varco	36.66	1	3	4	1.25	NMF	0.5	N- 50%	2599	Teradata Corp.	29.50	2	3	4	1.20	16.4	NIL	55-120%
2429	Noble Corp. plc	5.77	2	4	4	1.60	NMF	1.4	145-335%										
2430	Oceaneering Int'l	26.64	2	3	4	1.30	26.1	4.1	50-125%										
2432	RPC Inc.	18.64	2	3	4	1.55	NMF	NIL	N- 35%										
2434	Schlumberger Ltd.	81.39	1	2	3	1.30	74.0	2.5	35- 85%										
2436	Superior Energy Svcs.	18.07	2	4	3	1.70	NMF	NIL	N- 40%										
2437	TETRA Technologies	5.96	2	4	4	1.70	11.9	NIL	100-235%										
2440	Weatherford Int'l plc	5.91	1	4	4	1.80	NMF	NIL	155-325%										
<b>Pipeline MLPs (INDUSTRY RANK 6)</b>																			
614	Boardwalk Pipeline	16.74	2	4	3	0.80	14.8	2.4	20-110%										
617	Energy Transfer	36.44	2	3	3	1.10	24.6	11.6	25- 90%										
618	EnLink Midstream Part.	18.36	1	3	3	1.35	NMF	8.5	N- 65%										
621	ONEOK Partners L.P.	41.87	2	3	3	1.00	18.0	7.5	20- 80%										
622	Plains All Amer. Pipe.	32.46	1	3	5	1.20	41.6	6.8	25- 85%										
623	Suburban Propane	33.71	1	3	3	0.85	21.9	10.5	N- 50%										
624	Sunoco Logistics Part.	26.89	2	3	3	1.30	24.0	7.4	50-105%										
625	Williams Partners L.P.	36.79	2	4	2	1.30	21.0	9.2	10- 75%										

**TIMELY STOCKS IN TIMELY INDUSTRIES**

Page No.	Industry (Industry Rank)	RANKS					Est'd. 3-5 Year Price Apprec.	Page No.	Industry (Industry Rank)	RANKS					Est'd. 3-5 Year Price Apprec.				
		Recent Price	Technical	Safety	Beta	Current P/E Ratio				Recent Price	Technical	Safety	Beta	Current P/E Ratio					
<b>Tobacco (INDUSTRY RANK 15)</b>								<b>Educational Services (INDUSTRY RANK 25)</b>											
1992	Brit. Amer Tobac. ADR	118.76	2	2	2	0.90	19.2	3.6	15- 55%	1999	Bridgepoint Education	6.76	2	4	3	1.40	29.4	NIL	35-105%
1993	Philip Morris Int'l	96.56	2	2	2	0.80	20.3	4.3	N- 25%	2001	DeVry Education Group	22.23	2	3	4	1.15	9.1	NIL	35-125%
1994	Reynolds American	47.27	2	2	3	0.65	20.3	3.9	N- 40%	2003	Rosetta Stone	7.38	2	4	1	0.65	NMF	NIL	35-130%
1996	Universal Corp.	55.55	2	3	2	0.80	15.4	3.8	N- 25%	2004	Strayer Education	45.31	2	4	4	1.20	14.4	NIL	30-120%
<b>Electric Util. (Central) (INDUSTRY RANK 16)</b>								<b>Power (INDUSTRY RANK 26)</b>											
903	Alliant Energy	37.38	2	2	2	0.75	19.2	3.2	N- 5%	1215	AES Corp.	11.87	2	3	2	1.15	74.2	3.7	35-110%
905	Amer. Elec. Power	63.37	2	2	3	0.65	15.5	3.7	N- 20%	1220	EnerNOC, Inc.	5.36	1	5	3	1.60	NMF	NIL	70-200%
907	CenterPoint Energy	22.51	2	3	3	0.80	22.5	4.7	N- 35%	1226	NRG Energy	11.70	2	3	4	1.15	NMF	1.0	30-115%
908	DTE Energy	92.84	2	2	2	0.70	18.5	3.4	N- 10%	1231	SunPower Corp.	8.54	1	4	4	1.90	NMF	NIL	195-425%
913	MGE Energy	55.81	1	1	3	0.70	24.0	2.2	N- N%	1232	TransAlta Corp.	5.99	2	3	3	0.85	NMF	2.7	50-165%
914	OGE Energy	30.68	2	2	3	0.90	16.9	4.0	15- 45%	<b>Electrical Equipment (INDUSTRY RANK 27)</b>									
<b>Metal Fabricating (INDUSTRY RANK 17)</b>								1308 Garmin Ltd. 48.64 2 2 3 1.00 19.0 4.3 N- 25%											
729	Chart Industries	32.79	1	3	3	1.75	27.3	NIL	35-100%	1315	Trimble Inc.	29.30	1	3	3	1.30	47.3	NIL	N- 55%
736	Tenaris S.A. ADS	29.04	1	3	3	1.40	NMF	3.1	5- 55%	1317	WESCO Int'l	58.10	2	3	2	1.35	13.9	NIL	30- 90%
<b>Petroleum (Integrated) (INDUSTRY RANK 18)</b>								<b>Household Products (INDUSTRY RANK 28)</b>											
503	Cenovus Energy	20.29	2	3	3	1.10	NMF	1.0	25- 70%	1190	Clorox Co.	121.80	2	2	3	0.65	23.1	2.7	N- 25%
504	Chevron Corp.	101.79	2	1	3	1.15	73.2	4.2	15- 40%	1191	Colgate-Palmolive	71.93	2	1	2	0.75	25.8	2.3	20- 40%
505	Exxon Mobil Corp.	86.77	2	1	3	0.95	31.3	3.5	15- 40%	1195	Kimberly-Clark	120.54	2	1	2	0.65	21.9	3.1	10- 35%
506	Hess Corp.	50.98	2	3	3	1.55	NMF	2.0	10- 65%	1196	Newell Brands	52.68	1	3	3	1.10	34.0	1.4	N- 15%
507	HollyFrontier Corp.	23.80	2	3	4	1.25	16.6	5.7	70-150%	1197	Procter & Gamble	87.45	2	1	2	0.65	20.4	3.1	5- 25%
508	Husky Energy	15.70	2	3	4	1.05	NMF	NIL	25- 90%	<b>Thrift (INDUSTRY RANK 29)</b>									
509	Imperial Oil Ltd.	32.51	1	2	4	1.20	39.6	1.4	25- 70%	1506	New York Community	13.93	2	3	3	0.90	12.7	4.9	20- 80%
511	Murphy Oil Corp.	28.20	2	3	3	1.45	NMF	3.5	75-150%	1507	Northwest Bancshares	15.60	1	2	3	0.75	26.4	3.8	5- 30%
512	Occidental Petroleum	72.57	2	3	2	1.20	NMF	4.2	15- 70%	<b>Telecom. Utility (INDUSTRY RANK 30)</b>									
514	Petroleo Brasileiro ADR	11.77	1	5	3	1.75	49.0	NIL	45-155%	1026	BCE Inc.	46.17	2	3	2	0.70	20.3	4.5	N- 30%
517	Suncor Energy	37.96	2	3	4	1.20	NMF	3.1	5- 70%	1032	Frontier Commun.	4.08	2	4	2	1.15	NMF	10.3	25- 95%
519	Total ADR	48.54	2	2	4	1.20	12.5	5.7	35- 75%	1033	Telefonica SA ADR	9.73	2	4	3	1.15	17.1	8.7	25-105%
<b>Bank (Midwest) (INDUSTRY RANK 19)</b>								<b>Electric Utility (West) (INDUSTRY RANK 31)</b>											
776	BOK Financial	69.83	2	3	2	1.00	15.7	2.5	N- 50%	2228	El Paso Electric	43.74	2	2	2	0.70	17.9	2.9	N- 25%
778	Comerica Inc.	50.05	2	3	3	1.25	17.2	1.8	N- 50%	2229	Hawaiian Elec.	28.95	1	2	3	0.70	13.0	4.3	N- 5%
779	Commerce Bancshs.	48.52	2	1	2	0.90	17.6	1.9	N- 25%	2232	PG&E Corp.	60.93	2	3	3	0.65	17.3	3.3	N- 30%
783	Hancock Holding	32.28	1	3	2	1.10	13.8	3.0	10- 70%	2237	Xcel Energy Inc.	40.54	2	1	3	0.60	17.9	3.5	N- 10%
787	Park National	95.01	2	2	3	0.90	17.6	4.0	N- 20%	<b>Internet (INDUSTRY RANK 32)</b>									
<b>Office Equip/Supplies (INDUSTRY RANK 20)</b>								2634 IAC/InterActiveCorp 64.62 2 3 5 1.10 42.8 NIL 25- 85%											
1415	Diebold, Inc.	22.80	1	3	3	1.15	12.7	1.8	55-120%	2639	Pandora Media	12.50	2	5	4	1.15	NMF	NIL	5-100%
1417	Essendant Inc.	18.27	2	3	4	1.10	8.1	3.1	65-145%	2641	Sohu.com Inc.	42.21	1	3	4	1.30	NMF	NIL	N- N%
1421	Pitney Bowes	17.22	2	3	3	1.15	9.4	4.4	15- 75%	2642	TripAdvisor, Inc.	63.19	2	3	4	1.15	59.1	NIL	35-105%
1422	Staples, Inc.	7.50	2	3	3	1.05	8.3	6.4	60-125%	2647	Yelp, Inc.	35.80	1	4	3	1.50	NMF	NIL	N- N%
<b>Toiletries/Cosmetics (INDUSTRY RANK 21)</b>								2648 Zillow Group 'C' 33.58 2 3 3 1.25 NMF NIL N- 20%											
1007	Avon Products	6.62	1	4	4	1.50	25.5	NIL	35-125%	<b>Reinsurance (INDUSTRY RANK 33)</b>									
1011	Inter Parfums	31.55	1	3	1	1.15	27.0	2.0	N- 60%	2025	Greenlight Capital Re	20.48	1	3	3	0.90	23.5	NIL	45- 95%
1014	Regis Corp.	12.07	1	3	3	1.00	86.2	NIL	N- 35%	2028	Third Point Reinsurance	12.35	1	3	4	0.90	6.2	NIL	40-100%
<b>Insurance (Life) (INDUSTRY RANK 22)</b>								<b>Funeral Services (INDUSTRY RANK 34)</b>											
1552	AEGON	4.15	1	3	3	1.45	8.8	7.0	45-115%	1833	Hillenbrand, Inc.	30.73	2	3	2	1.10	16.3	2.6	15- 65%
1554	Genworth Fin'l	5.09	2	5	4	1.95	5.9	NIL	20- 95%	1836	StoneMor Partners L.P.	24.78	1	3	4	0.60	NMF	10.7	N- 20%
1557	MetLife Inc.	46.80	2	3	5	1.40	9.7	3.6	20- 70%	<b>Engineering &amp; Const (INDUSTRY RANK 35)</b>									
<b>Precision Instrument (INDUSTRY RANK 23)</b>								1239 Jacobs Engineering 50.58 2 3 2 1.25 16.4 NIL N- 50%											
113	Agilent Technologies	45.44	2	3	3	1.25	22.1	1.0	30- 85%	1240	KBR, Inc.	14.82	2	3	3	1.60	11.4	2.2	20- 70%
122	Geospace Technologies	17.46	1	4	3	1.60	NMF	NIL	N- 45%	1244	SNC-Lavalin Group	52.23	2	3	2	0.95	19.1	2.0	5- 65%
125	Landauer, Inc.	44.60	1	3	2	1.00	23.6	2.5	10- 70%	<b>Environmental (INDUSTRY RANK 24)</b>									
126	MTS Systems	46.13	2	3	4	1.05	27.6	2.6	20- 75%	413	Calgon Carbon	15.79	2	3	5	1.05	25.1	1.3	N- 25%
128	National Instruments	27.77	2	3	4	1.10	33.9	2.9	25-100%	414	Clean Harbors	46.96	2	3	3	1.10	57.3	NIL	5- 60%
134	Thermo Fisher Sci.	151.67	2	2	3	1.05	28.1	0.4	N- 30%	418	Tetra Tech	37.35	2	3	3	1.15	19.2	1.0	20- 85%
135	Ultratech, Inc.	22.90	1	3	1	1.10	57.3	NIL	10- 55%	<b>Environmental (INDUSTRY RANK 24)</b>									
136	Veeco Instruments	21.45	2	4	4	1.20	NMF	NIL	N- 15%	413 Calgon Carbon 15.79 2 3 5 1.05 25.1 1.3 N- 25%									
137	Waters Corp.	156.74	2	2	3	1.00	23.1	NIL	N- 10%	414 Clean Harbors 46.96 2 3 3 1.10 57.3 NIL 5- 60%									
<b>Environmental (INDUSTRY RANK 24)</b>								418 Tetra Tech 37.35 2 3 3 1.15 19.2 1.0 20- 85%											

# Timely Stocks

## Stocks Ranked 1 (Highest) for Relative Price Performance (Next 12 Months)

Page No.	Stock Name	Recent Price Ticker	Technical Safety	R a n k s	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price Ticker	Technical Safety	R a n k s	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank		
1737	ABB Ltd. ADR	ABB	22.45	3	2	23.1	3.3	Diversified Co.	36	1760	LSB Inds.	LXU	6.22	5	3	NMF	NIL	Diversified Co.	36
940	ADTRAN, Inc.	ADTN	18.60	3	3	27.4	1.9	Telecom. Equipment	37	125	Landauer, Inc.	LDR	44.60	3	2	23.6	2.5	Precision Instrument	23
438	Advisory Board	ABCO	43.52	3	4	45.3	NIL	Information Services	74	2563	Legg Mason	LM	31.70	3	3	13.3	2.8	Financial Svcs. (Div.)	58
1552	AEGON	AEG	4.15	3	3	8.8	7.0	Insurance (Life)	22	1761	Leucadia National	LUK	18.96	3	4	37.2	1.3	Diversified Co.	36
703	AeroVironment ■	AVAV	22.51	3	3	NMF	NIL	Aerospace/Defense	59	2564	Loews Corp.	L	41.29	2	3	14.9	0.6	Financial Svcs. (Div.)	58
1607	Albany Molecular	AMRI	16.44	4	5	NMF	NIL	Drug	45	913	MGE Energy	MGEE	55.81	1	3	24.0	2.2	Electric Util. (Central)	16
1582	Allegheny Techn.	ATI	16.92	4	4	NMF	1.9	Metals & Mining (Div.)	2	1536	Mack-Cali R'ty	CLI	26.59	3	3	NMF	2.3	R.E.I.T.	50
1322	Anixter Int'l	AXE	60.90	3	4	14.1	NIL	Electronics	56	954	Marvell Technology	MRVL	13.01	3	3	24.1	1.8	Telecom. Equipment	37
740	ArcelorMittal	MT	6.36	4	4	13.3	NIL	Steel	7	1924	Mead Johnson Nutrition	MJN	80.11	2	4	23.3	2.1	Food Processing	49
305	Atlas Air Worldwide ■	AAWW	42.00	3	5	11.3	NIL	Air Transport	92	767	Mercury General	MCY	54.05	2	2	24.7	4.6	Insurance (Prop/Cas.)	46
1007	Avon Products	AVP	6.62	4	4	25.5	NIL	Toiletries/Cosmetics	21	220	Meridian Bioscience	VIVO	18.65	3	3	21.2	4.3	Med Supp Non-Invasive	39
1584	BHP Billiton Ltd. ADR	BHP	34.49	3	5	NMF	1.7	Metals & Mining (Div.)	2	572	Methanex Corp. ■	MEOH	37.80	3	5	NMF	3.0	Chemical (Specialty)	62
2416	Baker Hughes	BHI	51.60	3	4	NMF	1.3	Oilfield Svcs/Equip.	5	535	National Fuel Gas	NFG	52.93	3	1	NMF	3.1	Natural Gas (Div.)	13
2653	Blackstone Group LP ■	BX	23.61	3	3	9.9	6.1	Public/Private Equity	1	2428	National Oilwell Varco	NOV	36.66	3	4	NMF	0.5	Oilfield Svcs/Equip.	5
306	Bristow Group	BRS	11.59	4	4	NMF	2.4	Air Transport	92	1196	Newell Brands	NWL	52.68	3	3	34.0	1.4	Household Products	28
1353	Broadcom Ltd.	AVGO	172.17	3	3	60.8	1.2	Semiconductor	75	2410	Noble Energy	NBL	35.09	3	4	NMF	1.1	Petroleum (Producing)	9
796	Brookdale Sen. Living ■	BKD	15.48	4	3	NMF	NIL	Medical Services	70	1507	Northwest Bancshares	NWBI	15.60	2	3	26.4	3.8	Thrift	29
761	CNA Fin'l	CNA	35.71	2	5	11.9	2.8	Insurance (Prop/Cas.)	46	2591	Nuance Communic.	NUAN	13.79	3	3	NMF	NIL	Computer Software	14
2417	CARBO Ceramics	CRR	10.56	4	3	NMF	NIL	Oilfield Svcs/Equip.	5	607	ONEOK Inc.	OKE	50.03	3	3	27.8	5.1	Oil/Gas Distribution	8
729	Chart Industries	GTLS	32.79	3	3	27.3	NIL	Metal Fabricating	17	514	Petroleo Brasileiro ADR	PBR	11.77	5	3	49.0	NIL	Petroleum (Integrated)	18
821	Computer Prog. & Sys.	CPSI	26.21	3	5	23.2	5.2	Healthcare Information	11	1629	Pfizer, Inc.	PFE	32.69	1	1	19.7	3.7	Drug	45
946	Comtech Telecom. ■	CMTL	10.88	4	3	NMF	11.0	Telecom. Equipment	37	622	Plains All Amer. Pipe.	PAA	32.46	3	5	41.6	6.8	Pipeline MLPs	6
2418	Core Laboratories	CLB	111.99	3	4	60.5	2.0	Oilfield Svcs/Equip.	5	1168	Potlatch Corp.	PCH	38.80	3	3	NMF	3.9	Paper/Forest Products	42
2155	Crocs, Inc.	CROX	8.08	4	4	NMF	NIL	Shoe	81	823	Quality Systems	QSII	12.27	3	4	49.1	NIL	Healthcare Information	11
2512	Cullen/Frost Bankers	CFR	73.00	2	3	16.3	3.0	Bank	51	1014	Regis Corp.	RGS	12.07	3	3	86.2	NIL	Toiletries/Cosmetics	21
2008	Daktronics Inc. ■	DAKT	8.60	3	3	26.9	3.5	Entertainment Tech	44	1575	Royal Gold	RGLD	68.87	3	2	47.2	1.4	Precious Metals	3
1415	Diebold, Inc.	DBD	22.80	3	3	12.7	1.8	Office Equip/Supplies	20	748	Russel Metals	RUS.TO	20.77	3	3	18.5	7.3	Steel	7
1568	Eldorado Gold	EGO	3.61	4	3	45.1	NIL	Precious Metals	3	1630	Sanofi ADR ■	SNY	37.73	1	4	20.3	4.6	Drug	45
1220	EnerNOC, Inc. ■	ENOC	5.36	5	3	NMF	NIL	Power	26	2434	Schlumberger Ltd.	SLB	81.39	2	3	74.0	2.5	Oilfield Svcs/Equip.	5
618	EnLink Midstream Part.	ENLK	18.36	3	3	NMF	8.5	Pipeline MLPs	6	749	Schnitzer Steel	SCHN	21.75	3	3	42.6	3.4	Steel	7
947	Ericsson ADR ■	ERIC	5.47	3	4	11.6	8.4	Telecom. Equipment	37	2344	Scripps (E.W.) 'A'	SSP	14.11	3	3	15.0	NIL	Entertainment	76
2586	FireEye Inc.	FEYE	12.53	4	3	NMF	NIL	Computer Software	14	2621	ServiceNow, Inc.	NOW	76.16	4	3	NMF	NIL	IT Services	64
2587	Fortinet Inc.	FTNT	30.99	3	1	NMF	NIL	Computer Software	14	1376	Silicon Labs	SLAB	58.40	3	3	49.9	NIL	Semiconductor	75
2555	Franklin Resources ■	BEN	34.23	2	3	11.8	2.4	Financial Svcs. (Div.)	58	1576	Silver Wheaton	SLW	24.08	3	1	29.0	0.8	Precious Metals	3
1587	FreepT-McMoRan Inc.	FCX	9.72	4	3	16.5	NIL	Metals & Mining (Div.)	2	2641	Sohu.com Inc.	SOHU	42.21	3	4	NMF	NIL	Internet	32
210	Genomic Health	GHDX	29.82	3	4	NMF	NIL	Med Supp Non-Invasive	39	1591	Southern Copper	SCCO	26.63	3	4	22.4	0.9	Metals & Mining (Div.)	2
122	Geospace Technologies	GEOS	17.46	4	3	NMF	NIL	Precision Instrument	23	1827	Splunk Inc.	SPLK	57.66	3	2	NMF	NIL	E-Commerce	65
1616	GlaxoSmithKline ADR	GSK	41.76	1	2	28.2	4.8	Drug	45	1836	StoneMor Partners L.P.	STON	24.78	3	4	NMF	10.7	Funeral Services	34
333	Golar LNG Ltd.	GLNG	23.62	4	4	NMF	0.8	Maritime	53	623	Suburban Propane	SPH	33.71	3	3	21.9	10.5	Pipeline MLPs	6
1804	Greenhill & Co.	GHL	22.95	3	4	12.7	7.8	Investment Banking	10	1231	SunPower Corp.	SPWR	8.54	4	4	NMF	NIL	Power	26
2025	Greenlight Capital Re	GLRE	20.48	3	3	23.5	NIL	Reinsurance	33	736	Tenaris S.A. ADS	TS	29.04	3	3	NMF	3.1	Metal Fabricating	17
2515	HSBC Holdings PLC	HSBC	38.33	3	4	10.0	5.2	Bank	51	2028	Third Point Reinsurance	TPRE	12.35	3	4	6.2	NIL	Reinsurance	33
783	Hancock Holding	HBHC	32.28	3	2	13.8	3.0	Bank (Midwest)	19	1003	Titan Int'l	TWI	10.25	4	3	NMF	0.2	Auto Parts	93
2229	Hawaiian Elec.	HE	28.95	2	3	13.0	4.3	Electric Utility (West)	31	1315	Trimble Inc.	TRMB	29.30	3	3	47.3	NIL	Electrical Equipment	27
804	Healthways Inc.	HWAY	25.92	4	3	13.7	NIL	Medical Services	70	135	Ultratech, Inc.	UTEK	22.90	3	1	57.3	NIL	Precision Instrument	23
509	Imperial Oil Ltd.	IMO	32.51	2	4	39.6	1.4	Petroleum (Integrated)	18	751	U.S. Steel Corp.	X	17.17	5	2	NMF	1.2	Steel	7
1011	Inter Parfums	IPAR	31.55	3	1	27.0	2.0	Toiletries/Cosmetics	21	1776	United Technologies	UTX	99.99	1	2	15.1	2.6	Diversified Co.	36
833	Ionis Pharmac. ■	IONS	28.62	4	4	NMF	NIL	Biotechnology	40	2440	Weatherford Int'l plc	WFT	5.91	4	4	NMF	NIL	Oilfield Svcs/Equip.	5
2656	KKR & Co. L.P.	KKR	13.72	3	3	4.4	4.7	Public/Private Equity	1	2196	Weight Watchers	WTW	10.18	5	4	9.5	NIL	Retail (Hardlines)	61
2143	Kohl's Corp.	KSS	43.04	2	4	12.1	4.9	Retail Store	57	2647	Yelp, Inc.	YELP	35.80	4	3	NMF	NIL	Internet	32

■ Newly added this week.

**Rank 1 Deletions:**

AngioDynamics; Bio-Techne Corp.; Black Box; Cabot Oil & Gas 'A'; CLARCOR Inc.; Enerplus Corp.; Forrester Research; MSC Industrial Direct; RPC Inc.; South Jersey Inds.; SurModics, Inc.; 3D Systems.

**Rank removed—see supplement or report:**

None.



Continued from preceding page

**TIMELY STOCKS**

**Stocks Ranked 2 (Above Average) for Relative Price Performance in the Next 12 Months**

Page No.	Stock Name	Ticker	Recent Price	Technical Safety	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Ticker	Recent Price	Technical Safety	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank		
702	AAR Corp.	AIR	31.77	3	3	23.9	0.9	Aerospace/Defense	59	908	DTE Energy	DTE	92.84	2	2	18.5	3.4	Electric Util. (Central)	16
1215	AES Corp.	AES	11.87	3	2	74.2	3.7	Power	26	1507	Deere & Co.	DE	86.61	1	4	23.5	2.8	Heavy Truck & Equip	55
1319	AVX Corp.	AVX	13.75	3	3	18.3	3.2	Electronics	56	2458	Denbury Resources ▲	DNR	2.77	5	3	NMF	NIL	Petroleum (Producing)	9
198	Abbott Labs.	ABT	41.17	1	4	18.4	2.5	Med Supp Non-Invasive	39	2001	DeVry Education Group ▲	DV	22.23	3	4	9.1	1.7	Educational Services	25
2006	Activision Blizzard	ATVI	44.18	3	3	53.9	0.6	Entertainment Tech	44	1974	Diageo plc	DEO	108.15	1	2	22.1	3.2	Beverage	38
154	Actuant Corp.	ATU	22.26	3	4	18.0	0.2	Heavy Truck & Equip	55	1519	Digital Realty Trust	DLR	96.57	3	3	75.4	3.9	R.E.I.T.	50
2580	Adobe Systems	ADBE	108.42	3	3	51.6	NIL	Computer Software	14	1021	Dish Network 'A'	DISH	56.62	3	5	17.4	NIL	Cable TV	73
1738	Aerofjet Rocketdyne	AJRD	17.25	3	2	20.5	NIL	Diversified Co.	36	2009	Dolby Labs.	DLB	51.46	3	3	27.5	0.9	Entertainment Tech	44
113	Agilent Technologies	A	45.44	3	3	22.1	1.0	Precision Instrument	23	142	Dominion Resources	D	73.37	2	2	18.7	4.0	Electric Utility (East)	12
1565	Agnico Eagle Mines	AEM	48.01	3	2	87.3	0.8	Precious Metals	3	1163	Domtar Corp.	UFS	37.47	3	5	11.7	4.4	Paper/Forest Products	42
1608	Alexion Pharm.	ALXN	121.34	3	4	27.3	NIL	Drug	45	1710	Donaldson Co.	DCI	36.41	2	2	23.6	1.9	Machinery	68
754	Alleghany Corp.	Y	524.98	1	3	20.3	NIL	Insurance (Prop/Cas.)	46	1711	Dover Corp.	DOV	67.54	2	2	19.8	2.6	Machinery	68
903	Alliant Energy	LNT	37.38	2	2	19.2	3.2	Electric Util. (Central)	16	143	Duke Energy	DUK	77.90	2	2	17.1	4.4	Electric Utility (East)	12
826	Alnylam Pharm.	ALNY	38.07	4	4	NMF	NIL	Biotechnology	40	444	Dun & Bradstreet	DNB	125.71	3	1	16.8	1.5	Information Services	74
2604	Amdocs Ltd.	DOX	59.61	1	3	20.9	1.3	IT Services	64	529	EOG Resources	EOG	93.13	3	2	NMF	0.8	Natural Gas (Div.)	13
794	Amedys, Inc.	AMED	46.12	4	2	26.1	NIL	Medical Services	70	530	EQT Corp.	EQT	65.61	3	1	NMF	0.2	Natural Gas (Div.)	13
922	America Movil	AMX	11.91	3	5	13.7	2.5	Telecom. Services	71	2549	Eaton Vance Corp. ▲	EV	37.21	3	1	16.8	3.0	Financial Svcs. (Div.)	51
2201	Amer. Eagle Outfitters	AEO	17.14	3	1	12.9	2.9	Retail (Softlines)	63	2228	El Paso Electric	EE	43.74	2	2	17.9	2.9	Electric Utility (West)	38
905	Amer. Elec. Power	AEP	63.37	2	3	15.5	3.7	Electric Util. (Central)	16	617	Energy Transfer	ETP	36.44	3	3	24.6	11.6	Pipeline MLPs	6
1384	Amkor Technology	AMKR	9.39	5	3	20.9	NIL	Semiconductor Equip	67	533	Enphase Corp. ▼	ENPH	9.67	5	3	NMF	1.2	Natural Gas (Div.)	13
2402	Anadarko Petroleum	APC	62.97	3	5	NMF	0.3	Petroleum (Producing)	9	2421	Enso plc	ESV	8.47	4	5	9.8	0.5	Oilfield Svcs/Equip.	5
172	AngioDynamics ▼	ANGO	16.93	3	3	NMF	NIL	Med Supp Invasive	48	764	Erie Indemnity	ERIE	104.72	2	3	27.9	2.8	Insurance (Prop/Cas.)	46
1566	AngloGold Ashanti ADS	AU	14.13	4	1	22.8	NIL	Precious Metals	3	1749	ESCO Technologies	ESE	44.90	3	2	21.3	0.7	Diversified Co.	36
1512	Anny Capital Mgmt.	NLY	10.10	3	3	8.6	11.9	R.E.I.T.	50	1417	Essendant Inc.	ESND	18.27	3	4	8.1	3.1	Office Equip/Supplies	20
523	Antero Resources Corp. ▲	AR	27.44	4	4	50.8	NIL	Natural Gas (Div.)	13	711	Esterline Technologies	ESL	73.00	3	3	14.3	NIL	Aerospace/Defense	59
2651	Apollo Global Mgmt ▲	APO	17.61	3	3	6.7	8.4	Public/Private Equity	1	145	Exelon Corp.	EXC	33.09	3	2	14.8	3.9	Electric Utility (East)	12
2652	Apollo Investment	AINV	5.89	3	3	29.5	10.2	Public/Private Equity	1	505	Exxon Mobil Corp.	XOM	86.77	1	3	31.3	3.5	Petroleum (Integrated)	18
155	Astec Inds.	ASTE	59.10	3	3	24.5	0.7	Heavy Truck & Equip	55	1601	FMC Corp.	FMC	47.22	3	2	16.7	1.5	Chemical (Basic)	4
2605	Automatic Data Proc.	ADP	87.38	1	2	24.8	2.6	IT Services	64	390	FTI Consulting	FCN	43.88	3	3	18.4	NIL	Industrial Services	69
1026	BCE Inc.	BCE	46.17	3	2	20.3	4.5	Telecom. Utility	30	1524	Federal Rlty. Inv. Trust	FRT	147.10	2	2	46.4	2.7	R.E.I.T.	50
776	BOK Financial	BOKF	69.83	3	2	15.7	2.5	Bank (Midwest)	19	2551	Federated Investors	FII	27.78	3	1	13.9	3.6	Financial Svcs. (Div.)	58
2508	Bank of Nova Scotia	BNS.TO	70.78	1	2	11.9	4.2	Bank	51	2552	Fidelity National	FIS	75.95	2	2	27.8	1.4	Financial Svcs. (Div.)	58
1567	Barrick Gold	ABX	16.37	3	2	27.7	0.5	Precious Metals	3	161	Finning Int'l	FTT.TO	25.58	3	3	28.1	2.9	Heavy Truck & Equip	55
1175	Bemis Co.	BMS	50.46	1	2	19.2	2.3	Packaging & Container	82	1712	Flowerserve Corp.	FLS	42.93	3	3	17.1	1.8	Machinery	68
2167	Big 5 Sporting Goods ▲	BGFV	16.55	4	3	27.1	3.0	Retail (Hardlines)	61	447	Forrester Research ▼	FORR	37.90	3	2	30.8	2.0	Information Services	74
828	Bio-Techne Corp. ▼	TECH	105.22	1	2	35.2	1.2	Biotechnology	40	2173	Fossil Group	FOSL	28.02	3	4	13.5	NIL	Retail (Hardlines)	61
829	BioMarin Pharm.	BMRN	85.40	3	3	NMF	NIL	Biotechnology	40	2142	Fred's Inc. ▲	FRED	8.83	3	3	NMF	2.7	Retail Store	57
942	Black Box ▼	BBOX	12.75	3	3	36.4	3.9	Telecom. Equipment	37	1032	Frontier Commun.	FTR	4.08	4	2	NMF	10.3	Telecom. Utility	37
587	BlackBerry	BBRY	7.42	4	4	NMF	NIL	Wireless Networking	77	1308	Garmin Ltd.	GRMN	48.64	2	3	19.0	4.3	Electrical Equipment	20
614	Boardwalk Pipeline	BWP	16.74	4	3	14.8	2.4	Pipeline MLPs	6	2332	GasLog Ltd.	GLOG	16.55	4	4	87.1	3.4	Maritime	53
707	Bombardier Inc. 'B'	BBDB.TO	1.77	5	2	NMF	NIL	Aerospace/Defense	59	1752	Gen'l Electric	GE	28.98	3	2	18.5	3.2	Diversified Co.	36
1742	Brady Corp.	BRC	34.10	3	2	19.6	2.4	Diversified Co.	36	991	Genuine Parts	GPC	96.35	1	2	20.3	2.7	Auto Parts	93
1999	Bridgepoint Education	BPI	6.76	4	3	29.4	NIL	Educational Services	25	1554	Genworth Fin'l	GNW	5.09	5	4	5.9	NIL	Insurance (Life)	22
382	Brink's (The) Co. ▲	BCO	36.99	3	3	32.4	1.1	Industrial Services	69	2655	Gladstone Capital	GLAD	8.60	3	3	9.7	9.8	Public/Private Equity	1
1612	Bristol-Myers Squibb	BYM	50.05	1	3	19.3	3.0	Drug	45	2336	Global Eagle Entertain.	ENT	8.33	4	5	75.7	NIL	Entertainment	76
1992	Brit. Amer Tobac. ADR	BTI	118.76	2	2	19.2	3.6	Tobacco	15	925	Gogo Inc.	GOGO	10.87	4	4	NMF	NIL	Telecom. Services	71
2203	Buckle (The), Inc.	BKE	21.30	3	3	9.4	5.1	Retail (Softlines)	63	1570	Goldcorp Inc.	GG	14.86	3	2	49.5	0.8	Precious Metals	3
2583	CA, Inc.	CA	32.16	2	2	17.4	3.2	Computer Software	14	1803	Goldman Sachs ▲	GS	172.63	2	4	9.7	1.5	Investment Banking	10
1354	CEVA, Inc.	CEVA	30.85	4	3	49.8	NIL	Semiconductor	75	162	Gorman-Rupp Co.	GRC	24.58	3	3	27.0	1.7	Heavy Truck & Equip	55
1596	CF Industries	CF	23.46	3	4	27.9	5.8	Chemical (Basic)	4	1180	Greif, Inc.	GEF	48.21	3	2	18.3	3.5	Packaging & Container	82
1793	CME Group	CME	104.09	2	2	23.9	2.3	Brokers & Exchanges	47	2106	Guess Inc.	GES	13.72	3	3	16.5	6.6	Apparel	86
1597	CVR Partners, LP	UAN	4.86	3	3	NMF	14.0	Chemical (Basic)	4	211	Haemonetics Corp.	HAE	34.47	3	3	24.6	NIL	Med Supp Non-Invasive	39
561	Cabot Microelectr's ▲	CCMP	52.40	3	3	20.8	1.4	Chemical (Specialty)	62	2423	Haiburton Co.	HAL	47.07	3	3	NMF	1.5	Oilfield Svcs/Equip.	5
524	Cabot Oil & Gas 'A' ▼	COG	22.11	3	1	NMF	0.4	Natural Gas (Div.)	13	393	Harsco Corp.	HSC	9.90	4	4	20.6	NIL	Industrial Services	69
413	Calgon Carbon ▲	CCC	15.79	3	5	25.1	1.3	Environmental	24	2424	Helix Energy Solutions	HLX	9.53	4	5	NMF	NIL	Oilfield Svcs/Equip.	5
1784	California Water	CWT	32.45	3	3	30.3	2.1	Water Utility	43	2425	Helmerich & Payne	HP	67.17	3	3	NMF	4.2	Oilfield Svcs/Equip.	5
1585	Cameco Corp.	CCO.TO	10.50	3	3	11.8	3.8	Metals & Mining (Div.)	2	506	Hess Corp.	HES	50.98	3	3	NMF	2.0	Petroleum (Integrated)	38
1983	Canon Inc. ADR	CAJ	29.24	2	4	16.7	4.5	Foreign Electronics	52	1833	Hillenbrand, Inc.	HI	30.73	3	2	16.3	2.6	Funeral Services	34
1328	Celestica Inc.	CLS	10.42	3	3	12.0	NIL	Electronics	56	507	HollyFrontier Corp. ▲	HFC	23.80	3	4	16.6	5.7	Petroleum (Integrated)	18
503	Centovus Energy	CVE.TO	20.29	3	3	NMF	1.0	Petroleum (Integrated)	16	213	Hologic, Inc.	HOLX	38.73	3	3	35.2	NIL	Med Supp Non-Invasive	39
907	CenterPoint Energy	CNP	22.51	3	3	22.5	4.7	Electric Util. (Central)	18	107	Honda Motor ADR	HMC	29.52	3	3	14.1	2.8	Automotive	60
603	Cheniere Energy	LNG	41.61	4	3	NMF	NIL	Oil/Gas Distribution	8	1531	Hospitality Properties	HPT	29.29	3	2	20.3	7.0	R.E.I.T.	50
525	Chesapeake Energy	CHK	6.52	5	3	NMF	NIL	Natural Gas (Div.)	13	508	Husky Energy ▲	HSE.TO	15.70	3	4	NMF	NIL	Petroleum (Integrated)	18
504	Chevron Corp. ▲	CVX	101.79	1	3	73.2	4.2	Petroleum (Integrated)	18	2634	IAC/InterActiveCorp	IAC	64.62	3	5	42.8	NIL	Internet	32
2205	Chico's FAS	CHS	11.92	3	3	17.3	2.9	Retail (Softlines)	63	2012	Immersion Corp.	IMMR	7.76	4	4	NMF	NIL	Entertainment Tech	44
1177	CLARCOR Inc. ▼																		

**TIMELY STOCKS**

**Stocks Ranked 2 (Above Average) for Relative Price Performance in the Next 12 Months**

Page No.	Stock Name	Ticker	R a n k s		Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Ticker	R a n k s		Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank		
			Recent Price	Technical Safety								Recent Price	Technical Safety						
534	MDU Resources	MDU	25.04	2	3	21.2	3.0	Natural Gas (Div.)	13	1244	SNC-Lavalin Group	SNC.TO	52.23	3	2	19.1	2.0	Engineering & Const	35
2426	MRC Global	MRC	15.91	4	3	NMF	NIL	Oilfield Svcs/Equip.	5	150	SCANA Corp.	SCG	70.59	2	2	17.3	3.4	Electric Utility (East)	12
1718	MSA Safety	MSA	57.00	3	3	23.7	2.4	Machinery	68	1408	ScanSource	SCSC	35.50	3	3	14.5	NIL	Computers/Peripherals	83
1719	MSC Industrial Direct	MSM	71.04	2	2	18.6	2.4	Machinery	68	581	Schulman (A.)	SHLM	27.90	3	4	13.4	2.9	Chemical (Specialty)	62
126	MTS Systems	MTSC	46.13	3	4	27.6	2.6	Precision Instrument	23	839	Seattle Genetics	SGEN	50.73	4	3	NMF	NIL	Biotechnology	40
2618	ManTech Int'l 'A'	MANT	39.18	3	3	26.8	2.1	IT Services	64	1375	Semtech Corp.	SMTC	24.85	3	2	36.0	NIL	Semiconductor	75
2409	Marathon Oil Corp.	MRO	14.20	3	3	NMF	1.4	Petroleum (Producing)	9	1933	Sensient Techn.	SXT	72.52	2	2	21.6	1.5	Food Processing	49
2315	Mattel, Inc.	MAT	30.71	2	2	22.3	4.9	Recreation	85	1024	Shaw Commun. 'B'	SJRB.TO	26.38	2	4	21.6	4.5	Cable TV	73
1923	McCormick & Co.	MKC	94.85	1	2	24.6	1.8	Food Processing	49	1934	Smucker (J.M.)	SJM	132.22	1	2	20.2	2.3	Food Processing	49
365	McDonald's Corp.	MCD	111.25	1	3	19.5	3.4	Restaurant	87	2192	Sotheby's	BID	36.58	3	2	15.9	NIL	Retail (Hardlines)	61
1619	Medicines Company	MDCO	37.95	3	3	NMF	NIL	Drug	45	550	South Jersey Inds. ▼	SJI	28.61	2	2	21.7	3.9	Natural Gas Utility	41
1557	MetLife Inc.	MET	46.80	3	5	9.7	3.6	Insurance (Life)	22	151	Southern Co.	SO	51.09	2	2	18.1	4.5	Electric Utility (East)	12
2590	Microsoft Corp.	MSFT	57.66	1	3	20.0	2.7	Computer Software	14	541	Southwestern Energy	SWN	12.64	4	3	NMF	NIL	Natural Gas (Div.)	13
1602	Mosaic Company	MOS	23.39	3	3	37.7	5.3	Chemical (Basic)	4	1955	SpartanNash Co.	SPTN	28.40	3	1	14.9	2.1	Retail/Wholesale Food	79
511	Murphy Oil Corp.	MUR	28.20	3	3	NMF	3.5	Petroleum (Integrated)	18	2325	Speedway Motorsports	TRK	17.66	3	5	13.3	3.4	Recreation	85
1226	NRG Energy	NRG	11.70	3	4	NMF	1.0	Power	26	1422	Staples, Inc.	SPLS	7.50	3	3	8.3	6.4	Office Equip/Supplies	20
128	National Instruments	NATI	27.77	3	4	33.9	2.9	Precision Instrument	23	1809	Stifel Financial Corp.	SF	38.40	3	4	14.6	NIL	Investment Banking	10
1926	Nestle SA ADS	NSRGY	75.63	1	1	24.4	3.1	Food Processing	49	1577	Stillwater Mining	SWC	12.45	4	2	69.2	NIL	Precious Metals	3
1506	New York Community	NYCB	13.93	3	3	12.7	4.9	Thrift	29	1344	Stratays Ltd.	SSYS	20.39	3	4	NMF	NIL	Electronics	56
1572	Newmont Mining	NEM	36.17	3	1	23.2	0.6	Precious Metals	3	2004	Strayer Education	STRA	45.31	4	4	14.4	NIL	Educational Services	25
2429	Noble Corp. plc	NE	5.77	4	4	NMF	1.4	Oilfield Svcs/Equip.	5	191	Stryker Corp.	SYK	114.81	1	3	23.3	1.3	Med Supp Invasive	48
1623	Novartis AG ADR	NVS	76.31	1	3	23.5	3.6	Drug	45	517	Suncor Energy	SU.TO	37.96	3	4	NMF	3.1	Petroleum (Integrated)	18
745	Nucor Corp.	NUE	47.15	3	2	19.4	3.2	Steel	7	624	Sunoco Logistics Part.	SXL	26.89	3	3	24.0	7.4	Pipeline MLPs	6
1927	NutriSystem Inc.	NTRI	30.70	3	3	26.5	2.3	Food Processing	49	2436	Superior Energy Svcs.	SPN	18.07	4	3	NMF	NIL	Oilfield Svcs/Equip.	5
914	OGE Energy	OGE	30.68	2	3	16.9	4.0	Electric Util. (Central)	16	192	SurModics, Inc. ▼	SRDX	28.50	3	3	32.0	NIL	Med Supp Invasive	48
512	Occidental Petroleum	OXY	72.57	3	2	NMF	4.2	Petroleum (Integrated)	18	1958	Sysco Corp.	SY	48.27	1	1	21.4	2.6	Retail/Wholesale Food	79
2430	Oceaneering Int'l	OII	26.64	3	4	26.1	4.1	Oilfield Svcs/Equip.	5	1592	Teck Resources Ltd. 'B'	TCKB.TO	27.10	4	3	58.9	0.4	Metals & Mining (Div.)	2
222	Omnicell, Inc.	OMCL	35.65	3	1	99.0	NIL	Med Supp Non-Invasive	39	1033	Telefonica SA ADR	TEF	9.73	4	17.1	8.7	Telecom. Utility	30	
621	ONEOK Partners L.P.	OKS	41.87	3	3	18.0	7.5	Pipeline MLPs	6	1161	Tempur Sealy Int'l	TPX	52.60	4	1	20.9	NIL	Furn/Home Furnishings	96
166	Oshkosh Corp.	OSK	53.30	3	2	17.5	1.4	Heavy Truck & Equip	55	2599	Teradata Corp. ▲	TDC	29.50	3	4	16.4	NIL	Computer Software	14
223	Owens & Minor	OMI	33.29	2	4	16.2	3.1	Med Supp Non-Invasive	39	110	Tesla Motors	TSLA	199.10	4	4	NMF	NIL	Automotive	60
1181	Owens-Illinois	OI	17.37	3	3	7.3	NIL	Packaging & Container	82	418	Tetra Tech	TTEK	37.35	3	3	19.2	1.0	Environmental	24
2232	PG&E Corp.	PCG	60.93	3	3	17.3	3.3	Electric Utility (West)	31	2437	TETRA Technologies ▲	TTI	5.96	4	4	11.9	NIL	Oilfield Svcs/Equip.	5
2593	PTC Inc.	PTC	46.13	3	3	63.2	NIL	Computer Software	14	134	Thermo Fisher Sci.	TMO	151.67	2	3	28.1	0.4	Precision Instrument	23
2594	Palo Alto Networks	PANW	148.46	3	5	NMF	NIL	Computer Software	14	1346	3D Systems ▼	DDD	14.14	3	4	NMF	NIL	Electronics	56
1573	Pan Amer. Silver	PAAS	16.42	4	2	26.1	0.3	Precious Metals	3	2193	Tiffany & Co.	TIF	72.04	3	4	19.2	2.6	Retail (Hardlines)	61
2639	Pandora Media	P	12.50	5	4	NMF	NIL	Internet	32	1143	Tile Shop Hldgs.	TTM	18.15	4	3	37.8	NIL	Retail Building Supply	72
575	Park Electrochemical	PKE	14.06	3	3	17.6	2.8	Chemical (Specialty)	62	519	Total ADR ▲	TOT	48.54	2	4	12.5	5.7	Petroleum (Integrated)	18
787	Park National	PRK	95.01	2	3	17.6	4.0	Bank (Midwest)	19	1232	TransAlta Corp.	TA.TO	5.99	3	3	NMF	2.7	Power	26
1766	Parker-Hannifin	PH	122.82	2	3	17.9	2.1	Diversified Co.	36	610	TransCanada Corp.	TRP	47.27	2	2	27.6	4.8	Oil/Gas Distribution	8
224	Patterson Cos.	PDCO	44.58	2	3	17.8	2.2	Med Supp Non-Invasive	39	582	Tredegar Corp.	TG	18.25	3	2	22.0	2.7	Chemical (Specialty)	62
608	Pembina Pipeline Corp.	PPL.TO	40.92	3	3	35.0	4.7	Oil/Gas Distribution	8	2642	TriAdvisor, Inc.	TRIP	63.19	4	4	59.1	NIL	Internet	32
1537	Penn. R.E.I.T.	PEI	21.48	3	1	NMF	4.1	R.E.I.T.	50	1941	Unilever PLC ADR	UL	42.86	1	2	21.4	3.3	Food Processing	49
1979	PepsiCo, Inc.	PEP	106.95	1	3	22.0	2.8	Beverage	38	1996	Universal Corp.	UVV	55.55	3	2	15.4	3.8	Tobacco	15
970	PetMed Express	PETS	20.85	3	3	18.1	3.7	Pharmacy Services	84	2017	Universal Electronics	UEIC	69.15	3	1	38.2	NIL	Entertainment Tech	44
1988	Philips Electronics NV	PHG	29.24	3	3	41.8	3.2	Foreign Electronics	52	1777	Valmont Inds.	VMI	129.35	3	2	20.2	1.2	Diversified Co.	36
1993	Philip Morris Int'l ▲	PM	96.56	2	2	20.3	4.3	Tobacco	15	136	Veeco Instruments	VECO	21.45	4	4	NMF	NIL	Precision Instrument	23
2412	Pioneer Natural Res.	PXD	184.03	3	3	NMF	NIL	Petroleum (Producing)	9	1545	Ventas, Inc.	VTR	67.66	3	2	36.4	4.4	R.E.I.T.	50
1421	Pitney Bowes	PBI	17.22	3	3	9.4	4.4	Office Equip/Supplies	20	2353	Viacom Inc. 'B' ▲	VIAB	36.14	3	3	8.4	2.2	Entertainment	76
1339	Plantronics Inc.	PLT	51.34	3	3	20.1	1.2	Electronics	56	554	WGL Holdings Inc.	WGL	61.40	1	3	19.2	3.2	Natural Gas Utility	41
1340	Plexus Corp.	PLXS	45.58	3	2	14.7	NIL	Electronics	56	2152	Wal-Mart Stores	WMT	68.87	1	2	15.7	2.9	Retail Store	57
746	POSCO ADR	PKX	52.91	3	3	18.9	3.4	Steel	7	137	Waters Corp.	WAT	156.74	2	3	23.1	NIL	Precision Instrument	23
1574	Pretium Resources	PVG	9.80	5	2	NMF	NIL	Precious Metals	3	1317	WESCO Int'l	WCC	58.10	3	2	13.9	NIL	Electrical Equipment	27
1197	Procter & Gamble	PG	87.45	1	2	20.4	3.1	Household Products	28	228	West Pharm. Svcs.	WST	72.97	2	2	36.3	0.7	Med Supp Non-Invasive	39
149	Public Serv. Enterprise	PEG	41.81	1	3	16.0	4.0	Electric Utility (East)	12	117	Weyerhaeuser Co.	WY	31.70	3	3	32.0	3.9	Paper/Forest Products	42
770	RLI Corp.	RLI	68.04	2	3	32.9	1.2	Insurance (Prop/Cas.)	46	2414	Whiting Petroleum	WLL	8.36	5	4	NMF	NIL	Petroleum (Producing)	9
2432	RPC Inc. ▼	RES	18.64	3	4	NMF	NIL	Oilfield Svcs/Equip.	5	2384	Wiley (John) & Sons	JWA	51.30	3	3	17.1	2.4	Publishing	54
2114	Ralph Lauren	RL	97.64	3	3	18.1	2.1	Apparel	86	611	Williams Cos. ▲	WMB	29.24	3	3	40.6	2.7	Oil/Gas Distribution	8
2413	Range Resources Corp.	RRC	38.07	3	3	NMF	0.2	Petroleum (Producing)	9	625	Williams Partners L.P.	WPZ	36.79	4	2	21.0	9.2	Pipeline MLPs	6
1540	Realty Income Corp.	O	62.66	2	3	47.1	3.9	R.E.I.T.	50	612	World Fuel Services ▲	INT	45.98	3	2	16.7	0.5	Oil/Gas Distribution	8
2148	Rent-A-Center	RCII	9.26	3	4	7.9	3.5	Retail Store	57	2375	Wynn Resorts	WYNN	92.98	3	1	30.4	2.2	Hotel/Gaming	80
1725	Reynold Corp.	RXN	19.11	3	3	19.1	NIL	Machinery	68	2237	Xcel Energy Inc.	XEL	40.54	1	3	17.9	3.5	Electric Utility (West)	31
1994	Reynolds American	RAI	47.27	2	3	20.3	3.9	Tobacco	15	1735	Xylem Inc.	XYL	49.15	2	2	24.2	1.3	Machinery	68
1590	Rio Tinto plc	RIO	32.55	3	4	16.3	4.9	Metals & Mining (Div.)	2	1579	Yamana Gold	AUY	3.79	5	3	25.3	0.5	Precious Metals	3
2003	Rosetta Stone	RST	7.38	4	1	NMF	NIL	Educational Services	25	2648	Zillow Group 'C'	Z	33.58	3	3	NMF			



Stocks Ranked 1 (Highest) for Relative Safety

Page No.	Stock Name	Rank Current					Industry Rank	Page No.	Stock Name	Rank Current					Industry Rank		
		Recent Price	Time-liness	Tech-nical	P/E Ratio	% Est'd Yield				Recent Price	Time-liness	Tech-nical	P/E Ratio	% Est'd Yield			
1965	AB InBev ADR	127.96	3	-	39.1	3.4	Beverage	38	2566	Marsh & McLennan	65.14	4	2	18.9	2.1	Financial Svcs. (Div.)	58
920	AT&T Inc.	39.36	3	3	13.7	5.0	Telecom. Services	71	2567	MasterCard Inc.	101.73	3	2	27.2	0.7	Financial Svcs. (Div.)	58
198	Abbott Labs.	41.17	2	4	18.4	2.5	Med Supp Non-Invasive	39	1923	McCormick & Co.	94.85	2	2	24.6	1.8	Food Processing	49
2603	Accenture Plc	117.53	3	3	21.0	2.1	IT Services	64	3625	McDonald's Corp.	111.25	2	3	19.5	3.4	Restaurant	87
2442	Air Products & Chem.	133.82	-	-	17.1	2.6	Chemical (Diversified)	88	219	McKesson Corp.	162.10	3	3	11.7	0.7	Med Supp Non-Invasive	39
754	Allegheny Corp.	524.98	2	3	20.3	NIL	Insurance (Prop/Cas.)	46	186	Medtronic plc	83.55	3	2	15.2	2.1	Med Supp Invasive	48
755	Allstate Corp.	69.29	3	3	13.4	1.9	Insurance (Prop/Cas.)	46	2620	Merck & Co.	62.09	3	2	16.4	3.0	Drug	45
2604	Amdocs Ltd.	59.61	2	3	20.9	1.3	IT Services	64	1950	Microsoft Corp.	57.66	2	3	20.0	2.7	Computer Software	14
2536	Amer. Express	60.08	4	3	10.8	2.1	Financial Svcs. (Div.)	58	955	Motorola Solutions	73.80	4	2	15.8	2.4	Telecom. Equipment	37
201	AmerisourceBergen	81.09	4	4	14.3	1.7	Med Supp Non-Invasive	39	1926	Nestle SA ADS	75.63	2	1	24.4	3.1	Food Processing	49
827	Amgen	162.80	2	4	14.3	2.6	Biotechnology	40	546	New Jersey Resources	33.30	3	3	19.6	2.9	Natural Gas Utility	41
2539	Aon plc	110.59	5	2	19.5	1.2	Financial Svcs. (Div.)	58	2159	NIKE, Inc. 'B'	51.22	4	3	22.7	1.2	Shoe	81
758	Arch Capital Group	79.30	3	3	17.5	NIL	Insurance (Prop/Cas.)	46	719	Northrop Grumman	219.44	5	4	19.9	1.6	Aerospace/Defense	59
544	Atmos Energy	72.17	3	3	20.6	2.5	Natural Gas Utility	41	548	Northwest Nat. Gas	59.37	3	2	26.7	3.2	Natural Gas Utility	41
2605	Automatic Data Proc.	87.38	2	2	24.8	2.6	IT Services	64	1623	Novartis AG ADR	76.31	2	3	23.5	3.6	Drug	45
2508	Bank of Nova Scotia	70.78	2	2	11.9	4.2	Bank	51	1211	Nuveen Muni Value Fund	10.00	-	3	NMF	4.0	Investment Co.	-
173	Bard (C.R.)	223.42	3	3	21.5	0.5	Med Supp Invasive	48	2592	Oracle Corp.	38.42	3	2	13.9	1.7	Computer Software	14
175	Becton, Dickinson	172.79	4	3	20.1	1.7	Med Supp Invasive	48	2451	PPG Inds.	92.81	4	3	15.1	1.7	Chemical (Diversified)	88
1175	Bemis Co.	50.46	2	2	19.2	2.3	Packaging & Container	82	2619	Paychex, Inc.	56.14	3	2	25.6	3.3	IT Services	64
759	Berkley (W.R.)	58.06	3	3	17.2	0.9	Insurance (Prop/Cas.)	46	1979	PepsiCo, Inc.	106.95	2	3	22.0	2.8	Beverage	38
760	Berkshire Hathaway 'B'	144.30	2	2	15.7	NIL	Insurance (Prop/Cas.)	46	1629	Pfizer, Inc.	32.69	1	1	19.7	3.7	Drug	45
828	Bio-Techne Corp.	105.22	2	2	35.2	1.2	Biotechnology	40	2234	Pinnacle West Capital	75.12	3	3	18.3	3.5	Electric Utility (West)	31
706	Boeing	135.10	3	5	14.2	3.5	Aerospace/Defense	59	578	Praxair Inc.	118.49	3	2	20.9	2.7	Chemical (Specialty)	62
1612	Bristol-Myers Squibb	50.05	2	3	19.3	3.0	Drug	45	1197	Procter & Gamble	87.45	2	2	20.4	3.1	Household Products	28
1967	Brown-Forman 'B'	45.38	3	4	25.2	1.5	Beverage	38	149	Public Serv. Enterprise	41.81	2	3	16.0	4.0	Electric Utility (East)	12
966	CVS Health	87.19	4	3	14.5	1.9	Pharmacy Services	84	1539	Public Storage	215.83	3	3	29.9	3.5	R.E.I.T.	50
2509	Can. Imperial Bank	101.07	3	2	10.6	4.8	Bank	51	960	Qualcomm Inc.	66.10	3	3	14.2	3.4	Telecom. Equipment	37
2136	Canadian Tire Corp. 'A' (TSE)	130.95	4	2	14.4	1.8	Retail Store	57	721	Raytheon Co.	137.63	3	3	17.8	2.1	Aerospace/Defense	59
204	Cardinal Health	75.73	3	3	17.3	2.5	Med Supp Non-Invasive	39	722	Rockwell Collins	84.10	3	5	14.6	1.6	Aerospace/Defense	59
504	Chevron Corp.	101.79	2	3	73.2	4.2	Petroleum (Integrated)	18	1726	Roper Tech.	172.52	4	2	25.6	0.7	Machinery	68
762	Chubb Ltd.	125.34	3	2	12.3	2.2	Insurance (Prop/Cas.)	46	2523	Royal Bank of Canada	83.53	4	3	12.3	4.1	Bank	51
1189	Church & Dwight	48.20	3	3	26.5	1.5	Household Products	28	1630	Sanofi ADR	37.73	1	4	20.3	4.6	Drug	45
1968	Coca-Cola	41.97	2	3	22.0	3.5	Beverage	38	1932	Saputo Inc.	47.50	4	3	26.4	1.3	Food Processing	49
1191	Colgate-Palmolive	71.93	2	2	25.8	2.3	Household Products	28	1142	Sherwin-Williams	270.85	2	2	21.4	1.3	Retail Building Supply	72
779	Commerce Bancshs.	48.52	2	2	17.6	1.9	Bank (Midwest)	19	1934	Smucker (J.M.)	132.22	2	2	20.2	2.3	Food Processing	49
1909	ConAgra Foods	48.38	-	-	20.3	2.1	Food Processing	49	375	Starbucks Corp.	52.61	3	2	25.9	1.8	Restaurant	47
141	Consol. Edison	73.24	3	3	17.2	3.7	Electric Utility (East)	12	191	Stryker Corp.	114.81	2	3	23.3	1.3	Med Supp Invasive	88
2137	Costco Wholesale	149.11	4	3	26.8	1.2	Retail Store	57	2598	Synopsys, Inc.	59.62	3	3	19.2	NIL	Computer Software	14
158	Deere & Co.	86.61	2	4	23.5	2.8	Heavy Truck & Equip	55	1958	Sysco Corp.	48.27	2	1	21.4	2.6	Retail/Wholesale Food	79
1974	Diageo plc	108.15	2	2	22.1	3.2	Beverage	38	2218	TJX Companies	73.16	4	3	20.7	1.4	Retail (Softlines)	63
2333	Disney (Walt)	91.17	3	4	15.3	1.6	Entertainment	76	2151	Target Corp.	67.36	3	4	13.5	3.6	Retail Store	57
1600	Du Pont	69.50	-	-	21.5	2.3	Chemical (Basic)	4	1381	Texas Instruments	69.25	3	4	22.1	2.2	Semiconductor	75
564	Ecolab Inc.	116.60	3	2	25.5	1.2	Chemical (Specialty)	62	1774	3M Company	169.95	3	1	20.4	2.6	Diversified Co.	36
1305	Emerson Electric	49.88	-	-	16.2	3.8	Electrical Equipment	27	1937	Tootsie Roll Ind.	35.73	3	3	31.9	1.0	Food Processing	49
2024	Everest Re Group Ltd.	195.34	4	3	11.5	2.5	Reinsurance	33	1561	Torchmark Corp.	64.31	3	3	14.3	0.9	Insurance (Life)	22
144	Eversource Energy	54.13	3	3	17.9	3.5	Electric Utility (East)	12	772	Travelers Cos.	115.18	4	3	11.8	2.3	Insurance (Prop/Cas.)	46
505	Exxon Mobil Corp.	86.77	2	3	31.3	3.5	Petroleum (Integrated)	18	1941	Unilever PLC ADR	42.86	2	2	21.4	3.3	Food Processing	49
309	FedEx Corp.	170.74	3	3	14.8	0.9	Air Transport	92	349	Union Pacific	96.72	3	3	18.6	2.3	Railroad	91
2556	Gallagher (Arthur J.)	50.02	3	2	17.3	3.0	Financial Svcs. (Div.)	58	316	United Parcel Serv.	108.13	3	3	18.4	3.0	Air Transport	92
712	Gen'l Dynamics	151.88	3	2	15.7	2.0	Aerospace/Defense	59	1776	United Technologies	99.99	1	2	15.1	2.6	Diversified Co.	36
1913	Gen'l Mills	61.91	3	1	20.5	3.1	Food Processing	49	814	UnitedHealth Group	143.39	4	3	17.4	1.7	Medical Services	70
991	Genuine Parts	96.35	2	2	20.3	2.7	Auto Parts	93	194	Varian Medical Sys.	96.38	-	-	21.3	NIL	Med Supp Invasive	48
1616	GlaxoSmithKline ADR	41.76	1	2	28.2	4.8	Drug	45	936	Verizon Commun.	50.27	4	2	12.7	4.6	Telecom. Services	71
1310	Grainger (W.W.)	205.86	3	2	17.7	2.4	Electrical Equipment	27	2576	Visa Inc.	81.58	4	3	27.3	0.8	Financial Svcs. (Div.)	58
1139	Home Depot	125.74	3	3	19.4	2.4	Retail Building Supply	72	917	WEC Energy Group	58.30	3	3	19.4	3.5	Electric Util. (Central)	16
1755	Honeywell Int'l	107.87	3	3	16.0	2.2	Diversified Co.	36	554	WGL Holdings Inc.	61.40	2	3	19.2	3.2	Natural Gas Utility	41
1917	Hormel Foods	38.27	3	4	23.3	1.7	Food Processing	49	2152	Wal-Mart Stores	68.87	2	2	15.7	2.9	Retail Store	57
732	Illinois Tool Works	115.08	4	2	20.0	2.3	Metal Fabricating	17	421	Waste Management	62.54	3	3	21.5	2.7	Environmental	24
1360	Intel Corp.	37.75	4	3	14.8	2.8	Semiconductor	75	2237	Xcel Energy Inc.	40.54	2	3	17.9	3.5	Electric Utility (West)	31
1402	Int'l Business Mach.	150.72	2	2	12.2	3.8	Computers/Peripherals	83	195	Zimmer Biomet Hldgs.	129.10	5	3	15.6	0.8	Med Supp Invasive	48

Stocks Ranked 2 (Above Average) for Relative Safety

Page No.	Stock Name	Rank Current					Industry Rank	Page No.	Stock Name	Rank Current					Industry Rank		
		Recent Price	Time-liness	Tech-nical	P/E Ratio	% Est'd Yield				Recent Price	Time-liness	Tech-nical	P/E Ratio	% Est'd Yield			
1204	Adams Divers. Equity Fd	12.97	-	3	NMF	1.5	Investment Co.	-	2022	AXIS Capital Hldgs.	56.72	3	3	15.2	2.5	Reinsurance	33
2119	Advance Auto Parts	142.99	5	3	19.3	0.2	Retail Automotive	95	2502	BB&T Corp.	37.89	3	2	13.5	3.2	Bank	51
793	Aetna Inc.	111.43	4	2	13.6	0.9	Medical Services	70	1174	Ball Corp.	80.92	4	3	16.2	0.6	Packaging & Container	82
902	ALLETE	58.99	3	2	18.6	3.6	Electric Util. (Central)	16	2505	Bank of Hawaii	73.25	3	3	18.5	2.6	Bank	51
903	Alliant Energy	37.38	2	2	19.2	3.2	Electric Util. (Central)	16	2506	Bank of Montreal	85.20	3	2	12.5	4.1	Bank	51
2624	Alphabet Inc.	795.26	3	3	28.0	NIL	Internet	32	174	Baxter Int'l Inc.	48.06	-	-	27.3	1.1	Med Supp Invasive	48
1991	Altria Group	62.66	3	3	20.3	3.9	Tobacco	15	2165	Bed Bath & Beyond	40.24	3	3	8.4	1.2	Retail (Hardlines)	61
904	Ameren Corp.	48.91	3	2	18.7	3.6	Electric Util. (Central)	16	202	Bio-Rad Labs. 'A'	162.33	3	3	46.0	NIL	Med Supp Non-Invasive	39
905	Amer. Elec. Power	63.37	2	3	15.5	3.7	Electric Util. (Central)	16	2226	Black Hills	58.91</						

Continued from preceding page

Stocks Ranked 2 (Above Average) for Relative Safety

Page No.	Stock Name	Recent Price	Time-liness	Rank	Current	P/E	% Est'd	Yield	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Time-liness	Rank	Current	P/E	% Est'd	Yield	Industry Group	Industry Rank	
1814	Check Point Software (NDQ)	77.23	3	4	19.1	NIL			E-Commerce	65	2129	O'Reilly Automotive (NDQ)	278.07	3	3	25.0	NIL			Retail Automotive	95	
356	Chesapeake Factory (NDQ)	50.93	4	3	18.3	1.9			Restaurant	87	915	Otter Tail Corp. (NDQ)	34.20	3	2	21.1	3.7			Electric Util. (Central)	16	
545	Chesapeake Utilities	62.10	4	3	19.8	2.0			Natural Gas Utility	41	223	Owens & Minor	33.29	2	4	16.2	3.1			Med Supp Non-Invasive	39	
798	Cigna Corp.	123.65	-	-	15.3	NIL			Medical Services	70	2520	PNC Financial Serv.	89.86	3	4	12.3	2.4			Bank	51	
763	Cincinnati Financial (NDQ)	75.24	4	3	24.4	2.6			Insurance (Prop/Cas.)	46	148	PPL Corp.	33.41	-	-	11.8	4.7			Electric Utility (East)	12	
386	Cintas Corp. (NDQ)	108.40	2	2	24.7	1.2			Industrial Services	69	366	Panera Bread Co. (NDQ)	192.21	3	2	27.9	NIL			Restaurant	87	
944	Cisco Systems (NDQ)	30.44	3	2	12.7	3.7			Telecom. Equipment	37	787	Park National (ASE)	95.01	2	3	17.6	4.0			Bank (Midwest)	19	
1190	Clorox Co.	121.80	2	3	23.1	2.7			Household Products	28	1766	Parker-Hannifin (NDQ)	122.82	2	3	17.9	2.1			Diversified Co.	36	
2610	Cognizant Technology (NDQ)	50.22	4	4	14.6	NIL			IT Services	64	224	Patterson Cos. (NDQ)	44.58	2	3	17.8	2.2			Med Supp Non-Invasive	39	
1020	Comcast Corp. (NDQ)	64.88	5	3	18.6	1.7			Cable TV	73	259	PayPal Holdings (NDQ)	39.83	-	-	32.6	NIL			Financial Svcs. (Div.)	58	
207	Cooper Cos.	180.68	3	1	24.5	NIL			Med Supp Non-Invasive	39	1508	People's United Fin'l (NDQ)	15.64	3	2	17.0	4.3			Thrift	29	
2124	Copart, Inc. (NDQ)	54.12	4	3	22.6	NIL			Retail Automotive	95	1993	Philip Morris Int'l	96.56	2	2	20.3	4.3			Tobacco	15	
358	Cracker Barrel (NDQ)	132.09	5	1	16.1	3.5			Restaurant	87	2235	Portland General	41.77	3	3	18.8	3.2			Electric Utility (West)	31	
2512	Cullen/Frost Bankers	73.00	1	3	16.3	3.0			Bank	51	2270	Price (T. Rowe) Group (NDQ)	65.21	4	3	14.0	3.4			Financial Svcs. (Div.)	58	
1205	DNP Select Inc. Fund	10.17	-	3	NMF	4.4			Investment Co.	-	769	Progressive (Ohio)	32.08	3	3	18.8	2.8			Insurance (Prop/Cas.)	46	
2612	DST Systems	112.98	-	-	20.5	1.2			IT Services	64	810	Quest Diagnostics	83.70	3	3	16.2	1.9			Medical Services	70	
908	DTE Energy	92.84	2	2	18.5	3.4			Electric Util. (Central)	16	770	RLI Corp.	68.04	2	3	32.9	1.2			Insurance (Prop/Cas.)	46	
1748	Danaher Corp.	76.43	-	-	19.3	0.7			Diversified Co.	36	1540	Realty Income Corp.	62.66	2	3	47.1	3.9			R.E.I.T.	50	
800	DaVita Inc. (NDQ)	62.51	4	4	16.4	NIL			Medical Services	70	1560	Reinsurance Group	110.03	3	3	11.5	1.5			Insurance (Life)	22	
179	Dentsply Sirona (NDQ)	59.06	-	-	21.0	0.5			Med Supp Invasive	48	2027	RenaissanceRe Hldgs.	123.34	3	3	15.4	1.0			Reinsurance	33	
1031	Deutsche Telekom ADR (PNK)	15.97	4	3	22.8	3.9			Telecom. Utility	30	416	Republic Services	50.24	3	3	22.8	2.5			Environmental	24	
2140	Dollar Tree, Inc. (NDQ)	76.25	3	1	19.6	NIL			Retail Store	57	1994	Reynolds American	47.27	2	3	20.3	3.9			Tobacco	15	
142	Dominion Resources	73.37	2	2	18.7	4.0			Electric Utility (East)	12	1644	Robert Half Int'l	38.06	4	5	13.6	2.4			Human Resources	78	
1710	Donaldson Co.	36.41	2	2	23.6	1.9			Machinery	68	406	Rollins, Inc.	28.26	4	2	34.9	1.6			Industrial Services	69	
1711	Dover Corp.	67.54	2	2	19.8	2.6			Machinery	68	2216	Ross Stores (NDQ)	63.55	4	3	22.5	0.9			Retail (Softlines)	63	
1975	Dr Pepper Snapple	87.66	3	3	19.5	2.5			Beverage	38	516	Royal Dutch Shell 'B'	53.83	4	4	26.1	7.0			Petroleum (Integrated)	18	
143	Duke Energy	77.90	2	2	17.1	4.4			Electric Utility (East)	12	453	S&P Global	122.89	4	2	23.1	1.2			Information Services	74	
987	Eaton Corp. plc	63.19	3	2	14.5	3.6			Auto Parts	93	2596	SAP SE (NDQ)	87.66	3	2	26.6	1.5			Computer Software	14	
2227	Edison Int'l	72.07	3	3	18.1	2.9			Electric Utility (West)	31	1620	SEI Investments (NDQ)	44.44	3	3	20.7	1.3			IT Services	64	
2228	El Paso Electric	43.74	2	2	17.9	2.9			Electric Utility (West)	31	250	SCANA Corp.	70.59	2	2	17.3	3.4			Electric Utility (East)	12	
1948	Empire Company Ltd. (TSE)	19.60	3	4	10.6	2.1			Retail/Wholesale Food	79	2343	Schlumberger Ltd.	81.39	1	3	74.0	2.5			Oilfield Svcs/Equip.	5	
909	Empire Dist. Elec.	34.27	-	-	25.6	3.1			Electric Util. (Central)	16	2454	Scrips Networks	61.69	3	3	11.9	1.6			Entertainment	76	
605	Enbridge Inc. (TSE)	58.16	5	2	24.1	3.6			Oil/Gas Distribution	8	2236	Sempra Energy	105.06	3	2	25.8	3.1			Electric Utility (West)	31	
2023	Endurance Specialty	91.88	-	-	14.8	1.7			Reinsurance	33	1933	Sensient Techn.	72.52	2	2	21.6	1.5			Food Processing	49	
445	Equifax, Inc.	130.28	4	3	23.6	1.0			Information Services	74	1024	Shaw Commun. 'B' (TSE)	26.38	2	4	21.6	4.5			Cable TV	73	
764	Erie Indemnity (NDQ)	104.72	2	3	27.9	2.8			Insurance (Prop/Cas.)	46	1543	Simon Property Group	198.44	4	2	32.3	3.4			R.E.I.T.	50	
389	Expeditors Int'l (NDQ)	49.42	3	3	20.0	1.6			Industrial Services	69	1728	Snap-on Inc.	149.56	4	2	16.3	1.6			Machinery	68	
446	FactSet Research	155.84	4	1	23.7	1.3			Information Services	74	1185	Sonoco Products	50.60	3	2	18.3	2.9			Packaging & Container	82	
1138	Fastenal Co. (NDQ)	38.16	3	3	21.7	3.1			Retail Building Supply	72	550	South Jersey Inds.	28.61	2	2	21.7	3.9			Natural Gas Utility	41	
1524	Federal Rlty. Inv. Trust	147.10	2	2	46.4	2.7			R.E.I.T.	50	151	Southern Co.	51.09	2	2	18.1	4.5			Electric Utility (East)	12	
2552	Fidelity National	75.95	2	2	27.8	1.4			Financial Svcs. (Div.)	58	552	Spire Inc.	61.70	3	3	18.4	3.2			Natural Gas Utility	41	
2614	Fiserv Inc. (NDQ)	100.06	3	3	21.8	NIL			IT Services	64	1729	Stanley Black & Decker	120.00	3	3	18.0	1.9			Machinery	68	
1751	Fortis Inc. (TSE)	42.46	3	3	19.0	3.8			Diversified Co.	36	417	Stericycle Inc. (NDQ)	74.85	3	3	18.6	NIL			Environmental	24	
2555	Franklin Resources	34.23	1	3	11.8	2.4			Financial Svcs. (Div.)	58	190	STERIS plc	69.29	3	3	17.3	1.6			Med Supp Invasive	48	
1308	Garmin Ltd. (NDQ)	48.64	2	3	19.0	4.3			Electrical Equipment	27	1379	Taiwan Semic. ADR	30.86	5	3	15.7	3.0			Semiconductor	75	
448	Gartner Inc.	88.13	3	3	31.6	NIL			Information Services	74	193	Teleflex Inc.	167.59	3	2	29.9	0.8			Med Supp Invasive	48	
2557	Global Payments	74.21	3	3	32.7	0.1			Financial Svcs. (Div.)	58	934	TELVU Corporation (TSE)	42.80	3	3	16.0	4.6			Telecom. Services	71	
1803	Goldman Sachs	172.63	2	4	9.7	1.5			Investment Banking	10	1631	Teva Pharm. ADR	43.26	3	3	8.0	3.2			Drug	45	
765	Hanover Insurance	78.76	4	4	13.2	2.3			Insurance (Prop/Cas.)	46	134	Thermo Fisher Sci.	151.67	2	3	28.1	0.4			Precision Instrument	23	
1333	Harris Corp.	90.39	3	3	15.6	2.4			Electronics	56	454	Thomson Reuters (TSE)	52.26	3	3	24.7	2.6			Information Services	74	
2229	Hawaiian Elec.	28.95	1	3	13.0	4.3			Electric Utility (West)	31	2528	Toronto-Dominion (TSE)	58.93	3	3	12.6	3.9			Bank	51	
394	Healthcare Svcs. (NDQ)	37.49	3	3	34.1	2.1			Industrial Services	69	519	Total ADR	48.54	2	4	12.5	5.7			Petroleum (Integrated)	18	
321	Heartland Express (NDQ)	18.16	3	3	25.2	0.4			Trucking	94	2574	Total System Svcs.	48.31	3	3	22.1	0.8			Financial Svcs. (Div.)	58	
2615	Henry (Jack) & Assoc. (NDQ)	82.52	3	2	27.1	1.4			IT Services	64	111	Toyota Motor ADR	115.05	4	3	12.0	3.5			Automotive	60	
1916	Hershey Co.	96.31	3	2	22.1	2.6			Food Processing	49	610	TransCanada Corp.	47.27	2	2	27.6	4.8			Oil/Gas Distribution	8	
1312	Hubbell Inc.	103.24	3	2	19.0	2.4			Electrical Equipment	27	1213	Tri-Continental	20.93	-	3	NMF	3.8				Investment Co.	-
323	Hunt (J.B.) (NDQ)	78.99	5	3	19.9	1.1			Trucking	94	553	UGI Corp.	44.71	3	2	20.5	2.1			Natural Gas Utility	41	
2230	IDACORP, Inc.	75.79	3	3	18.9	2.9			Electric Utility (West)	31	411	UniFirst Corp.	130.80	3	3	22.8	0.1			Industrial Services	69	
1714	IDEX Corp.	86.79	5	1	22.7	1.6			Machinery	68	790	U.S. Bancorp	43.01	3	2	13.0	2.6			Bank (Midwest)	19	
509	Imperial Oil Ltd. (ASE)	32.51	1	4	39.6	1.4			Petroleum (Integrated)	18	2117	V.F. Corp.	54.48	4	3	16.4	2.7			Apparel	86	
2616	Infosys Ltd. ADR	15.91	3	4	15.2	2.6			IT Services	64	2029	Validus Holdings	51.57	3	3	11.8	2.7			Reinsurance	33	
1795	Intercontinental Exch.	267.65	4	1	19.1	1.3			Brokers & Exchanges	47	916	Vectren Corp.	48.82	3	3	19.6	3.4			Electric Util. (Central)	16	
2588	Intuit Inc. (NDQ)	107.15	3	3	25.8	1.1			Computer Software	1												



**HIGHEST DIVIDEND YIELDING STOCKS (Based upon estimated year-ahead dividends per share)**

Page No.	Stock Name	Recent Price	Time-liness	Safety	P/E Ratio	Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Time-liness	Safety	P/E Ratio	Est'd Yield	Industry Group	Industry Rank
1512	Annaly Capital Mgmt.	10.10	2	3	8.6	11.9	R.E.I.T.	50	619	Enterprise Products	27.03	3	3	21.3	6.1	Pipeline MLPs	6
617	Energy Transfer	36.44	2	3	24.6	11.6	Pipeline MLPs	6	2387	Gannett Co.	10.64	-	3	10.2	6.1	Newspaper	-
2217	Stage Stores	5.16	-	4	19.1	11.6	Retail (Softlines)	63	2175	GameStop Corp.	24.82	3	3	6.1	6.0	Retail (Hardlines)	61
946	Comtech Telecom.	10.88	1	4	NMF	11.0	Telecom. Equipment	37	1764	National Presto Ind.	85.90	3	3	15.4	5.9	Diversified Co.	36
1836	StoneMor Partners L.P.	24.78	1	3	NMF	10.7	Funeral Services	34	1596	CF Industries	23.46	2	3	27.9	5.8	Chemical (Basic)	4
331	Frontline Ltd.	7.56	3	5	7.2	10.6	Maritime	53	2164	Barnes & Noble	10.50	-	4	35.0	5.7	Retail (Hardlines)	61
623	Suburban Propane	33.71	1	3	21.9	10.5	Pipeline MLPs	6	2307	Cedar Fair L.P.	58.03	5	3	16.0	5.7	Recreation	85
1032	Frontier Commun.	4.08	2	4	NMF	10.3	Telecom. Utility	30	507	HollyFrontier Corp.	23.80	2	3	16.6	5.7	Petroleum (Integrated)	18
2652	Apollo Investment	5.89	2	3	29.5	10.2	Public/Private Equity	1	397	Iron Mountain	34.15	2	3	30.0	5.7	Industrial Services	69
2655	Gladstone Capital	8.60	2	3	9.7	9.8	Public/Private Equity	1	513	PBF Energy	21.07	3	3	8.4	5.7	Petroleum (Integrated)	18
1209	Liberty All-Star	5.07	-	2	NMF	9.5	Investment Co.	-	2383	Time Inc.	13.30	-	3	8.5	5.7	Publishing	54
625	Williams Partners L.P.	36.79	2	4	21.0	9.2	Pipeline MLPs	6	519	Total ADR	48.54	2	2	12.5	5.7	Petroleum (Integrated)	18
616	DCP Midstream Partners	34.83	3	3	24.2	9.0	Pipeline MLPs	6	2360	Extended Stay America	13.70	3	3	15.4	5.5	Hotel/Gaming	80
2535	AllianceBernstein Hldg.	21.80	3	3	11.5	8.9	Financial Svcs. (Div.)	58	2200	Abercrombie & Fitch	15.39	3	3	22.3	5.4	Retail (Softlines)	63
1033	Telefonica SA ADR	9.73	2	4	17.1	8.7	Telecom. Utility	30	511	Western Refining	28.07	4	3	10.7	5.4	Petroleum (Integrated)	18
1203	Aberdeen Asia-Pac. Fd.	4.90	-	4	NMF	8.6	Investment Co.	-	1602	Mosaic Company	23.39	2	3	37.7	5.3	Chemical (Basic)	4
618	EnLink Midstream Part.	18.36	1	3	NMF	8.5	Pipeline MLPs	6	821	Computer Prog. & Sys.	26.21	1	3	23.2	5.2	Healthcare Information	11
2651	Apollo Global Mgmt	17.61	2	3	6.7	8.4	Public/Private Equity	1	102	Daimler AG	70.80	3	3	7.3	5.2	Automotive	60
947	Ericsson ADR	5.47	1	3	11.6	8.4	Telecom. Equipment	37	2515	HSBC Holdings PLC	38.33	1	3	10.0	5.2	Bank	51
1210	MFS Multimarket	5.90	-	4	NMF	8.1	Investment Co.	-	1532	Host Hotels & Resorts	15.70	3	3	17.4	5.2	R.E.I.T.	50
1804	Greenhill & Co.	22.95	1	3	12.7	7.8	Investment Banking	10	2203	Buckle (The), Inc.	21.30	2	3	9.4	5.1	Retail (Softlines)	63
570	Kronos Worldwide	7.70	2	4	59.2	7.8	Chemical (Specialty)	62	1518	DDR Corp.	16.37	3	3	51.2	5.1	R.E.I.T.	50
1028	CenturyLink Inc.	27.90	3	3	11.2	7.7	Telecom. Utility	30	1309	Gen'l Cable	14.25	3	4	14.8	5.1	Electrical Equipment	27
621	ONEOK Partners L.P.	41.87	2	3	18.0	7.5	Pipeline MLPs	6	607	ONEOK Inc.	50.03	1	3	27.8	5.1	Oil/Gas Distribution	8
1583	Alliance Resource	23.55	3	3	8.1	7.4	Metals & Mining (Div.)	2	1550	Welltower Inc.	70.33	3	3	24.0	5.1	R.E.I.T.	50
624	Sunoco Logistics Part.	26.89	2	3	24.0	7.4	Pipeline MLPs	6	920	AT&T Inc.	39.36	3	1	13.7	5.0	Telecom. Services	71
748	Russel Metals	20.77	1	3	18.5	7.3	Steel	7	105	Ford Motor	11.89	3	3	6.7	5.0	Automotive	60
1791	BGC Partners	8.85	3	3	9.1	7.2	Brokers & Exchanges	47	2396	Lamar Advertising	64.55	4	3	21.1	5.0	Advertising	66
615	Buckeye Partners L.P.	70.01	3	3	16.3	7.1	Pipeline MLPs	6	2364	Las Vegas Sands	57.45	3	2	9.1	5.0	Hotel/Gaming	80
1229	Pattern Energy Group	22.38	3	3	NMF	7.1	Power	26	2519	Nat'l Bank of Canada	45.68	3	2	26.9	5.0	Bank	51
1409	Seagate Technology	35.34	3	3	11.6	7.1	Computers/Peripherals	83	1558	Power Financial	31.25	3	3	11.0	5.0	Insurance (Life)	22
1034	Windstream Hldgs.	8.40	-	4	NMF	7.1	Telecom. Utility	30	2534	Aircastle Ltd.	19.72	3	3	10.2	4.9	Financial Svcs. (Div.)	58
1552	AEGON	4.15	1	3	8.8	7.0	Insurance (Life)	22	2143	Kohl's Corp.	43.04	1	2	12.1	4.9	Retail Store	57
2654	Fortress Investment	5.13	3	3	5.2	7.0	Public/Private Equity	1	2315	Mattel, Inc.	30.71	2	2	22.3	4.9	Recreation	85
1531	Hospitality Properties	29.29	2	3	20.3	7.0	R.E.I.T.	50	1506	New York Community	13.93	2	3	12.7	4.9	Thrift	29
516	Royal Dutch Shell 'B'	53.83	3	2	26.1	7.0	Petroleum (Integrated)	18	1590	Rio Tinto plc	32.55	2	3	16.3	4.9	Metals & Mining (Div.)	2
622	Plains All Amer. Pipe.	32.46	1	3	41.6	6.8	Pipeline MLPs	6	2150	Stein Mart	6.09	3	3	14.5	4.9	Retail Store	57
502	BP PLC ADR	35.98	3	3	66.6	6.7	Petroleum (Integrated)	18	2509	Can. Imperial Bank	101.07	3	1	10.6	4.8	Bank	51
1218	Covanta Holding Corp.	15.20	3	3	NMF	6.6	Power	26	106	General Motors	31.40	4	3	5.3	4.8	Automotive	60
1206	Deutsche High Income	9.25	-	4	NMF	6.6	Investment Co.	-	1616	GlaxoSmithKline ADR	41.76	1	1	28.2	4.8	Drug	45
2106	Guess Inc.	13.72	2	3	16.5	6.6	Apparel	86	620	Magellan Midstream	71.48	3	3	19.9	4.8	Pipeline MLPs	6
1529	HCP Inc.	36.69	-	3	16.5	6.4	R.E.I.T.	50	2381	Quad/Graphics Inc.	24.87	3	4	21.8	4.8	Publishing	54
400	Macquarie Infrastructure	83.20	3	3	68.2	6.4	Industrial Services	69	610	TransCanada Corp.	47.27	2	2	27.6	4.8	Oil/Gas Distribution	8
2190	Pier 1 Imports	4.40	3	4	22.0	6.4	Retail (Hardlines)	61	907	CenterPoint Energy	22.51	2	3	22.5	4.7	Electric Util. (Central)	16
1422	Staples, Inc.	7.50	2	3	8.3	6.4	Office Equip/Supplies	20	360	DineEquity Inc.	78.38	4	3	13.7	4.7	Restaurant	87
1030	Consol. Commun.	24.66	3	3	72.5	6.3	Telecom. Utility	30	2656	KKR & Co. L.P.	13.72	1	3	4.4	4.7	Public/Private Equity	1
1541	Ryman Hospitality	50.25	3	3	17.4	6.3	R.E.I.T.	50	1534	Liberty Property	40.21	3	3	16.0	4.7	R.E.I.T.	50
1547	W.P. Carey Inc.	62.25	3	3	28.8	6.3	R.E.I.T.	50	2568	Navigent Corp.	13.61	-	3	7.3	4.7	Financial Svcs. (Div.)	58
2398	National CineMedia	14.10	3	3	17.6	6.2	Advertising	66	148	PPL Corp.	33.41	-	2	11.8	4.7	Electric Utility (East)	12
2653	Blackstone Group LP	23.61	1	3	9.9	6.1	Public/Private Equity	1	608	Pembina Pipeline Corp.	40.92	2	3	35.0	4.7	Oil/Gas Distribution	8

**STOCKS WITH HIGH 3- TO 5-YEAR PRICE APPRECIATION POTENTIAL**

Some of the stocks tabulated below are very risky and appreciation potentialities tentative. Please read the full-page reports in Ratings & Reports to gain an understanding of the risks entailed. Some of these stocks may not be timely investment commitments. (See the Performance Ranks below.)

Page No.	Stock Name	Recent Price	5-year Potential	Time-liness	Safety	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	5-year Potential	Time-liness	Safety	Industry Group	Industry Rank
1126	Hovnanian Enterpr. 'A'	1.58	405%	-	5	Homebuilding	90	2181	Liberty Interactive	18.78	165%	4	3	Retail (Hardlines)	61
2435	Seadrill Ltd.	2.32	395%	3	5	Oilfield Svcs/Equip.	5	1621	Mylan N.V.	37.39	165%	3	3	Drug	45
2438	Tidewater Inc.	2.97	390%	-	5	Oilfield Svcs/Equip.	5	1625	Opko Health	9.40	165%	3	3	Drug	45
1632	Valeant Pharm. Int'l	22.07	375%	3	5	Drug	45	799	Community Health	10.53	160%	-	4	Medical Services	70
2202	Ascena Retail Group	5.00	330%	3	3	Retail (Softlines)	63	2586	FireEye Inc.	12.53	160%	1	4	Computer Software	14
372	Ruby Tuesday	3.10	320%	-	4	Restaurant	87	1222	First Solar, Inc.	39.57	160%	3	3	Power	26
1231	SunPower Corp.	8.54	310%	1	4	Power	26	513	PBF Energy	21.07	160%	3	3	Petroleum (Integrated)	18
840	Senomyx, Inc.	2.72	305%	-	5	Biotechnology	40	2217	Stage Stores	5.16	160%	-	4	Retail (Softlines)	63
813	Tenet Healthcare	23.68	290%	4	4	Medical Services	70	2196	Weight Watchers	10.18	160%	1	5	Retail (Hardlines)	61
2417	CARBO Ceramics	10.56	280%	1	4	Oilfield Svcs/Equip.	5	988	Federal-Mogul Hldgs.	9.20	155%	-	4	Auto Parts	93
1324	Avigilon Corp.	8.34	260%	4	3	Electronics	56	2155	Cross, Inc.	8.08	150%	1	4	Shoe	81
2394	Harle-Hanks	1.52	260%	-	5	Advertising	66	2175	GameStop Corp.	24.82	150%	3	3	Retail (Hardlines)	61
1760	LSB Inds.	6.22	260%	1	5	Diversified Co.	36	2363	La Quinta Hldgs.	10.91	150%	-	3	Hotel/Gaming	80
1597	CVR Partners, LP	4.86	250%	2	3	Chemical (Basic)	4	572	Methanex Corp.	37.80	150%	1	3	Chemical (Specialty)	62
801	Envision Healthcare	21.83	245%	-	3	Medical Services	70	2185	Movado Group	22.10	150%	3	3	Retail (Hardlines)	61
337	Teekay Corp.	7.92	245%	4	5	Maritime	53	2149	Sears Holdings	10.99	150%	3	5	Retail Store	57
351	B.J.'s Restaurants	35.42	240%	4	3	Restaurant	87	841	United Therapeutics	116.97	150%	4	3	Biotechnology	40
2429	Noble Corp. plc	5.77	240%	2	4	Oilfield Svcs/Equip.	5	2653	Blackstone Group LP	23.61	145%	1	3	Public/Private Equity	1
2440	Weatherford Int'l plc	5.91	240%	1	4	Oilfield Svcs/Equip.	5	352	Bloom'n Brands	17.18	145%	3	3	Restaurant	87
1330	Fitbit Inc.	13.54	230%	-	4	Electronics	56	588	CalAmp Corp.	13.23	145%	3	4	Wireless Networking	77
1626	PDL BioPharma	3.19	230%	3	5	Drug	45	1397	Cray Inc.	21.33	145%	4	4	Computers/Peripherals	83
2572	SLM Corporation	7.25	230%	-	4	Financial Svcs. (Div.)	58	1181	Owens-Illinois	17.37	145%	2	3	Packaging & Container	82
2347	Sirius XM Holdings	4.10	215%	4	4	Entertainment	76	2369	P						

**BIGGEST "FREE FLOW" CASH GENERATORS**

Stocks of companies that have earned more "cash flow" in the last 5 years than was required to build plant and pay dividends

Page No.	Stock Name	Ratio "Cash Flow"			Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Ratio "Cash Flow"			Safety Rank	Industry Group	Industry Rank
		Recent Price	To Cash Out	Time-liness						Recent Price	To Cash Out	Time-liness			
2656	KKR & Co. L.P.	13.72	87.97	1	3	Public/Private Equity	1	724	TASER Int'l	22.63	6.91	3	4	Aerospace/Defense	59
2108	Iconix Brand Group	7.89	85.92	3	4	Apparel	86	1726	Roper Tech.	172.52	6.89	4	1	Machinery	68
1814	Check Point Software	77.23	58.25	3	2	E-Commerce	65	2158	Madden (Steven) Ltd.	33.24	6.87	3	3	Shoe	81
2640	Priceline Group (The)	1454.97	22.71	4	3	Internet	32	171	ABIOMED Inc.	129.07	6.75	3	3	Med Supp Invasive	48
834	Jazz Pharmac. plc	119.35	21.91	3	3	Biotechnology	40	2555	Franklin Resources	34.23	6.75	1	2	Financial Svcs. (Div.)	58
2636	Netflix, Inc.	118.79	20.39	3	3	Internet	32	1322	Anixter Int'l	60.90	6.73	1	3	Electronics	56
1609	Allergan plc	227.94	16.33	4	3	Drug	45	593	InterDigital Inc.	78.65	6.57	4	3	Wireless Networking	77
598	Ubiquiti Networks	49.53	16.03	4	3	Wireless Networking	77	956	NETGEAR	52.70	6.54	3	3	Telecom. Equipment	37
1136	Toll Brothers	28.61	15.52	4	3	Homebuilding	90	841	United Therapeutics	116.97	6.47	4	3	Biotechnology	40
809	MEDNAX, Inc.	66.98	15.00	4	2	Medical Services	70	941	Arris Int'l plc	28.90	6.41	4	3	Telecom. Equipment	37
1720	Middleby Corp. (The)	117.68	14.78	4	3	Machinery	68	221	Natus Medical	39.70	6.32	4	3	Med Supp Non-Invasive	39
2554	FleetCor Technologies	173.56	14.17	4	3	Financial Svcs. (Div.)	58	154	Actuant Corp.	22.26	6.31	2	3	Heavy Truck & Equip	55
1131	NVR, Inc.	1602.40	14.10	4	2	Homebuilding	90	1234	AECOM	27.94	6.28	3	3	Engineering & Const	35
2332	Discovery Commun.	25.21	13.61	3	3	Entertainment	76	713	HEICO Corp.	67.53	6.19	4	3	Aerospace/Defense	59
2581	ANSYS, Inc.	91.39	13.28	3	2	Computer Software	14	1733	Wabtec Corp.	80.81	6.17	4	3	Machinery	68
2163	Avis Budget Group	32.05	13.00	5	4	Retail (Hardlines)	61	1408	ScanSource	35.50	6.16	2	3	Computers/Peripherals	83
1977	Monster Beverage	146.72	12.79	3	3	Beverage	38	2180	Insight Enterprises	32.91	6.13	3	3	Retail (Hardlines)	61
2606	CACI Int'l	100.30	12.65	4	3	IT Services	64	194	Varian Medical Sys.	96.38	6.09	-	1	Med Supp Invasive	48
2371	Scientific Games	12.70	12.54	-	5	Hotel/Gaming	80	1224	Generac Holdings	36.62	6.03	3	3	Power	26
968	Express Scripts	70.31	12.45	4	3	Pharmacy Services	84	2007	DTS, Inc.	42.30	6.00	-	4	Entertainment Tech	44
2016	TiVo Corp.	19.65	11.58	-	3	Entertainment Tech	44	185	Intuitive Surgical	721.73	5.93	3	3	Med Supp Invasive	48
1632	Valeant Pharm. Int'l	22.07	11.49	3	5	Drug	45	588	CalAmp Corp.	13.23	5.87	3	4	Wireless Networking	77
726	TransDigm Group	282.08	11.48	4	3	Aerospace/Defense	59	134	Thermo Fisher Sci.	151.67	5.77	2	2	Precision Instrument	23
836	Myriad Genetics	19.91	11.33	3	3	Biotechnology	40	2602	ACI Worldwide	19.73	5.72	5	3	IT Services	64
1317	WESCO Int'l	58.10	11.11	2	3	Electrical Equipment	27	2598	Synopsys, Inc.	59.62	5.67	3	1	Computer Software	14
1615	Gilead Sciences	73.41	10.71	5	3	Drug	45	961	Synaptics	65.90	5.63	4	3	Telecom. Equipment	37
1613	Celgene Corp.	100.06	10.63	3	3	Drug	45	169	Wabash National	13.45	5.60	5	4	Heavy Truck & Equip	55
1388	Kulicic & Soffa	12.93	10.49	3	3	Semiconductor Equip	67	131	PerkinElmer Inc.	52.49	5.59	4	3	Precision Instrument	23
2617	Manhattan Assoc.	59.01	9.91	4	3	IT Services	64	1323	Arrow Electronics	62.20	5.58	5	3	Electronics	56
948	F5 Networks	117.56	9.80	3	3	Telecom. Equipment	37	601	Zebra Techn. 'A'	65.36	5.53	4	3	Wireless Networking	77
2599	Teradata Corp.	29.50	9.48	2	3	Computer Software	14	2578	WEX Inc.	104.89	5.52	3	3	Financial Svcs. (Div.)	58
1354	CEVA, Inc.	30.85	9.29	2	4	Semiconductor	75	1999	Bridgepoint Education	6.76	5.47	2	4	Educational Services	25
2330	AMC Networks	49.26	9.19	5	3	Entertainment	76	1276	Boston Scientific	23.12	5.45	3	3	Med Supp Invasive	48
226	Schein (Henry)	153.35	9.06	3	3	Med Supp Non-Invasive	39	1363	Chicago Bridge & Iron	27.73	5.43	4	3	Engineering & Const	35
1010	Helen of Troy Ltd.	82.45	8.88	4	3	Toiletries/Cosmetics	21	2610	Cognizant Technology	50.22	5.43	4	2	IT Services	64
938	Vonage Holdings	6.25	8.74	5	4	Telecom. Services	71	2347	Sirius XM Holdings	4.10	5.41	4	4	Entertainment	76
1410	Tech Data	80.57	8.60	4	3	Computers/Peripherals	83	1356	Cirrus Logic	53.55	5.36	4	3	Semiconductor	75
1316	Universal Display	50.22	8.47	3	3	Electrical Equipment	27	2187	Nautlius Inc.	20.50	5.35	4	4	Retail (Hardlines)	61
1611	Biogen	295.05	8.24	4	3	Drug	45	1978	National Beverage	49.50	5.34	3	3	Beverage	38
1128	Lennox Corp.	41.91	8.16	5	3	Homebuilding	90	962	Verifone Systems	15.14	5.34	3	4	Telecom. Equipment	37
1645	Team Health Hldgs.	40.25	8.13	-	3	Human Resources	78	1359	Integrated Device	20.15	5.29	4	3	Semiconductor	75
2654	Fortress Investment	5.13	7.67	3	3	Public/Private Equity	1	951	Ixia	11.96	5.27	3	3	Telecom. Equipment	37
2584	Cadence Design Sys.	26.24	7.54	4	3	Computer Software	14	711	Esterline Technologies	73.00	5.26	2	3	Aerospace/Defense	59
1130	Meritage Homes	33.85	7.52	3	3	Homebuilding	90	1576	Silver Wheaton	24.08	5.20	1	3	Precious Metals	3
1350	Advanced Energy	46.83	7.51	4	3	Semiconductor	75	957	NeuStar Inc.	25.20	5.16	3	3	Telecom. Equipment	37
1315	Trimble Inc.	29.30	7.44	1	3	Electrical Equipment	27	568	Innospec Inc.	61.96	5.14	5	3	Chemical (Specialty)	62
2010	Electronic Arts	84.01	7.16	5	3	Entertainment Tech	44	1628	Perrigo Co. plc	88.24	5.11	4	3	Drug	45
2567	MasterCard Inc.	101.73	7.15	3	1	Financial Svcs. (Div.)	58	1643	On Assignment	36.55	5.08	4	3	Human Resources	78
192	SurModics, Inc.	28.50	7.08	2	3	Med Supp Invasive	48	414	Tetra Tech	37.35	5.08	2	3	Environmental	24
2593	PTC Inc.	46.13	6.91	2	3	Computer Software	14	417	Stericycle Inc.	74.85	5.06	3	2	Environmental	24

**BEST PERFORMING STOCKS**

(Measured by Price Change in the Last 13 Weeks)

Page No.	Stock Name	Ticker	Recent Price	Percent Change In Price	Time-liness	Safety Rank
804	Healthways Inc.	HWAY	25.92	117.3%	1	4
165	Navistar Int'l	NAV	22.36	88.7%	3	5
949	Harmonic, Inc.	HLIT	5.55	86.2%	-	3
1554	Genworth Fin'l	GNW	5.09	78.0%	2	5
562	Chemours Co. (The)	CC	15.86	74.3%	-	4
1007	Avon Products	AVP	6.62	68.0%	1	4
2167	Big 5 Sporting Goods	BGFV	16.55	64.2%	2	4
205	Cepheid	CPHD	52.82	62.8%	-	4
2220	Tilly's, Inc.	TLYS	9.29	58.0%	3	3
591	Finsisar Corp.	FNSR	29.00	56.6%	3	4
1592	Teck Resources Ltd. 'B'	TCKB.TO	27.10	55.1%	2	4
1003	Titan Int'l	TWI	10.25	54.4%	1	4
1973	Craft Brew Alliance	BREW	18.05	53.6%	2	4
1361	Intersil Corp. 'A'	ISIL	22.06	53.6%	-	3
1384	Amkor Technology	AMKR	9.39	52.2%	2	5
931	Sprint Corp.	S	6.86	51.8%	3	4
2007	DTS, Inc.	DTSI	42.30	50.7%	-	4
333	Golar LNG Ltd.	GLNG	23.62	50.6%	1	4
1589	Natural Resource	NRP	30.18	46.5%	-	5
525	Chesapeake Energy	CHK	6.52	44.9%	2	5
531	Encana Corp.	ECA	11.12	43.5%	3	5
178	CryoLife Inc.	CRY	17.00	42.0%	2	3
514	Petroleo Brasileiro ADR	PBR	11.77	39.0%	1	5
2636	Netflix, Inc.	NFLX	118.79	38.4%	3	3
307	Copa Holdings, S.A.	CPA	92.01	38.3%	3	3
593	InterDigital Inc.	IDCC	78.65	38.2%	4	3
2223	Zumiez Inc.	ZUMZ	21.80	38.2%	3	3
1411	Unisys Corp.	UIS	10.15	38.1%	3	5
2427	Nabors Inds.	NBR	13.14	37.9%	3	4
998	Meritor, Inc.	MTOR	10.56	37.7%	5	5
2023	Endurance Specialty	ENH	91.88	37.2%	-	2
592	Infoblox Inc.	BLOX	26.35	36.2%	-	4
570	Kronos Worldwide	KRO	7.70	35.8%	2	4
2386	A.H. Belo	AHC	7.15	35.7%	-	4
2424	Helix Energy Solutions	HLX	9.53	35.6%	2	4
521	Western Refining	WNR	28.07	35.2%	4	3
1378	STMicroelectronics	STM	8.26	35.0%	3	3
1824	Rackspace Hosting	RAX	31.79	34.9%	-	3
208	Cutera, Inc.	CUTR	14.45	34.2%	3	3
2633	Groupon, Inc.	GRPN	5.07	33.8%	3	5
572	Methanex Corp.	MEOH	37.80	33.1%	1	3

**WORST PERFORMING STOCKS**

(Measured by Price Change in the Last 13 Weeks)

Page No.	Stock Name	Ticker	Recent Price	Percent Change In Price	Time-liness	Safety Rank
1760	LSB Inds.	LXU	6.22	-52.4%	1	5
1231	SunPower Corp.	SPWR	8.54	-44.7%	1	4
2104	G-III Apparel Group	GIII	27.94	-44.4%	4	3
2142	Fred's Inc.	FRED	8.83	-44.3%	2	3
1417	Essendant Inc.	ESND	18.27	-42.9%	2	3
826	Alnylam Pharmac.	ALNY	38.07	-40.5%	2	4
1597	CVR Partners, LP	UAN	4.86	-39.6%	2	3
1334	Integer Holdings	ITGR	19.54	-39.1%	3	3
2438	Tidewater Inc.	TDW	2.97	-36.8%	-	5
2202	Ascena Retail Group	ASNA	5.00	-36.5%	3	3
836	Myriad Genetics	MYGN	19.91	-36.2%	3	3
930	Shenandoah Telecom.	SHEN	26.55	-36.2%	3	3
727	Triumph Group	TGI	24.25	-36.0%	3	3
1324	Avigilon Corp.	AVO.TO	8.34	-35.1%	4	3
1579	Yamana Gold	AUY	3.79	-35.1%	2	5
821	Computer Prog. & Sys.	CPSI	26.21			



**WIDEST DISCOUNTS FROM BOOK VALUE**  
**Stocks whose ratios of recent price to book value are lowest**

Page No.	Stock Name	Ticker	Recent Price	Book Value Per sh.*	Percent Price-to-Book Value	Time-liness	Safety Rank	Beta	P/E Ratio	Est'd Yield	Industry Group	Industry Rank
2438	Tidewater Inc.	TDW	2.97	48.86	6%	-	5	1.40	NMF	NIL	Oilfield Svcs/Equip.	5
2435	Seadrill Ltd.	SDRL	2.32	19.02	12%	3	5	1.75	2.8	NIL	Oilfield Svcs/Equip.	5
337	Teekay Corp.	TK	7.92	50.90	16%	4	5	1.70	24.0	2.8	Maritime	53
330	Diana Shipping	DSX	2.50	14.76	17%	-	4	1.45	NMF	NIL	Maritime	53
1554	Genworth Fin'l	GNW	5.09	29.43	17%	2	5	1.95	5.9	NIL	Insurance (Life)	22
2429	Noble Corp. plc	NE	5.77	27.69	21%	2	4	1.60	NMF	1.4	Oilfield Svcs/Equip.	5
2439	Transocean Ltd.	RIG	9.90	39.83	25%	3	5	1.50	NMF	NIL	Oilfield Svcs/Equip.	5
306	Bristow Group	BRS	11.59	42.86	27%	1	4	1.30	NMF	2.4	Air Transport	92
799	Community Health	CYH	10.53	35.64	30%	-	4	1.35	7.4	NIL	Medical Services	70
2421	Enesco plc	ESV	8.47	27.67	31%	2	4	1.45	9.8	0.5	Oilfield Svcs/Equip.	5
2217	Stage Stores	SSI	5.16	16.00	32%	-	4	1.45	19.1	11.6	Retail (Softlines)	63
2414	Whiting Petroleum	WLL	8.36	23.27	36%	2	5	2.10	NMF	NIL	Petroleum (Producing)	9
2433	Rowan Cos. plc	RDC	14.09	38.24	37%	3	3	1.35	9.0	NIL	Oilfield Svcs/Equip.	5
2417	CARBO Ceramics	CRR	10.56	27.59	38%	1	4	1.45	NMF	NIL	Oilfield Svcs/Equip.	5
1760	LSB Inds.	LXU	6.22	16.39	38%	1	5	1.65	NMF	NIL	Diversified Co.	36
740	ArcelorMittal	MT	6.36	15.25	42%	1	4	1.70	13.3	NIL	Steel	7
979	China Auto. Sys.	CAAS	3.90	9.31	42%	-	4	1.40	5.5	NIL	Auto Parts	93
946	Comtech Telecom.	CMTL	10.88	24.88	44%	1	4	1.20	NMF	11.0	Telecom. Equipment	37
2170	Conn's, Inc.	CONN	8.98	17.57	51%	2	4	1.55	NMF	NIL	Retail (Hardlines)	61
2409	Marathon Oil Corp.	MRO	14.20	27.40	52%	2	3	1.70	NMF	1.4	Petroleum (Producing)	9
1636	CDI Corp.	CDI	6.06	11.23	54%	-	4	1.20	NMF	NIL	Human Resources	78
2419	Diamond Offshore	DO	16.97	29.99	57%	3	3	1.15	22.3	NIL	Oilfield Svcs/Equip.	5
1123	Beazer Homes USA	BZH	11.29	19.30	58%	4	5	2.10	19.5	NIL	Homebuilding	90
2411	Oasis Petroleum	OAS	10.57	16.68	63%	3	5	2.05	NMF	NIL	Petroleum (Producing)	9
2397	Monster Worldwide	MWW	3.46	5.39	64%	-	5	1.50	18.2	NIL	Advertising	66
2108	Iconix Brand Group	ICON	7.89	12.17	65%	3	4	1.25	8.8	NIL	Apparel	86
927	Iridium Communications	IRDM	8.40	12.92	65%	3	4	0.90	9.3	NIL	Telecom. Services	71
1761	Leucadia National	LUK	18.96	29.03	65%	1	3	1.35	37.2	1.3	Diversified Co.	36
2394	Harte-Hanks	HHS	1.52	2.29	66%	-	5	1.05	15.2	NIL	Advertising	66
2021	Assured Guaranty	AGO	29.66	43.96	67%	3	3	1.50	10.1	1.9	Reinsurance	33
2544	CIT Group	CIT	36.62	54.61	67%	4	3	1.20	11.2	1.6	Financial Svcs. (Div.)	58
1568	Eldorado Gold	EGO	3.61	5.24	69%	1	4	1.25	45.1	NIL	Precious Metals	3
2013	SeaChange Int'l	SEAC	2.66	3.88	69%	-	4	0.80	NMF	NIL	Entertainment Tech	44
2197	West Marine	WMAR	8.37	12.11	69%	3	3	1.00	44.1	NIL	Retail (Hardlines)	61
1334	Integer Holdings	ITGR	19.54	27.80	70%	3	3	1.10	6.8	NIL	Electronics	56
305	Atlas Air Worldwide	AAWW	42.00	59.02	71%	1	3	1.40	11.3	NIL	Air Transport	92
2510	Citigroup Inc.	C	48.99	69.46	71%	3	3	1.50	10.3	1.3	Bank	51
933	Telephone & Data	TDS	26.97	37.86	71%	3	3	1.20	62.7	2.2	Telecom. Services	71
2504	Bank of America	BAC	16.26	22.54	72%	3	3	1.45	11.5	1.9	Bank	51
1222	First Solar, Inc.	FSLR	39.57	54.52	73%	3	3	1.55	15.3	NIL	Power	26
216	Invacare Corp.	IVC	10.35	14.21	73%	2	4	1.25	NMF	0.5	Med Supp Non-Invasive	39
1614	Endo Int'l plc	ENDP	19.85	26.87	74%	3	3	0.90	4.2	NIL	Drug	45
1556	Manulife Fin'l	MFC	14.68	19.90	74%	3	3	1.35	10.8	3.9	Insurance (Life)	22
1579	Yamana Gold	AUY	3.79	5.11	74%	2	5	1.15	25.3	0.5	Precious Metals	3
1585	Cameco Corp.	CCO.TO	10.50	14.01	75%	2	3	1.20	11.8	3.8	Metals & Mining (Div.)	2
506	Hess Corp.	HES	50.98	67.77	75%	2	3	1.55	NMF	2.0	Petroleum (Integrated)	18
1626	PDL BioPharma	PDLI	3.19	4.24	75%	3	5	0.95	15.2	NIL	Drug	45
2025	Greenlight Capital Re	GLRE	20.48	26.82	76%	1	3	0.90	23.5	NIL	Reinsurance	33
617	Energy Transfer	ETP	36.44	47.44	77%	2	3	1.10	24.6	11.6	Pipeline MLPs	6
538	QEP Resources	QEP	17.30	22.33	77%	3	4	1.60	NMF	NIL	Natural Gas (Div.)	13
1231	SunPower Corp.	SPWR	8.54	11.11	77%	1	4	1.90	NMF	NIL	Power	26
2407	Denbury Resources	DNR	2.77	3.55	78%	2	5	2.00	NMF	NIL	Petroleum (Producing)	9
1557	MetLife Inc.	MET	46.80	59.97	78%	2	3	1.40	9.7	3.6	Insurance (Life)	22
2521	Popular Inc.	BPOP	37.86	48.79	78%	5	4	1.45	11.0	1.6	Bank	51
122	Geospace Technologies	GEOS	17.46	22.03	79%	1	4	1.60	NMF	NIL	Precision Instrument	23
2424	Helix Energy Solutions	HLX	9.53	12.03	79%	2	4	1.95	NMF	NIL	Oilfield Svcs/Equip.	5
1640	Kelly Services 'A'	KELYA	18.72	23.57	79%	3	3	1.20	13.8	1.6	Human Resources	78
937	Vodafone Group ADR	VOD	28.15	35.72	79%	3	3	1.15	33.1	4.6	Telecom. Services	71
2200	Abercrombie & Fitch	ANF	15.39	19.17	80%	3	3	1.30	22.3	5.4	Retail (Softlines)	63
1998	Apollo Education Group	APOL	8.46	10.61	80%	-	3	1.10	26.4	NIL	Educational Services	25
2515	HSBC Holdings PLC	HSBC	38.33	47.87	80%	1	3	1.10	10.0	5.2	Bank	51
2563	Legg Mason	LM	31.70	39.58	80%	1	3	1.40	13.3	2.8	Financial Svcs. (Div.)	58
2537	Amer. Int'l Group	AIG	60.49	75.10	81%	3	3	1.15	12.7	2.1	Financial Svcs. (Div.)	58
2652	Apollo Investment	AINV	5.89	7.28	81%	2	3	0.95	29.5	10.2	Public/Private Equity	1
2142	Fred's Inc.	FRED	8.83	10.86	81%	2	3	1.05	NMF	2.7	Retail Store	57
761	CNA Fin'l	CNA	35.71	43.50	82%	1	2	0.95	11.9	2.8	Insurance (Prop/Cas.)	46
331	Frontline Ltd.	FRO	7.56	9.25	82%	3	5	1.70	7.2	10.6	Maritime	53
507	HollyFrontier Corp.	HFC	23.80	29.15	82%	2	3	1.25	16.6	5.7	Petroleum (Integrated)	18
576	Platform Specialty	PAH	7.49	9.17	82%	3	4	2.00	10.9	NIL	Chemical (Specialty)	62
108	Nissan Motor ADR	NSANY	19.22	23.11	83%	3	3	1.05	7.7	4.2	Automotive	60
2522	Regions Financial	RF	10.25	12.35	83%	3	3	1.40	12.2	2.6	Bank	51
2351	Tribune Media Co.	TRCO	34.24	41.43	83%	3	3	1.20	16.1	2.9	Entertainment	76
2428	National Oilwell Varco	NOV	36.66	43.60	84%	1	3	1.25	NMF	0.5	Oilfield Svcs/Equip.	5
1582	Allegheny Techn.	ATI	16.92	20.01	85%	1	4	1.85	NMF	1.9	Metals & Mining (Div.)	2
2650	Amer. Capital, Ltd.	ACAS	16.91	19.88	85%	-	4	1.15	10.6	NIL	Public/Private Equity	1
2564	Loews Corp.	L	41.29	48.45	85%	1	2	0.95	14.9	0.6	Financial Svcs. (Div.)	58
1512	Annaly Capital Mgmt.	NLY	10.10	11.73	86%	2	3	0.60	8.6	11.9	R.E.I.T.	50
319	ArcBest Corp.	ARCB	19.50	22.77	86%	4	3	1.60	18.9	1.6	Trucking	94
2545	Capital One Fin'l	COF	71.99	83.28	86%	3	3	1.15	10.2	2.2	Financial Svcs. (Div.)	58
2427	Nabors Inds.	NBR	13.14	15.23	86%	3	4	1.85	NMF	1.8	Oilfield Svcs/Equip.	5
935	U.S. Cellular	USM	36.42	42.21	86%	3	3	1.05	45.0	NIL	Telecom. Services	71
2550	EZCORP. Inc.	EZPW	10.89	12.55	87%	-	4	1.40	NMF	NIL	Financial Svcs. (Div.)	58
1127	KB Home	KBH	15.93	18.32	87%	3	4	1.75	11.1	0.6	Homebuilding	90
1555	Lincoln Nat'l Corp.	LNC	48.82	55.84	87%	3	3	1.55	7.7	2.3	Insurance (Life)	22
1762	McDermott Int'l	MDR	5.39	6.22	87%	3	5	1.80	NMF	NIL	Diversified Co.	36
1602	Mosaic Company	MOS	23.39	27.04	87%	2	3	1.35	37.7	5.3	Chemical (Basic)	4
1807	Piper Jaffray Cos.	PJC	51.00	58.87	87%	3	3	1.30	14.2	NIL	Investment Banking	10
773	XL Group Ltd.	XL	34.40	39.62	87%	3	3	0.95	13.6	2.3	Insurance (Prop/Cas.)	46
2011	Glu Mobile	GLUU	2.06	2.33	88%	-	5	1.40	NMF	NIL	Entertainment Tech	44
107	Honda Motor ADR	HMC	29.52	33.38	88%	2	3	1.05	14.1	2.8	Automotive	60
1986	Kyocera Corp. ADR	KYO	48.57	55.40	88%	3	2	1.00	22.1	1.8	Foreign Electronics	52
2534	Aircastle Ltd.	AYR	19.72	22.11	89%	3	3	1.20	10.2	4.9	Financial Svcs. (Div.)	58
1163	Domtar Corp.	UFS	37.47	42.20	89%	2	3	1.15	11.7	4.4	Paper/Forest Products	42
1344	Stratasys Ltd.	SSYS	20.39	22.83	89%	2	3	1.35	NMF	NIL	Electronics	56
1559	Prudential Fin'l	PRU	84.37	93.69	90%	3	3	1.35	9.5	3.3	Insurance (Life)	22
1422	Staples, Inc.	SPLS	7.50	8.33	90%	2	3	1.05	8.3	6.4	Office Equip/Supplies	20
1586	CONSOL Energy	CNX	18.63	20.53	91%	2	4	1.50	NMF	NIL	Metals & Mining (Div.)	2
1597	CVR Partners, LP	UAN	4.66	5.27	92%	-	3	1.15	NMF	14.0	Chemical (Basic)	4
1502	Astoria Financial	AF	14.23	15.23	93%	-	3	1.10	24.5	1.1	Thrift	29
2325	Speedway Motorsports	TRK	17.66	19.03	93%	2	3	0.90	13.3	3.4	Recreation	85

\*If fiscal 2016 Book Value not available, estimate used.

LOWEST P/E's

Stocks with the lowest estimated current P/E ratios

Page No.	Stock Name	Recent Price	Current P/E Ratio	Time-liness	Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Current P/E Ratio	Time-liness	Safety Rank	Industry Group	Industry Rank
2432	Seadrill Ltd.	2.32	2.8	3	5	Oilfield Svcs/Equip.	5	1420	Office Depot	3.25	8.3	4	4	Office Equip/Supplies	20
1635	Valeant Pharm. Int'l	22.07	3.1	3	5	Drug	45	1422	Staples, Inc.	7.50	8.3	2	3	Office Equip/Supplies	20
104	Fiat Chrysler	6.27	3.3	-	3	Automotive	60	2165	Bed Bath & Beyond	40.24	8.4	3	2	Retail (Hardlines)	61
1589	Natural Resource	30.18	4.0	-	5	Metals & Mining (Div.)	2	513	PBF Energy	21.07	8.4	3	3	Petroleum (Integrated)	18
1614	Endo Int'l plc	19.85	4.2	3	3	Drug	45	2353	Viacom Inc. 'B'	36.14	8.4	2	3	Entertainment	76
2656	KKR & Co. L.P.	13.72	4.4	1	3	Public/Private Equity	1	2449	Husman Corp.	15.78	8.5	3	4	Chemical (Diversified)	88
2654	Fortress Investment	5.13	5.2	3	3	Public/Private Equity	1	2383	Time Inc.	13.30	8.5	-	3	Publishing	54
106	General Motors	31.40	5.3	4	3	Automotive	60	1234	AECOM	27.94	8.6	3	3	Engineering & Const	35
976	Amer. Axle	17.47	5.4	4	4	Auto Parts	93	1512	Annaly Capital Mgmt.	10.10	8.6	2	3	R.E.I.T.	50
727	Triumph Group	24.25	5.4	3	3	Aerospace/Defense	59	343	GATX Corp.	44.08	8.7	3	3	Railroad	91
979	China Auto. Sys.	3.90	5.5	-	4	Auto Parts	93	345	Greenbrier (The) Cos.	35.55	8.7	5	4	Railroad	91
1236	Chicago Bridge & Iron	27.73	5.9	4	3	Engineering & Const	35	1400	Hewlett Packard Ent.	21.47	8.7	-	3	Computers/Peripherals	83
1554	Genworth Fin'l	5.09	5.9	2	5	Insurance (Life)	22	1552	AEGON	4.15	8.8	1	3	Insurance (Life)	22
2175	GameStop Corp.	24.82	6.1	3	3	Retail (Hardlines)	61	757	AmTrust Financial Svcs.	27.33	8.8	3	3	Insurance (Prop/Cas.)	46
2028	Third Point Reinsurance	12.35	6.2	1	3	Reinsurance	33	2120	Asbury Automotive	54.70	8.8	4	3	Retail Automotive	95
2174	GNC Holdings	19.40	6.4	3	3	Retail (Hardlines)	61	1124	CalAtlantic Group	32.29	8.8	3	3	Homebuilding	90
996	Linamar Corp.	52.60	6.4	4	3	Auto Parts	93	988	Federal-Mogul Hldgs.	9.20	8.8	-	4	Auto Parts	93
998	Meritor, Inc.	10.56	6.6	5	5	Auto Parts	93	2108	Iconix Brand Group	7.89	8.8	3	4	Apparel	86
2651	Apollo Global Mgmt	17.61	6.7	2	3	Public/Private Equity	1	2131	Sonic Automotive	18.95	8.8	4	3	Retail Automotive	95
308	Delta Air Lines	39.46	6.7	5	3	Air Transport	92	1002	Tenneco Inc.	53.36	8.8	5	4	Auto Parts	93
105	Ford Motor	11.89	6.7	3	3	Automotive	60	981	Cooper Tire & Rubber	35.98	8.9	4	3	Auto Parts	93
1615	Gilead Sciences	73.41	6.7	5	3	Drug	45	2340	MSG Networks	18.65	8.9	-	3	Entertainment	76
1334	Integer Holdings	19.54	6.8	3	3	Electronics	56	841	United Therapeutics	116.97	8.9	4	3	Biotechnology	40
2565	MGIC Investment	8.44	6.9	5	5	Financial Svcs. (Div.)	58	2433	Rowan Cos. plc	14.09	9.0	3	3	Oilfield Svcs/Equip.	5
315	United Cont'l Hldgs.	53.68	7.1	5	4	Air Transport	92	1134	TRT Pointe Group	12.71	9.0	4	3	Homebuilding	90
331	Frontline Ltd.	7.56	7.2	3	5	Maritime	53	518	Tesoro Corp.	81.44	9.0	5	3	Petroleum (Integrated)	18
304	American Airlines	39.35	7.3	4	3	Air Transport	92	1791	BGC Partners	8.85	9.1	3	3	Brokers & Exchanges	47
102	Daimler AG	70.80	7.3	3	3	Automotive	60	2001	DeVry Education Group	22.23	9.1	2	3	Educational Services	25
2568	Navient Corp.	13.61	7.3	-	3	Financial Svcs. (Div.)	58	1957	SUPERVALU INC.	5.02	9.1	-	5	Retail/Wholesale Food	79
1181	Owens-Illinois	17.37	7.3	2	3	Packaging & Container	82	1323	Arrow Electronics	62.20	9.2	5	3	Electronics	56
789	Community Health	10.53	7.4	-	4	Medical Services	70	2163	Avis Budget Group	32.05	9.2	5	4	Retail (Hardlines)	61
992	Goodyear Tire	31.11	7.5	5	3	Auto Parts	93	317	WestJet Airlines Ltd.	23.13	9.2	4	3	Air Transport	92
997	Magna Int'l 'A'	40.12	7.5	4	3	Auto Parts	93	2447	Eastman Chemical	65.35	9.3	4	3	Chemical (Diversified)	88
2026	Maiden Hldgs. Ltd.	13.80	7.6	3	3	Reinsurance	33	927	Iridium Communications	8.40	9.3	3	4	Telecom. Services	71
169	Wabash National	13.45	7.6	5	4	Heavy Truck & Equip	55	2113	Perry Ellis Int'l	18.95	9.3	3	4	Apparel	86
983	Dana Inc.	14.29	7.7	4	3	Auto Parts	93	2203	Buckle (The), Inc.	21.30	9.4	2	3	Retail (Softlines)	63
1555	Lincoln Nat'l Corp.	48.82	7.7	3	3	Insurance (Life)	22	1130	Meritage Homes	33.85	9.4	3	3	Homebuilding	90
108	Nissan Motor ADR	19.22	7.7	3	3	Automotive	60	1421	Pitney Bowes	17.22	9.4	2	3	Office Equip/Supplies	20
2148	Rent-A-Center	9.26	7.9	2	3	Retail Store	57	2452	Trinseo S.A.	55.95	9.4	-	3	Chemical (Diversified)	88
2346	Sinclair Broadcast	26.50	7.9	4	4	Entertainment	76	1562	Unum Group	36.55	9.4	3	3	Insurance (Life)	22
2330	AMC Networks	49.26	8.0	5	3	Entertainment	76	600	West Corp.	21.22	9.4	3	3	Wireless Networking	77
2125	Group 1 Automotive	61.61	8.0	5	3	Retail Automotive	95	2548	Discover Fin'l Svcs.	54.81	9.5	3	3	Financial Svcs. (Div.)	58
1631	Teva Pharm. ADR	43.26	8.0	3	2	Drug	45	1559	Prudential Fin'l	84.37	9.5	3	3	Insurance (Life)	22
1583	Alliance Resource	23.55	8.1	3	3	Metals & Mining (Div.)	2	2219	Tailored Brands	15.81	9.5	3	4	Retail (Softlines)	63
1417	Essendant Inc.	18.27	8.1	2	3	Office Equip/Supplies	20	962	Verifone Systems	15.14	9.5	3	4	Telecom. Equipment	37
311	JetBlue Airways	17.78	8.2	4	3	Air Transport	92	2196	Weight Watchers	10.18	9.5	1	5	Retail (Hardlines)	61
571	LyondellBasell Inds.	80.18	8.2	5	3	Chemical (Specialty)	62	1732	United Rentals	76.44	9.6	5	4	Machinery	68
957	NeuStar Inc.	25.20	8.2	3	3	Telecom. Equipment	37	941	Arris Int'l plc	28.90	9.7	4	3	Telecom. Equipment	37
1126	Hovnanian Enterpr. 'A'	1.58	8.3	-	5	Homebuilding	90	2655	Gladstone Capital	8.60	9.7	2	3	Public/Private Equity	1
995	Lear Corp.	112.84	8.3	5	3	Auto Parts	93	1803	Goldman Sachs	172.63	9.7	2	2	Investment Banking	10

HIGHEST P/E's

Stocks with the highest estimated current P/E ratios

Page No.	Stock Name	Recent Price	Current P/E Ratio	Time-liness	Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Current P/E Ratio	Time-liness	Safety Rank	Industry Group	Industry Rank
222	Omniceil, Inc.	35.65	99.0	2	3	Med Supp Non-Invasive	39	188	NuVasive, Inc.	67.65	52.9	3	3	Med Supp Invasive	48
2016	TiVo Corp.	19.65	89.3	-	3	Entertainment Tech	44	1520	Duke Realty Corp.	25.88	52.8	4	3	R.E.I.T.	50
588	CalAmp Corp.	13.23	88.2	3	4	Wireless Networking	77	1900	Primo Water Corp.	14.15	52.4	3	4	Beverage	38
1565	Agnico Eagle Mines	48.01	87.3	2	3	Precious Metals	3	372	Ruby Tuesday	3.10	51.7	-	4	Restaurant	87
332	GasLog Ltd.	16.55	87.1	2	4	Maritime	53	2580	Adobe Systems	108.42	51.6	2	3	Computer Software	14
1014	Regis Corp.	12.07	86.2	1	3	Toiletries/Cosmetics	21	1518	DDR Corp.	16.37	51.2	3	3	R.E.I.T.	50
2305	Carmike Cinemas	32.80	82.0	-	4	Recreation	85	1820	Mercadolibre Inc.	167.51	51.2	3	3	E-Commerce	65
1526	Forest City Realty	21.59	80.0	-	4	R.E.I.T.	50	523	Antero Resources Corp.	27.44	50.8	2	4	Natural Gas (Div.)	13
2336	Global Eagle Entertain.	8.33	75.7	2	4	Entertainment	76	455	TransUnion	32.93	50.7	-	3	Information Services	74
1519	Digital Realty Trust	96.57	75.4	2	3	R.E.I.T.	50	2631	Expedia Inc.	122.83	49.9	3	3	Internet	32
1215	AES Corp.	11.87	74.2	2	3	Power	26	1376	Silicon Labs.	58.40	49.9	1	4	Semiconductor	75
2434	Schlumberger Ltd.	81.39	74.0	1	2	Oilfield Svcs/Equip.	5	1354	CEVA, Inc.	30.85	49.8	2	3	Semiconductor	75
504	Chevron Corp.	101.79	73.2	2	1	Petroleum (Integrated)	18	1570	Goldcorp Inc.	14.86	49.5	2	3	Precious Metals	3
1030	Consol. Communic.	24.66	72.5	3	3	Telecom. Utility	30	823	Qualys Systems	12.27	49.1	2	3	Healthcare Information	11
1373	Qorvo Inc.	53.59	71.5	-	3	Semiconductor	75	514	Petroleo Brasileiro ADR	11.77	49.0	1	5	Petroleum (Integrated)	18
163	Joy Global	27.81	71.3	-	4	Heavy Truck & Equip	55	1023	Liberty Global plc	31.24	48.1	3	3	Cable TV	73
1522	Essex Property Trust	207.70	70.9	3	3	R.E.I.T.	50	443	CoStar Group	209.75	47.5	3	3	Information Services	74
1569	Franco-Nevada Corp.	66.03	69.5	3	3	Precious Metals	3	1316	Universal Display	50.22	47.4	3	3	Electrical Equipment	27
2015	Take-Two Interactive	45.09	69.4	4	3	Entertainment Tech	44	1315	Trimble Inc.	29.30	47.3	1	3	Electrical Equipment	27
1577	Stellwater Mining	12.45	69.2	2	4	Precious Metals	3	1548	Washington R.E.I.T.	30.25	47.3	3	3	R.E.I.T.	50
400	Macquarie Infrastructure	83.20	68.2	3	3	Industrial Services	69	1575	Royal Gold	68.87	47.2	1	3	Precious Metals	3
2309	ClubCorp Hldgs.	12.13	67.4	3	3	Recreation	85	2354	World Wrestling Ent.	19.82	47.2	3	4	Entertainment	76
502	BP PLC ADR	35.98	66.6	3	3	Petroleum (Integrated)	18	1540	Realty Income Corp.	62.66	47.1	2	2	R.E.I.T.	50
449	IHS Markit	37.30	66.6	-	3	Information Services	74	1515	Boston Properties	127.18	46.8	3	3	R.E.I.T.	50
2638	Overstock.com	14.85	64.6	3	4	Internet	32	357	Chipotle Mex. Grill	393.96	46.7	3	3	Restaurant	87
589	Crown Castle Int'l	91.82	63.8	3	3	Wireless Networking	77	214	IDEXX Labs.	112.57	46.7	4	3	Med Supp Non-Invasive	39
2593	PTC Inc.	46.13	63.2	2	3	Computer Software	73	1524	Federal Rty. Inv. Trust	147.10	46.4	2	2	R.E.I.T.	50
1018	Charter Commun.	259.95	62.9	3	3	Cable TV	73	1973	Craft Brew Alliance	18.05	46.3	2	4	Beverage	38
2115	Under Armour	38.30	62.8</												



**STOCKS WITH HIGHEST ANNUAL TOTAL RETURNS (NEXT 3 TO 5 YEARS)**  
(Estimated compound annual stock price appreciation plus estimated annual dividend income.)

Page No.	Stock Name	Recent Price	Est'd Total Return	Time-liness	Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Est'd Total Return	Time-liness	Safety Rank	Industry Group	Industry Rank
1126	Hovnanian Enterpr. 'A'	1.58	50%	-	5	Homebuilding	90	231	Frontline Ltd.	7.56	28%	3	5	Maritime	53
2435	Seadrill Ltd.	2.32	49%	3	5	Oilfield Svcs/Equip.	5	2181	Liberty Interactive	18.78	28%	4	3	Retail (Hardlines)	61
2438	Tidewater Inc.	2.97	49%	-	5	Oilfield Svcs/Equip.	5	2565	MGIC Investment	8.44	28%	5	5	Financial Svcs. (Div.)	58
1632	Valeant Pharm. Int'l	22.07	48%	3	5	Drug	45	1365	Mellanox Technologies	41.50	28%	3	4	Semiconductor	75
2202	Ascena Retail Group	5.00	44%	3	3	Retail (Softlines)	63	572	Methanex Corp.	37.80	28%	1	3	Chemical (Specialty)	62
1597	CVR Partners, LP	4.86	43%	2	3	Chemical (Basic)	4	1621	Mylan N.V.	37.39	28%	3	3	Drug	45
372	Ruby Tuesday	3.10	43%	-	4	Restaurant	87	957	NeuStar Inc.	25.20	28%	3	3	Telecom. Equipment	37
840	Senomyx, Inc.	2.72	42%	-	5	Biotechnology	40	1625	Opko Health	9.40	28%	3	3	Drug	45
1231	SunPower Corp.	8.54	42%	1	4	Power	26	2190	Pier 1 Imports	4.40	28%	3	4	Retail (Hardlines)	61
337	Teekay Corp.	7.92	41%	4	5	Maritime	53	2150	Stein Mart	6.09	28%	3	3	Retail Store	57
813	Tenet Healthcare	23.68	41%	4	4	Medical Services	70	2437	TETRA Technologies	5.96	28%	2	4	Oilfield Svcs/Equip.	5
2417	CARBO Ceramics	10.56	40%	1	4	Oilfield Svcs/Equip.	5	352	Bloomin' Brands	17.18	27%	3	3	Restaurant	87
1324	Avigilon Corp.	8.34	38%	4	3	Electronics	56	799	Community Health	10.53	27%	-	4	Medical Services	70
2394	Harte-Hanks	1.52	38%	-	5	Advertising	66	2586	FireEye Inc.	12.53	27%	1	4	Computer Software	14
1760	LSB Inds.	6.22	38%	1	5	Diversified Co.	36	1222	First Solar, Inc.	39.57	27%	3	3	Power	26
2654	Fortress Investment	5.13	37%	3	3	Public/Private Equity	1	2387	Gannett Co.	10.64	27%	-	3	Newspaper	-
351	BJ's Restaurants	35.42	36%	4	3	Restaurant	87	2185	Movado Group	22.10	27%	3	3	Retail (Hardlines)	61
801	Envision Healthcare	21.83	36%	-	3	Medical Services	70	2196	Weight Watchers	10.18	27%	1	5	Retail (Hardlines)	61
2429	Noble Corp. plc	5.77	36%	2	4	Oilfield Svcs/Equip.	5	1585	Cameco Corp.	10.50	26%	2	3	Metals & Mining (Div.)	2
2440	Weatherford Int'l plc	5.91	36%	1	4	Oilfield Svcs/Equip.	5	1358	Cypress Semic.	10.61	26%	3	3	Semiconductor	75
1330	Fitbit Inc.	13.54	35%	-	4	Electronics	56	2008	Daktronics Inc.	8.60	26%	1	3	Entertainment Tech	44
1626	PDL BioPharma	3.19	35%	3	5	Drug	45	947	Ericsson ADR	5.47	26%	1	3	Telecom. Equipment	37
2572	SLM Corporation	7.25	35%	-	4	Financial Svcs. (Div.)	58	988	Federal-Mogul Hldgs.	9.20	26%	-	4	Auto Parts	93
946	Comtech Telecom.	10.88	34%	1	4	Telecom. Equipment	37	1804	Greenhill & Co.	22.95	26%	1	3	Investment Banking	10
1587	Freep't-McMoRan Inc.	9.72	34%	1	4	Metals & Mining (Div.)	2	2363	La Quinta Hldgs.	10.91	26%	-	3	Hotel/Gaming	80
2219	Tailored Brands	15.81	34%	3	4	Retail (Softlines)	63	1768	Realogy Holdings	24.37	26%	3	3	Diversified Co.	36
2347	Sirius XM Holdings	4.10	33%	4	4	Entertainment	76	2149	Sears Holdings	10.99	26%	3	5	Retail Store	57
2200	Abercrombie & Fitch	15.39	32%	3	3	Retail (Softlines)	63	2383	Time Inc.	13.30	26%	-	3	Publishing	54
1796	Investment Techn.	16.08	32%	2	3	Brokers & Exchanges	47	588	CalAmp Corp.	13.23	25%	3	4	Wireless Networking	77
2433	Rowan Cos. plc	14.09	32%	3	3	Oilfield Svcs/Equip.	5	1786	Consolidated Water	10.89	25%	2	3	Water Utility	43
2217	Stage Stores	5.16	32%	-	4	Retail (Softlines)	63	1397	Cray Inc.	21.33	25%	4	4	Computers/Peripherals	83
2353	Viacom Inc. 'B'	36.14	32%	2	3	Entertainment	76	2155	Cross, Inc.	8.08	25%	1	4	Shoe	81
2330	AMC Networks	49.26	31%	5	3	Entertainment	76	2173	Fossil Group	28.02	25%	2	3	Retail (Hardlines)	61
2653	Blackstone Group LP	23.61	31%	1	3	Public/Private Equity	1	2104	G-Hill Apparel Group	27.94	25%	4	3	Apparel	86
1236	Chicago Bridge & Iron	27.73	31%	4	3	Engineering & Const	35	1570	Goldcorp Inc.	14.86	25%	2	3	Precious Metals	3
1334	Integer Holdings	19.54	31%	3	3	Electronics	56	2106	Guess Inc.	13.72	25%	2	3	Apparel	86
2656	KKR & Co. L.P.	13.72	31%	1	3	Public/Private Equity	1	1311	Harman Int'l	79.79	25%	3	3	Electrical Equipment	27
597	Sierra Wireless	13.45	31%	4	4	Wireless Networking	77	2312	IMAX Corp.	30.14	25%	3	3	Recreation	85
990	Gentherm Inc.	28.10	30%	4	3	Auto Parts	93	1641	Korn/Ferry Int'l	20.92	25%	4	3	Human Resources	78
2563	Legg Mason	31.70	30%	1	3	Financial Svcs. (Div.)	58	2338	Lions Gate Entertain.	18.72	25%	3	3	Entertainment	76
513	PBF Energy	21.07	30%	3	3	Petroleum (Integrated)	18	997	Magna Int'l 'A'	40.12	25%	4	3	Auto Parts	93
370	Red Robin Gourmet	42.65	30%	4	3	Restaurant	87	1806	Morgan Stanley	32.32	25%	3	3	Investment Banking	10
2148	Rent-A-Center	9.26	30%	2	3	Retail Store	57	2316	Norwegian Cruise Line	38.25	25%	4	3	Recreation	85
1614	Endo Int'l plc	19.85	29%	3	3	Drug	45	1181	Owens-Illinois	17.37	25%	2	3	Packaging & Container	82
2175	GameStop Corp.	24.82	29%	3	3	Retail (Hardlines)	61	2369	Penn Nat'l Gaming	13.27	25%	4	3	Hotel/Gaming	80
576	Platform Specialty	7.49	29%	3	4	Chemical (Specialty)	62	841	United Therapeutics	116.97	25%	4	3	Biotechnology	40
962	Verifone Systems	15.14	29%	3	4	Telecom. Equipment	37	521	Western Refining	28.07	25%	4	3	Petroleum (Integrated)	18
979	China Auto. Sys.	3.90	28%	-	4	Auto Parts	93	1217	Calpine Corp.	12.83	24%	3	3	Power	26
2419	Diamond Offshore	16.97	28%	3	3	Oilfield Svcs/Equip.	5	943	Ciena Corp.	20.34	24%	3	4	Telecom. Equipment	37
2332	Discovery Communic.	25.21	28%	3	3	Entertainment	76	2171	Container Store Group	4.88	24%	3	5	Retail (Hardlines)	61

**STOCKS WITH HIGHEST PROJECTED 3- TO 5-YEAR DIVIDEND YIELD**  
Based upon the projected dividend per share 3 to 5 years hence divided by the recent price

Page No.	Stock Name	Recent Price	Est'd Future Yield	Time-liness	Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Est'd Future Yield	Time-liness	Safety Rank	Industry Group	Industry Rank
2654	Fortress Investment	5.13	21%	3	3	Public/Private Equity	1	1531	Hospitality Properties	29.29	7%	2	3	R.E.I.T.	50
2656	Apollo Global Mgmt	17.61	20%	2	3	Public/Private Equity	1	2651	KKR & Co. L.P.	13.72	7%	1	3	Public/Private Equity	1
337	Teekay Corp.	7.92	20%	4	5	Maritime	53	2143	Kohl's Corp.	43.04	7%	1	2	Retail Store	57
2653	Blackstone Group LP	23.61	19%	1	3	Public/Private Equity	1	2396	Lamar Advertising	64.55	7%	4	3	Advertising	66
331	Frontline Ltd.	7.56	19%	3	5	Maritime	53	400	Macquarie Infrastructure	83.20	7%	3	3	Industrial Services	69
1512	Annaly Capital Mgmt.	10.10	17%	2	3	R.E.I.T.	50	620	Magellan Midstream	71.48	7%	3	3	Pipeline MLPs	6
946	Comtech Telecom.	10.88	15%	1	4	Telecom. Equipment	37	1602	Mosaic Company	23.39	7%	2	3	Chemical (Basic)	4
617	Energy Transfer	36.44	14%	2	3	Pipeline MLPs	6	2398	National CineMedia	14.10	7%	3	3	Advertising	66
2217	Stage Stores	5.16	12%	-	4	Retail (Softlines)	63	1764	National Presto Ind.	85.90	7%	3	3	Diversified Co.	36
624	Sunoco Logistics Part.	26.89	12%	2	3	Pipeline MLPs	6	513	PBF Energy	21.07	7%	3	3	Petroleum (Integrated)	18
2535	AllianceBernstein Hldg.	21.80	11%	3	3	Financial Svcs. (Div.)	58	516	Royal Dutch Shell 'B'	53.83	7%	3	2	Petroleum (Integrated)	18
1836	StoneMor Partners L.P.	24.78	11%	1	3	Funeral Services	34	748	Russel Metals	20.77	7%	1	3	Steel	7
623	Suburban Propane	33.71	11%	1	3	Pipeline MLPs	6	2150	Stein Mart	6.09	7%	3	3	Retail Store	57
1583	Alliance Resource	23.55	10%	3	3	Metals & Mining (Div.)	2	2383	Time Inc.	13.30	7%	-	3	Publishing	54
2652	Apollo Investment	5.89	10%	2	3	Public/Private Equity	1	519	Total ADR	48.54	7%	2	2	Petroleum (Integrated)	18
616	DCP Midstream Partners	34.83	10%	3	3	Pipeline MLPs	6	937	Vodafone Group ADR	28.15	7%	3	3	Telecom. Services	71
618	EnLink Midstream Part.	18.36	10%	1	3	Pipeline MLPs	6	1547	W.P. Carey Inc.	62.25	7%	3	3	R.E.I.T.	50
1032	Frontier Communic.	4.08	10%	2	4	Telecom. Utility	30	1550	Welltower Inc.	70.33	7%	3	3	R.E.I.T.	50
2655	Gladstone Capital	8.60	10%	2	3	Public/Private Equity	1	521	Western Refining	28.07	7%	4	3	Petroleum (Integrated)	18
615	Buckeye Partners L.P.	70.01	9%	3	3	Pipeline MLPs	6	1034	Windstream Hldgs.	8.40	7%	-	4	Telecom. Utility	30
1596	CF Industries	23.46	9%	2	3	Chemical (Basic)	4	920	AT&T Inc.	39.36	6%	3	1	Telecom. Services	71
619	Enterprise Products	27.03	9%	3	3	Pipeline MLPs	6	2200	Abercrombie & Fitch	15.39	6%	3	3	Retail (Softlines)	63
947	Ericsson ADR	5.47	9%	1	3	Telecom. Equipment	37	2534	Aircastle Ltd.	19.72	6%	3	3	Financial Svcs. (Div.)	58
1525	FelCor Lodging Tr.	6.52	9%	3	4	R.E.I.T.	50	1027	BT Group ADR	23.85	6%	3	3	Telecom. Utility	30
1804	Greenhill & Co.	22.95	9%	1	3	Investment Banking	10	2203	Buckle (The), Inc.	21.30	6%	2	3	Retail (Softlines)	63
621	ONEOK Partners L.P.	41.87	9%	2	3	Pipeline MLPs	6	1983	Canon Inc. ADR	29.24	6%	2	2	Foreign Electronics	52
622	Plains All Amer. Pipe.	32.46	9%	1	3	Pipeline MLPs	6	2169	Coach Inc.	35.22	6%	2	2	Retail (Hardlines)	61
1033	Telefonica SA ADR	9.73	9%	2	4	Telecom. Utility	30	821	Computer Prog. & Sys.	26.21	6%	1	3	Healthcare Information	11
625	Williams Partners L.P.	36.79	9%	2	4	Pipeline MLPs	6	1030	Consol. Communic.	24.66	6%	3	3	Telecom. Utility	30
1552	AEGON	4.15	8%	1	3	Insurance (Life)	22	1358	Cypress Semic.	10.61	6%	3	3	Semiconductor	75
1791	BGC Partners	8.85	8%	3	3	Brokers & Exchanges	47	1518	DDR Corp.</						

**HIGH RETURNS EARNED ON TOTAL CAPITAL**

Stocks with high average returns on capital in last 5 years ranked by earnings retained to common equity

Page No.	Stock Name	Ticker	Recent Price	Avg. Retained to Com. Eq.	Avg. Return On Cap.	Time-liness	Safety Rank	Beta	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank
716	Lockheed Martin	LMT	232.79	773%	35%	3	1	0.80	19.1	3.1	Aerospace/Defense	59
1924	Mead Johnson Nutrition	MJN	80.11	724%	40%	1	2	0.90	23.3	2.1	Food Processing	49
451	Moody's Corp.	MCO	107.80	158%	41%	3	3	1.20	22.6	1.4	Information Services	74
1190	Clorox Co.	CLX	121.80	140%	34%	2	2	0.65	23.1	2.7	Household Products	28
2418	Core Laboratories	CLB	111.99	118%	49%	1	3	1.15	60.5	2.0	Oilfield Svcs/Equip.	5
2656	KKR & Co. L.P.	KKR	13.72	80%	43%	1	3	1.40	4.4	4.7	Public/Private Equity	1
1626	PDL BioPharma	PDLI	3.19	79%	85%	3	5	0.95	15.2	NIL	Drug	45
448	Gartner Inc.	IT	88.13	77%	38%	3	2	0.90	31.6	NIL	Information Services	74
2004	Strayer Education	STRA	45.31	77%	42%	2	4	1.20	14.4	NIL	Educational Services	25
1915	Herbalife, Ltd.	HLF	62.03	74%	46%	4	3	1.35	12.9	NIL	Food Processing	49
1402	Int'l Business Mach.	IBM	150.72	68%	34%	3	1	0.90	12.2	3.8	Computers/Peripherals	83
2212	Francesca's Hldgs.	FRAN	15.81	64%	47%	3	3	0.90	15.5	NIL	Retail (Softlines)	63
214	IDEXX Labs.	IDXX	112.57	62%	33%	4	3	0.90	46.7	NIL	Med Supp Non-Invasive	39
316	United Parcel Serv.	UPS	108.13	61%	31%	3	1	0.85	18.4	3.0	Air Transport	92
598	Ubiquiti Networks	UBNT	49.53	54%	43%	4	3	0.95	17.8	NIL	Wireless Networking	77
1191	Colgate-Palmolive	CL	71.93	52%	32%	2	1	0.75	25.8	2.3	Household Products	28
1615	Gilead Sciences	GILD	73.41	52%	30%	5	3	0.95	6.7	2.6	Drug	45
1978	National Beverage	FIZZ	49.50	51%	34%	3	3	0.80	29.1	NIL	Beverage	38
378	Yum! Brands	YUM	86.16	50%	32%	-	3	0.95	23.5	2.4	Restaurant	87
2627	Blue Nile	NILE	35.14	49%	48%	3	3	1.00	37.0	NIL	Internet	32
1142	Sherwin-Williams	SHW	270.85	47%	30%	3	1	0.95	21.4	1.3	Retail Building Supply	72
1792	CBOE Holdings	CBOE	65.01	46%	68%	3	3	0.75	24.5	1.5	Brokers & Exchanges	47
2654	Fortress Investment	FIG	5.13	45%	42%	3	3	1.35	5.2	7.0	Public/Private Equity	1
2567	MasterCard Inc.	MA	101.73	43%	42%	3	1	1.05	27.2	0.7	Financial Svcs. (Div.)	58
2218	TJX Companies	TJX	73.16	41%	39%	4	1	0.85	20.7	1.4	Retail (Softlines)	63
1005	WABCO Hldgs.	WBC	106.87	41%	35%	3	3	1.35	19.6	NIL	Auto Parts	93
834	Jazz Pharmac. plc	JAZZ	119.35	39%	30%	3	3	1.25	11.4	NIL	Biotechnology	40
2617	Manhattan Assoc.	MANH	59.01	39%	39%	4	3	1.10	34.7	NIL	IT Services	64
2110	Michael Kors Hldgs.	KORS	47.52	38%	38%	3	3	1.00	10.4	NIL	Apparel	86
2640	Priceline Group (The)	PCLN	1454.97	38%	30%	4	3	1.25	21.0	NIL	Internet	32
1624	Novo Nordisk ADR	NVO	40.56	37%	60%	3	2	0.90	16.9	2.7	Drug	45
2318	Polaris Inds.	PII	77.54	37%	40%	3	3	1.20	12.3	2.8	Recreation	85
2603	Accenture Plc	ACN	117.53	36%	57%	3	1	1.00	21.0	2.1	IT Services	64
2626	Baidu, Inc.	BIDU	175.65	36%	32%	3	3	1.25	29.2	NIL	Internet	32
1916	Hershey Co.	HSY	96.31	36%	30%	3	2	0.70	22.1	2.6	Food Processing	49
2216	Ross Stores	ROST	63.55	35%	38%	4	2	0.85	22.5	0.9	Retail (Softlines)	63
1998	Apollo Education Group	APOL	8.46	34%	31%	-	3	1.10	26.4	NIL	Educational Services	25
2203	Buckle (The), Inc.	BKE	21.30	33%	45%	2	3	1.00	9.4	5.1	Retail (Softlines)	63
1977	Monster Beverage	MNST	146.72	32%	32%	3	3	0.90	41.3	NIL	Beverage	38
2588	Intuit Inc.	INTU	107.15	31%	34%	3	2	1.10	25.8	1.1	Computer Software	14
1395	Apple Inc.	AAPL	117.47	30%	31%	5	2	0.95	13.7	2.0	Computers/Peripherals	83
1363	Linear Technology	LLTC	58.94	29%	37%	-	2	1.00	27.5	2.2	Semiconductor	75
2326	Sturm, Ruger & Co.	RGR	58.45	29%	45%	4	3	1.00	14.6	2.8	Recreation	85
2169	Coach Inc.	COH	35.22	28%	40%	2	3	1.10	16.4	3.8	Retail (Hardlines)	61
446	FactSet Research	FDS	155.84	28%	38%	4	2	1.00	23.7	1.3	Information Services	74
1991	Altria Group	MO	62.66	26%	30%	3	2	0.60	20.3	3.9	Tobacco	15
1143	Tile Shop Hldgs.	TTS	18.15	22%	41%	2	4	1.15	37.8	NIL	Retail Building Supply	72
385	C.H. Robinson	CHRW	68.80	21%	33%	3	2	0.85	18.5	2.5	Industrial Services	69
406	Rollins, Inc.	ROL	28.26	17%	30%	4	2	0.95	34.9	1.6	Industrial Services	69
821	Computer Prog. & Sys.	CPSI	26.21	9%	42%	1	3	0.85	23.2	5.2	Healthcare Information	11

**BARGAIN BASEMENT STOCKS**

Stocks with current price-earnings multiples and price-to-“net” working capital ratios that are in the bottom quartile of the Value Line universe (“Net” working capital equals current assets less all liabilities including long-term debt and preferred)

Page No.	Stock Name	Ticker	Recent Price	Percent Price-to “Net” Wkg. Capital	Current P/E Ratio	Percent Price-to Book Value	Time-liness	Safety Rank	Beta	% Est'd Yield	Industry Group	Industry Rank
979	China Auto. Sys.	CAAS	3.90	75%	5.5	42%	-	4	1.40	NIL	Auto Parts	93
1130	Meritage Homes	MTH	33.85	128%	9.4	107%	3	3	1.45	NIL	Homebuilding	90
1129	M.D.C. Holdings	MDC	24.37	129%	11.3	95%	3	3	1.40	4.1	Homebuilding	90
1135	Taylor Morrison Home	TMHC	17.46	138%	10.0	108%	3	3	1.45	NIL	Homebuilding	90
1134	TRI Pointe Group	TPH	12.71	143%	9.0	124%	4	3	1.35	NIL	Homebuilding	90
1803	Goldman Sachs	GS	172.63	144%	9.7	96%	2	2	1.30	1.5	Investment Banking	10
2185	Movado Group	MOV	22.10	147%	14.8	115%	3	3	1.25	2.4	Retail (Hardlines)	61
1136	Toll Brothers	TOL	28.61	152%	10.6	118%	4	3	1.35	NIL	Homebuilding	90
1388	Kulicke & Soffa	KLIC	12.93	160%	14.7	119%	3	3	1.20	NIL	Semiconductor Equip	67
1408	ScanSource	SCSC	35.50	168%	14.5	124%	2	3	1.20	NIL	Computers/Peripherals	83
1410	Tech Data	TECD	80.57	192%	13.5	141%	4	3	1.00	NIL	Computers/Peripherals	83
1127	KB Home	KBH	15.93	203%	11.1	87%	3	4	1.75	0.6	Homebuilding	90
947	Ericsson ADR	ERIC	5.47	204%	11.6	104%	1	3	1.20	8.4	Telecom. Equipment	37
1124	CalAtlantic Group	CAA	32.29	205%	8.8	101%	3	3	1.50	0.5	Homebuilding	90
2104	G-III Apparel Group	GIII	27.94	210%	12.5	143%	4	3	1.10	NIL	Apparel	86
1328	Celestica Inc.	CLS	10.42	218%	12.0	137%	2	3	1.10	NIL	Electronics	56
2188	PC Connection	CNXX	25.66	222%	13.2	173%	4	3	1.00	NIL	Retail (Hardlines)	61
2555	Franklin Resources	BEN	34.23	232%	11.8	174%	1	2	1.30	2.4	Financial Svcs. (Div.)	58
1401	Ingram Micro ‘A’	IM	36.10	244%	13.6	135%	-	3	1.05	NIL	Computers/Peripherals	83
1125	Horton D.R.	DHI	29.40	275%	11.7	184%	5	3	1.40	1.1	Homebuilding	90
1132	PulteGroup, Inc.	PHM	19.81	283%	11.2	145%	3	3	1.70	2.0	Homebuilding	90
2180	Insight Enterprises	NSIT	32.91	288%	13.1	178%	3	3	1.30	NIL	Retail (Hardlines)	61
1807	Piper Jaffray Cos.	PJC	51.00	291%	14.2	87%	3	3	1.30	NIL	Investment Banking	10
1340	Plexus Corp.	PLXS	45.58	315%	14.7	181%	2	3	1.15	NIL	Electronics	56
2222	Vera Bradley Inc.	VRA	13.87	331%	14.8	183%	3	3	1.15	NIL	Retail (Softlines)	63
1417	Essendant Inc.	ESND	18.27	332%	8.1	94%	2	3	1.10	3.1	Office Equip/Supplies	20
2204	Cato Corp.	CATO	29.74	342%	12.6	201%	4	3	1.00	4.4	Retail (Softlines)	63
2156	Deckers Outdoor	DECK	56.24	379%	13.1	186%	3	3	1.05	NIL	Shoe	81
1337	Methode Electronics	MEI	32.10	381%	13.4	252%	4	3	1.35	1.1	Electronics	56
2210	Finish Line (The)	FINL	20.92	383%	13.5	168%	3	3	0.95	1.9	Retail (Softlines)	63
1640	Kelly Services ‘A’	KELYA	18.72	389%	13.8	79%	3	3	1.20	1.6	Human Resources	78
926	Intelligent Inc.	IQNT	16.89	409%	13.1	318%	3	3	1.35	3.8	Telecom. Services	71
2160	Skechers U.S.A.	SKX	22.67	409%	12.1	262%	5	3	1.25	NIL	Shoe	81
2179	Hibbett Sports	HIBB	39.10	448%	13.1	287%	4	3	0.90	NIL	Retail (Hardlines)	61



UNTIMELY STOCKS

Stocks ranked 5 (Lowest) for Relative Price Performance in the next 12 months

Page No.	Stock Name	Recent Price	Time-Safety	Rank	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Time-Safety	Rank	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank
2602	ACI Worldwide	19.73	3	5	43.8	NIL	IT Services	64	1714	IDEX Corp. ■	86.79	2	1	22.7	1.6	Machinery	68
2330	AMC Networks	49.26	3	4	8.0	NIL	Entertainment	76	568	Innospec Inc.	61.96	3	3	16.9	1.1	Chemical (Specialty)	62
2119	Advance Auto Parts	142.99	2	3	19.3	0.2	Retail Automotive	95	1758	Kadant Inc.	51.31	3	2	16.9	1.5	Diversified Co.	36
302	Alaska Air Group	72.11	3	5	10.2	1.5	Air Transport	92	324	Knight Transportation	27.24	3	3	22.5	0.9	Trucking	94
1944	Alimentation Couche-Tard	67.13	3	3	21.7	0.5	Retail/Wholesale Food	79	1950	Kroger Co.	30.64	2	4	14.1	1.7	Retail/Wholesale Food	79
339	American Railcar	39.05	3	3	10.0	4.1	Railroad	91	1154	La-Z-Boy Inc.	24.99	3	2	13.9	1.6	Furn/Home Furnishings	96
2539	Aon plc	110.59	1	2	19.5	1.2	Financial Svcs. (Div.)	58	995	Lear Corp.	112.84	3	3	8.3	1.1	Auto Parts	93
1513	Apartment Investment	42.93	3	3	24.5	3.1	R.E.I.T.	50	1128	Lennar Corp.	41.91	3	3	10.6	0.4	Homebuilding	90
1395	Aple Inc.	117.47	2	5	13.7	2.0	Computers/Peripherals	83	595	Level 3 Commun.	47.07	4	3	26.3	NIL	Wireless Networking	77
1740	AFAMARK Holdings	36.92	3	2	29.3	1.0	Diversified Co.	36	2127	Lithia Motors ■	93.37	3	5	11.9	1.1	Retail Automotive	95
1323	Arrow Electronics	62.20	3	1	9.2	NIL	Electronics	56	571	LithiaBasell Inds.	80.18	3	5	8.2	4.2	Chemical (Specialty)	62
2163	Avis Budget Group	32.05	4	3	9.2	NIL	Retail (Hardlines)	61	2565	MGIC Investment	8.44	5	4	6.9	NIL	Financial Svcs. (Div.)	53
1147	Bassett Furniture	23.93	3	4	16.0	1.7	Furn/Home Furnishings	96	336	Matson, Inc.	40.38	3	5	19.0	1.9	Maritime	58
1176	Berry Plastics Group	45.11	3	3	17.2	NIL	Packaging & Container	82	998	Meritor, Inc.	10.56	5	3	6.6	NIL	Auto Parts	93
2357	Boyd Gaming	19.04	5	3	15.2	NIL	Hotel/Gaming	80	1368	Microsemi Corp.	37.92	3	2	11.2	NIL	Semiconductor	75
354	Brinker Int'l	50.25	3	3	13.9	2.7	Restaurant	87	573	Minerals Techn.	68.65	3	3	15.0	0.3	Chemical (Specialty)	62
2303	Brunswick Corp.	48.33	3	5	13.3	1.4	Recreation	85	2002	New Orient. Ed. ADS	47.17	3	3	28.2	NIL	Educational Services	25
2609	CDW Corp.	44.28	3	3	14.6	1.0	IT Services	64	2343	Nextar Broadcasting	51.90	3	2	12.2	1.8	Entertainment	76
2154	Caleres Inc.	25.40	3	5	12.3	1.1	Shoe	81	452	Nielsen Hdgcs. plc	53.89	2	3	18.3	2.3	Information Services	74
2102	Carters Inc.	85.92	3	2	16.8	1.5	Apparel	86	719	Northrop Grumman	219.44	1	4	19.9	1.6	Aerospace/Defense	59
1946	Casey's Gen'l Stores	116.53	3	2	20.3	0.8	Retail/Wholesale Food	79	1115	Owens Corning	52.12	3	3	14.8	1.4	Building Materials	89
2307	Cedar Fair L.P.	58.03	3	3	16.0	5.7	Recreation	85	2233	PNM Resources	32.30	3	3	18.9	2.7	Electric Utility (West)	31
2446	Celanese Corp.	69.37	3	4	10.6	2.1	Chemical (Diversified)	88	1182	Packaging Corp.	83.77	3	3	16.9	3.0	Packaging & Container	82
2308	Cinemark Hldgs.	39.90	3	3	21.8	2.7	Recreation	85	1823	Paylocity Holding Corp	44.36	4	3	NMF	NIL	E-Commerce	65
1019	Cogeco Commun.	63.10	3	5	12.0	2.5	Cable TV	73	2130	Penske Auto	45.32	3	3	11.4	2.7	Retail Automotive	95
1020	Comcast Corp.	64.88	2	3	18.6	1.7	Cable TV	73	2521	Popular Inc. ■	37.86	4	1	11.0	1.6	Bank	51
982	Cooper-Standard Holdings	95.31	3	3	11.0	NIL	Auto Parts	93	1342	Sammina Corp.	28.20	3	3	10.8	NIL	Electronics	56
358	Cracker Barrel	132.09	1	1	16.1	3.5	Restaurant	87	1198	Scotts Miracle-Gro	86.64	3	4	23.8	2.4	Household Products	28
1178	Crown Holdings	55.98	3	3	14.0	NIL	Packaging & Container	82	2191	Signet Jewelers Ltd.	80.40	3	4	10.7	1.4	Retail (Hardlines)	61
1148	Culp Inc.	30.15	3	2	14.7	0.9	Furn/Home Furnishings	96	2160	Skchers U.S.A.	22.67	3	4	12.1	NIL	Shoe	81
308	Delta Air Lines	39.46	3	5	6.7	2.1	Air Transport	92	1377	Skyworks Solutions	77.65	3	5	17.1	1.4	Semiconductor	75
159	Douglas Dynamics	32.05	3	3	19.5	2.9	Heavy Truck & Equip	55	313	Southwest Airlines	41.68	3	5	10.3	1.0	Air Transport	92
923	Dycem Inds.	85.07	3	3	16.2	NIL	Telecom. Services	71	327	Swift Transportation	20.00	4	3	14.1	NIL	Trucking	94
2010	Electronic Arts	84.01	3	3	24.4	NIL	Entertainment Tech	44	2014	Synchrosyn Techn.	36.72	3	2	14.3	NIL	Entertainment Tech	44
1219	Emera Inc.	46.87	3	3	15.6	4.5	Power	26	932	T-Mobile US	47.35	3	3	39.1	NIL	Telecom. Services	71
605	Enbridge Inc.	58.16	2	2	24.1	3.6	Oil/Gas Distribution	8	1079	Taiwan Semic. ADR	30.86	2	3	15.7	3.0	Semiconductor	75
1521	Equity Residential	61.08	3	4	38.4	3.5	R.E.I.T.	50	1322	Teneco Inc.	53.36	4	2	8.8	NIL	Auto Parts	93
1615	Gilead Sciences	73.41	3	4	6.7	2.6	Drug	45	518	Tesoro Corp.	61.44	3	5	9.0	2.7	Petroleum (Integrated)	78
992	Goodyear Tire	31.11	3	3	7.5	1.3	Auto Parts	93	2350	Time Warner	79.51	3	3	14.6	2.0	Entertainment	76
1179	Graphic Packaging	13.68	3	1	14.1	1.5	Packaging & Container	82	1731	Toro Co.	47.18	3	3	22.2	1.3	Machinery	68
345	Greenbrier (The) Cos.	35.55	4	4	8.7	2.4	Railroad	91	348	Trinity Inds.	23.13	3	3	11.8	1.9	Railroad	91
2125	Group 1 Automotive ■	61.61	3	5	8.0	1.6	Retail Automotive	95	1939	Trinity Foods 'A'	71.56	3	3	15.2	1.0	Food Processing	49
802	HCA Holdings	82.02	3	3	12.5	NIL	Medical Services	70	1119	USG Corp.	26.46	5	3	14.1	NIL	Building Materials	92
1151	HNI Corp.	37.65	3	1	12.8	2.9	Furn/Home Furnishings	96	315	United Cont'l Hldgs.	53.68	4	4	7.1	NIL	Air Transport	89
310	Hawaiian Hldgs.	49.10	4	3	10.2	NIL	Air Transport	92	1732	United Rentals	76.44	4	2	9.6	NIL	Machinery	68
1111	Headwaters Inc.	17.35	4	4	15.9	NIL	Building Materials	89	1120	Universal Forest ■	95.95	3	1	19.0	0.9	Building Materials	89
212	Hill-Rom Hldgs.	59.90	3	3	16.8	1.1	Med Supp Non-Invasive	39	815	Universal Health Sv. 'B'	125.85	3	3	16.5	0.3	Medical Services	70
1125	Horton D.R.	29.40	3	2	11.7	1.1	Homebuilding	90	938	Vonage Holdings	6.25	4	2	20.8	NIL	Telecom. Services	71
323	Hunt (J.B.)	78.99	2	3	19.9	1.1	Trucking	94	169	Wabash National	13.45	4	3	7.6	NIL	Heavy Truck & Equip	55
714	Huntington Ingalls	160.58	3	3	16.3	1.2	Aerospace/Defense	59	195	Zimmer Biomet Hldgs.	129.10	1	3	15.6	0.8	Med Supp Invasive	48

■ Newly added this week.

HIGHEST DIVIDEND YIELDING NON-UTILITY STOCKS

Based upon estimated year-ahead dividends per share

Page No.	Stock Name	Recent Price	Time-Safety	Rank	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Time-Safety	Rank	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank
1597	CVR Partners, LP	4.86	2	3	NMF	14.0†	Chemical (Basic)	4	1589	Natural Resource	30.18	-	5	4.0	6.0†	Metals & Mining (Div.)	2
1512	Annaly Capital Mgmt.	10.10	2	3	8.6	11.9	R.E.I.T.	50	1764	National Presto Ind.	85.90	3	3	15.4	5.9	Diversified Co.	36
617	Energy Transfer	36.44	2	3	24.6	11.6	Pipeline MLPs	6	1596	CF Industries	23.46	2	3	27.9	5.8	Chemical (Basic)	4
2217	Stage Stores	5.16	-	4	19.1	11.6	Retail (Softlines)	63	2164	Barnes & Noble	10.50	-	4	35.0	5.7	Retail (Hardlines)	61
946	Comtech Telecom.	10.88	1	4	NMF	11.0	Telecom. Equipment	37	2307	Cedar Fair L.P.	58.03	5	3	16.0	5.7	Recreation	85
1836	StoneMor Partners L.P.	24.78	1	3	NMF	10.7	Funeral Services	34	507	HollyFrontier Corp.	23.80	2	3	16.6	5.7	Petroleum (Integrated)	18
331	Frontline Ltd.	7.56	3	5	7.2	10.6	Maritime	53	397	Iron Mountain	34.15	2	3	30.0	5.7	Industrial Services	69
623	Suburban Propane	33.71	1	3	21.9	10.5	Pipeline MLPs	6	513	PBF Energy	21.07	3	3	8.4	5.7	Petroleum (Integrated)	18
2652	Apollo Investment	5.89	2	3	29.5	10.2	Public/Private Equity	1	2383	Time Inc.	13.30	-	3	8.5	5.7	Publishing	54
2655	Goldstone Capital	8.60	2	3	9.7	9.8	Public/Private Equity	1	519	Total ADR	48.54	2	2	12.5	5.7	Petroleum (Integrated)	18
1209	Liberty All-Star	5.07	-	2	NMF	9.5	Investment Co.	-	2360	Extended Stay America	13.70	3	3	15.4	5.5	Hotel/Gaming	80
625	Williams Partners L.P.	36.79	2	4	21.0	9.2	Pipeline MLPs	6	2200	Abercrombie & Fitch	15.39	3	3	22.3	5.4	Retail (Softlines)	63
2388	New Media Investment	14.55	-	3	16.3	9.1†	Newspaper	-	521	Western Refining	28.07	4	3	10.7	5.4	Petroleum (Integrated)	18
616	DCP Midstream Partners	34.83	3	3	24.2	9.0	Pipeline MLPs	6	1602	Mosaic Company	23.39	2	3	37.7	5.3	Chemical (Basic)	4
2535	AllianceBernstein Hldg.	21.80	3	3	11.5	8.9	Financial Svcs. (Div.)	58	821	Computer Prog. & Sys.	26.21	1	3	23.2	5.2	Healthcare Information	11
1203	Aberdeen Asia-Pac. Fd.	4.90	-	4	NMF	8.6	Investment Co.	-	102	Daimler AG	70.80	3	3	7.3	5.2	Automotive	60
618	EnLink Midstream Part.	18.36	1	3	NMF	8.5	Pipeline MLPs	6	2515	HSBC Holdings PLC	38.33	1	3	10.0	5.2	Bank	51
2651	Apollo Global Mgmt	17.61	2	3	6.7	8.4	Public/Private Equity	1	1532	Host Hotels & Resorts	15.70	3	3	17.4	5.2	R.E.I.T.	50
947	Ericsson ADR	5.47	1	3	11.6	8.4	Telecom. Equipment	37	2203	Buckle (The), Inc.	21.30	2	3	9.4	5.1	Retail (Softlines)	63
1210	MFS Multimarket	5.90	-	4	NMF												

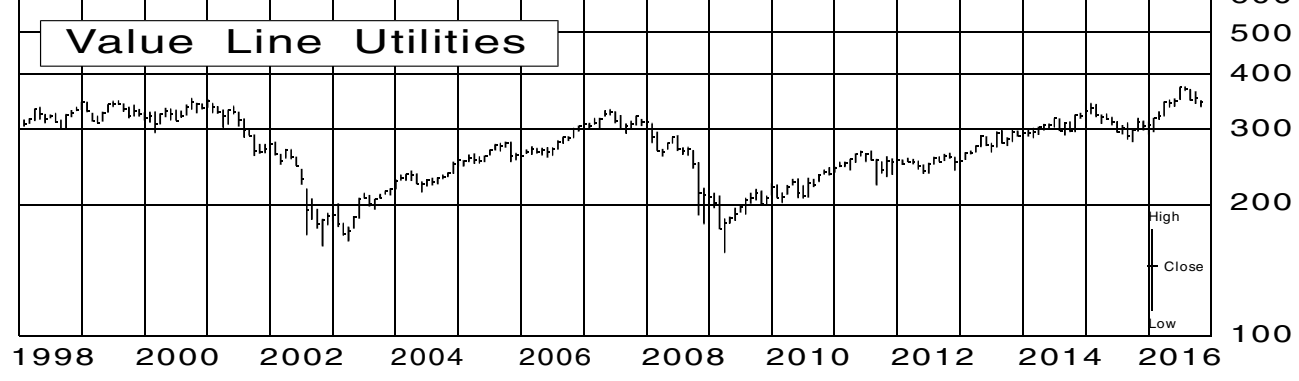
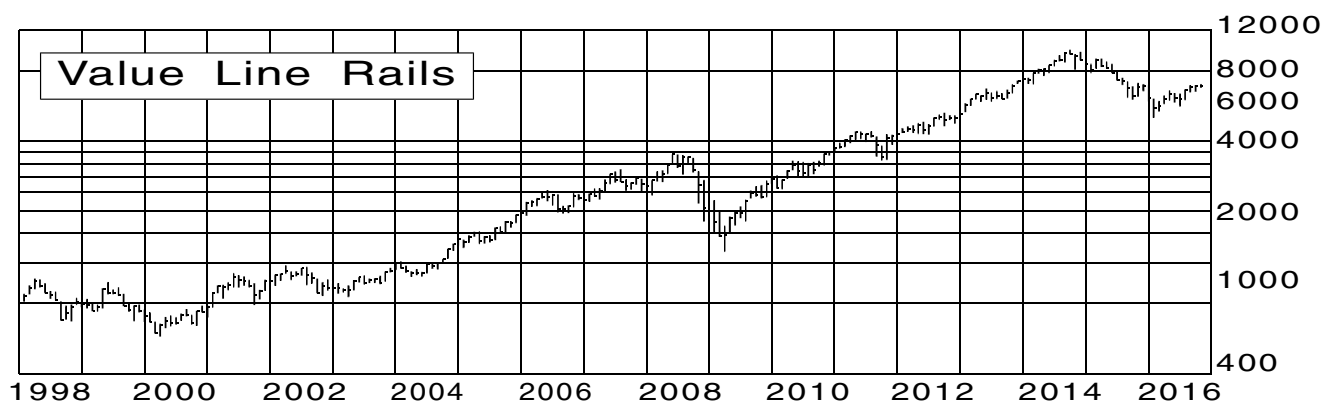
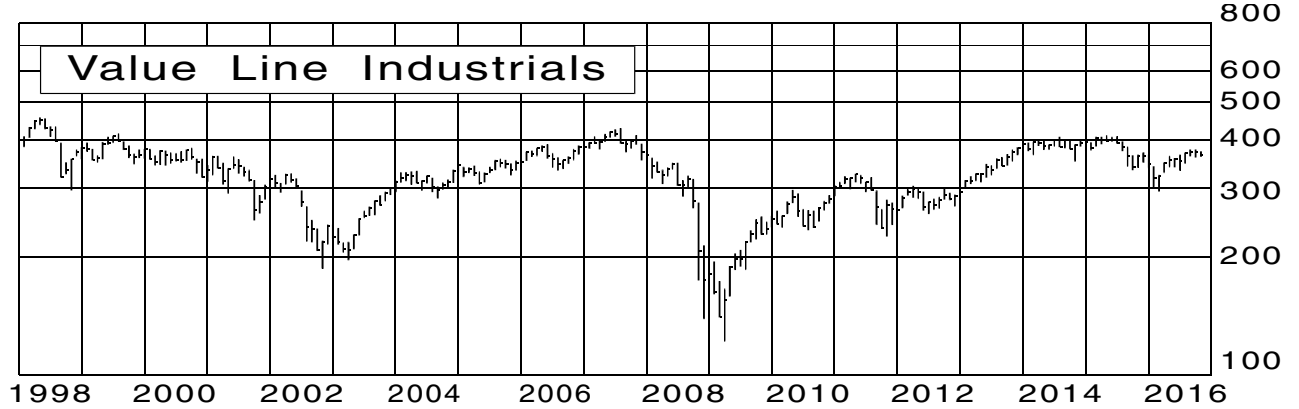
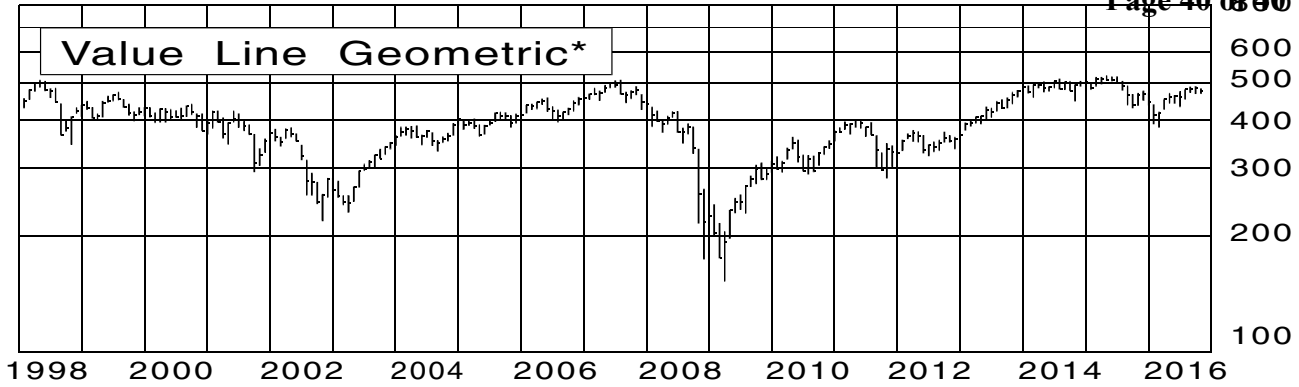
HIGHEST GROWTH STOCKS

(To be included, a company's annual growth of sales, cash flow, earnings, dividends and book value must together have averaged 10% or more over the past 10 years and be expected to average at least 10% in the coming 3-5 years.)

Page No.	Stock Name	Ticker	Recent Price	Growth Past 10 Years	Est'd Growth 3-5 Years	Time-ness	Safety Rank	Beta	Current P/E Ratio	% Est'd Yield	Estimated 3-5 Year Price Appreciation	Industry Group	Industry Rank
1702	AAON, Inc.	AAON	29.20	12%	15%	4	3	1.25	28.6	0.9	20- 70%	Machinery	68
2119	Advance Auto Parts	AAP	142.99	15%	11%	5	2	0.90	19.3	0.2	10- 50%	Retail Automotive	95
302	Alaska Air Group	ALK	72.11	15%	11%	5	3	1.15	10.2	1.5	10- 65%	Air Transport	92
1944	Alimentation Couche-Tard	ATDB.TO	67.13	21%	17%	5	3	0.60	21.7	0.5	35- 95%	Retail/Wholesale Food	79
1609	Allergan plc	AGN	227.94	20%	10%	4	3	0.90	15.3	NIL	35-105%	Drug	45
2624	Alphabet Inc.	GOOG	795.26	33%	14%	3	2	1.00	28.0	NIL	10- 50%	Internet	32
827	Amgen	AMGN	162.80	14%	10%	4	1	0.95	14.3	2.6	25- 55%	Biotechnology	40
1395	Apple Inc.	AAPL	117.47	45%	11%	5	2	0.95	13.7	2.0	30- 75%	Computers/Peripherals	83
704	Astronics Corp.	ATRO	36.51	21%	11%	4	3	1.15	18.4	NIL	25- 80%	Aerospace/Defense	59
351	BJ's Restaurants	BJRI	35.42	17%	15%	4	3	0.90	18.4	NIL	170-310%	Restaurant	87
560	Balchem Corp.	BCPC	75.96	19%	11%	3	3	1.00	35.7	0.4	N- 30%	Chemical (Specialty)	62
2134	Big Lots Inc.	BIG	44.61	12%	12%	3	3	1.05	12.4	2.1	45-125%	Retail Store	57
1966	Boston Beer 'A'	SAM	158.10	20%	11%	4	3	0.90	24.1	NIL	60-140%	Beverage	38
355	Buffalo Wild Wings	BWLD	138.90	25%	14%	4	3	0.85	23.1	NIL	35-100%	Restaurant	87
966	CVS Health	CVS	87.19	14%	11%	4	1	0.85	14.5	1.9	55- 90%	Pharmacy Services	84
1907	Calavo Growers	CVGW	63.65	11%	12%	3	3	0.70	28.0	1.4	N- 25%	Food Processing	49
203	Cantel Medical Corp.	CMN	76.11	12%	13%	4	3	1.05	45.3	0.2	N- 10%	Med Supp Non-Invasive	39
2102	Carter's Inc.	CRI	85.92	15%	12%	5	3	0.75	16.8	1.5	40-110%	Apparel	86
2446	Celanese Corp.	CE	69.37	16%	11%	5	3	1.45	10.6	2.1	25- 80%	Chemical (Diversified)	88
1613	Celgene Corp.	CELG	100.06	36%	18%	3	3	1.10	18.2	NIL	45-120%	Drug	45
797	Centene Corp.	CNC	61.41	16%	20%	4	3	0.95	12.4	NIL	45-120%	Medical Services	70
820	Cerner Corp.	CERN	61.15	18%	13%	3	2	1.00	25.3	NIL	15- 45%	Healthcare Information	11
1745	Chemed Corp.	CHE	141.37	14%	11%	3	3	0.80	21.5	0.7	5- 50%	Diversified Co.	36
2610	Cognizant Technology	CTSH	50.22	31%	13%	4	2	1.05	14.6	NIL	60-110%	IT Services	64
2124	Copart, Inc.	CPRT	54.12	13%	12%	4	2	0.90	22.6	NIL	N- 40%	Retail Automotive	95
443	CoStar Group	CSGP	209.75	15%	15%	3	3	1.10	47.5	NIL	10- 65%	Information Services	74
2628	Ctrip.com Int'l ADR	CTRP	47.06	32%	21%	3	3	1.15	NMF	NIL	5- 50%	Internet	32
2140	Dollar Tree, Inc.	DLTR	76.25	16%	19%	3	2	0.75	19.6	NIL	45- 95%	Retail Store	57
180	Edwards Lifesciences	EW	118.22	13%	14%	4	3	0.85	39.5	NIL	20- 80%	Med Supp Invasive	48
1614	Endo Int'l plc	ENDP	19.85	12%	13%	3	3	0.90	4.2	NIL	125-225%	Drug	45
445	Egulfax, Inc.	EFX	130.28	12%	10%	4	2	1.00	23.6	1.0	10- 50%	Information Services	74
948	F5 Networks	FFIV	117.56	25%	10%	3	3	1.15	21.3	NIL	15- 70%	Telecom. Equipment	37
446	FactSet Research	FDS	155.84	15%	10%	4	2	1.00	23.7	1.3	5- 40%	Information Services	74
448	Gartner Inc.	IT	88.13	14%	12%	3	2	0.90	31.6	NIL	40- 85%	Information Services	74
2557	Global Payments	GP	74.21	12%	13%	3	2	1.10	32.7	0.1	15- 55%	Financial Svcs. (Div.)	58
394	Healthcare Svcs.	HCSG	37.49	12%	12%	3	2	0.85	34.1	2.1	N- 35%	Industrial Services	69
713	HEICO Corp.	HEI	67.53	18%	12%	4	3	0.95	27.5	0.3	20- 80%	Aerospace/Defense	59
213	Hologic, Inc.	HOLX	38.73	14%	11%	2	3	1.10	35.2	NIL	5- 40%	Med Supp Non-Invasive	39
1917	Hormel Foods	HRL	38.27	10%	12%	3	1	0.75	23.3	1.7	5- 30%	Food Processing	49
323	Hunt (J.B.)	JBHT	78.99	12%	11%	5	2	0.90	19.9	1.1	20- 65%	Trucking	94
214	IDEXX Labs.	IDXX	112.57	14%	10%	4	3	0.90	46.7	NIL	N- 35%	Med Supp Non-Invasive	39
2616	Infosys Ltd. ADR	INFY	15.91	20%	11%	3	2	0.90	15.2	2.6	90-150%	IT Services	64
2588	Intuit Inc.	INTU	107.15	12%	12%	3	2	1.10	25.8	1.1	25- 70%	Computer Software	14
185	Intuitive Surgical	ISRG	721.73	30%	10%	3	3	0.85	39.3	NIL	N- 30%	Med Supp Invasive	48
928	i2 Global	JCOM	64.62	17%	11%	3	3	1.00	20.7	2.3	30-100%	Telecom. Services	71
1950	Kroger Co.	KR	30.64	10%	10%	5	2	0.80	14.1	1.7	30- 80%	Retail/Wholesale Food	79
994	LKQ Corp.	LKQ	32.93	25%	13%	4	3	1.05	17.1	NIL	50-130%	Auto Parts	93
806	Laboratory Corp.	LH	138.31	11%	10%	3	1	0.85	15.3	NIL	20- 45%	Medical Services	70
1389	Lam Research	LRCX	99.47	14%	12%	4	3	1.15	17.4	1.2	N- 10%	Semiconductor Equip	67
996	Linamar Corp.	LNR.TO	52.60	11%	13%	4	3	1.05	6.4	0.8	70-155%	Auto Parts	93
2617	Manhattan Assoc.	MANH	59.01	15%	15%	4	3	1.10	34.7	NIL	10- 60%	IT Services	64
401	MAXIMUS Inc.	MMS	54.18	16%	16%	3	3	0.95	18.0	0.3	40-110%	Industrial Services	69
219	McKesson Corp.	MCK	162.10	14%	11%	3	1	0.95	11.7	0.7	70-105%	Med Supp Non-Invasive	39
809	MEDNAX, Inc.	MD	66.98	13%	12%	4	2	0.90	16.3	NIL	25- 65%	Medical Services	75
1368	Microsemi Corp.	MSCC	37.92	17%	16%	5	3	1.30	11.2	NIL	60-125%	Semiconductor	70
1720	Middleby Corp. (The)	MIDD	117.68	21%	13%	4	3	1.10	23.6	NIL	N- 45%	Machinery	68
1977	Monster Beverage	MNST	146.72	33%	14%	3	3	0.90	41.3	NIL	N- 25%	Beverage	38
2636	Netflix, Inc.	NFLX	118.79	27%	18%	3	3	0.95	NMF	NIL	N- 35%	Internet	32
2159	NIKE, Inc. 'B'	NKE	51.22	12%	13%	4	1	0.85	22.7	1.2	25- 55%	Shoe	81
1624	Novo Nordisk ADR	NVO	40.56	18%	11%	3	2	0.90	16.9	2.7	60-110%	Drug	45
1927	NutriSystem Inc.	NTRI	30.70	13%	16%	2	3	1.00	26.5	2.3	N- 45%	Food Processing	49
1370	VIDIA Corp.	NVDA	66.61	11%	12%	3	3	1.10	38.3	0.7	N- N%	Semiconductor	75
222	Omniceil, Inc.	OMCL	35.65	15%	12%	2	3	0.95	99.0	NIL	10- 70%	Med Supp Non-Invasive	39
1822	Open Text Corp.	OTEX	64.39	16%	13%	4	3	0.95	25.8	1.4	15- 70%	E-Commerce	65
2129	O'Reilly Automotive	ORLY	278.07	18%	12%	3	2	0.75	25.0	NIL	N- 25%	Retail Automotive	95
367	Papa John's Int'l	PZZA	79.59	11%	15%	4	3	0.70	31.5	1.0	N- 5%	Restaurant	87
1627	PAREXEL Int'l	PRXL	67.59	18%	13%	4	3	1.05	19.0	NIL	35- 90%	Drug	45
1628	Perrigo Co. plc	PRGO	88.24	20%	10%	4	3	0.80	12.5	0.7	80-170%	Drug	45
2640	Priceline Group (The)	PCLN	1454.97	43%	15%	4	3	1.25	21.0	NIL	40-110%	Internet	32
2595	Red Hat, Inc.	RHT	77.50	16%	13%	3	3	1.20	55.4	NIL	15- 70%	Computer Software	14
370	Red Robin Gourmet	RRGB	42.65	10%	13%	4	3	1.00	11.8	NIL	125-240%	Restaurant	87
406	Rollins, Inc.	ROL	28.26	12%	12%	4	2	0.95	34.9	1.6	25- 60%	Industrial Services	69
2216	Ross Stores	ROST	63.55	18%	10%	4	2	0.85	22.5	0.9	N- 25%	Retail (Softlines)	63
1575	Royal Gold	RGLD	68.87	16%	15%	1	3	0.95	47.2	1.4	30- 95%	Precious Metals	3
2620	SEI Investments	SEIC	44.44	11%	12%	3	2	1.20	20.7	1.3	25- 80%	IT Services	64
749	Schnitzer Steel	SCHN	21.75	10%	11%	1	3	1.45	42.6	3.4	15- 60%	Steel	7
930	Shenandoah Telecom.	SHEN	26.55	11%	14%	3	3	1.05	27.4	1.0	30-105%	Telecom. Services	71
1142	Sherwin-Williams	SHW	270.85	11%	11%	3	1	0.95	21.4	1.3	15- 40%	Retail Building Supply	72
2346	Sinclair Broadcast	SBGI	26.50	14%	12%	4	4	1.30	7.9	2.7	70-185%	Entertainment	76
2160	Skechers U.S.A.	SKX	22.67	13%	16%	5	3	1.25	12.1	NIL	55-145%	Shoe	81
1377	Skyworks Solutions	SKWS	77.65	20%	17%	5	3	1.40	17.1	1.4	30- 95%	Semiconductor	75
313	Southwest Airlines	LUV	41.68	14%	14%	5	3	1.15	10.3	1.0	45-115%	Air Transport	92
1245	Stantec Inc.	STN.TO	30.75	15%	10%	3	3	0.85	17.6	1.5	15- 80%	Engineering & Const	35
375	Starbucks Corp.	SBUX	52.61	15%	15%	3	1	0.95	25.9	1.8	35- 70%	Restaurant	87
961	Synaptics	SYNA	65.90	25%	12%	4	3	1.15	15.7	NIL	60-135%	Telecom. Equipment	37
2218	TJX Companies	TJX	73.16	15%	11%	4	1	0.85	20.7	1.4	30- 55%	Retail (Softlines)	63
1379	Taiwan Semic. ADR	TSM	30.86	12%	11%	5	2	0.95	15.7	3.0	15- 60%	Semiconductor	75
724	TASER Int'l	TASR	22.63	17%	3%	4	1.20	61.2	NIL	NIL	55-165%	Aerospace/Defense	59
1731	Toro Co.	TTC	47.18	11%	11%	5	3	0.95	22.2	1.3	N- 5%	Machinery	68
1144	Tractor Supply	TSCO	65.27	17%	12%	4	3	0.95	19.7	1.5	30- 90%	Retail Building Supply	72
841	United Therapeutics	UTHR	116.97	33%	14%	4	3	1.00	8.9	NIL	95-200%	Biotechnology	40
814	UnitedHealth Group	UNH	143.39	15%	13%	4	1	0.90	17.4	1.7	N- 20%	Medical Services	70
815	Universal Health Sv. 'B'	UHS	125.85	12%	11%	5	3	1.10	16.5	0.3	5- 60%	Medical Services	70
2221	Urban Outfitters	URBN	33.26	15%	11%	3	3	0.90	15.5	NIL	50-140%	Retail (Softlines)	63
816	VCA Inc.	WOOF	68.99	12%	13%	3	3	1.05	24.8	NIL	N- 45%	Medical Services	70
420	Waste Connections	WCN	74.55	10%	11%	3	2	0.75	27.2	0.9	25- 70%	Environmental	24
824	WebMD Health	WBMD	50.04	19%	14%	3	4	1.00	27.2	NIL	20- 90%	Healthcare Information	11
138	Woodward, Inc.	WWD	59.28	13%	10%	3	3	1.20	19.5	0.7	20- 75%	Precision Instrument	23
2645	XO Group	XOXO	18.83	11%	16%	3	3	0.80	41.8	NIL	5- 60%	Internet	32
601	Zebra Techn. 'A'	ZBRA	65.36	12%	14%	4	3	1.15	11.4	NIL	40-115%	Wireless Networking	77

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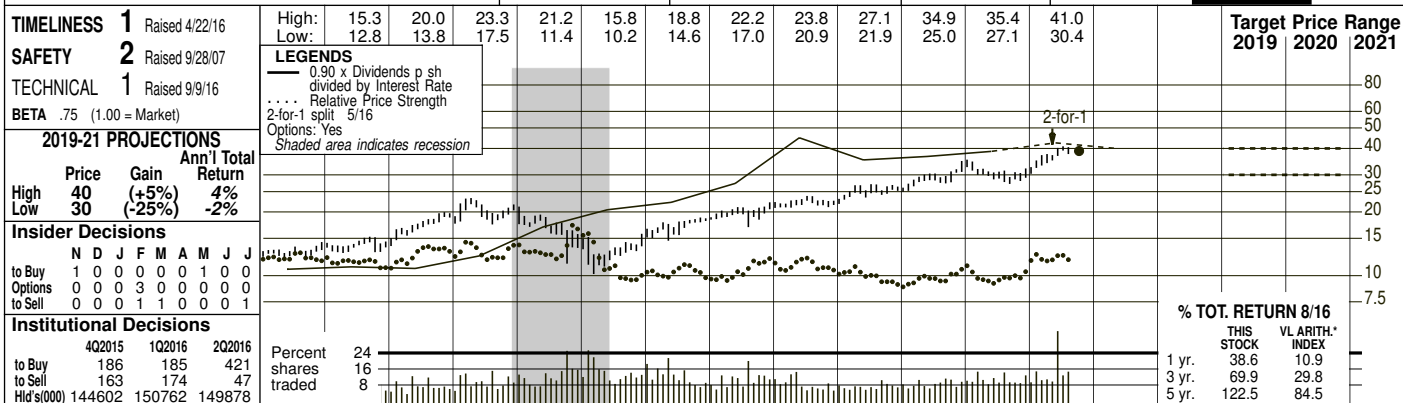


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# ALLIANT ENERGY NYSE-LNT

RECENT PRICE **38.81** P/E RATIO **19.9** (Trailing: 22.1; Median: 15.0) RELATIVE P/E RATIO **1.05** DIV'D YLD **3.0%** VALUE LINE



**TIMELINESS** 1 Raised 4/22/16  
**SAFETY** 2 Raised 9/28/07  
**TECHNICAL** 1 Raised 9/16/16  
**BETA** .75 (1.00 = Market)

**2019-21 PROJECTIONS**

	Price	Gain	Ann'l Total Return
High	40	(+5%)	4%
Low	30	(-25%)	-2%

**Insider Decisions**

	N	D	J	F	M	A	M	J	J
to Buy	1	0	0	0	0	0	0	1	0
Options	0	0	0	3	0	0	0	0	0
to Sell	0	0	0	1	1	0	0	0	1

**Institutional Decisions**

	4Q2015	1Q2016	2Q2016	Percent shares traded
to Buy	186	185	421	24
to Sell	163	174	47	16
Hld's(000)	144602	150762	149878	8

Alliant Energy, formerly called Interstate Energy Corporation, was formed on April 21, 1998 through the merger of WPL Holdings, IES Industries, and Interstate Power. WPL stockholders received one share of Interstate Energy stock for each WPL share, IES stockholders received 1.14 Interstate Energy shares for each IES share, and Interstate Power stockholders received 1.11 Interstate Energy shares for each Interstate Power share.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
Revenues per sh	14.46	15.57	16.67	15.51	15.40	16.51	13.94	14.77	15.10	14.34	14.70	15.45		17.85
"Cash Flow" per sh	2.16	2.56	2.28	2.10	2.60	2.75	2.95	3.34	3.44	3.45	3.75	4.00		4.95
Earnings per sh <sup>A</sup>	1.03	1.35	1.27	.95	1.38	1.38	1.53	1.65	1.74	1.69	1.90	2.00		2.45
Div'd Decl'd per sh <sup>B</sup> $\uparrow$	.58	.64	.70	.75	.79	.85	.90	.94	1.02	1.10	1.18	1.25		1.50
Cap'l Spending per sh <sup>C</sup>	1.71	2.46	3.98	5.43	3.91	3.03	5.22	3.32	3.78	4.25	4.50	4.85		5.65
Book Value per sh <sup>D</sup>	11.42	12.15	12.78	12.54	13.05	13.57	14.12	14.79	15.54	16.41	18.05	18.75		20.00
Common Shs Outst'g <sup>D</sup>	232.25	220.72	220.90	221.31	221.79	222.04	221.97	221.89	221.87	226.92	230.00	230.00		230.00
Avg Ann'l P/E Ratio	16.8	15.1	13.4	13.9	12.5	14.5	14.5	15.3	16.6	18.1	<i>Bold figures are Value Line estimates</i>			15.0
Relative P/E Ratio	.91	.80	.81	.93	.80	.91	.92	.86	.87	.92				.95
Avg Ann'l Div'd Yield	3.3%	3.1%	4.1%	5.7%	4.6%	4.3%	4.1%	3.7%	3.5%	3.6%				4.1%

**CAPITAL STRUCTURE as of 6/30/16**  
 Total Debt \$3902.7 mill. Due in 5 Yrs \$1100.0 mill.  
 LT Debt \$3588.7 mill. LT Interest \$175.0 mill.  
 (LT interest earned: 3.6x)

**Pension Assets-12/15** \$895.0 mill. **Oblig.** \$1206.3 mill.  
**Pfd Stock** \$400.0 mill. **Pfd Div'd** \$10.2 mill.  
 16,000,000 shs.

**Common Stock** 226,918,432 shs.  
 Adjusted for 2-for-1 split 4/20/16

**MARKET CAP: \$8.8 billion (Large Cap)**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Revenues (\$mill)	3359.4	3437.6	3681.7	3432.8	3416.1	3665.3	3094.5	3276.8	3350.3	3253.6	3380	3550	4100
Net Profit (\$mill)	260.1	320.8	280.0	208.6	303.9	304.4	337.8	382.1	385.5	380.7	435	460	565
Income Tax Rate	43.8%	44.4%	33.4%	--	30.1%	19.0%	21.5%	12.4%	10.1%	15.3%	15.0%	15.0%	15.0%
AFUDC % to Net Profit	3.1%	2.4%	--	--	--	--	--	--	6.5%	7.0%	7.0%	7.0%	7.0%
Long-Term Debt Ratio	31.4%	32.4%	36.3%	44.3%	46.3%	45.7%	48.4%	46.1%	49.7%	48.6%	49.5%	49.5%	49.5%
Common Equity Ratio	62.9%	61.9%	58.6%	51.2%	49.5%	50.9%	48.4%	50.8%	47.5%	51.4%	49.5%	49.5%	49.5%
Total Capital (\$mill)	4218.4	4329.5	4815.6	5423.0	5840.8	5921.2	6476.6	6461.0	7257.2	7246.3	7600	7800	8200
Net Plant (\$mill)	4944.9	4679.9	5353.5	6203.0	6730.6	7037.1	7838.0	7147.3	6442.0	8970.2	8200	8200	8800
Return on Total Cap'l	7.5%	8.6%	7.0%	5.1%	6.6%	6.4%	6.3%	7.0%	5.3%	5.1%	5.5%	6.0%	7.0%
Return on Shr. Equity	9.0%	11.0%	9.1%	6.9%	9.7%	9.5%	10.1%	11.0%	10.6%	9.7%	10.5%	10.5%	12.0%
Return on Com Equity <sup>E</sup>	9.1%	11.3%	9.3%	6.8%	9.9%	9.5%	10.3%	11.3%	10.9%	10.0%	11.0%	11.0%	12.5%
Retained to Com Eq	4.0%	5.9%	3.8%	.9%	3.8%	3.3%	3.9%	4.9%	4.3%	3.4%	4.0%	4.5%	5.5%
All Div'ds to Net Prof	59%	50%	62%	88%	64%	67%	64%	57%	59%	65%	62%	63%	61%

**ELECTRIC OPERATING STATISTICS**

	2013	2014	2015
% Change Retail Sales (KWH)	+1	+1	-1
Avg. Indust. Use (MWH)	11471	11821	11735
Avg. Indust. Revs. per KWH (c)	6.75	6.85	6.92
Capacity at Peak (Mw)	5820	5426	5385
Peak Load, Summer (Mw)	5820	5426	5385
Annual Load Factor (%)	NA	NA	NA
% Change Customers (yr-end)	+4	+4	+3

**BUSINESS:** Alliant Energy Corp., formerly named Interstate Energy, is a holding company formed through the merger of WPL Holdings, IES Industries, and Interstate Power. Supplies electricity, gas, and other services in Wisconsin, Iowa, and Minnesota. Elect. revs. by state: WI, 44%; IA, 55%; MN, 1%. Elect. rev.: residential, 39%; commercial, 24%; industrial, 30%; wholesale, 6%; other, 1%. Fuel sources, 2015: coal, 46%; gas, 19%; other, 35%. Fuel costs: 49% of revs. 2015 depreciation rate: 5.7%. Estimated plant age: 13 years. Has 4,070 employees. Chairman & Chief Executive Officer: Patricia L. Kampling. Incorporated: Wisconsin. Address: 4902 N. Biltmore Lane, Madison, Wisconsin 53718. Telephone: 608-458-3311. Internet: www.alliantenergy.com.

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '13-'15 of change (per sh) to '19-'21

	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15
Revenues	1.0%	-1.5%	4.0%
"Cash Flow"	3.5%	8.0%	6.0%
Earnings	6.0%	7.0%	6.0%
Dividends	7.0%	6.5%	4.5%
Book Value	4.0%	4.0%	4.0%

**Alliant Energy reported better-than-expected second-quarter results.** The company posted share net of \$0.37, rising 23% versus the year-earlier figure, and easily topping our \$0.30 estimate. The performance was driven by a large uptick in electric sales to commercial entities, coupled with newly implemented cost-containment initiatives. Given the impressive results, we are increasing our 2016 full-year earnings estimate by a nickel, to \$1.90 a share. That is slightly below the high end of management's share-net guidance of \$1.80 to \$1.95.

**changes to its 2016-2019 capital expenditure program.** Even with the new wind turbine proposal, it continues to forecast capex of about \$5 billion through 2019. That is because a number of planned projects are coming in below the original forecast, and several others have been shelved or delayed.

**The Marshalltown generating station is approximately 85% complete.** Total capital expenditures for this project are slated to be about \$700 million. The natural gas-fired facility is expected to go into service in the spring of 2017.

**QUARTERLY REVENUES (\$ mill.)**

Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	859.6	718.0	866.6	832.6	3278.8
2014	952.8	750.3	843.1	804.1	3350.3
2015	897.4	717.2	898.9	740.1	3253.6
2016	843.8	754.2	930	852	3380
2017	885	780	975	910	3550

**Alliant asked the Iowa Utilities Board to approve a \$1 billion plan that would expand its wind energy operations in the state.** The new project is part of the company's efforts to reduce carbon emissions and improve its clean energy profile. The \$1 billion would be invested over five years, and add approximately 500 megawatts of wind power to an existing farm in northern Iowa. The utility is requesting an 11.5% return on common equity. If authorized, the project is expected to be completed by 2020.

**Management does not anticipate any**

**The company is also making progress on the Riverside Energy Center expansion.** It recently selected AECOM to perform the engineering, procurement, and construction of the development. The \$700 million investment in Riverside is expected to supply energy to customers by early 2020.

**This issue is now ranked 1 (Highest) for Timeliness.** However, given the excessive valuation, total return potential over the 3- to 5-year haul is well below the Value Line median.

Daniel Henigson  
September 16, 2016

**EARNINGS PER SHARE <sup>A</sup>**

Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	.36	.30	.72	.27	1.65
2014	.49	.28	.70	.27	1.74
2015	.44	.30	.80	.15	1.69
2016	.43	.37	.90	.20	1.90
2017	.48	.30	.90	.32	2.00

**QUARTERLY DIVIDENDS PAID <sup>B</sup>  $\uparrow$**

Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.225	.225	.225	.225	.90
2013	.235	.235	.235	.235	.94
2014	.255	.255	.255	.255	1.02
2015	.275	.275	.275	.275	1.10
2016	.295	.295	.295		

(A) Diluted EPS. Excl. nonrecr. gains (losses): '06, 42c; '07, 55c; '08, 4c; '09, (44c); '10, (8c); '11, (1c); '12, (8c). Next earnings report due early November. (B) Dividends historically paid in mid-Feb., May, Aug., and Nov.  $\uparrow$  Div'd reinst. plan avail.  $\uparrow$  Shareholder invest. plan avail. (C) Incl. deferred chgs. In '15: \$95.0 mill., \$0.42/sh. (D) In mill. (E) Rate base: Orig. cost. Rates all'd on com. eq. in IA in '15: 10.9%; in WI in '15 Regul. Clim.: WI, Above Avg.; IA, Avg.

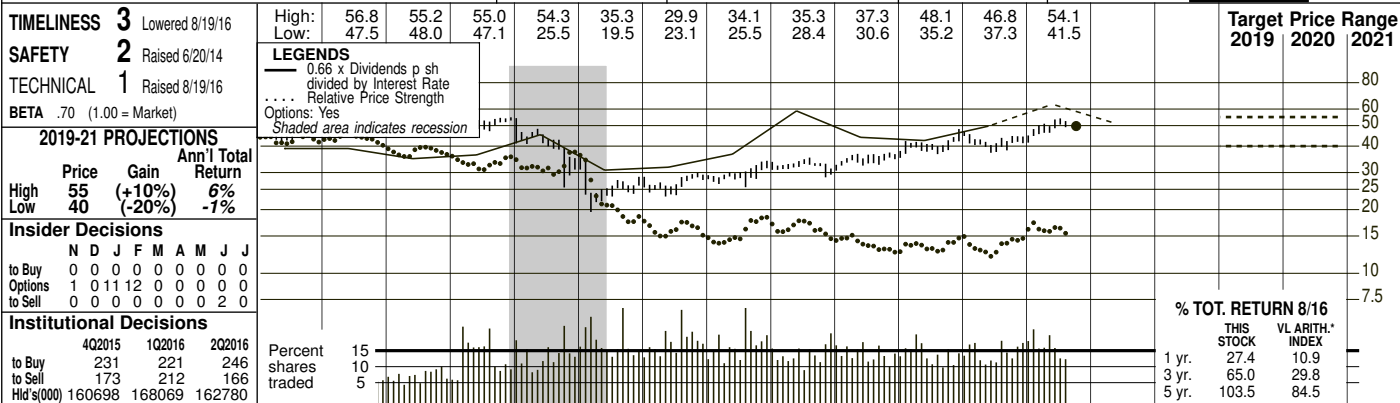
**Company's Financial Strength** A  
**Stock's Price Stability** 100  
**Price Growth Persistence** 95  
**Earnings Predictability** 85

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**AMEREN** NYSE-AEE **RECENT PRICE 49.84** **P/E RATIO 19.0** (Trailing: 19.4 Median: 15.0) **RELATIVE P/E RATIO 1.01** **DIV'D YLD 3.5%** **VALUE LINE**



2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
28.10	32.64	24.93	28.20	26.43	33.12	33.30	36.23	36.92	29.87	31.77	31.04	28.14	24.06	24.95	25.13	<b>24.95</b>	<b>25.75</b>	Revenues per sh	<b>28.25</b>
6.11	6.33	5.28	6.29	5.57	6.10	6.02	6.76	6.44	6.06	6.33	5.87	5.87	5.25	5.77	6.08	<b>6.60</b>	<b>7.05</b>	"Cash Flow" per sh	<b>8.50</b>
3.33	3.41	2.66	3.14	2.82	3.13	2.66	2.98	2.88	2.78	2.77	2.47	2.41	2.10	2.40	2.38	<b>2.60</b>	<b>2.75</b>	Earnings per sh <sup>A</sup>	<b>3.25</b>
2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	1.54	1.54	1.56	1.60	1.60	1.61	1.66	<b>1.72</b>	<b>1.78</b>	Div'd Decl'd per sh <sup>B</sup>	<b>2.05</b>
6.77	7.99	5.11	4.19	4.13	4.63	4.99	6.96	9.75	7.51	4.66	4.50	5.49	5.87	7.66	8.12	<b>8.90</b>	<b>9.00</b>	Cap'l Spending per sh	<b>9.50</b>
23.30	24.26	24.93	26.73	29.71	31.09	31.86	32.41	32.80	33.08	32.15	32.64	27.27	26.97	27.67	28.63	<b>29.50</b>	<b>30.50</b>	Book Value per sh <sup>C</sup>	<b>34.00</b>
137.22	138.05	154.10	162.90	195.20	204.70	206.60	208.30	212.30	237.40	240.40	242.60	242.63	242.63	242.63	242.63	<b>242.63</b>	<b>242.63</b>	Common Shs Outst'g <sup>D</sup>	<b>242.63</b>
11.0	12.1	15.8	13.5	16.3	16.7	19.4	17.4	14.2	9.3	9.7	11.9	13.4	16.5	16.7	17.5	<b>17.5</b>	<b>17.5</b>	Avg Ann'l P/E Ratio	<b>15.0</b>
.72	.62	.86	.77	.86	.89	1.05	.92	.85	.62	.62	.75	.85	.93	.88	.88	<b>.88</b>	<b>.88</b>	Relative P/E Ratio	<b>.95</b>
6.9%	6.2%	6.1%	6.0%	5.5%	4.9%	4.9%	4.9%	6.2%	6.0%	5.8%	5.3%	5.0%	4.6%	4.0%	4.0%	<b>4.0%</b>	<b>4.0%</b>	Avg Ann'l Div'd Yield	<b>4.2%</b>

**CAPITAL STRUCTURE as of 6/30/16**  
 Total Debt \$7814 mill. Due in 5 Yrs \$3342 mill.  
 LT Debt \$6605 mill. LT Interest \$328 mill.  
 (LT interest earned: 4.0x)  
 Leases, Uncapitalized Annual rentals \$13 mill.  
 Pension Assets-12/15 \$3653 mill. Oblig \$4197 mill.

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Revenues (\$mill)	6850
6880.0	7546.0	7839.0	7090.0	7638.0	7531.0	6828.0	5838.0	6053.0	6098.0	<b>6050</b>	<b>6250</b>	Revenues (\$mill)	<b>6850</b>						
547.0	629.0	615.0	624.0	669.0	602.0	589.0	518.0	593.0	585.0	<b>635</b>	<b>675</b>	Net Profit (\$mill)	<b>795</b>						
32.7%	33.5%	33.7%	34.7%	36.8%	37.3%	36.9%	37.5%	38.9%	38.3%	<b>35.0%</b>	<b>38.0%</b>	Income Tax Rate	<b>38.0%</b>						
.7%	.8%	4.6%	5.8%	7.8%	5.6%	6.1%	7.1%	5.7%	5.1%	<b>5.0%</b>	<b>4.0%</b>	AFUDC % to Net Profit	<b>4.0%</b>						
43.8%	45.0%	47.8%	49.7%	48.2%	45.3%	49.5%	45.2%	47.2%	49.3%	<b>48.5%</b>	<b>48.5%</b>	Long-Term Debt Ratio	<b>49.5%</b>						
54.6%	53.4%	50.8%	49.1%	50.9%	53.7%	49.4%	53.7%	51.7%	49.7%	<b>50.5%</b>	<b>50.5%</b>	Common Equity Ratio	<b>50.0%</b>						
12063	12654	13712	15991	15185	14738	13384	12190	12975	13968	<b>14200</b>	<b>14600</b>	Total Capital (\$mill)	<b>16500</b>						
14286	15069	16567	17610	17853	18127	16096	16205	17424	18799	<b>20000</b>	<b>21125</b>	Net Plant (\$mill)	<b>24300</b>						
5.7%	6.2%	5.7%	5.3%	6.0%	5.6%	6.0%	5.6%	5.8%	5.3%	<b>5.5%</b>	<b>6.0%</b>	Return on Total Cap'l	<b>6.0%</b>						
8.1%	9.0%	8.6%	7.8%	8.5%	7.5%	8.7%	7.7%	8.7%	8.3%	<b>8.5%</b>	<b>9.0%</b>	Return on Shr. Equity	<b>9.5%</b>						
8.1%	9.2%	8.7%	7.8%	8.6%	7.5%	8.8%	7.8%	8.7%	8.3%	<b>9.0%</b>	<b>9.0%</b>	Return on Com Equity <sup>E</sup>	<b>9.5%</b>						
.2%	1.3%	1.0%	3.5%	3.8%	2.8%	3.0%	1.9%	2.9%	2.5%	<b>3.0%</b>	<b>3.0%</b>	Retained to Com Eq	<b>3.5%</b>						
97%	86%	88%	56%	56%	63%	66%	76%	67%	70%	<b>66%</b>	<b>65%</b>	All Div'ds to Net Prof	<b>63%</b>						

**ELECTRIC OPERATING STATISTICS**

	2013	2014	2015
% Change Retail Sales (KWH)	.5	-1	-1.1
Avg. Indust. Use (MWH)	NA	NA	NA
Avg. Indust. Revs. per KWH (c)	5.41	5.46	NA
Capacity at Peak (Mw)	NA	NA	NA
Peak Load, Summer (Mw)	NA	NA	NA
Annual Load Factor (%)	NA	NA	NA
% Change Customers (yr-end)	NA	NA	NA

**BUSINESS:** Ameren Corporation is a holding company formed through the merger of Union Electric and CIPSCO. Acq'd CILCORP 1/03; Illinois Power 10/04. Has 1.2 mill. electric and 127,000 gas customers in Missouri; 1.2 mill. electric and 813,000 gas customers in Illinois. Discontinued nonregulated power-generation operation in '13. Electric rev. breakdown: residential, 45%; commercial, 33%; industrial, 12%; other, 10%. Generating sources: coal, 67%; nuclear, 23%; hydro, 4%; purchased & other, 6%. Fuel costs: 30% of revs. '15 reported deprec. rates: 3%-4%. Has 8,500 employees. Chairman, President & CEO: Warner L. Baxter, Inc.: MO. Address: One Ameren Plaza, 1901 Chouteau Ave., P.O. Box 66149, St. Louis, MO 63166-6149. Tel.: 314-621-3222. Internet: www.ameren.com.

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '13-'15 of change (per sh) 19-'21

	10 Yrs.	5 Yrs.	Est'd '13-'15
Revenues	-1.5%	-5.5%	2.5%
"Cash Flow"	-5%	-2.0%	7.0%
Earnings	-2.5%	-4.0%	6.0%
Dividends	-4.5%	-3.0%	4.0%
Book Value	-5%	-3.0%	3.5%

**AMEREN HAS FILED AN ELECTRIC RATE CASE IN MISSOURI.** The utility is seeking an increase of \$206 million (7.8%), based on a return of 9.9% on a common-equity ratio of 51.8%. Besides asking for the recovery of capital expenditures and higher expenses, the application reflects lost volume from Ameren's historically largest customer, Noranda, which has idled production at its aluminum smelter. The company is also requesting a regulatory mechanism to track transmission costs. New tariffs are expected to go into effect in late May.

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	1475	1403	1638	1322	5838.0
2014	1594	1419	1670	1370	6053.0
2015	1556	1401	1833	1308	6098.0
2016	1434	1427	<b>1850</b>	<b>1339</b>	<b>6050</b>
2017	<b>1500</b>	<b>1450</b>	<b>1900</b>	<b>1400</b>	<b>6250</b>

**THE CLOSING OF THE NORANDA SMELTER IS HURTING AMEREN'S PROFITS.** The utility estimates the negative effect at \$0.15 a share this year, and \$0.06-\$0.07 a share in the first half of 2017. Nevertheless, earnings are still likely to advance in 2016 because the second-quarter comparison was easy. In fact, we raised our share-earnings estimate by \$0.10, to \$2.60, because June-quarter profits (aided by favorable weather conditions) were better than we expected. Our revised estimate is within Ameren's targeted range of \$2.45-\$2.65, which management raised by a nickel upon releasing second-quarter results.

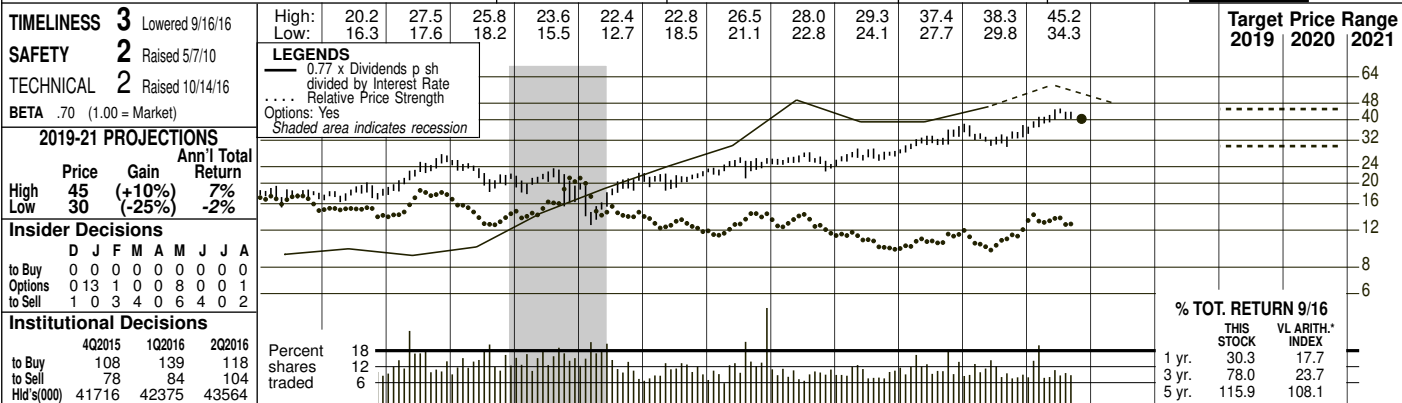
Cal-endar	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	.22	.44	1.25	.19	2.10
2014	.40	.62	1.20	.19	2.40
2015	.45	.40	1.41	.12	2.38
2016	.43	.61	<b>1.40</b>	<b>.16</b>	<b>2.60</b>
2017	<b>.45</b>	<b>.60</b>	<b>1.50</b>	<b>.20</b>	<b>2.75</b>

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2012	.40	.40	.40	.40	1.60
2013	.40	.40	.40	.40	1.60
2014	.40	.40	.40	.41	1.61
2015	.41	.41	.41	.425	1.66
2016	.425	.425			

**Like other transmission owners in the Midwest, Ameren is awaiting orders from the Federal Energy Regulatory Commission (FERC).** Transmission users complained to FERC that allowed returns on equity for transmission owners are too high. Administrative law judges have recommended significant cuts in the allowed ROE, although FERC granted Ameren an additional half-percentage point "adder" for participating in a regional transmission organization. The company has taken a reserve of \$58 million for potential refunds of previously collected revenues. Despite all of this, electric transmission should be a source of profit growth for Ameren in the coming years. **We think the board of directors will raise the dividend in the fourth quarter.** This has occurred in each of the past two years. We estimate a boost of \$0.06 a share (3.5%) in the annual payout. **Ameren stock has a dividend yield that is about equal to the utility average.** With the recent quotation within our 2019-2021 Target Price Range, total return potential is just modest. *Paul E. Debbas, CFA September 16, 2016*

(A) Diluted EPS. Excl. nonrecurr. gain (losses): '05, (11c); '10, (\$2.19); '11, (32c); '12, (\$6.42); gain (loss) from disc. ops.: '13, (92c); '15, 21c. '14 EPS don't add due to rounding. Next eps. report due early Nov. (B) Div'ds histor. paid in late Mar., June, Sept., & Dec. (C) Div'd reinvest. plan avail. (D) Incl. intang. In '15: \$7.39/sh. (E) Rate base: Orig. cost depr. Rate all'd on com. eq. in MO in '15: elec., 9.53%; in '11: gas, none specified; in IL in '14: elec., 8.7%; in '16: gas, 9.6%; earned on avg. com. eq., '15: 8.5%. Regulatory Climate: Below Avg.

**AVISTA CORP. NYSE-AVA** RECENT PRICE **40.37** P/E RATIO **19.6** (Trailing: 19.5; Median: 16.0) RELATIVE P/E RATIO **1.07** DIV'D YLD **3.5%** VALUE LINE



2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
167.59	126.17	20.41	23.24	23.76	27.98	28.68	26.80	30.77	27.58	27.29	27.73	25.86	26.94	23.66	23.83	<b>22.10</b>	<b>22.70</b>	Revenues per sh	24.75
3.31	2.71	2.19	2.63	2.35	2.72	4.27	2.93	3.98	4.45	3.62	3.78	3.70	4.36	4.36	4.92	<b>4.90</b>	<b>5.20</b>	"Cash Flow" per sh	6.00
1.76	1.20	.67	1.02	.73	.92	1.47	.72	1.36	1.58	1.65	1.72	1.32	1.85	1.84	1.89	<b>2.05</b>	<b>2.15</b>	Earnings per sh <sup>A</sup>	2.50
.48	.48	.48	.49	.52	.55	.57	.60	.69	.81	1.00	1.10	1.16	1.22	1.27	1.32	<b>1.37</b>	<b>1.42</b>	Div'd Decl'd per sh <sup>B</sup>	1.60
4.24	5.92	1.74	2.21	2.47	3.23	3.14	4.04	4.09	3.86	3.64	4.20	4.61	5.05	5.47	6.46	<b>6.25</b>	<b>6.65</b>	Cap'l Spending per sh	6.75
15.34	15.12	14.84	15.54	15.54	15.87	17.46	17.27	18.30	19.17	19.71	20.30	21.06	21.61	23.84	24.53	<b>25.55</b>	<b>26.25</b>	Book Value per sh <sup>C</sup>	28.50
47.21	47.63	48.04	48.34	48.47	48.59	52.51	52.91	54.49	54.84	57.12	58.42	59.81	60.08	62.24	62.31	<b>64.50</b>	<b>65.00</b>	Common Shs Outst'g <sup>D</sup>	66.50
13.6	13.7	19.3	13.8	24.4	19.4	15.4	30.9	15.0	11.4	12.7	14.1	19.3	14.6	17.3	17.6	<b>Bold figures are Value Line estimates</b>		Avg Ann'l P/E Ratio	15.0
.88	.70	1.05	.79	1.29	1.03	.83	1.64	.90	.76	.81	.88	1.23	.82	.91	.89			Relative P/E Ratio	.95
2.0%	2.9%	3.7%	3.5%	2.9%	3.0%	2.5%	2.7%	3.4%	4.5%	4.8%	4.5%	4.6%	4.5%	4.0%	4.0%			Avg Ann'l Div'd Yield	4.2%

**CAPITAL STRUCTURE as of 6/30/16**

Total Debt \$1784.4 mill. Due in 5 Yrs \$682.7 mill.  
 LT Debt \$1531.2 mill. LT Interest \$77.0 mill.  
 Incl. \$51.5 mill. debt to affiliated trusts.  
 (LT interest earned: 3.5x)

**Pension Assets-12/15** \$517.2 mill. **Oblig.** \$613.5 mill.

**Pfd Stock** None

**Common Stock** 63,706,037 shs. as of 7/31/16

**MARKET CAP: \$2.6 billion (Mid Cap)**

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Revenues (\$mill)	1425	1475	1484.8	1475	1475	1475	1475	1475	1475
Net Profit (\$mill)	130	140	130	140	140	140	140	140	140
Income Tax Rate	36.5%	36.5%	36.3%	36.5%	36.5%	36.5%	36.5%	36.5%	36.5%
AFUDC % to Net Profit	9.0%	9.0%	10.1%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%
Long-Term Debt Ratio	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%
Common Equity Ratio	49.0%	52.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%	49.0%
Total Capital (\$mill)	3355	3290	3060.3	3355	3290	3290	3290	3290	3290
Net Plant (\$mill)	4115	4350	3898.6	4115	4350	4350	4350	4350	4350
Return on Total Cap'l	5.5%	5.5%	5.1%	5.0%	5.5%	5.5%	5.5%	5.5%	5.5%
Return on Shr. Equity	8.5%	8.5%	7.7%	8.0%	8.5%	8.5%	8.5%	8.5%	8.5%
Return on Com Equity <sup>E</sup>	8.5%	8.5%	7.7%	8.0%	8.5%	8.5%	8.5%	8.5%	8.5%
Retained to Com Eq	3.0%	3.0%	2.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
All Div's to Net Prof	67%	67%	69%	67%	67%	67%	67%	67%	67%

**ELECTRIC OPERATING STATISTICS**

	2013	2014	2015
% Change Retail Sales (KWH)	+4	+8	2.0
Avg. Indust. Use (MWH)	1428	1349	1339
Avg. Indust. Revs. per KWH (c)	5.74	5.93	6.17
Capacity at Peak (Mw)	2767	2594	NA
Peak Load, Winter (Mw)	2223	2223	NA
Annual Load Factor (%)	59.0	64.0	NA
% Change Customers (yr-end)	+1.1	+5.5	+1.3

**BUSINESS:** Avista Corporation (formerly The Washington Water Power Company) supplies electricity & gas in eastern Washington & northern Idaho. Supplies electricity to part of Alaska & gas to part of Oregon. Customers: 392,000 electric, 335,000 gas. Acq'd Alaska Electric Light and Power 7/14. Sold Ecova energy-management sub. 6/14. Electric rev. breakdown: residential, 34%; commercial, 31%; industrial, 11%; wholesale, 13%; other, 11%. Generating sources: gas & coal, 32%; hydro, 28%; purchased, 40%. Fuel costs: 44% of revs. '15 reported deprec. rate (Avista): 3.1%. Has 1,900 employees. Chairman, President & CEO: Scott L. Morris. Inc.: WA. Address: 1411 E. Mission Ave., Spokane, WA 99202-2600. Tel.: 509-489-0500. Web: www.avistacorp.com.

**As usual, Avista is active in the regulatory arena.** The utility asked the Washington regulators for electric and gas rate increases of \$38.6 million (7.6%) and \$4.4 million (2.7%), respectively, at the start of 2017, followed by increases of \$10.3 million (1.6%) and \$0.9 million (1.0%) at the beginning of 2018. The petition is based on a 9.9% return on a 48.5% common-equity ratio. The staff of the Washington commission is recommending electric and gas hikes of \$25.6 million and \$2.1 million, respectively, based on a 9.2% return on a 48.5% common-equity ratio. Avista filed for a \$15.4 million rate boost in Idaho, based on a 9.9% return on a 50% common-equity ratio. New tariffs would take effect at the start of 2017. Alaska Electric Light & Power filed an application (the utility's first since 2010) that would raise revenues by \$5.7 million, based on a 13.8% return on a 58% common-equity ratio. (The requested ROE is high because of the utility's risks of operating in Juneau.) An interim increase might take effect at the start of November. Finally, the company's gas utility in Oregon will probably file a rate case this quarter.

**Frequent rate filings are necessary to deal with the effects of regulatory lag.** This has caused Avista to underearn its allowed ROE for many years. Even so, we think rate relief will help earnings advance this year and next. Our 2016 profit estimate is near the middle of the company's targeted range of \$1.96-\$2.16 a share. Management's goal for annual profit growth is 4%-5%.

**A court case is pending in Washington.** In early 2016, Avista's electric rates were cut by \$8.1 million, but the state attorney general's office said the reduction should have been more than twice as large. When this will be resolved is unknown.

**Finances are in good shape.** The fixed-charge coverage and common-equity ratio are healthy. Avista is ranked 'A' for Financial Strength.

**The dividend yield of this stock is close to the industry average.** With the recent quotation near the upper end of our 2019-2021 Target Price Range, total return potential over that time frame is unappealing.

*Paul E. Debbas, CFA*      *October 28, 2016*

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	482.9	352.0	335.9	447.7	1618.5
2014	446.6	312.6	301.6	411.8	1472.6
2015	446.5	337.3	313.7	387.3	1484.8
2016	418.2	318.8	313	375	1425
2017	425	335	325	390	1475

Cal-endar	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	.71	.43	.19	.53	1.85
2014	.79	.43	.16	.48	1.84
2015	.74	.40	.21	.54	1.89
2016	.89	.43	.16	.57	2.05
2017	.90	.48	.17	.60	2.15

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2012	.29	.29	.29	.29	1.16
2013	.305	.305	.305	.305	1.22
2014	.3175	.3175	.3175	.3175	1.27
2015	.33	.33	.33	.33	1.32
2016	.3425	.3425	.3425		

(A) Dil. EPS. Excl. nonrec. gain (losses): '02, (9c); '03, (3c); '14, 9c; gains (losses) on disc. ops.: '01, (\$1.00); '02, 2c; '03, (10c); '14, \$1.17; '16, 8c. '13 & '14 EPS don't add due to rounding or change in shs. Next earnings report due early Nov. (B) Div'ds paid in mid-Mar., June, Sept. & Dec. Div'd reinv. avail. (C) Incl. def'd chgs. In '15: \$9.89/sh. (D) In mill. (E) Rate base: Net orig. cost. Rate all'd on com. eq. in WA in '16: 9.5%; in ID in '16: 9.5%; in OR in '15: 9.5%; earn. on avg. com. eq., '15: 8.2%. Regul. Clim.: WA, Avg.; ID, Above Avg.

BLACK HILLS CORP. NYSE-BKH										RECENT PRICE	P/E RATIO		RELATIVE P/E RATIO		DIV/D YLD		VALUE LINE			
										58.91	21.0 (Trailing: 23.9; Median: 17.0)		1.14		3.1%					
TIMELINESS	3	Lowered 9/16/16		High:	44.6	37.9	45.4	44.0	28.0	34.5	34.8	37.0	55.1	62.1	53.4	64.6	Target Price Range			
SAFETY	2	Raised 5/1/15		Low:	29.2	32.5	35.4	21.7	14.5	25.7	25.8	30.3	36.9	47.1	36.8	44.7	2019	2020	2021	
TECHNICAL	3	Lowered 9/30/16																128		
BETA	.90	(1.00 = Market)																96		
2019-21 PROJECTIONS																				80
Insider Decisions																				64
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CAPITAL STRUCTURE as of 6/30/16																				40
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BUSINESS																				12
Black Hills is still integrating Source-Gas, which it bought in February.																				12
Black Hills wants to reduce its presence in the oil and gas exploration and production business.																				12
A rate case is pending in Colorado.																				12
This stock has a dividend yield that is below the utility mean.																				12

(A) Dil. EPS. Excl. nonrec. gains (losses): '05, '09, '09; '11, 23¢; '12, (16¢). '14 EPS don't add due to rounding. Next egs. due early Nov. '15: \$10.52/sh. (D) In mill. (E) Rate base: Net orig. cost. Rate all'd on com. eq. in SD in '15: none specified; in CO in '15: 9.83%; earned on avg. com. eq.; '15: 9.0%. Reg. Climate: Avg. (B) Div'ds paid early Mar., Jun., Sept., & Dec. (C) Div'd reinv. plan avail. (C) Incl. def'd chgs. In

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Company's Financial Strength A  
 Stock's Price Stability 85  
 Price Growth Persistence 70  
 Earnings Predictability 50

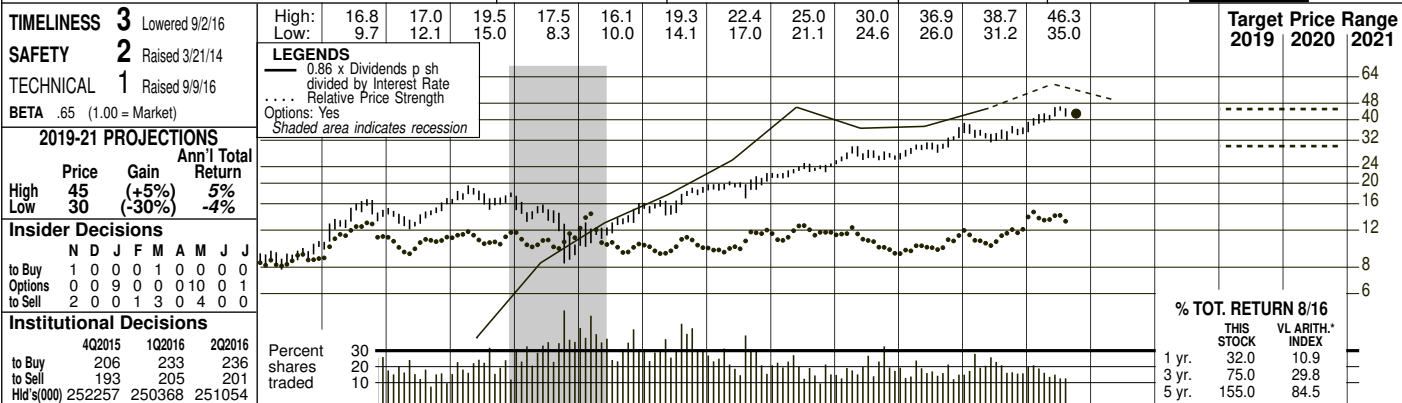
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# CMS ENERGY CORP. NYSE-CMS

RECENT PRICE **42.80** P/E RATIO **20.3** (Trailing: 21.9; Median: 16.0) RELATIVE P/E RATIO **1.07** DIV'D YLD **3.0%** VALUE LINE



**TIMELINESS** 3 Lowered 9/2/16  
**SAFETY** 2 Raised 3/21/14  
**TECHNICAL** 1 Raised 9/9/16  
**BETA** .65 (1.00 = Market)

High: 16.8 17.0 19.5 17.5 16.1 19.3 22.4 25.0 30.0 36.9 38.7 46.3  
 Low: 9.7 12.1 15.0 8.3 10.0 14.1 17.0 21.1 24.6 26.0 31.2 35.0

**LEGENDS**  
 0.86 x Dividends p sh divided by Interest Rate  
 Relative Price Strength  
 Options: Yes  
 Shaded area indicates recession

**2019-21 PROJECTIONS**

	Price	Gain	Ann'l Total Return
High	45	(+5%)	5%
Low	30	(-30%)	-4%

**Insider Decisions**

	N	D	J	F	M	A	M	J	J
to Buy	1	0	0	0	1	0	0	0	0
Options	0	0	9	0	0	0	10	0	1
to Sell	2	0	0	1	3	0	4	0	0

**Institutional Decisions**

	4Q2015	1Q2016	2Q2016
to Buy	206	233	236
to Sell	193	205	201
Hlds(000)	252257	250368	251054

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	19-21
Revenues per sh	74.24	72.16	60.28	34.21	28.06	28.52	30.57	28.95	30.13	27.23	25.77	25.59	23.90	24.68	26.09	23.29	22.15	22.70	24.75
"Cash Flow" per sh	7.61	5.24	d.09	2.39	2.87	3.43	3.22	3.08	3.88	3.47	3.70	3.65	3.82	4.06	4.22	4.59	4.80	5.30	6.50
Earnings per sh <sup>A</sup>	2.53	1.27	d2.99	d.29	.74	1.10	.64	.64	1.23	.93	1.33	1.45	1.53	1.66	1.74	1.89	1.95	2.15	2.50
Div'd Decl'd per sh <sup>B</sup>	1.46	1.46	1.09	--	--	--	--	.20	.36	.50	.66	.84	.96	1.02	1.08	1.16	1.24	1.32	1.60
Cap'l Spending per sh	8.51	9.49	5.18	3.32	2.69	2.69	3.01	5.61	3.50	3.59	3.29	3.47	4.65	4.98	5.73	5.64	6.00	6.20	5.75
Book Value per sh <sup>C</sup>	19.48	14.21	7.86	9.84	10.63	10.53	10.03	9.46	10.88	11.42	11.19	11.92	12.09	12.98	13.34	14.21	15.00	16.00	19.25
Common Shs Outst'g <sup>D</sup>	121.20	132.99	144.10	161.13	195.00	220.50	222.78	225.15	226.41	227.89	249.60	254.10	264.10	266.10	275.20	277.16	280.00	282.00	288.00
Avg Ann'l P/E Ratio	9.6	20.8	--	--	12.4	12.6	22.2	26.8	10.9	13.6	12.5	13.6	15.1	16.3	17.3	18.3	18.0	18.0	15.0
Relative P/E Ratio	.62	1.07	--	--	.66	.67	1.20	1.42	.66	.91	.80	.85	.96	.92	.91	.93	1.07	1.07	.95
Avg Ann'l Div'd Yield	6.0%	5.5%	7.5%	--	--	--	--	1.2%	2.7%	4.0%	4.0%	4.3%	4.2%	3.8%	3.6%	3.4%	3.0%	3.0%	4.2%

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	19-21
Revenues per sh	74.24	72.16	60.28	34.21	28.06	28.52	30.57	28.95	30.13	27.23	25.77	25.59	23.90	24.68	26.09	23.29	22.15	22.70	24.75
"Cash Flow" per sh	7.61	5.24	d.09	2.39	2.87	3.43	3.22	3.08	3.88	3.47	3.70	3.65	3.82	4.06	4.22	4.59	4.80	5.30	6.50
Earnings per sh <sup>A</sup>	2.53	1.27	d2.99	d.29	.74	1.10	.64	.64	1.23	.93	1.33	1.45	1.53	1.66	1.74	1.89	1.95	2.15	2.50
Div'd Decl'd per sh <sup>B</sup>	1.46	1.46	1.09	--	--	--	--	.20	.36	.50	.66	.84	.96	1.02	1.08	1.16	1.24	1.32	1.60
Cap'l Spending per sh	8.51	9.49	5.18	3.32	2.69	2.69	3.01	5.61	3.50	3.59	3.29	3.47	4.65	4.98	5.73	5.64	6.00	6.20	5.75
Book Value per sh <sup>C</sup>	19.48	14.21	7.86	9.84	10.63	10.53	10.03	9.46	10.88	11.42	11.19	11.92	12.09	12.98	13.34	14.21	15.00	16.00	19.25
Common Shs Outst'g <sup>D</sup>	121.20	132.99	144.10	161.13	195.00	220.50	222.78	225.15	226.41	227.89	249.60	254.10	264.10	266.10	275.20	277.16	280.00	282.00	288.00
Avg Ann'l P/E Ratio	9.6	20.8	--	--	12.4	12.6	22.2	26.8	10.9	13.6	12.5	13.6	15.1	16.3	17.3	18.3	18.0	18.0	15.0
Relative P/E Ratio	.62	1.07	--	--	.66	.67	1.20	1.42	.66	.91	.80	.85	.96	.92	.91	.93	1.07	1.07	.95
Avg Ann'l Div'd Yield	6.0%	5.5%	7.5%	--	--	--	--	1.2%	2.7%	4.0%	4.0%	4.3%	4.2%	3.8%	3.6%	3.4%	3.0%	3.0%	4.2%

**CAPITAL STRUCTURE as of 6/30/16**

Total Debt	\$9514 mill.	Due in 5 Yrs	\$4793 mill.
LT Debt	\$8596 mill.	LT Interest	\$388 mill.
Incl.	\$110 mill. capitalized leases.		
	(LT interest earned: 3.0x)		
Leases, Uncapitalized	Annual rentals \$20 mill.		
Pension Assets-12/15	\$2013 mill.		
Oblig	\$2403 mill.		
Pfd Stock	\$37 mill.	Pfd Div'd	\$2 mill.
Incl.	373,148 shs. \$4.50 \$100 par, cum., callable at \$110.00.		
Common Stock	279,300,000 shs.		

**MARKET CAP: \$12 billion (Large Cap)**

**ELECTRIC OPERATING STATISTICS**

	2013	2014	2015
% Change Retail Sales (KWH)	3.1	+1.9	-8
Avg. Indust. Use (MWH)	NMF	NMF	5922
Avg. Indust. Revs. per KWH (c)	8.93	8.79	8.07
Capacity at Peak (Mw)	8603	8776	8762
Peak Load, Summer (Mw)	8509	7498	7812
Annual Load Factor (%)	50.0	59.7	56.8
% Change Customers (yr-end)	+1	--	+6

**BUSINESS:** CMS Energy Corporation is a holding company for Consumers Energy, which supplies electricity and gas to lower Michigan (excluding Detroit). Has 1.8 million electric, 1.7 million gas customers. Has 1,034 megawatts of nonregulated generating capacity. Sold Palisades nuclear plant in '07. Electric revenue breakdown: residential, 43%; commercial, 34%; industrial, 16%; other, 7%. Generating sources: coal, 44%; gas, 10%; other, 3%; purchased, 43%. Fuel costs: 47% of revenues. '15 reported deprec. rates: 3.5% electric, 2.8% gas, 8.7% other. Has 7,400 employees. Chairman: John G. Russell. President & CEO: Patti Poppe. Incorporated: Michigan. Address: One Energy Plaza, Jackson, Michigan 49201. Tel.: 517-788-0550. Internet: www.cmsenergy.com.

**CMS Energy's utility subsidiary has electric and gas rate cases pending.** On the electric side, Consumers Energy is seeking a tariff increase of \$225 million, based on an allowed return on equity of 10.7%. At the start of September, the utility self-implemented a \$170 million hike, which it may do under Michigan regulatory law. The staff of the Michigan Public Service Commission (MPSC) is proposing a \$92 million increase, based on a 10% ROE. The MPSC's order is due in late February. On the gas side, Consumers Energy filed for an increase of \$90 million, based on a 10.6% ROE. The utility will self-implement a raise at the beginning of February, with the MPSC's decision due in late July. Rate cases are going to be put forth regularly in the coming years, mainly to place new capital investment in the rate base.

**We have trimmed our 2016 earnings estimate by \$0.05 a share.** In the current quarter, CMS expects to record an undisclosed charge for an early retirement program. Management will exclude this from its typically narrow earnings guidance of \$1.99-\$2.02 a share, but we will include it, whatever the amount of the charge turns out to be.

<b>ANNUAL RATES</b> Past 10 Yrs. Past 5 Yrs. Est'd '13-'15 of change (per sh)	Revenues	-2.0%	-2.5%	Nil
"Cash Flow"	4.0%	3.0%	7.0%	
Earnings	13.0%	8.5%	6.0%	
Dividends	--	16.5%	6.5%	
Book Value	2.5%	4.0%	6.0%	

Cal-endar	QUARTERLY REVENUES (\$ mill.)	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2013	1979 1406 1445 1736	6566.0
2014	2523 1468 1430 1758	7179.0
2015	2111 1350 1486 1509	6456.0
2016	1801 1371 1478 1550	6200
2017	1950 1350 1500 1600	6400

Cal-endar	EARNINGS PER SHARE <sup>A</sup>	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2013	.53 .29 .46 .37	1.66
2014	.75 .30 .34 .35	1.74
2015	.73 .25 .53 .38	1.89
2016	.59 .45 .50 .41	1.95
2017	.75 .35 .60 .45	2.15

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B</sup>	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2012	.24 .24 .24 .24	.96
2013	.255 .255 .255 .255	1.02
2014	.27 .27 .27 .27	1.08
2015	.29 .29 .29 .29	1.16
2016	.31 .31 .31 .31	1.24

(A) Diluted EPS. Excl. nonrec. gains (losses): '05, (\$1.61); '06, (\$1.08); '07, (\$1.26); '08, (7c); '10, 3c; '11, 12c; '12, (14c); gains (losses) on disc. ops.: '05, 7c; '06, 3c; '07, (40c); '09, 8c; '10, (8c); '11, 1c; '12, 3c. '13 EPS don't add due to rounding. Next earnings report due late Oct. (B) Div'ds historically paid late Feb., May, Aug., & Nov. (C) Div'd reinvestment plan avail. (D) Incl. intang. In '15: \$6.64/sh. (E) In mill. Rate base: Net orig. cost. Rate allowed on com. eq. in '15: 10.3%; earned on avg. com. eq., '15: 13.7%. Regulatory Climate: Average.

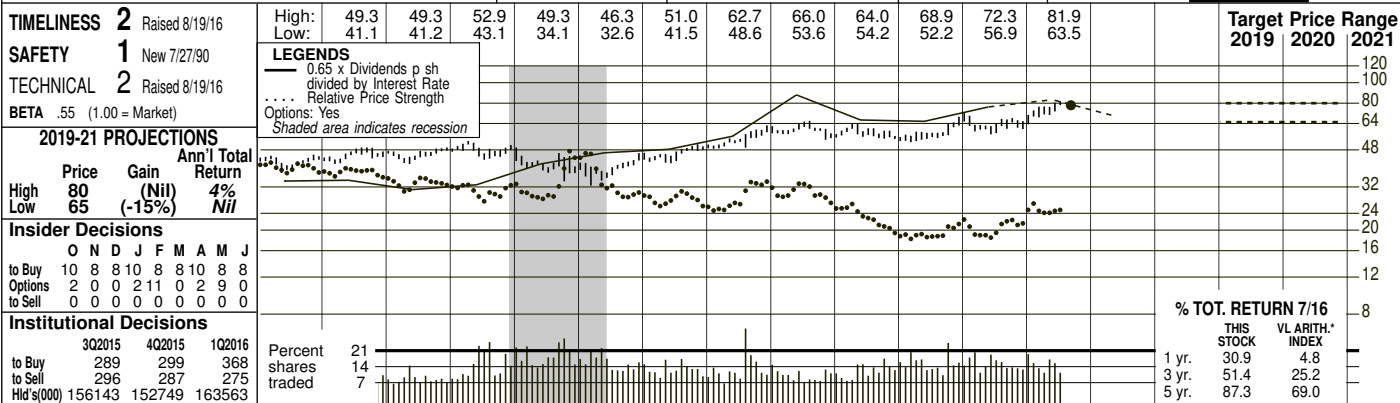
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**Company's Financial Strength** B++  
**Stock's Price Stability** 100  
**Price Growth Persistence** 90  
**Earnings Predictability** 80

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**CON. EDISON** NYSE-ED **RECENT PRICE 78.09** **P/E RATIO 18.4** (Trailing: 20.2 Median: 15.0) **RELATIVE P/E RATIO 0.98** **DIV'D YLD 3.5%** **VALUE LINE**



2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
44.48	45.41	39.65	43.51	40.24	47.66	47.14	48.23	49.62	46.36	45.69	44.17	41.62	42.27	44.11	42.85	<b>39.35</b>	<b>40.35</b>	Revenues per sh	<b>43.75</b>
5.51	5.70	5.44	5.12	4.54	5.27	5.28	5.77	5.99	5.86	6.24	6.61	7.15	7.45	7.30	7.93	<b>7.95</b>	<b>8.40</b>	"Cash Flow" per sh	<b>9.50</b>
2.74	3.21	3.13	2.83	2.32	2.99	2.95	3.48	3.36	3.14	3.47	3.57	3.86	3.93	3.62	4.05	<b>4.05</b>	<b>4.30</b>	Earnings per sh <sup>A</sup>	<b>4.50</b>
2.18	2.20	2.22	2.24	2.26	2.28	2.30	2.32	2.34	2.36	2.38	2.40	2.42	2.46	2.52	2.60	<b>2.68</b>	<b>2.76</b>	Div'd Decl'd per sh <sup>B</sup>	<b>3.00</b>
4.52	5.20	5.68	5.72	5.60	6.59	7.17	7.09	8.50	7.80	6.96	6.72	7.06	8.67	8.26	10.42	<b>12.55</b>	<b>10.60</b>	Cap'l Spending per sh	<b>10.25</b>
25.81	26.71	27.68	28.44	29.09	29.80	31.09	32.58	35.43	36.46	37.93	39.05	40.53	41.81	42.94	44.55	<b>46.75</b>	<b>48.40</b>	Book Value per sh <sup>C</sup>	<b>53.50</b>
212.03	212.15	213.93	225.84	242.51	245.29	257.46	272.02	273.72	281.12	291.62	292.89	292.87	292.87	292.88	293.00	<b>305.00</b>	<b>306.00</b>	Common Shs Outst'g <sup>D</sup>	<b>309.00</b>
12.0	12.0	13.3	14.3	18.2	15.1	15.5	13.8	12.3	12.5	13.3	15.1	15.4	14.7	15.9	15.6	<b>16.0</b>	<b>16.0</b>	Avg Ann'l P/E Ratio	<b>16.0</b>
.78	.61	.73	.82	.96	.80	.84	.73	.74	.83	.85	.95	.98	.83	.84	.79	<b>.84</b>	<b>.79</b>	Relative P/E Ratio	<b>1.00</b>
6.6%	5.7%	5.3%	5.5%	5.3%	5.0%	5.0%	4.8%	5.7%	6.0%	5.2%	4.5%	4.1%	4.3%	4.4%	4.1%	<b>4.1%</b>	<b>4.1%</b>	Avg Ann'l Div'd Yield	<b>4.2%</b>

**CAPITAL STRUCTURE as of 6/30/16**

Total Debt \$15201 mill. Due in 5 Yrs \$2710 mill.  
 LT Debt \$13747 mill. LT Interest \$625 mill.  
 (LT interest earned: 3.7x)

Leases, Uncapitalized Annual rentals \$18 mill.

Pension Assets-12/15 \$11759 mill. Oblig \$14377 mill.

Pfd Stock None

Common Stock 304,414,974 shs. as of 7/29/16

MARKET CAP: \$24 billion (Large Cap)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	
Revenues (\$mill)	12137	13120	13583	13032	13325	12938	12188	12381	12919	12554
Net Profit (\$mill)	749.0	936.0	933.0	868.0	992.0	1062.0	1141.0	1157.0	1066.0	1193.0
Income Tax Rate	35.2%	32.6%	36.0%	34.2%	36.0%	36.1%	34.5%	31.8%	34.0%	33.6%
AFUDC % to Net Profit	1.6%	1.9%	1.7%	2.6%	2.4%	1.6%	5%	5%	3%	7%
Long-Term Debt Ratio	50.2%	45.6%	48.3%	48.6%	48.6%	46.5%	45.9%	46.1%	48.0%	47.9%
Common Equity Ratio	48.5%	53.1%	50.6%	50.4%	50.4%	52.5%	54.1%	53.9%	52.0%	52.1%
Total Capital (\$mill)	16515	16687	19160	20330	21952	21794	21933	22735	24207	25058
Net Plant (\$mill)	18445	19914	20874	22464	23863	25093	26939	28436	29827	32209
Return on Total Cap'l	6.0%	7.0%	6.2%	5.7%	5.9%	6.2%	6.5%	6.4%	5.6%	6.0%
Return on Shr. Equity	9.1%	10.3%	9.4%	8.3%	8.8%	9.1%	9.6%	9.4%	8.5%	9.1%
Return on Com Equity <sup>E</sup>	9.2%	10.4%	9.5%	8.4%	8.9%	9.2%	9.6%	9.4%	8.5%	9.1%
Retained to Com Eq	2.6%	3.9%	3.1%	2.5%	3.2%	3.1%	3.6%	3.6%	2.6%	3.5%
All Div'ds to Net Prof	73%	63%	67%	71%	65%	66%	62%	62%	69%	61%

**ELECTRIC OPERATING STATISTICS**

	2013	2014	2015
% Change Retail Sales (KWH)	+1	-1	+1.9
Avg. Indust. Use (MWH)	NA	NA	NA
Avg. Indust. Revs. per KWH (c)	NA	NA	NA
Capacity at Peak (Mw)	NMF	NMF	NMF
Peak Load, Summer (Mw)	14883	13568	13721
Annual Load Factor (%)	NMF	NMF	NMF
% Change Customers (yr-end)	NA	NA	NA

**BUSINESS:** Consolidated Edison, Inc. is a holding company for Consolidated Edison Company of New York, Inc. (CECONY), which sells electricity, gas, and steam in most of New York City and Westchester County. Also owns Orange and Rockland Utilities (O&R), which operates in New York and New Jersey. Has 3.6 million electric, 1.2 million gas customers. Pursues competitive energy opportunities through three wholly owned subsidiaries. Entered into midstream gas joint venture 6/16. Purchases most of its power. Fuel costs: 30% of revenues. '15 reported depreciation rates: 3.0%-3.1%. Has 14,800 employees. Chairman, President & CEO: John McAvoy, Inc.: New York. Address: 4 Irving Place, New York, New York 10003. Tel.: 212-460-4600. Internet: www.conedison.com.

**Consolidated Edison has "substantial-y completed" a significant investment.** The company paid \$945 million for a 50% interest in a new gas pipeline and storage joint venture, Stagecoach Gas Services. Stagecoach will own four gas storage facilities and a pipeline. ConEd financed the deal with debt and common equity (10 million shares for \$702 million that were issued in May). Our estimates and projections now include the new joint venture. We have raised our 2016 and 2017 share-earnings estimates by \$0.10 and \$0.25, respectively. Note that our earnings presentation includes the effect of mark-to-market accounting gains or losses. These boosted the bottom line by \$0.07 a share in the first six months of 2016.

**Two asset sales are pending.** ConEd has agreed to sell its retail electric supply business in a deal that is expected to close by yearend. (The company will record mark-to-market items upon closing of the sale.) Expected proceeds are \$200 million. The company is also selling a small utility in Pennsylvania for \$16 million. The move requires regulatory approval, and should close later this year.

**The company awaits orders on some rate cases.** ConEd's largest subsidiary, Consolidated Edison Company of New York, is seeking electric rate hikes of \$498 million in 2017, \$169 million in 2018, and \$186 million in 2019. On the gas side, CECONY is asking for increases of \$125 million in 2017, \$110 million in 2018, and \$100 million in 2019. The filings are based on a 9.75% return on a 48% common-equity ratio. The staff of the New York State Public Service Commission is proposing an electric raise of \$45 million and a gas decrease of \$25 million, however. Separately, Rockland Electric requested a \$9 million hike in New Jersey, based on a 10.2% return on a 49.7% common-equity ratio. New tariffs would take effect in March of 2017. Rate relief is one reason why we expect profits to improve in 2017.

**This timely and high-quality stock has a dividend yield that is not much higher than the utility norm.** With the recent quotation near the upper end of our 2019-2021 Target Price Range, total return potential is low.

*Paul E. Debbas, CFA August 19, 2016*

Cal-endar	QUARTERLY REVENUES (\$ mill.)	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2013	3306 2767 3440 2868	12381
2014	3789 2911 3390 2829	12919
2015	3616 2788 3443 2707	12554
2016	3156 2794 3350 2700	12000
2017	<b>3300 2800 3450 2800</b>	<b>12350</b>

Cal-endar	EARNINGS PER SHARE <sup>A</sup>	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2013	1.16 .49 1.49 .79	3.93
2014	1.23 .63 1.49 .28	3.62
2015	1.26 .74 1.45 .60	4.05
2016	1.05 .78 1.56 .66	4.05
2017	<b>1.25 .75 1.60 .70</b>	<b>4.30</b>

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B</sup>	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2012	.605 .605 .605 .605	2.42
2013	.615 .615 .615 .615	2.46
2014	.63 .63 .63 .63	2.52
2015	.65 .65 .65 .65	2.60
2016	.67 .67	

(A) Diluted EPS. Excl. nonrec. gain (losses): '02, (11c); '03, (45c); '13, (32c); '14, 9c; gain on discontinued operations: '08, \$1.01. '14 EPS don't add due to rounding. Next earnings report due early Nov. (B) Div'ds historically paid in mid-Mar., June, Sept., and Dec. '14 Div'd reinvestment plan avail. (C) Incl. intang. In '15: \$29.74/sh. (D) In mill. (E) Rate base: net orig. cost. Rate allowed on com. eq. for CECONY in '14: 9.2% elec., 9.3% gas & steam; O&R in '15: 9.0%; earned on avg. com. eq., '15: 9.3%. Regulatory Climate: Below Average.

**Company's Financial Strength** A+  
**Stock's Price Stability** 100  
**Price Growth Persistence** 45  
**Earnings Predictability** 95

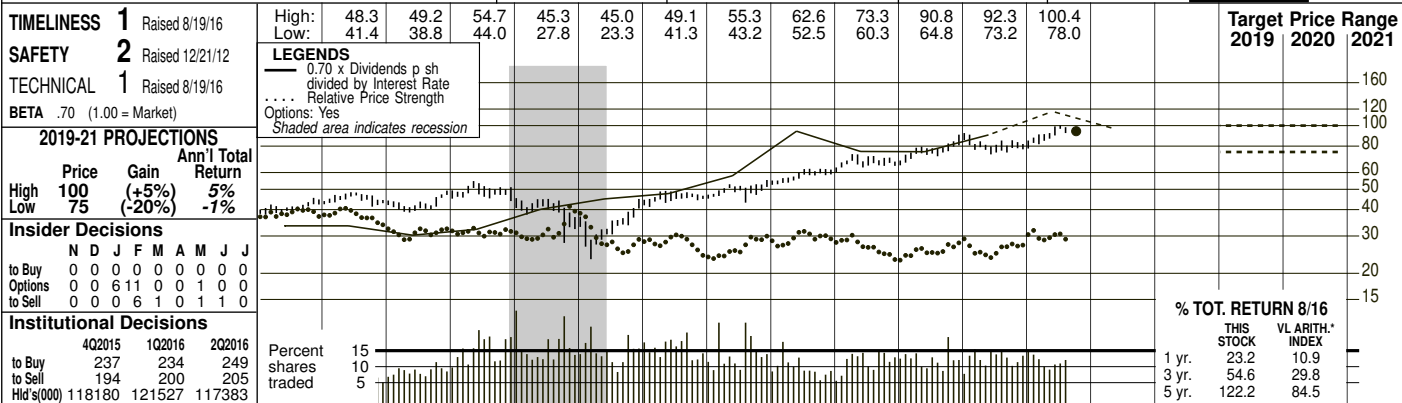
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# DTE ENERGY CO. NYSE-DTE

RECENT PRICE **94.16** P/E RATIO **18.7** (Trailing: 20.8 Median: 16.0) RELATIVE P/E RATIO **0.99** DIV'D YLD **3.3%** VALUE LINE



2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
39.24	48.71	40.30	41.76	40.84	50.74	50.93	54.28	57.23	48.45	50.51	52.57	51.01	54.56	69.50	57.60	<b>56.80</b>	<b>59.85</b>	Revenues per sh	<b>68.50</b>
8.59	6.98	8.31	6.95	6.81	8.14	8.19	8.48	8.26	9.38	9.78	9.57	9.77	10.13	11.85	9.44	<b>10.30</b>	<b>11.25</b>	"Cash Flow" per sh	<b>13.75</b>
3.27	2.15	3.83	2.85	2.55	3.27	2.45	2.66	2.73	3.24	3.74	3.67	3.88	3.76	5.10	4.45	<b>4.80</b>	<b>5.30</b>	Earnings per sh <sup>A</sup>	<b>6.25</b>
2.06	2.06	2.06	2.06	2.06	2.06	2.08	2.12	2.12	2.12	2.18	2.32	2.42	2.59	2.69	2.84	<b>3.00</b>	<b>3.16</b>	Div'd Decl'd per sh <sup>B</sup>	<b>3.70</b>
5.25	6.80	5.88	4.45	5.19	5.99	7.92	7.96	8.42	6.26	6.49	8.77	10.56	10.59	11.58	11.26	<b>14.50</b>	<b>14.70</b>	Cap'l Spending per sh	<b>13.50</b>
28.15	28.48	27.26	31.36	31.85	32.44	33.02	35.86	36.77	37.96	39.67	41.41	42.78	44.73	47.05	48.88	<b>50.70</b>	<b>53.10</b>	Book Value per sh <sup>C</sup>	<b>61.00</b>
142.65	161.13	167.46	168.61	174.21	177.81	177.14	163.23	163.02	165.40	169.43	169.25	172.35	177.09	176.99	179.47	<b>179.50</b>	<b>180.50</b>	Common Shs Outst'g <sup>D</sup>	<b>184.00</b>
10.3	19.3	11.3	13.7	16.0	13.8	17.4	18.3	14.8	10.4	12.3	13.5	14.9	17.9	14.9	18.1	<b>14.50</b>	<b>14.70</b>	Avg Ann'l P/E Ratio	<b>14.0</b>
.67	.99	.62	.78	.85	.73	.94	.97	.89	.69	.78	.85	.95	1.01	.78	.91	<b>0.95</b>	<b>0.95</b>	Relative P/E Ratio	<b>.90</b>
6.1%	5.0%	4.8%	5.3%	5.0%	4.6%	4.9%	4.4%	5.2%	6.3%	4.8%	4.7%	4.2%	3.8%	3.5%	3.5%	<b>3.5%</b>	<b>3.5%</b>	Avg Ann'l Div'd Yield	<b>4.2%</b>

CAPITAL STRUCTURE as of 6/30/16		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Debt \$9683 mill. Due in 5 Yrs \$2204 mill.		9022.0	8861.0	9329.0	8014.0	8557.0	8897.0	8791.0	9661.0	12301	10337	10200	10800	10800	10800	10800	10800	10800	10800
LT Debt \$9343 mill. LT Interest \$434 mill.		437.0	453.0	445.0	532.0	630.0	624.0	666.0	661.0	905.0	796.0	870	960	960	960	960	960	960	960
Incl. \$12 mill. capitalized leases and \$780 mill. Trust Preferred Securities. (LT interest earned: 3.7x)		23.9%	25.1%	34.9%	31.6%	32.7%	35.9%	29.8%	27.5%	28.5%	25.6%	26.0%	26.0%	26.0%	26.0%	26.0%	26.0%	26.0%	26.0%
Leases, Uncapitalized Annual rentals \$37 mill. Pension Assets-12/15 \$3832 mill. Oblig \$4971 mill.		5.0%	7.1%	11.2%	2.6%	1.6%	1.6%	3.0%	3.5%	4.1%	4.3%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Pfd Stock None		56.1%	54.4%	56.4%	54.0%	51.3%	50.6%	48.8%	47.7%	50.0%	50.2%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%
Common Stock 179,435,004 shs.		43.9%	45.6%	43.6%	46.0%	48.7%	49.4%	51.2%	52.3%	50.0%	49.8%	49.0%	48.0%	48.0%	48.0%	48.0%	48.0%	48.0%	48.0%
MARKET CAP: \$17 billion (Large Cap)		13323	12824	13736	13648	13811	14196	14387	15135	16670	17607	18625	19875	19875	19875	19875	19875	19875	19875
ELECTRIC OPERATING STATISTICS		11451	11408	12231	12431	12992	13746	14684	15800	16820	18034	19650	21225	21225	21225	21225	21225	21225	21225
% Change Retail Sales (KWH)		5.1%	5.3%	5.0%	5.7%	6.3%	5.9%	6.1%	5.7%	6.6%	5.7%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Avg. Indust. Use (MWH)		7.5%	7.7%	7.4%	8.5%	9.4%	8.9%	9.0%	8.3%	10.9%	9.1%	9.5%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Avg. Indust. Revs. per KWH (c)		7.5%	7.7%	7.4%	8.5%	9.4%	8.9%	9.0%	8.3%	10.9%	9.1%	9.5%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Capacity at Peak (Mw)		1.2%	1.5%	1.7%	2.9%	4.0%	3.4%	3.5%	2.7%	5.2%	3.4%	3.5%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Peak Load, Summer (Mw)		84%	80%	77%	65%	57%	62%	61%	67%	52%	63%	62%	59%	59%	59%	59%	59%	59%	59%
Annual Load Factor (%)		<p><b>BUSINESS:</b> DTE Energy Company is a holding company for DTE Electric (formerly Detroit Edison), which supplies electricity in Detroit and a 7,600-square-mile area in southeastern Michigan, and DTE Gas (formerly Michigan Consolidated Gas). Customers: 2.1 mill. electric, 1.3 mill. gas. Has various nonutility operations. Electric revenue breakdown: residential, 45%; commercial, 35%; industrial, 13%; other, 7%. Generating sources: coal, 67%; nuclear, 17%; gas, 1%; purchased, 15%. Fuel costs: 54% of revenues. '15 reported deprec. rates: 3.5% electric, 2.6% gas. Has 10,000 employees. Chairman &amp; CEO: Gerard M. Anderson. President &amp; COO: Jerry Norcia. Inc.: MI. Address: One Energy Plaza, Detroit, MI 48226-1279. Tel.: 313-235-4000. Internet: www.dteenergy.com.</p>																	
% Change Customers (yr-end)		<p><b>Each of DTE Energy's utility subsidiaries has a rate case pending.</b> DTE Electric is seeking \$344 million, based on a return of 10.5% on a common-equity ratio of 50%. The utility self-implemented a \$245 million increase at the start of August. The staff of the Michigan Public Service Commission (MPSC) is proposing a boost of \$189 million, based on a 10% ROE. DTE Gas is requesting \$183 million, based on a return of 10.75% on a common-equity ratio of 52%. The utility plans to self-implement a \$103 million hike on or after November 1st. The MPSC's staff is recommending a raise of \$109 million, based on a 10% ROE. An order on this case is due by December 17th, and a ruling on the electric application is due by January 31st.</p>																	
Fixed Charge Cov. (%)		<p><b>Earnings should advance this year and next.</b> Rate relief is one factor. Another is growth from the nonutility side of DTE's business. The Gas Pipelines and Storage division is performing better than the company had expected earlier this year, and some projects are in various stages of development. Most significant is the NEXUS pipeline from Michigan to Ohio, which would be a \$1 billion investment for DTE through a joint venture. This project is expected to go into service in the fourth quarter of 2017.</p>																	

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	2516	2225	2387	2533	9661.0
2014	3930	2698	2595	3078	12301
2015	2984	2268	2598	2487	10337
2016	2566	2262	2700	2672	10200
2017	<b>2900</b>	<b>2300</b>	<b>2800</b>	<b>2800</b>	<b>10800</b>

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	1.34	.60	1.13	.69	3.76
2014	1.84	.70	.88	1.68	5.10
2015	1.53	.61	1.47	.84	4.45
2016	1.37	.84	1.49	1.10	4.80
2017	<b>1.60</b>	<b>1.00</b>	<b>1.55</b>	<b>1.15</b>	<b>5.30</b>

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.5875	.5875	.5875	.62	2.38
2013	.62	.62	.655	.655	2.55
2014	.655	.655	.655	.69	2.66
2015	.69	.69	.69	.77	2.80
2016	.73	.73	.73	.77	

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	1.34	.60	1.13	.69	3.76
2014	1.84	.70	.88	1.68	5.10
2015	1.53	.61	1.47	.84	4.45
2016	1.37	.84	1.49	1.10	4.80
2017	<b>1.60</b>	<b>1.00</b>	<b>1.55</b>	<b>1.15</b>	<b>5.30</b>

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.5875	.5875	.5875	.62	2.38
2013	.62	.62	.655	.655	2.55
2014	.655	.655	.655	.69	2.66
2015	.69	.69	.69	.77	2.80
2016	.73	.73	.73	.77	

(A) Diluted EPS. Excl. nonrec. gains (losses): '03, (16c); '05, (2c); '06, 1c; '07, \$1.96; '08, 50c; '11, 51c; '15, (39c); gains (losses) on disc. ops.: '03, 40c; '04, (6c); '05, (20c); '06, (2c); '07, \$1.20; '08, 13c; '12, (33c). Next earnings report due late Oct. (B) Div'ds historically paid in mid-Jan., Apr., July and Oct. • Div'd reinvestment plan avail. (C) Incl. intang. In '15: \$32.31/sh. (D) In mill. (E) Rate base: Net orig. cost. Rate allowed on com. eq. in '15: 10.3% elec.; in '13: 10.5% gas; earned on avg. com. eq., '15: 9.2%. Regulatory Climate: Average.

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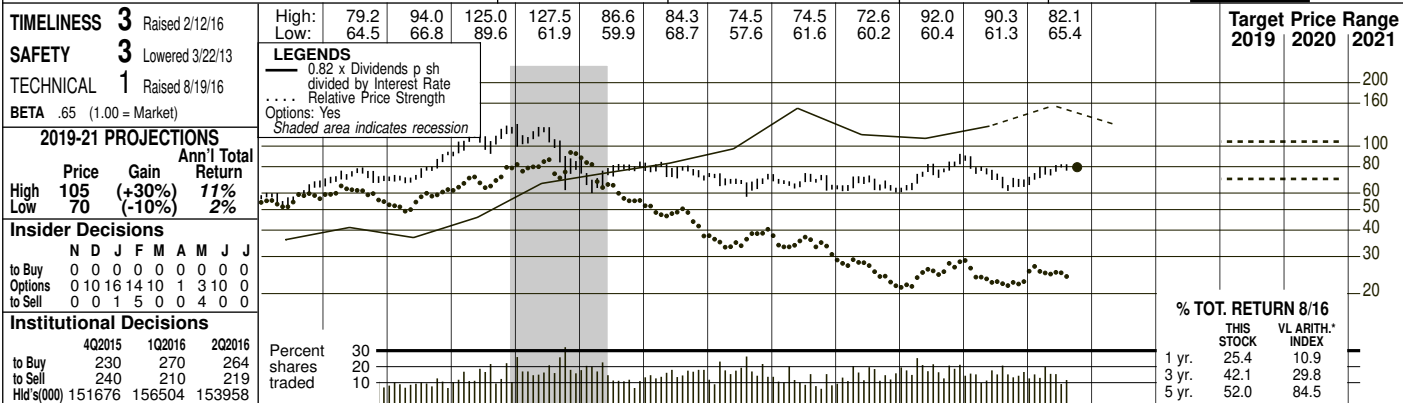
Company's Financial Strength	B++
Stock's Price Stability	100
Price Growth Persistence	85
Earnings Predictability	90

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Paul E. Debbas, CFA September 16, 2016

# ENTERGY CORP. NYSE-ETR

RECENT PRICE **79.57** P/E RATIO **11.3** (Trailing: 10.2 Median: 13.0) RELATIVE P/E RATIO **0.60** DIV'D YLD **4.4%** VALUE LINE



2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
45.61	43.59	37.34	40.17	46.69	46.61	53.94	59.47	69.15	56.82	64.27	63.67	57.94	63.86	69.71	64.54	<b>60.90</b>	<b>62.00</b>	Revenues per sh	67.00
6.49	6.41	7.62	7.43	8.33	8.18	10.69	11.73	12.89	13.29	16.54	17.53	15.98	16.25	17.68	17.71	<b>18.30</b>	<b>16.95</b>	"Cash Flow" per sh	19.00
2.97	3.08	3.68	3.69	3.93	4.40	5.36	5.60	6.20	6.30	6.66	7.55	6.02	4.96	5.77	5.81	<b>7.00</b>	<b>5.35</b>	Earnings per sh <sup>A</sup>	6.25
1.22	1.28	1.34	1.60	1.89	2.16	2.16	2.58	3.00	3.00	3.24	3.32	3.32	3.32	3.32	3.34	<b>3.42</b>	<b>3.52</b>	Div'd Decl'd per sh <sup>B = †</sup>	4.00
6.80	6.25	6.88	6.85	6.51	6.72	9.44	10.29	13.92	12.99	13.33	15.21	18.18	15.73	14.82	16.79	<b>16.00</b>	<b>19.25</b>	Cap'l Spending per sh	16.25
31.89	33.78	35.24	38.02	38.26	35.71	40.45	40.71	42.07	45.54	47.53	50.81	51.73	54.00	55.83	51.89	<b>55.50</b>	<b>57.40</b>	Book Value per sh <sup>C</sup>	64.00
219.60	220.73	222.42	228.90	216.83	216.83	202.67	193.12	189.36	189.12	178.75	176.36	177.81	178.37	179.24	178.39	<b>179.00</b>	<b>179.00</b>	Common Shs Outst'g <sup>D</sup>	179.00
10.1	12.5	11.5	13.8	15.1	16.3	14.3	19.3	16.6	12.0	11.6	9.1	11.2	13.2	12.9	12.5	<b>12.5</b>	<b>12.5</b>	Avg Ann'l P/E Ratio	14.0
.66	.64	.63	.79	.80	.87	.77	1.02	1.00	.80	.74	.57	.71	.74	.68	.63	<b>4.6%</b>	<b>4.6%</b>	Relative P/E Ratio	.90
4.1%	3.3%	3.2%	3.1%	3.2%	3.0%	2.8%	2.4%	2.9%	4.0%	4.2%	4.9%	4.9%	5.1%	4.5%	4.6%	<b>4.5%</b>	<b>4.6%</b>	Avg Ann'l Div'd Yield	4.5%

CAPITAL STRUCTURE as of 6/30/16		2013	2014	2015	BUSINESS:		
Total Debt	\$14809 mill. Due in 5 Yrs \$5237.8 mill.	10932	11484	13094	10746	11488	11229
LT Debt	\$13112 mill. LT Interest \$612.3 mill.	1160.9	1160.0	1240.5	1251.1	1270.3	1367.4
Incl.	\$716.2 mill. of securitization bonds. (LT interest earned: 2.6x)	27.6%	30.7%	32.7%	33.6%	32.7%	17.3%
Leases, Uncapitalized	Annual rentals \$78.3 mill.	5.5%	5.8%	5.6%	7.4%	7.4%	8.9%
Pension Assets-12/15	\$4707.4 mill.	51.2%	54.3%	58.2%	55.3%	56.3%	52.2%
Oblig	\$6848.2 mill.	46.7%	43.9%	40.2%	43.1%	42.1%	46.4%
Pfd Stock	\$318.2 mill. Pfd Div'd \$21.1 mill.	17539	17902	19795	19985	20166	19324
6,115,105 sh. 4.32%-8.25%, \$100 par; 1,000,000 sh. 8.95%; 250,000 sh. 8.75%, all without sinking fund.		19438	20974	22429	23389	23848	25609
Common Stock	178,982,069 shs. as of 7/29/16	8.0%	7.9%	7.5%	7.6%	7.7%	8.5%
MARKET CAP: \$14 billion (Large Cap)		13.6%	14.2%	15.0%	14.0%	14.4%	11.5%
		13.8%	14.4%	15.3%	14.3%	14.7%	15.0%
		8.3%	8.0%	8.1%	7.6%	7.6%	8.4%
		41%	46%	48%	48%	49%	45%

**ELECTRIC OPERATING STATISTICS**

	2013	2014	2015
% Change Retail Sales (KWH)	+7	+2.9	+1.3
Avg. Indust. Use (MWH)	910	951	957
Avg. Indust. Revs. per KWH(c)	5.77	6.00	5.55
Capacity at Peak (Mw)	23802	24367	24504
Peak Load, Summer (Mw)	21581	20472	20472
Annual Load Factor (%)	62	65	61
% Change Customers (yr-end)	+8	+6	+1.0

Fixed Charge Cov. (%) 245 309 223

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '13-'15 of change (per sh)

	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15
Revenues	4.0%	1.0%	Nil
"Cash Flow"	8.0%	4.0%	1.5%
Earnings	3.0%	-3.0%	2.0%
Dividends	6.0%	1.5%	3.0%
Book Value	3.5%	3.5%	3.0%

**Entertry's second-quarter earnings require an explanation.** The company's profit of \$3.16 a share included \$2.01 a share from a favorable resolution of uncertain income tax positions. This is the second straight year in which Entergy has benefited from positive tax items, as is evident in the tax rate shown in the statistical array. The company's earnings guidance for 2016 is now \$6.60-\$7.40 a share, and our revised estimate of \$7.00 (up from the previous \$5.10) is within this range. Assuming no unusual tax items in 2017, earnings will likely regress to a more-typical level. At least Entergy should benefit from better operations at the Indian Point nuclear plant next year, which had an extended outage in 2016.

**Prospects at the utilities are generally good.** Entergy is benefiting from rate hikes associated with the purchase in early 2016 of a 1,948-megawatt gas-fired generating plant. The company also received a tariff hike in Arkansas in February, and has filed for additional rate relief through the state's new formula rate plan. Entergy has similar rate plans in Louisiana and Mississippi, as well. The utility has other opportunities to enhance growth by investing in its electric system, such as a project to install advanced meters beginning this year.

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	2609	2738	3352	2692	11391
2014	3209	2997	3458	2831	12495
2015	2920	2713	3371	2509	11513
2016	2610	2463	3300	2527	10900
2017	2700	2500	3300	2600	11100

Cal-endar	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	.90	.92	2.31	.83	4.96
2014	2.27	1.09	1.68	.74	5.77
2015	1.65	.83	1.90	1.43	5.81
2016	1.28	3.16	1.50	1.06	7.00
2017	1.35	1.15	1.60	1.25	5.35

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B = †</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2012	.83	.83	.83	.83	3.32
2013	.83	.83	.83	.83	3.32
2014	.83	.83	.83	.83	3.32
2015	.83	.83	.83	.85	3.34
2016	.85	.85	.85		

**Low power prices continue to affect Entergy's nonregulated operations.** This can be seen in the company's reduced profitability in recent years, compared with the 2008-2012 period. As a result, Entergy has shut (or announced plans to close) some of its nonutility nuclear plants. The FitzPatrick unit, in upstate New York, was one of them, but Entergy has found a buyer that has agreed to pay \$110 million. The companies hope to get approval from the New York commission by November.

**We look for a dividend hike at the board meeting in the fourth quarter.** We estimate that the directors will boost the quarterly payout by \$0.02 a share (2.4%), the same increase as a year earlier. **Entergy stock offers a dividend yield that is a percentage point above the utility mean.** Total return potential to 2019-2021 is also a cut above the industry average.

*Paul E. Debbas, CFA September 16, 2016*

(A) Diluted EPS. Excl. nonrecurring gains (losses): '01, 15c; '02, (\$1.04); '03, 33c net; '05, (21c); '12, (\$1.26); '13, (\$1.14); '14, (56c); '15, (\$6.99). '14 EPS don't add due to rounding. Next earnings report due early Nov. (B) Div'ds historically paid in early Mar., June, Sept., & Dec. Div'd reinvestment plan avail. Shareholder investment plan avail. (C) Incl. def'd charges. In '15: \$34.48/sh. (D) In mill. (E) Rate base: Net original cost. Allowed return on eq. (blended): 10%; earned on avg. com. eq., '15: 10.1%. Regulatory Climate: Average.

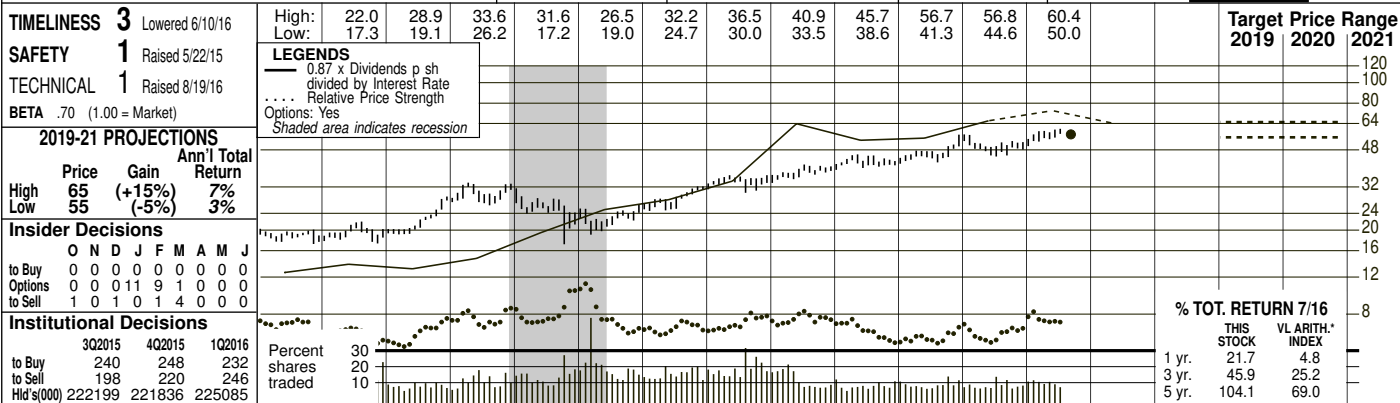
Company's Financial Strength		B++
Stock's Price Stability		95
Price Growth Persistence		15
Earnings Predictability		70

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# EVERSOURCE ENERGY NYSE-ES

RECENT PRICE **56.84** P/E RATIO **18.8** (Trailing: 20.9 Median: 17.0) RELATIVE P/E RATIO **1.00** DIV'D YLD **3.3%** VALUE LINE



2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
40.86	52.82	40.89	47.53	51.82	41.85	44.64	37.27	37.22	30.97	27.76	25.21	19.98	23.16	24.42	25.08	<b>23.35</b>	<b>23.80</b>	Revenues per sh	25.75
3.39	10.48	6.32	5.80	5.00	5.46	3.69	4.82	6.16	4.96	5.68	4.88	4.03	5.22	4.56	4.94	<b>4.95</b>	<b>5.40</b>	"Cash Flow" per sh	6.75
d.20	1.37	1.08	1.24	.91	.98	.82	1.59	1.86	1.91	2.10	2.22	1.89	2.49	2.58	2.76	<b>2.90</b>	<b>3.15</b>	Earnings per sh A	3.75
.40	.45	.53	.58	.63	.68	.73	.78	.83	.95	1.03	1.10	1.32	1.47	1.57	1.67	<b>1.78</b>	<b>1.90</b>	Div'd Decl'd per sh B	2.20
2.88	3.40	3.86	4.31	4.85	5.89	5.49	7.14	8.06	5.17	5.41	6.08	4.69	4.62	5.06	5.44	<b>6.95</b>	<b>8.40</b>	Cap'l Spending per sh	6.25
15.43	16.27	17.33	17.73	17.80	18.46	18.14	18.65	19.38	20.37	21.60	22.65	29.41	30.49	31.47	32.64	<b>33.75</b>	<b>35.05</b>	Book Value per sh C	39.50
143.82	130.13	127.56	127.70	129.03	131.59	154.23	156.22	155.83	175.62	176.45	177.16	314.05	315.27	316.98	317.19	<b>317.19</b>	<b>317.19</b>	Common Shs Outst'g D	317.19
--	14.1	16.1	13.4	20.8	19.8	27.1	18.7	13.7	12.0	13.4	15.4	19.9	16.9	17.9	18.1	<b>18.1</b>	<b>18.1</b>	Avg Ann'l P/E Ratio	16.0
--	.72	.88	.76	1.10	1.05	1.46	.99	.82	.80	.85	.97	1.27	.95	.94	.92	<b>.94</b>	<b>.92</b>	Relative P/E Ratio	1.00
1.9%	2.3%	3.0%	3.5%	3.3%	3.5%	3.3%	2.6%	3.2%	4.2%	3.6%	3.2%	3.5%	3.5%	3.4%	3.3%	<b>3.4%</b>	<b>3.3%</b>	Avg Ann'l Div'd Yield	3.7%

**CAPITAL STRUCTURE as of 3/31/16**  
 Total Debt \$10293 mill. Due in 5 Yrs \$3798.3 mill.  
 LT Debt \$9144.7 mill. LT Interest \$388.9 mill.  
 (LT interest earned: 4.7%)

**Leases, Uncapitalized** Annual rentals \$16.4 mill.  
**Pension Assets-12/15** \$3905.4 mill.

**Oblig \$5080.1 mill.**  
 Pfd Stock \$155.6 mill. Pfd Div'd \$7.6 mill.  
 Incl. 2,324,000 shs \$1.90-\$3.28 rates (\$50 par) not subject to mandatory redemption.  
**Common Stock** 317,191,249 shs. as of 4/30/16  
**MARKET CAP: \$18 billion (Large Cap)**

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
6884.4	5822.2	5800.1	5439.4	4898.2	4465.7	6273.8	7301.2	7741.9	7954.8	<b>7400</b>	<b>7550</b>	7400	7550	7400	7550
126.2	251.5	296.2	335.6	377.8	400.3	533.0	793.7	827.1	886.0	<b>930</b>	<b>1010</b>	930	1010	930	1010
--	30.3%	29.7%	34.9%	36.6%	29.9%	34.0%	35.0%	36.2%	37.9%	<b>37.5%</b>	<b>37.5%</b>	37.5%	37.5%	37.5%	37.5%
21.5%	13.9%	15.8%	4.6%	7.1%	8.6%	2.3%	1.4%	2.4%	2.9%	<b>4.0%</b>	<b>4.0%</b>	4.0%	4.0%	4.0%	4.0%
58.7%	59.2%	60.4%	57.2%	55.1%	53.4%	43.7%	44.3%	45.9%	45.6%	<b>46.5%</b>	<b>46.5%</b>	46.5%	46.5%	46.5%	46.5%
39.7%	39.2%	38.1%	41.5%	43.6%	45.3%	55.4%	54.8%	53.2%	53.6%	<b>53.0%</b>	<b>52.5%</b>	53.0%	52.5%	53.0%	52.5%
7052.0	7431.1	7926.2	8629.5	8741.8	8856.0	16675	17544	18738	19313	<b>20250</b>	<b>21100</b>	20250	21100	20250	21100
6242.2	7229.9	8207.9	8840.0	9567.7	10403	16605	17576	18647	19892	<b>21600</b>	<b>23700</b>	21600	23700	21600	23700
2.9%	5.0%	5.4%	5.4%	5.8%	5.9%	4.2%	5.5%	5.3%	5.5%	<b>5.5%</b>	<b>6.0%</b>	5.5%	6.0%	5.5%	6.0%
4.3%	8.3%	9.4%	9.1%	9.6%	9.7%	5.7%	8.1%	8.2%	8.4%	<b>8.5%</b>	<b>9.0%</b>	8.5%	9.0%	8.5%	9.0%
4.3%	8.4%	9.6%	9.2%	9.8%	9.8%	5.7%	8.2%	8.2%	8.5%	<b>8.5%</b>	<b>9.0%</b>	8.5%	9.0%	8.5%	9.0%
.3%	4.3%	5.3%	4.7%	5.0%	5.0%	1.6%	3.4%	3.5%	3.4%	<b>3.5%</b>	<b>3.5%</b>	3.5%	3.5%	3.5%	3.5%
94%	50%	45%	50%	49%	50%	72%	59%	58%	61%	<b>61%</b>	<b>60%</b>	61%	60%	61%	60%

**ELECTRIC OPERATING STATISTICS**

	2013	2014	2015
% Change Retail Sales (KWH)	+1.0	-1.6	+3.3
Avg. Indust. Use (MWH)	NA	NA	NA
Avg. Indust. Revs. per KWH (c)	NA	NA	NA
Capacity at Peak (Mw)	NA	NA	NA
Peak Load, Winter (Mw)	NA	NA	NA
Annual Load Factor (%)	NA	NA	NA
% Change Customers (yr-end)	NA	NA	NA

**BUSINESS:** Eversource Energy (formerly Northeast Utilities) is the parent of utilities that have 3.1 million electric, 504,000 gas customers. Supplies power to most of Connecticut and gas to part of Connecticut; supplies power to three fourths of New Hampshire's population; supplies power to western Massachusetts and parts of eastern Massachusetts & gas to central & eastern Massachusetts.

Acquired NSTAR 4/12. Electric revenue breakdown: residential, 52%; commercial, 36%; industrial, 5%; other, 7%. Fuel costs: 39% of revenues. '15 reported deprec. rate: 2.9%. Has 8,200 employees. Chairman: Thomas J. May. President & CEO: Jim Judge, Inc.: MA. Address: 300 Cadwell Drive, Springfield, MA 01104. Tel.: 413-785-5871. Internet: www.eversource.com.

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '13-'15 of change (per sh)

	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15
Revenues	-6.5%	-5.5%	1.0%
"Cash Flow"	-1.0%	-2.5%	5.5%
Earnings	9.5%	6.0%	6.0%
Dividends	9.5%	11.0%	6.0%
Book Value	6.0%	9.0%	4.0%

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	1995	1635	1892	1777	7301.2
2014	2290	1677	1892	1881	7741.9
2015	2513	1817	1933	1691	7954.8
2016	2056	1767	1900	1677	7400
2017	2150	1800	1900	1700	7550

Cal-endar	EARNINGS PER SHARE A				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	.72	.54	.66	.57	2.49
2014	.74	.40	.74	.70	2.58
2015	.80	.65	.74	.57	2.76
2016	.77	.64	.82	.67	2.90
2017	.90	.70	.85	.70	3.15

Cal-endar	QUARTERLY DIVIDENDS PAID B				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2012	.294	.343	.343	.343	1.32
2013	.3675	.3675	.3675	.3675	1.47
2014	.393	.393	.393	.393	1.57
2015	.4175	.4175	.4175	.4175	1.67
2016	.445	.445			

**Eversource is seeking various siting and regulatory approvals for two major projects in New England.** The utility wants to build a \$1.6 billion transmission line through New Hampshire into Quebec. It needs the approval of the siting authority in the state, which has stated that it will rule by September 30, 2017. If all approvals are received, the line would be in service by late 2019. In addition, Eversource has a 40% stake in a proposed \$3 billion gas pipeline to provide much-needed capacity into New England. This project would be in service in 2018.

**Electric transmission is a key growth area for the company.** Even after the Federal Energy Regulatory Commission (FERC) reduced the allowed return on equity for transmission owners in New England, this was still greater than the allowed ROE for distribution. (Due to additional complaints before FERC, there might be further reductions in the allowed ROE for transmission, although we are not reflecting any in our estimates and projections.) Eversource plans capital spending of \$3.9 billion for transmission from 2016 through 2019.

**We expect solid earnings growth this year and next.** Transmission investment is a significant factor. Eversource is effecting reductions in operating and maintenance expenses stemming from the 2012 merger of Northeast Utilities and NSTAR. The utility is benefiting from customer conversions from oil heat to gas heat. Our 2016 estimate is at the low end of Eversource's guidance of \$2.90-\$3.05 a share.

**Eversource will sell its generating assets in New Hampshire.** Their rate base is \$700 million. Under a settlement approved by the state commission, the utility will issue securitized bonds for any portion that is not recovered in the sale price. However, Eversource will still have to find a way to make up for the lost income (\$0.11 a share) that these assets generate annually. The company will attempt to do so by retiring debt and investing in utility infrastructure.

**This top-quality stock has a dividend yield that is average for a utility.** Like most utility issues, the recent price is within our 2019-2021 Target Price Range, so total return potential is unexciting.

*Paul E. Debbas, CFA August 19, 2016*

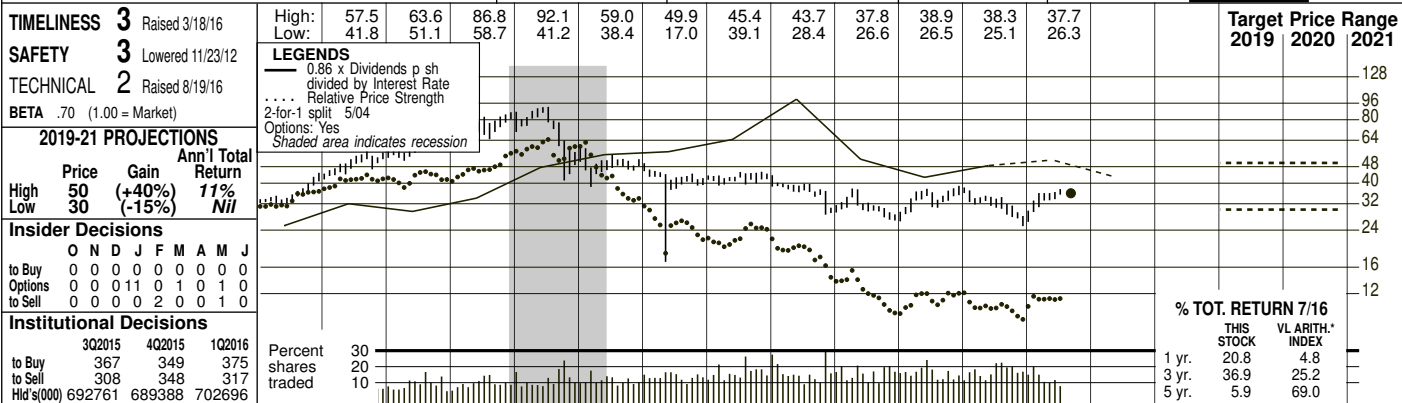
(A) Dil. EPS. Excl. nonrec. gains (losses): '02, 10c; '03, (32c); '04, (7c); '05, (\$1.36); '08, (19c); '10, 9c. '13 & '14 EPS don't add due to rounding. Next earnings report due late Oct. (B) Div'ds historically paid late Mar., June, Sept., & Dec. Div'd reinv. plan avail. (C) Incl. def'd chgs. In '15: \$22.88/sh. (D) In incl. (E) Rate all'd on com. eq. in MA: (elec) '11, 9.6%; (gas) '16, 9.8%; in CT: (elec.) '15, 9.02%; (gas) '15, 9.5%; in NH: '10, 9.67%; earn. on avg. com. eq., '15: 8.7%. Regul. Clim.: CT, Below Avg.; NH, Avg.; MA, Above Avg.

Company's Financial Strength	A
Stock's Price Stability	95
Price Growth Persistence	80
Earnings Predictability	85

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# EXELON CORP. NYSE-EXC

RECENT PRICE **35.85** P/E RATIO **16.0** (Trailing: 21.0 Median: 15.0) RELATIVE P/E RATIO **0.85** DIV'D YLD **3.6%** VALUE LINE



**TIMELINESS** 3 Raised 3/18/16  
**SAFETY** 3 Lowered 11/23/12  
**TECHNICAL** 2 Raised 8/19/16  
**BETA** .70 (1.00 = Market)

**2019-21 PROJECTIONS**

	Price	Gain	Ann'l Total Return
High	50	(+40%)	11%
Low	30	(-15%)	Nil

**Insider Decisions**

	O	N	D	J	F	M	A	M	J
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	1	1	1	0	1	0	1
to Sell	0	0	0	0	2	0	0	1	0

**Institutional Decisions**

	3Q2015	4Q2015	1Q2016
to Buy	367	349	375
to Sell	308	348	317
Hld's(000)	692761	689388	702696

**LEGENDS**  
 0.86 x Dividends p sh divided by Interest Rate  
 .... Relative Price Strength  
 2-for-1 split 5/04  
 Options: Yes  
 Shaded area indicates recession

**Percent shares traded**

30
20
10

**% TOT. RETURN 7/16**

	THIS STOCK	VL ARITH. INDEX
1 yr.	20.8	4.8
3 yr.	36.9	25.2
5 yr.	5.9	69.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
11.75	23.58	23.13	24.09	21.85	23.05	23.37	28.62	28.65	26.25	28.17	28.53	27.48	29.03	31.90	32.01	<b>32.60</b>	<b>33.10</b>	Revenues per sh	<b>36.25</b>
1.84	5.06	5.03	5.06	5.68	6.19	6.71	7.43	7.64	8.25	8.32	7.23	6.61	6.72	6.61	6.80	<b>6.95</b>	<b>8.15</b>	"Cash Flow" per sh	<b>9.75</b>
1.39	2.20	2.40	2.44	2.75	3.21	3.50	4.03	4.10	4.29	3.87	3.75	1.92	2.31	2.10	2.54	<b>1.75</b>	<b>2.75</b>	Earnings per sh <sup>A</sup>	<b>3.50</b>
--	.91	.88	.96	1.26	1.60	1.64	1.82	2.05	2.10	2.10	2.10	2.10	1.46	1.24	1.24	<b>1.26</b>	<b>1.29</b>	Div'd Decl'd per sh <sup>B</sup>	<b>1.50</b>
1.18	3.18	3.33	2.98	2.89	3.25	3.61	4.05	4.74	4.96	5.03	6.09	6.77	6.29	7.07	8.29	<b>8.35</b>	<b>7.40</b>	Cap'l Spending per sh	<b>5.75</b>
11.31	12.82	11.97	12.95	14.19	13.69	14.89	15.34	16.78	19.16	20.49	21.68	25.07	26.52	26.29	28.04	<b>28.35</b>	<b>30.15</b>	Book Value per sh <sup>C</sup>	<b>35.75</b>
638.01	642.01	646.63	656.37	664.19	666.37	669.86	660.88	658.15	659.76	661.85	663.37	854.78	857.29	859.83	919.92	<b>920.00</b>	<b>951.00</b>	Common Shs Outst'g <sup>D</sup>	<b>960.00</b>
22.4	13.2	10.5	11.8	13.0	15.4	16.5	18.2	18.0	11.5	11.0	11.3	19.1	13.4	16.0	12.6	<b>12.6</b>	<b>12.6</b>	Avg Ann'l P/E Ratio	<b>11.5</b>
1.46	.68	.57	.67	.69	.82	.89	.97	1.08	.77	.70	.71	1.22	.75	.84	.64	<b>.64</b>	<b>.64</b>	Relative P/E Ratio	<b>.70</b>
--	3.1%	3.5%	3.4%	3.5%	3.2%	2.8%	2.5%	2.8%	4.3%	4.9%	5.0%	5.7%	4.7%	3.7%	3.9%	<b>3.9%</b>	<b>3.9%</b>	Avg Ann'l Div'd Yield	<b>3.7%</b>

**CAPITAL STRUCTURE as of 3/31/16**  
 Total Debt \$35653 mill. Due in 5 Yrs \$12658 mill.  
 LT Debt \$29955 mill. LT Interest \$1273 mill.  
 Includes \$641 mill. nonrecourse transition bonds.  
 (LT interest earned: 4.1x)  
**Leases, Uncapitalized** Annual rentals \$133 mill.  
**Pension Assets-12/15** \$14347 mill.  
**Oblig** \$17753 mill.  
**Pfd Stock** \$193 mill. **Pfd Div'd** \$13 mill.  
 Includes \$193 mill. in preferred securities of subsidiaries.  
**Common Stock** 887,313,966 shs.

**MARKET CAP: \$32 billion (Large Cap)**

**ELECTRIC OPERATING STATISTICS**

	2013	2014	2015
% Change Retail Sales (KWH)	.5	.7	-1.0
Avg. Indust. Use (MWH)	NA	NA	NA
Avg. Indust. Revs. per MWH (c)	NMF	NMF	NMF
Capacity at Peak (KWH)	NA	NA	NA
Peak Load (Mw)	NA	NA	NA
Nuclear Capacity Factor (%)	94.1	94.3	NA
% Change Customers (yr-end)	+6	+6	+1.1

**ANNUAL RATES**

	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 of change (per sh)
Revenues	3.0%	2.5%	2.5%
"Cash Flow"	1.5%	-3.5%	6.5%
Earnings	-2.0%	-10.5%	7.0%
Dividends	.5%	-9.0%	2.5%
Book Value	7.0%	7.5%	5.0%

**QUARTERLY REVENUES (\$ mill.)**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	6082	6141	6502	6163	24888
2014	7237	6024	6912	7256	27429
2015	8830	6514	7401	6702	29447
2016	7573	6910	<b>8000</b>	<b>7517</b>	<b>30000</b>
2017	<b>8100</b>	<b>7200</b>	<b>8400</b>	<b>7800</b>	<b>31500</b>

**EARNINGS PER SHARE <sup>A</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	.30	.57	.86	.59	2.31
2014	.10	.68	.96	.35	2.10
2015	.80	.74	.69	.33	2.54
2016	.26	.43	.70	.36	<b>1.75</b>
2017	.75	.70	.85	.45	<b>2.75</b>

**QUARTERLY DIVIDENDS PAID <sup>B</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.525	.525	.525	.525	2.10
2013	.525	.31	.31	.31	1.46
2014	.31	.31	.31	.31	1.24
2015	.31	.31	.31	.31	1.24
2016	.31	.31	.318		

**BUSINESS:** Exelon Corporation is a holding company for Commonwealth Edison, PECO Energy, Baltimore Gas and Electric, Pepco, Delmarva Power, & Atlantic City Electric. Has 8.6 mill. elec., 1.3 mill. gas customers. Has nonregulated generating & energy-marketing ops. Acq'd Constellation Energy 3/12; Pepco Holdings 3/16. Elec. rev. breakdown: res'l, 63%; small comm'l & ind'l, 23%;

**Exelon is reducing its nuclear presence in Illinois and increasing it in New York.** The company's nuclear facilities are nonutility, and their profitability has diminished in recent years due to low power prices, subsidies for renewable energy, and weak demand for electricity. Exelon sought legislation in Illinois that would have kept two plants open, but was unsuccessful. Accordingly, the company will shut the Clinton plant in 2017 and the two Quad Cities units in 2018. On the other hand, New York will subsidize unprofitable plants upstate, so Exelon agreed to pay Entergy \$110 million for the FitzPatrick unit, which would have been closed next year.

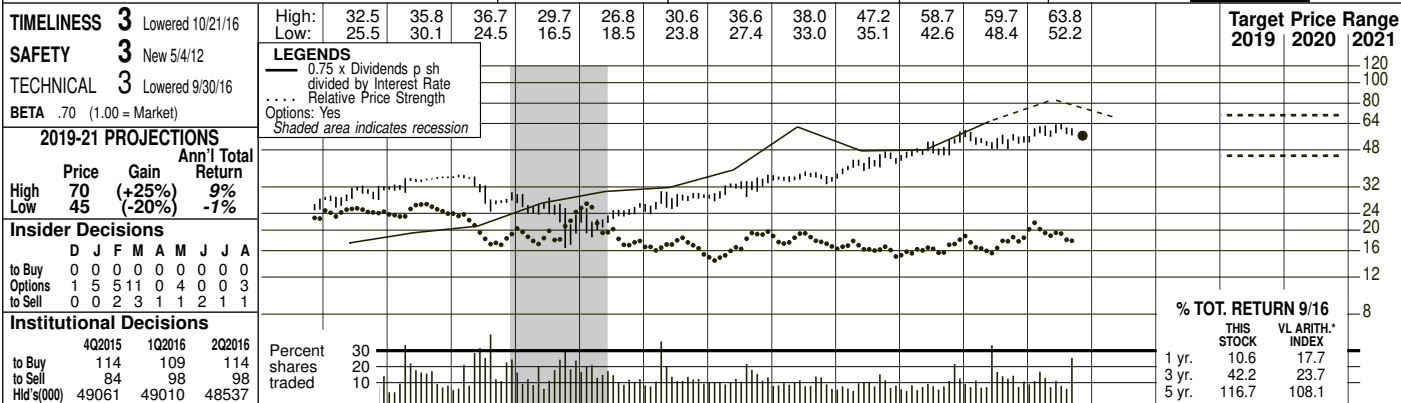
**Even with the announcement in New York, Exelon is still increasing its focus on its regulated utility operations.** This strategy was behind the company's acquisition of Pepco Holdings in March. The deal will be dilutive to earnings in 2016 due to merger-related costs, but should be accretive next year. Exelon projects that its utility income will rise at an average annual pace of 7%-9% through 2020, thanks to a combination of rate-base

growth and rate relief. In fact . . . **The utilities have become more active in the regulatory arena.** In early June, Baltimore Gas and Electric received electric and gas rate increases. Electric rates were raised by \$41.7 million, based on a 9.75% return on equity, and gas tariffs were boosted by \$47.8 million, based on a 9.65% ROE. Most notably, however, Pepco's utilities are earning ROEs more than two percentage points below their allowed level. Accordingly, rate cases are pending in each of Pepco's jurisdictions. In Maryland, Pepco filed for a \$126.6 million hike. In Washington, DC, Pepco asked for \$85.5 million. In New Jersey, Atlantic City Electric sought \$79.4 million. Delmarva Power requested electric and gas hikes in Delaware and Maryland totaling \$150.5 million. Each of these filings is based on a 10.6% ROE. Orders are expected in November for the Pepco Maryland application and in 2017 for the other cases. **The yield of Exelon stock, following a modest dividend hike, is about equal to the utility mean.** Total return potential to 2019-2021 is spectacular. *Paul E. Debbas, CFA August 19, 2016*

(A) Diluted eps. Excl. nonrec. gain (losses): '02, (18c); '03, (.03); '05, (\$1.85); '06, (\$1.15); '09, (20c); '12, (50c); '13, (31c); '14, 23c; '16, (21c). '13-'15 EPS don't add due to rounding or chg. in shs. Next eps. report due early Nov. (B) Div'ds paid in early Mar., June, Sept., & Dec. Div'd reinv. plan avail. (C) Incl. def'd charges. In '15: \$10.02/sh. (D) In mill., adj. for split. (E) Rate allowed on com. eq. in IL '15: 9.25%; in MD in '13: 9.75% elec., 9.6% gas; earned on avg. com. eq., '15: 9.4%. Regulated. Climate: PA, Avg.; IL, MD, Below Avg.	<b>Company's Financial Strength</b> B++ <b>Stock's Price Stability</b> 85 <b>Price Growth Persistence</b> 5 <b>Earnings Predictability</b> 60
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**NORTHWESTERN** NYSE:NWE **RECENT PRICE 56.10** **P/E RATIO 15.1** (Trailing: 16.6; Median: 16.0) **RELATIVE P/E RATIO 0.82** **DIV'D YLD 3.7%** **VALUE LINE**



2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
--	--	--	--	29.18	32.57	31.49	30.79	35.09	31.72	30.66	30.80	28.76	29.80	25.68	25.21	<b>25.75</b>	<b>26.65</b>	Revenues per sh	30.00
--	--	--	--	3.20	4.00	3.62	3.70	4.40	4.62	4.76	5.42	5.18	5.45	5.39	5.92	<b>6.60</b>	<b>6.80</b>	"Cash Flow" per sh	8.00
--	--	--	--	d14.32	1.71	1.31	1.44	1.77	2.02	2.14	2.53	2.26	2.46	2.99	2.90	<b>3.40</b>	<b>3.45</b>	Earnings per sh <sup>A</sup>	4.00
--	--	--	--	--	1.00	1.24	1.28	1.32	1.34	1.36	1.44	1.48	1.52	1.60	1.92	<b>2.00</b>	<b>2.08</b>	Div'd Decl'd per sh <sup>B</sup> = †	2.32
--	--	--	--	2.25	2.26	2.81	3.00	3.47	5.26	6.30	5.20	5.89	5.95	5.76	5.89	<b>6.35</b>	<b>6.65</b>	Cap'l Spending per sh	5.50
--	--	--	--	19.92	20.60	20.65	21.12	21.25	21.86	22.64	23.68	25.09	26.60	31.50	33.22	<b>34.40</b>	<b>35.60</b>	Book Value per sh <sup>C</sup>	40.00
--	--	--	--	35.60	35.79	35.97	38.97	35.93	36.00	36.23	36.28	37.22	38.75	46.91	48.17	<b>48.50</b>	<b>48.75</b>	Common Shs Outst'g <sup>D</sup>	49.50
--	--	--	--	17.1	26.0	21.7	13.9	11.5	12.9	12.6	15.7	16.9	16.2	18.4	18.4	<b>18.4</b>	<b>18.4</b>	Avg Ann'l P/E Ratio	14.0
--	--	--	--	.91	1.40	1.15	.84	.77	.82	.79	1.00	.95	.85	.93	.93	<b>1.00</b>	<b>1.00</b>	Relative P/E Ratio	.90
--	--	--	--	3.4%	3.6%	4.1%	5.4%	5.7%	4.9%	4.5%	4.2%	3.7%	3.3%	3.6%	3.6%	<b>3.6%</b>	<b>3.6%</b>	Avg Ann'l Div'd Yield	4.1%

**CAPITAL STRUCTURE as of 6/30/16**  
 Total Debt \$2057.8 mill. Due in 5 Yrs \$477.6 mill.  
 LT Debt \$1799.1 mill. LT Interest \$82.8 mill.  
 Incl. \$25.4 mill. capitalized leases.  
 (LT interest earned: 2.7x)

1132.7	1200.1	1260.8	1141.9	1110.7	1117.3	1070.3	1154.5	1204.9	1214.3	<b>1250</b>	<b>1300</b>	Revenues (\$mill)	1485
49.2	53.2	67.6	73.4	77.4	92.6	83.7	94.0	120.7	138.4	<b>165</b>	<b>170</b>	Net Profit (\$mill)	195
40.3%	37.8%	37.3%	17.2%	25.0%	9.8%	9.6%	13.2%	13.2%	13.7%	<b>Nil</b>	<b>12.0%</b>	Income Tax Rate	12.0%
3.3%	2.5%	2.3%	7.2%	22.7%	5.4%	15.2%	14.1%	14.4%	16.1%	<b>9.0%</b>	<b>9.0%</b>	AFUDC % to Net Profit	5.0%
49.9%	50.1%	46.8%	56.4%	57.2%	52.2%	53.8%	53.5%	53.4%	53.1%	<b>54.0%</b>	<b>53.0%</b>	Long-Term Debt Ratio	50.5%
50.1%	49.9%	53.2%	43.6%	42.8%	47.8%	46.2%	46.5%	46.6%	46.9%	<b>46.0%</b>	<b>47.0%</b>	Common Equity Ratio	49.5%
1482.2	1648.4	1434.3	1803.9	1916.4	1797.1	2020.7	3168.0	3408.6	<b>3630</b>	<b>3700</b>	Total Capital (\$mill)	4000	
1491.9	1770.9	1839.7	1964.1	2118.0	2213.3	2435.6	2690.1	3758.0	4059.5	<b>4215</b>	<b>4375</b>	Net Plant (\$mill)	4850
5.2%	5.0%	7.0%	6.0%	6.0%	7.1%	5.5%	5.5%	4.8%	5.2%	<b>5.5%</b>	<b>5.5%</b>	Return on Total Cap'l	6.0%
6.6%	6.5%	8.9%	9.3%	9.4%	10.8%	9.0%	9.1%	8.2%	8.6%	<b>10.0%</b>	<b>9.5%</b>	Return on Shr. Equity	10.0%
6.6%	6.5%	8.9%	9.3%	9.4%	10.8%	9.0%	9.1%	8.2%	8.6%	<b>10.0%</b>	<b>9.5%</b>	Return on Com Equity <sup>E</sup>	10.0%
.7%	.7%	2.3%	3.2%	3.5%	4.7%	3.2%	3.5%	3.8%	3.0%	<b>4.0%</b>	<b>4.0%</b>	Retained to Com Eq	4.0%
90%	89%	74%	66%	63%	56%	65%	61%	54%	65%	<b>59%</b>	<b>60%</b>	All Div'ds to Net Prof	58%

**ELECTRIC OPERATING STATISTICS**

	2013	2014	2015
% Change Retail Sales (KWH)	+1.3	+7	-1
Avg. Indust. Use (MWH)	29162	28987	30133
Avg. Indust. Revs. per KWH (c)	NA	NA	NA
Capacity at Peak (Mw)	NA	NA	NA
Peak Load, Winter (Mw)	2056	2044	2096
Annual Load Factor (%)	NA	NA	NA
% Change Customers (yr-end)	+7	+1.0	+1.3

**Business:** NorthWestern Corporation (doing business as NorthWestern Energy) supplies electricity & gas in the Upper Midwest and Northwest, serving 422,000 electric customers in Montana and South Dakota and 279,000 gas customers in Montana (87% of gross margin), South Dakota (12%), and Nebraska (1%). Electric revenue breakdown: residential, 40%; commercial, 51%; industrial, 5%; other, 4%. Generating sources are not provided by company. Fuel costs: 31% of revenues. '15 reported depreciation rate: 3.3%. Has 1,600 employees. Chairman: Dr. E. Linn Draper Jr. President & CEO: Robert C. Rowe. Incorporated: Delaware. Address: 3010 West 69th Street, Sioux Falls, South Dakota 57108. Telephone: 605-978-2900. Internet: www.northwesternenergy.com.

**NorthWestern is appealing two regulatory decisions that were issued this year.** The first involves the Federal Energy Regulatory Commission (FERC). In 2012, FERC, which regulates wholesale power, ruled that just 4% of the cost of a new gas-fired generating plant could be allocated to wholesale users. NorthWestern had proposed an allocation of 20%, with Montana customers being responsible for the remaining 80%. FERC's unfavorable ruling forced the company to take a \$0.12-a-share charge in 2012 (included in our earnings presentation). The regulators rejected NorthWestern's request for reconsideration. So the company has filed a petition with the U.S. Circuit Court of Appeals. The second involves the Montana Public Service Commission (MPSC), which disallowed some expenses associated with a plant outage that occurred in 2013. This decision forced NorthWestern to take a \$0.13-a-share charge (included in our presentation) in the first quarter of 2016. The company has filed an appeal with the Montana District Court. When either of these matters will be concluded is not known.

**The utility is seeking a gas rate increase in Montana.** This is the company's first such filing since 2012. NorthWestern asked for an increase of \$10.9 million (8.0%), based on a return of 10.35% on a common-equity ratio of 46.8%. A final order is expected in nine months. The utility is also requesting an interim boost of \$5.6 million (4.9%); if and when it gets interim rate relief is up to the MPSC. **We estimate that earnings will advance in 2016 and 2017.** The aforementioned regulatory disallowance hurt earnings in the first quarter, but was more than offset by a separate regulatory order in the second period that enabled NorthWestern to recognize revenues from previous periods and a third-quarter tax benefit. Customer growth and rate relief should benefit the bottom line each year. NorthWestern was granted an electric tariff hike in South Dakota in late 2015. **This stock's dividend yield is about average, by utility standards.** Like most utility issues, the recent price is within our 2019-2021 Target Price Range. Thus, total return potential is just modest. *Paul E. Debbas, CFA* *October 28, 2016*

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	313.0	260.2	262.2	319.1	1154.5
2014	369.7	270.3	251.9	313.0	1204.9
2015	346.0	270.6	272.7	325.0	1214.3
2016	332.5	293.1	301.0	<b>323.4</b>	<b>1250</b>
2017	<b>350</b>	<b>310</b>	<b>310</b>	<b>330</b>	<b>1300</b>

Cal-endar	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	1.01	.37	.40	.68	2.46
2014	1.17	.20	.77	.85	2.99
2015	1.09	.38	.51	.93	2.90
2016	.79	.73	.92	.96	<b>3.40</b>
2017	<b>1.10</b>	<b>.50</b>	<b>.75</b>	<b>1.10</b>	<b>3.45</b>

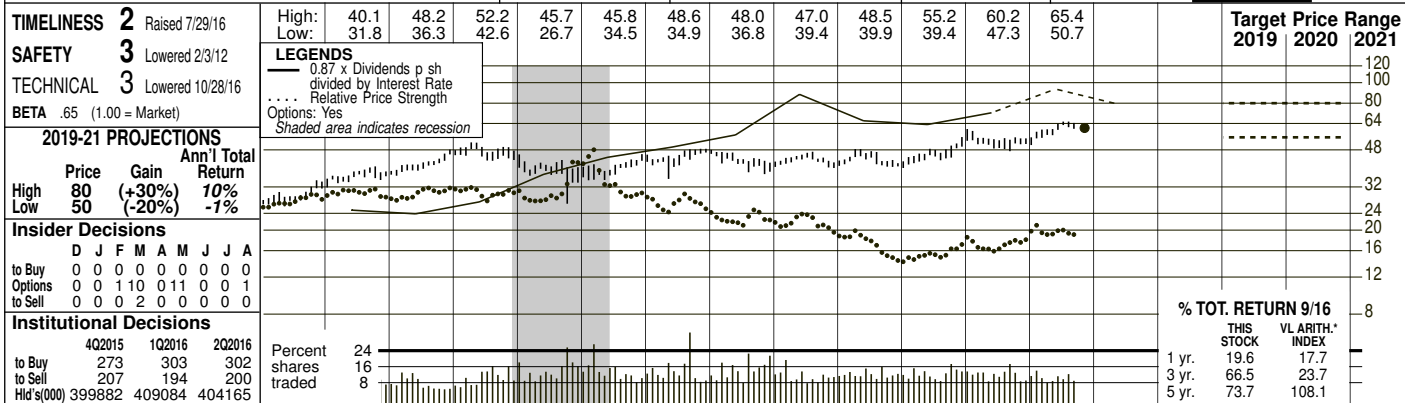
Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B</sup> = †				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2012	.37	.37	.37	.37	1.48
2013	.38	.38	.38	.38	1.52
2014	.40	.40	.40	.40	1.60
2015	.48	.48	.48	.48	1.92
2016	.50	.50	.50		

(A) Diluted EPS. Excl. gain (loss) on disc. ops.: '05, (6c); '06, 1c; nonrec. gains: '12, 39c net; '15, 27c. '15 EPS don't add due to rounding. Next earnings report due mid-Feb. (B) Div'ds historically paid in late Mar., June, Sept. & Dec. (C) Incl. def'd charges. In '15: \$18.16/sh. (D) In mill. (E) Rate base: Net orig. cost. Rate allowed on com. eq. in MT in '14 (elec.): 9.8%; in '13 (gas): 9.8%; in SD in '15: none specified; in NE in '07: 10.4%; earned on avg. com. eq., '15: 9.0%. Regul. Climate: Avg. Company's Financial Strength B+ Stock's Price Stability 85 Price Growth Persistence 95 Earnings Predictability 90

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**PG&E CORP. NYSE-PCG** RECENT PRICE **60.93** P/E RATIO **17.3** (Trailing: 38.6; Median: 16.0) RELATIVE P/E RATIO **0.94** DIV'D YLD **3.3%** VALUE LINE



2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
67.75	63.18	32.74	25.05	26.47	31.78	36.02	37.42	40.51	36.15	35.02	36.28	34.92	34.16	35.91	34.21	<b>33.45</b>	<b>34.90</b>	Revenues per sh	<b>39.25</b>
.80	5.66	1.14	4.80	5.71	7.12	7.76	8.02	8.44	8.37	8.22	8.08	7.32	6.33	8.13	7.29	<b>8.60</b>	<b>9.90</b>	"Cash Flow" per sh	<b>11.00</b>
d9.21	3.02	d2.36	2.05	2.12	2.35	2.76	2.78	3.22	3.03	2.82	2.78	2.07	1.83	3.06	2.00	<b>2.90</b>	<b>3.90</b>	Earnings per sh <sup>A</sup>	<b>4.50</b>
1.20	--	--	--	--	1.23	1.32	1.44	1.56	1.68	1.82	1.82	1.82	1.82	1.82	1.82	<b>1.93</b>	<b>2.08</b>	Div'd Decl'd per sh <sup>B</sup> +	<b>2.70</b>
4.54	7.33	7.94	4.08	3.72	4.90	6.90	7.83	10.05	10.68	9.62	9.79	10.74	11.40	10.16	10.51	<b>11.10</b>	<b>11.35</b>	Cap'l Spending per sh	<b>11.50</b>
8.19	11.89	9.47	10.12	20.62	19.60	22.44	24.18	25.97	27.88	28.55	29.35	30.35	31.41	33.09	33.69	<b>35.35</b>	<b>37.30</b>	Book Value per sh <sup>C</sup>	<b>42.25</b>
387.19	363.38	381.67	416.52	418.62	368.27	348.14	353.72	361.06	370.60	395.23	412.26	430.72	456.67	475.91	492.03	<b>505.00</b>	<b>510.00</b>	Common Shs Outst'g <sup>D</sup>	<b>525.00</b>
--	4.8	--	9.5	13.8	15.4	14.8	16.8	12.1	13.0	15.8	15.5	20.7	23.7	15.0	26.4	<b>26.4</b>	<b>26.4</b>	Avg Ann'l P/E Ratio	<b>14.5</b>
--	.25	--	.54	.73	.82	.80	.89	.73	.87	1.01	.97	1.32	1.33	.79	1.33	<b>1.33</b>	<b>1.33</b>	Relative P/E Ratio	<b>.90</b>
4.8%	--	--	--	--	3.4%	3.2%	3.1%	4.0%	4.3%	4.1%	4.2%	4.2%	4.2%	4.0%	3.4%	<b>3.4%</b>	<b>3.4%</b>	Avg Ann'l Div'd Yield	<b>4.1%</b>

**CAPITAL STRUCTURE as of 6/30/16**  
 Total Debt \$18214 mill. Due in 5 Yrs \$5102 mill.  
 LT Debt \$16525 mill. LT Interest \$766 mill.  
 (LT interest earned: 1.8x)  
 Pension Assets-12/15 \$13745 mill. Oblig. \$16299 mill.  
 Pfd Stock \$252 mill. Pfd Div'd \$14 mill.  
 4,534,958 shs. 4.36% to 5%, cumulative and \$25 par, redeemable from \$25.75 to \$27.25; 5,784,825 shs. 5.00% to 6.00%, cumulative nonredeemable and \$25 par.  
 Common Stock 498,506,353 shs. as of 7/19/16  
 MARKET CAP: \$30 billion (Large Cap)

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Revenues (\$mill)	20650
12539	13237	14628	13399	13841	14956	15040	15598	17090	16833	<b>16900</b>	<b>17800</b>	Revenues (\$mill)	<b>20650</b>						
1005.0	1020.0	1198.0	1168.0	1113.0	1132.0	893.0	828.0	1450.0	988.0	<b>1470</b>	<b>2005</b>	Net Profit (\$mill)	<b>2425</b>						
35.5%	34.6%	26.2%	31.1%	33.0%	30.3%	23.9%	24.5%	19.2%	19.2%	<b>25.0%</b>	<b>25.5%</b>	Income Tax Rate	<b>27.0%</b>						
6.7%	9.4%	9.5%	11.9%	14.4%	11.2%	17.5%	17.9%	10.0%	15.7%	<b>11.0%</b>	<b>8.0%</b>	AFUDC % to Net Profit	<b>7.0%</b>						
46.8%	46.1%	46.5%	47.4%	49.3%	50.2%	50.4%	52.5%	50.7%	50.4%	<b>49.5%</b>	<b>50.5%</b>	Long-Term Debt Ratio	<b>49.0%</b>						
16696	18558	20163	21793	22863	24119	25956	27311	31050	32858	<b>35925</b>	<b>37800</b>	Total Capital (\$mill)	<b>43900</b>						
21785	23656	26261	28892	31449	33655	37523	41252	43941	46723	<b>49450</b>	<b>52200</b>	Net Plant (\$mill)	<b>60300</b>						
7.6%	7.4%	7.8%	6.7%	6.2%	5.9%	4.7%	4.2%	5.8%	4.1%	<b>5.0%</b>	<b>6.5%</b>	Return on Total Cap'l	<b>6.5%</b>						
12.5%	11.6%	12.4%	11.0%	9.6%	9.2%	6.7%	5.7%	9.1%	5.9%	<b>8.0%</b>	<b>10.5%</b>	Return on Shr. Equity	<b>11.0%</b>						
12.7%	11.8%	12.6%	11.2%	9.7%	9.2%	6.7%	5.7%	9.1%	5.9%	<b>8.0%</b>	<b>10.5%</b>	Return on Com Equity <sup>E</sup>	<b>11.0%</b>						
6.8%	6.0%	6.8%	5.5%	3.9%	3.4%	1.0%	.2%	3.9%	.7%	<b>3.0%</b>	<b>5.0%</b>	Retained to Com Eq	<b>4.5%</b>						
47%	50%	47%	52%	61%	63%	85%	96%	58%	88%	<b>66%</b>	<b>53%</b>	All Div'ds to Net Prof	<b>59%</b>						

**ELECTRIC OPERATING STATISTICS**

	2013	2014	2015
% Change Retail Sales (KWH)	+5	-2	-5
Avg. Indust. Use (MWH)	NA	NA	NA
Avg. Indust. Revs. per KWH (c)	9.28	9.98	9.73
Capacity at Peak (Mw)	NMF	NMF	NMF
Peak Load, Summer (Mw)	NMF	NMF	NMF
Annual Load Factor (%)	NMF	NMF	NMF
% Change Customers (yr-end)	+3	+6	+7

Fixed Charge Cov. (%) 223 304 189

**BUSINESS:** PG&E Corporation is a holding company for Pacific Gas and Electric Company and nonutility subsidiaries. Supplies electricity and gas to most of northern and central California. Has 5.3 million electric and 4.4 million gas customers. Electric revenue breakdown: residential, 38%; commercial, 40%; industrial, 12%; agricultural, 9%; other, 1%. Generating sources: nuclear, 23%; gas, 9%; hydro, 5%; purchased, 63%. Fuel costs: 34% of revenues. <sup>15</sup> reported depreciation rate (utility): 3.8%. Has 23,000 employees. Chairman, President & Chief Executive Officer: Anthony F. Earley, Jr. Incorporated: California. Address: 77 Beale Street, P.O. Box 770000, San Francisco, California 94177. Telephone: 415-973-1000. Internet: www.pgecorp.com.

**PG&E's utility subsidiary has reached a settlement of its general rate case.** Pacific Gas and Electric had filed for rate increases of \$319 million in 2017, \$467 million in 2018, and \$368 million in 2019. The company reached a contested settlement calling for tariff hikes of \$88 million in 2017, \$444 million in 2018, and \$361 million in 2019. The settlement also recommends another \$361 million raise in 2020, but this is one of the contested issues. A final decision is expected in February, with the ruling being retroactive to the start of 2017.

**The Earnings Predictability rating overstates the predictability of PG&E's quarterly profits.** Since a gas pipeline exploded in San Bruno, California in September of 2010, the company has been incurring costs associated with the accident, including unrecovered expenses and capital costs associated with upgrading its gas system. This is why earnings have generally been weak since then. Moreover, PG&E is also recording costs—and booking insurance recoveries—related to a large fire that occurred in 2015 when a tree came in contact with a power line.

We include all of these expenses and insurance recoveries in our earnings presentation. Because we figure these costs will be much lower in 2017, we forecast a significant profit recovery next year. We do exclude fines that have been imposed on the company, including one of \$24 million (\$0.05 a share) that PG&E booked in the June quarter of 2016 for poor recordkeeping in the gas division. Our 2016 earnings estimate is within the company's guidance of \$2.83-\$3.15 a share on a GAAP basis. **The share count has risen significantly in recent years.** PG&E has been raising common equity to pay its fines and support its capital spending. The company expects \$800 million in equity needs for the year. Beginning in 2017, PG&E's annual equity requirements will probably be lower. **This timely stock has a dividend yield that is slightly below average, for a utility.** Total return potential to 2019-2021 is unimpressive. Like most utility issues, the recent quotation of PG&E stock is within our 3- to 5-year Target Price Range.

Cal-endar	QUARTERLY REVENUES (\$ mill.)	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	Year
2013	3672 3776 4175 3975	15598
2014	3891 3952 4939 4308	17090
2015	3899 4217 4550 4167	16833
2016	3974 4169 4557 4200	16900
2017	<b>4200 4400 4800 4400</b>	<b>17800</b>

Cal-endar	EARNINGS PER SHARE <sup>A</sup>	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	Year
2013	.55 .74 .36 .19	1.83
2014	.49 .57 1.71 .27	3.06
2015	.27 .83 .63 .27	2.00
2016	.22 .46 1.60 .62	2.90
2017	<b>.85 .75 1.55 .75</b>	<b>3.90</b>

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B</sup> +	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	Year
2012	.455 .455 .455 .455	1.82
2013	.455 .455 .455 .455	1.82
2014	.455 .455 .455 .455	1.82
2015	.455 .455 .455 .455	1.82
2016	.455 .455 .49 .49	1.82

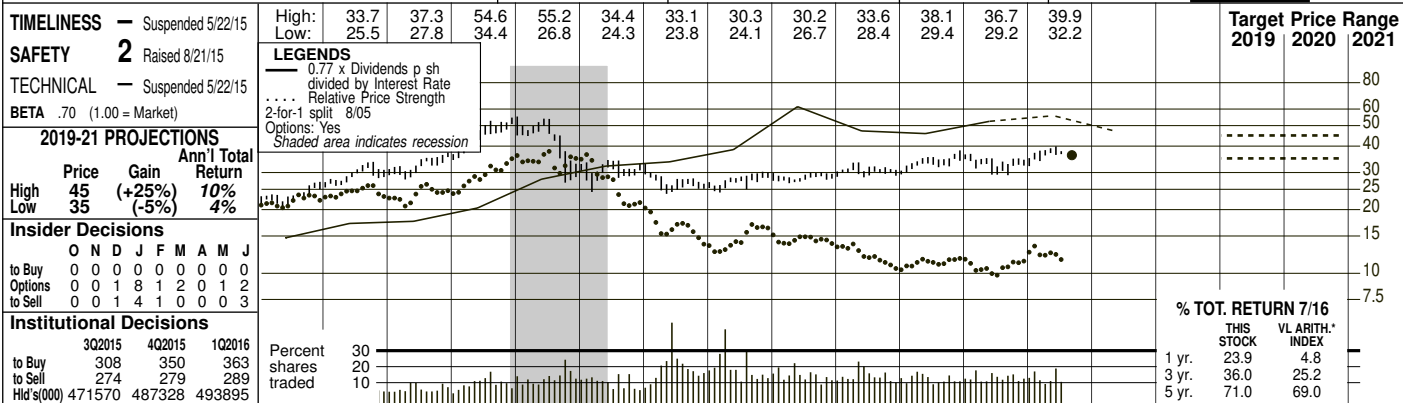
(A) Diluted EPS. Excl. nonrec. gains (losses): '04, \$6.95; '09, 18c; '11, (68c); '12, (15c); '15, (21c); '16, (5c); gain from disc. ops.: '08, 41c. '13 EPS don't add due to rounding, '14 due to change in shs. Next earnings report due early Nov. (B) Divs historically paid in mid-Jan., Apr., July, and Oct. Div'd reinvest. plan avail. † Shareholder investment plan avail. (C) Incl. intang. In '15: \$14.29/sh. (D) In mill. (E) Rate base: net orig. cost. Rate allowed on com. eq. in '15: 10.4%; earned on avg. com. eq., '15: 6.0%. Regulatory Climate: Average.

Company's Financial Strength	B+
Stock's Price Stability	95
Price Growth Persistence	35
Earnings Predictability	55

Paul E. Debbas, CFA October 28, 2016



**PPL CORPORATION** NYSE-PPL **RECENT PRICE 36.25** **P/E RATIO 12.8** (Trailing: 13.9; Median: 14.0) **RELATIVE P/E RATIO 0.68** **DIV'D YLD 4.3%** **VALUE LINE**



2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
19.59	19.53	16.38	15.75	15.37	16.36	17.92	17.41	21.47	20.03	17.63	22.02	21.11	18.82	17.27	11.38	<b>10.65</b>	<b>10.00</b>	Revenues per sh	10.75
3.32	3.51	3.20	3.60	3.59	3.84	4.26	5.10	4.71	3.47	3.66	4.59	4.84	4.64	4.58	3.78	<b>4.30</b>	<b>3.75</b>	"Cash Flow" per sh	4.25
1.64	1.79	1.54	1.84	1.87	1.92	2.29	2.63	2.45	1.19	2.29	2.61	2.61	2.38	2.38	2.37	<b>2.85</b>	<b>2.15</b>	Earnings per sh <sup>A</sup>	2.50
.53	.53	.72	.77	.82	.96	1.10	1.22	1.34	1.38	1.40	1.40	1.44	1.47	1.49	1.50	<b>1.52</b>	<b>1.58</b>	Div'd Decl'd per sh <sup>B</sup>	1.76
1.59	2.99	2.74	2.17	1.94	2.13	3.62	4.51	3.79	3.25	3.30	4.30	5.34	6.68	6.14	5.24	<b>4.65</b>	<b>4.50</b>	Cap'l Spending per sh	4.50
6.94	6.33	6.71	9.19	11.21	11.62	13.30	14.88	13.55	14.57	16.98	18.72	18.01	19.78	20.47	14.72	<b>16.15</b>	<b>16.80</b>	Book Value per sh <sup>C</sup>	19.25
290.08	293.16	331.47	354.72	378.14	380.15	385.04	373.27	374.58	377.18	483.39	578.41	581.94	630.32	665.85	673.86	<b>677.00</b>	<b>680.00</b>	Common Shs Outst'g <sup>D</sup>	692.00
8.9	12.4	11.1	10.6	12.5	15.1	14.1	17.3	17.6	NMF	11.9	10.5	10.9	12.8	14.1	13.9	<b>10.65</b>	<b>10.00</b>	Avg Ann'l P/E Ratio	16.0
.58	.64	.61	.60	.66	.80	.76	.92	1.06	NMF	.76	.66	.69	.72	.74	.70	<b>1.52</b>	<b>1.58</b>	Relative P/E Ratio	1.00
3.6%	2.4%	4.2%	4.0%	3.5%	3.3%	3.4%	2.7%	3.1%	4.5%	5.1%	5.1%	5.1%	4.8%	4.4%	4.5%	<b>4.3%</b>	<b>4.3%</b>	Avg Ann'l Div'd Yield	4.4%

**CAPITAL STRUCTURE as of 3/31/16**  
 Total Debt \$19824 mill. Due in 5 Yrs \$3733 mill.  
 LT Debt \$18074 mill. LT Interest \$759 mill.  
 Incl. 23 mill. units 7.75%, \$25 liq. value; 82,000 units 8.23%, \$1000 face value.  
 (LT interest earned: 3.2x)

**Leases, Uncapitalized** Annual rentals \$33 mill.  
**Pension Assets-12/15** \$10852 mill.  
**Oblig** \$12267 mill.

**Pfd Stock** None  
**Common Stock** 676,945,176 shs.  
 as of 4/22/16  
**MARKET CAP: \$25 billion (Large Cap)**

**ELECTRIC OPERATING STATISTICS**

	2013	2014	2015
% Change Retail Sales (KWH)	+1.2	-1.1	-5
Avg. Indust. Use (MWH)	NA	NA	NA
Avg. Indust. Revs. per KWH (c)	NA	NA	NA
Capacity at Peak (Mw)	NA	NA	NA
Peak Load, Winter (Mw)	NA	NA	NA
Annual Load Factor (%)	NA	NA	NA
% Change Customers (yr-end)	NA	NA	NA

Fixed Charge Cov. (%) 288 309 321

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '13-'15 of change (per sh)

	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15
Revenues	-	-4.5%	NMF
"Cash Flow"	1.5%	2.0%	NMF
Earnings	2.5%	4.0%	NMF
Dividends	5.5%	1.5%	3.0%
Book Value	5.5%	4.0%	NMF

**QUARTERLY REVENUES (\$ mill.)**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	2457	3450	3105	2848	11860
2014	1194	2833	3449	4023	11499
2015	2230	1781	1878	1780	7669
2016	2011	1785	1754	1650	7200
2017	1900	1600	1700	1600	6800

**EARNINGS PER SHARE <sup>A</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	.65	.63	.62	.46	2.38
2014	.50	.32	.73	.82	2.38
2015	.82	.37	.59	.60	2.37
2016	.71	.71	.90	.53	2.85
2017	.70	.45	.55	.45	2.15

**QUARTERLY DIVIDENDS PAID <sup>B</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.35	.36	.36	.36	1.43
2013	.36	.3675	.3675	.3675	1.46
2014	.3675	.3725	.3725	.3725	1.49
2015	.3725	.3725	.3725	.3775	1.50
2016	.3775	.38	.38		

**BUSINESS:** PPL Corporation (formerly PP&L Resources, Inc.) is a holding company for PPL Electric Utilities (formerly Pennsylvania Power & Light Company), which distributes electricity to 1.4 million customers in eastern & central PA. Acq'd Kentucky Utilities and Louisville Gas and Electric (1.2 million customers) 11/10. Has electric distribution sub. in U.K. (7.8 million customers). Sold gas distribution subsidiary in '08. Spun off power generating subsidiary in '15. The company no longer breaks out data on electric operating statistics. Fuel costs: 22% of revs. '15 reported deprec. rate: 2.6%. Has 12,800 employees. Chairman, President & CEO: William H. Spence, Inc.: PA. Address: Two North Ninth St., Allentown, PA 18101-1179. Tel.: 800-345-3085. Internet: www.pplweb.com.

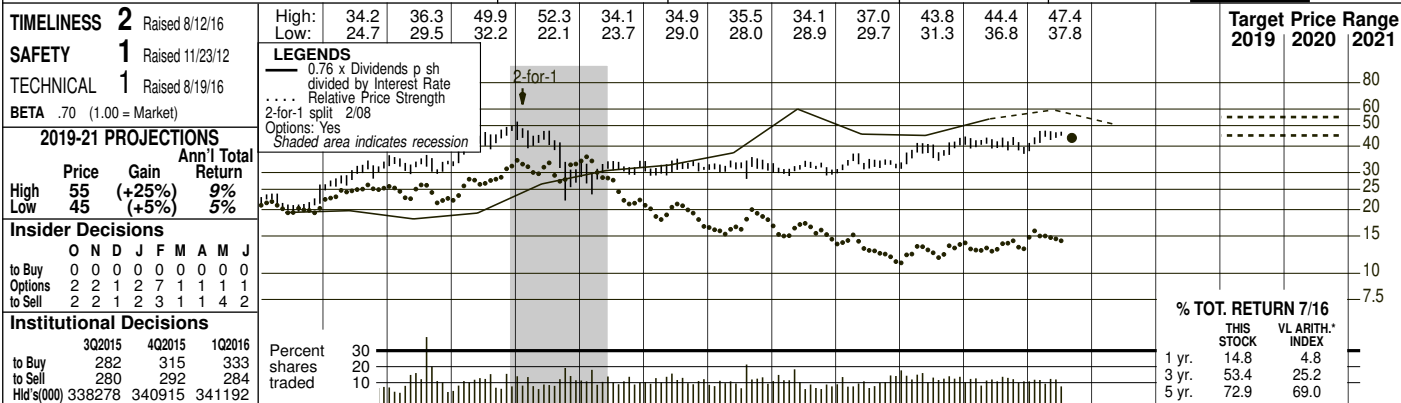
**Because PPL Corporation owns utilities in the United Kingdom, some investors are worried about the aftereffects of Brexit on the company.** PPL stock was the only electric utility to decline immediately after the vote on June 23rd, and year to date the equity is one of the few in this industry that has risen less than 10%. Investors are concerned about the sharp decline in the value of the pound versus the dollar, and about the possible negative effect on the state of the economy in the U.K. However, PPL hedges most its currency exposure, and regulatory rules will make its utilities whole for any volume shortfall over the next seven years. In fact, PPL's hedges were \$450 million in the money following Brexit, so in July management monetized \$310 million of this, and re-established hedges based on \$1.30/pound. This will hurt the translation of U.K. profits into dollars, but even so, we think the market overreacted. We include the effects of currency hedges in our earnings presentation because they are ongoing. They added \$0.19 to share net in the first half of 2016, and we estimate another \$0.30 benefit in the third period.

**Earnings are likely to decline in 2017.** That's mainly because of the re-establishment of hedges, but PPL's U.K. profits were expected to fall anyway due to lower incentive revenues. The company's targeted range for next year is \$2.05-\$2.25 a share, and from this base, the company's goal is 5%-6% annual profit growth through 2020.

**The Kentucky regulators approved a \$1 billion environmental compliance plan.** PPL's utilities in the state will recover these expenditures through 2023 via a regulatory mechanism, instead of filing a general rate case. This will help the company achieve its earnings growth goal. **PPL stock has a dividend yield that is about a percentage point above the utility average.** We project modest dividend growth over the 3- to 5-year period, but this should be enough to produce a total return that is a cut above the industry average. The stock is unranked for Timeliness because the spinoff of the company's nonregulated generating operation in 2015 has made year-to-year earnings comparisons misleading. *Paul E. Debbas, CFA August 19, 2016*

(A) Dil. EPS. Excl. nonrec. gain (losses): '07, (12c); '10, (8c); '11, 8c; '13, (62c); gains (losses) on disc. ops.: '07, 19c; '08, 3c; '09, (10c); '10, (4c); '12, (1c); '14, 23c; '15, (\$1.36). '13 EPS don't add due to chg. in shs., '14 & '15 to rounding. Next eps. rept. due early Nov. (B) Div's histor. pd. in early Jan., Apr., July, & Oct. ■ Div'd inv. plan avail. (C) Incl. intang. In '15: \$8.85/sh. (D) In mill., adj. for split. (E) Rate base: Fair val. Rate all'd on com. eq. in PA in '16: none spec.; in KY in '15: none spec.; earn. on avg. com. eq., '15: 13.0%. Reg. Clim.: Avg.

**P.S. ENTERPRISE GP. NYSE-PEG** RECENT PRICE **43.85** P/E RATIO **16.7** (Trailing: 15.8 Median: 13.0) RELATIVE P/E RATIO **0.89** DIV'D YLD **3.8%** **VALUE LINE**



2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
22.83	23.84	18.62	23.54	23.09	24.74	24.07	25.28	27.94	24.57	23.31	22.42	19.33	19.71	21.52	20.61	<b>18.40</b>	<b>18.95</b>	Revenues per sh	21.25
2.71	3.14	3.01	2.92	3.02	3.42	3.91	4.36	4.68	4.98	5.27	5.36	4.87	5.17	5.82	6.15	<b>5.70</b>	<b>6.35</b>	"Cash Flow" per sh	7.50
1.78	1.85	1.88	1.88	1.52	1.79	1.85	2.59	2.90	3.08	3.07	3.11	2.44	2.45	2.99	3.30	<b>2.60</b>	<b>3.00</b>	Earnings per sh <sup>A</sup>	3.50
1.08	1.08	1.08	1.08	1.10	1.12	1.14	1.17	1.29	1.33	1.37	1.37	1.42	1.44	1.48	1.56	<b>1.64</b>	<b>1.72</b>	Div'd Decl'd per sh <sup>B,†</sup>	2.00
2.31	4.99	4.03	2.86	2.64	2.04	2.01	2.65	3.50	3.55	4.27	4.12	5.09	5.56	5.58	7.65	<b>7.30</b>	<b>6.90</b>	Cap'l Spending per sh	5.00
9.61	10.05	8.85	11.71	12.05	11.99	13.35	14.35	15.36	17.37	19.04	20.30	21.31	22.95	24.09	25.86	<b>26.80</b>	<b>28.10</b>	Book Value per sh <sup>C</sup>	32.25
415.94	411.68	450.53	472.27	476.20	502.33	505.29	508.52	506.02	505.99	505.97	505.95	505.89	505.86	505.84	505.28	<b>506.00</b>	<b>506.00</b>	Common Shs Outst'g <sup>D</sup>	506.00
10.3	12.0	10.0	10.6	14.3	16.5	17.8	16.5	13.6	10.0	10.4	10.4	12.8	13.5	12.6	12.4	<b>14.5</b>	<b>14.5</b>	Avg Ann'l P/E Ratio	14.5
.67	.61	.55	.60	.76	.88	.96	.88	.82	.67	.66	.65	.81	.76	.66	.63	<b>.66</b>	<b>.63</b>	Relative P/E Ratio	.90
5.9%	4.9%	5.7%	5.4%	5.1%	3.8%	3.5%	2.7%	3.3%	4.3%	4.3%	4.2%	4.6%	4.4%	3.9%	3.8%	<b>3.9%</b>	<b>3.8%</b>	Avg Ann'l Div'd Yield	4.0%

**CAPITAL STRUCTURE as of 3/31/16**  
 Total Debt \$10250 mill. Due in 5 Yrs \$3755 mill.  
 LT Debt \$9676 mill. LT Interest \$393 mill.  
 (LT interest earned: 7.4x)

Leases, Uncapitalized Annual rentals \$29 mill.

Pension Assets-12/15 \$5039 mill. Oblig \$5522 mill.

Pfd Stock None

Common Stock 505,929,329 shs. as of 4/19/16

MARKET CAP: \$22 billion (Large Cap)

12164	12853	14139	12431	11793	11343	9781.0	9968.0	10886	10415	<b>9300</b>	<b>9600</b>	Revenues (\$mill)	10750
934.0	1323.0	1477.0	1567.0	1557.0	1577.0	1239.0	1243.0	1518.0	1679.0	<b>1325</b>	<b>1535</b>	Net Profit (\$mill)	1755
36.6%	44.5%	45.9%	42.3%	40.5%	40.4%	36.2%	39.5%	38.2%	37.4%	<b>36.5%</b>	<b>37.0%</b>	Income Tax Rate	37.0%
4.7%	2.7%	3.2%	3.8%	5.5%	2.7%	4.8%	4.6%	4.5%	5.5%	<b>5.0%</b>	<b>5.0%</b>	AFUDC % to Net Profit	3.0%
60.3%	54.0%	50.5%	46.3%	44.8%	42.1%	38.3%	40.4%	40.4%	40.3%	<b>41.0%</b>	<b>41.5%</b>	Long-Term Debt Ratio	44.0%
39.2%	45.5%	49.0%	53.2%	55.2%	57.9%	61.7%	59.6%	59.6%	59.7%	<b>59.0%</b>	<b>58.5%</b>	Common Equity Ratio	56.0%
17197	16041	15856	16513	17452	17731	17467	19470	20446	21900	<b>23000</b>	<b>24350</b>	Total Capital (\$mill)	29200
13002	13275	14433	15440	16390	17849	19736	21645	23589	26539	<b>28750</b>	<b>30625</b>	Net Plant (\$mill)	33000
7.7%	10.4%	11.2%	11.0%	10.4%	10.2%	8.1%	7.5%	8.4%	8.6%	<b>6.5%</b>	<b>7.0%</b>	Return on Total Cap'l	7.0%
13.7%	17.9%	18.8%	17.7%	16.2%	15.4%	11.5%	10.7%	12.5%	12.9%	<b>10.0%</b>	<b>11.0%</b>	Return on Shr. Equity	10.5%
13.8%	18.1%	19.0%	17.8%	16.2%	15.4%	11.5%	10.7%	12.5%	12.9%	<b>10.0%</b>	<b>11.0%</b>	Return on Com Equity <sup>E</sup>	10.5%
5.3%	9.9%	10.5%	10.1%	9.0%	8.6%	4.8%	4.4%	6.3%	6.8%	<b>3.5%</b>	<b>4.5%</b>	Retained to Com Eq	4.5%
62%	45%	45%	43%	45%	44%	58%	59%	49%	47%	<b>63%</b>	<b>57%</b>	All Div'ds to Net Prof	58%

**ELECTRIC OPERATING STATISTICS**

	2013	2014	2015
% Change Retail Sales (KWH)	.9	-1.3	+2.4
Avg. Indust. Use (MWH)	NA	NA	NA
Avg. Indust. Revs. per KWH(c)	NA	NA	NA
Capacity at Peak (Mw)	NA	NA	NA
Peak Load, Summer (Mw)	10414	9474	9595
Annual Load Factor (%)	NA	NA	NA
% Change Customers (avg.)	NA	NA	NA

Fixed Charge Cov. (%) 529 635 705

**BUSINESS:** Public Service Enterprise Group Incorporated is a holding company for Public Service Electric and Gas Company (PSE&G), which serves 2.2 million electric and 1.8 million gas customers in New Jersey, and PSEG Power LLC, a nonregulated power generator with nuclear, gas, and coal-fired plants in the Northeast. PSEG Energy Holdings is involved in renewable energy.

**The majority of Public Service Enterprise Group's earnings is coming from its regulated utility business.** Public Service Electric and Gas is hardening its electric and gas system through programs that will see the utility spend an expected \$2.1 billion. Most of these expenditures are recovered in rates concurrently, but some will be recouped through a general rate case that PSE&G will file in November of 2017. Capital spending on electric transmission also boosts utility income annually through a formula rate plan. This spending is especially important because the allowed return on equity for transmission, at 11.68%, is higher than that for distribution, at 10.3%. The utility is finding other investment opportunities, as well.

**The nonregulated side of the company's business isn't faring as well.** PSEG Power, the company's major non-utility arm, is still solidly profitable and is generating cash. However, low power prices and sluggish demand for electricity are hurting this operation. Currently, unplanned outages at the two Salem nuclear units are hurting this division, as well. We have lowered our 2016 earnings estimate

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	2786	2310	2554	2318	9968.0
2014	3223	2249	2641	2773	10886
2015	3135	2314	2688	2278	10415
2016	2616	1905	2500	2279	9300
2017	2750	2000	2550	2300	9600

Cal-endar	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	.63	.66	.77	.39	2.45
2014	.76	.42	.87	.94	2.99
2015	1.15	.68	.87	.60	3.30
2016	.93	.37	.80	.50	2.60
2017	.95	.65	.85	.55	3.00

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B,†</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2012	.355	.355	.355	.355	1.42
2013	.36	.36	.36	.36	1.44
2014	.37	.37	.37	.37	1.48
2015	.39	.39	.39	.39	1.56
2016	.41	.41			

(A) Diluted EPS. Excl. nonrecurr. gain (losses): '02, (\$1.30); '05, (3c); '06, (35c); '08, (96c); '09, 6c; '11, (34c); '12, 7c; gains (loss) from disc. ops.: '05, (33c); '06, 12c; '07, 3c; '08, 40c; '11, 13c. Next earnings report due late Oct. (B) Div'ds historically paid in late Mar., June, Sept., and Dec. † Div'd reinvestment plan avail. ‡ Shareholder investment plan avail. (C) Incl. intang. In '15: \$6.56/sh. (D) In mill., adj. for split. (E) Rate base: Net orig. cost. Rate allowed on com. eq. in '10: 10.3%; earned on avg. com. eq., '15: 13.2%. Reg. Climate: Avg.

by \$0.30 a share and our 2017 profit forecast by \$0.05 a share. The 2016 change reflects, in part, a mark-to-market accounting loss of \$0.20 a share that PSEG booked in the June quarter, but also reflects a lower expectation of income from PSEG Power.

**Despite tough conditions for PSEG Power, this subsidiary has some investment opportunities.** It plans to spend \$1.975 billion-\$2.125 billion on gas-fired plants totaling 1,780 megawatts of capacity in Maryland, New Jersey, and Connecticut in 2018 and 2019.

**Finances are strong.** PSEG has the highest fixed-charge coverage of any company we cover in the Electric Utility Industry. The common-equity ratio is very high, as well. PSEG merits a Financial Strength rating of A++, our highest.

**Top-quality and timely PSEG stock has a dividend yield that is somewhat above the utility average.** Unlike most utility issues, it is not trading within our 2019-2021 Target Price Range. Long-term total return potential, though modest, is still better than the industry average.

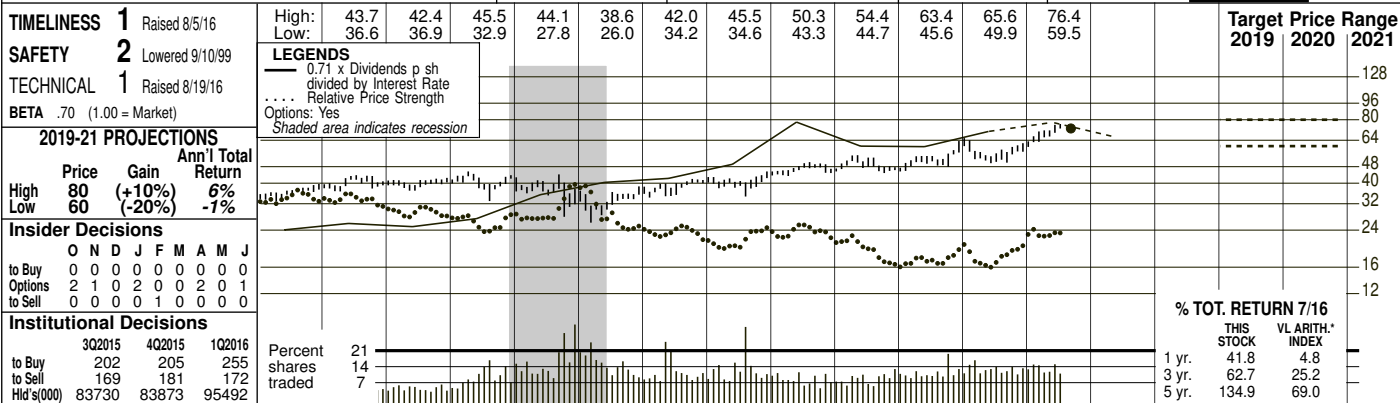
Paul E. Debbas, CFA August 19, 2016

Company's Financial Strength	A++
Stock's Price Stability	95
Price Growth Persistence	20
Earnings Predictability	70

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**SCANA CORP. NYSE:SCG** RECENT PRICE **72.75** P/E RATIO **17.9** (Trailing: 19.7; Median: 14.0) RELATIVE P/E RATIO **0.95** DIV'D YLD **3.3%** VALUE LINE



2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
32.78	32.95	26.65	30.85	34.53	41.66	39.11	39.61	45.16	34.35	36.10	33.95	31.63	31.88	34.70	30.65	<b>27.95</b>	<b>28.60</b>	Revenues per sh	31.75
4.43	4.55	4.56	4.95	5.28	7.43	5.68	5.73	5.86	5.63	5.91	6.01	6.30	6.53	6.91	6.70	<b>6.75</b>	<b>7.05</b>	"Cash Flow" per sh	8.25
2.12	2.15	2.38	2.50	2.67	2.78	2.59	2.74	2.95	2.85	2.98	2.97	3.15	3.39	3.79	3.81	<b>3.95</b>	<b>4.15</b>	Earnings per sh <sup>A</sup>	4.75
1.15	1.20	1.30	1.38	1.46	1.56	1.68	1.76	1.84	1.88	1.90	1.94	1.98	2.03	2.10	2.18	<b>2.30</b>	<b>2.42</b>	Div'd Decl'd per sh <sup>B</sup>	2.80
3.28	4.99	6.41	6.94	4.86	3.38	4.52	6.21	7.68	7.41	6.87	6.81	8.16	7.84	7.65	8.07	<b>11.95</b>	<b>14.80</b>	Cap'l Spending per sh	8.75
19.40	20.95	19.64	20.82	21.78	23.35	24.39	25.37	25.85	27.63	29.05	29.94	31.47	33.08	34.95	38.09	<b>39.70</b>	<b>41.75</b>	Book Value per sh <sup>C</sup>	47.75
104.73	104.73	110.83	110.74	112.52	114.67	116.67	116.67	117.78	123.34	127.45	129.88	132.01	141.00	142.70	142.90	<b>143.00</b>	<b>145.00</b>	Common Shs Outst'g <sup>D</sup>	150.00
12.5	12.6	12.2	13.0	13.6	14.4	15.4	15.0	12.7	11.6	12.9	13.7	14.8	14.4	13.7	14.7	<i>Bold figures are Value Line estimates</i>		Avg Ann'l P/E Ratio	14.5
.81	.65	.67	.74	.72	.77	.83	.80	.76	.77	.82	.86	.94	.81	.72	.75			Relative P/E Ratio	.90
4.3%	4.4%	4.5%	4.2%	4.0%	3.9%	4.2%	4.3%	4.9%	5.7%	4.9%	4.8%	4.2%	4.2%	4.1%	3.9%			Avg Ann'l Div'd Yield	4.0%

**CAPITAL STRUCTURE as of 3/31/16**  
 Total Debt \$6912 mill. Due in 5 Yrs \$2148 mill.  
 LT Debt \$5879 mill. LT Interest \$331 mill.  
 (LT interest earned: 3.4x)

**Leases, Uncapitalized** Annual rentals \$10 mill.  
**Pension Assets-12/15** \$781.7 mill.  
**Oblig** \$855.4 mill.

**Pfd Stock** None

**Common Stock** 142,916,917 shs.  
 as of 4/30/16  
**MARKET CAP: \$10 billion (Large Cap)**

**ELECTRIC OPERATING STATISTICS**

	2013	2014	2015
% Change Retail Sales (KWH)	+3	+4.7	-9
Avg. Indust. Use (MWH)	8180	NA	NA
Avg. Indust. Resv. per KWH (c)	7.27	NA	NA
Capacity at Yearend (Mw)	5237	5237	5234
Peak Load, Summer (Mw)	4574	4853	4970
Annual Load Factor (%)	58.8	NA	NA
% Change Customers (yr-end)	+1.2	+1.4	+1.5

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '13-'15 of change (per sh)

	10 Yrs.	5 Yrs.	Est'd '13-'15
Revenues	-1.0%	-3.5%	-5%
"Cash Flow"	1.5%	3.0%	3.5%
Earnings	3.5%	4.5%	4.5%
Dividends	3.5%	2.5%	5.0%
Book Value	5.0%	5.0%	5.0%

**QUARTERLY REVENUES (\$ mill.)**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	1311	1016	1051	1117	4495.0
2014	1590	1026	1121	1214	4951.0
2015	1389	967	1068	956	4380.0
2016	1172	905	950	973	4000
2017	<b>1200</b>	<b>950</b>	<b>1000</b>	<b>1000</b>	<b>4150</b>

**EARNINGS PER SHARE <sup>A</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	1.11	.60	.94	.73	3.39
2014	1.37	.68	1.01	.73	3.79
2015	1.39	.69	1.04	.69	3.81
2016	1.23	.74	1.20	.78	3.95
2017	<b>1.35</b>	<b>.75</b>	<b>1.25</b>	<b>.80</b>	<b>4.15</b>

**QUARTERLY DIVIDENDS PAID <sup>B</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.485	.495	.495	.495	1.97
2013	.495	.507	.507	.507	2.02
2014	.508	.525	.525	.525	2.08
2015	.525	.545	.545	.545	2.16
2016	.545	.575	.575		

**BUSINESS:** SCANA Corporation is a holding company for South Carolina Electric & Gas Company, which supplies electricity to 706,000 customers in central, southern, and southwestern South Carolina. Supplies gas service to 1.3 million customers in North Carolina, South Carolina, and Georgia. Electric revenue breakdown: residential, 44%; commercial, 33%; industrial, 18%; other, 5%. Generating sources: coal, 48%; oil & gas, 28%; nuclear, 19%; hydro, 3%; purchased, 2%. Fuel costs: 46% of revenues. '15 reported depreciation rate: 2.6%. Has 5,800 employees. Chairman, CEO & President: Kevin B. Marsh. Incorporated: South Carolina. Address: 100 SCANA Parkway, Cayce, South Carolina 29033. Telephone: 803-217-9000. Internet: www.scana.com.

**SCANA's electric utility subsidiary has made a decision regarding its nuclear construction project.** South Carolina Electric & Gas is building two units at the site of an existing unit. The new facilities are scheduled to come on line in August, 2019 and August, 2020. Cost overruns and construction delays prompted SCE&G to choose the fixed-price option of \$7.6 billion for the project. The contractor will swallow any costs that exceed this amount. However, the selection of this option has increased the company's expected costs by \$852 million. This requires the approval of the Public Service Commission of South Carolina. Its ruling is likely in late November.

**SCE&G has filed a rate request under the state's Base Load Review Act.** This regulatory law enables the utility to receive rate relief annually for its construction work in progress for the aforementioned nuclear construction. SCE&G filed for a hike of \$74.2 million (3.1%), and will earn a 10.5% return on equity. The utility is asking for the raise to take effect on November 27th.

**Gas rate cases are pending.** In North

Carolina, PSNC Energy is seeking a \$41.6 million (9.7%) tariff increase, based on a 10.6% return on a 53.5% common-equity ratio. It also wants the commission to grant a regulatory mechanism that allows ongoing recovery of capital expenditures for pipeline integrity programs. The utility earned an ROE of just 8.3% in the 12-month period through June 30th. PSNC is hoping to receive an order in time for new rates to take effect at the start of November. In South Carolina, SCE&G is asking for a modest boost of \$4 million because it is underearning its allowed ROE by more than half of a percentage point.

**Rate relief should enable earnings to advance in 2016 and 2017.** The annual increases under the aforementioned Base Load Review Act should help. We also assume reasonable regulatory treatment in the gas rate applications. We have raised our 2016 share-net estimate by a nickel, to \$3.95, because June-quarter weather patterns were more favorable than normal. **This timely stock has a dividend yield that is average for a utility.** Total return potential to 2019-2021 is low.

*Paul E. Debbas, CFA August 19, 2016*

(A) Diluted egs. Excl. nonrec. gains (losses): '00, 23c; '01, \$3.00; '02, (\$3.72); '03, 31c; '04, (23c); '05, 3c; '06, 9c; '15, \$1.41. '13 EPS don't add due to rounding. Next earnings report due late Oct. (B) Div'ds historically paid in early Jan., Apr., July, & Oct. (C) Div'd reinvestment plan avail. (D) Incl. intang. In '15: \$13.55/sh. (E) Rate base: Net orig. cost. Rate allowed on com. eq. in SC: 10.25% elec. in '13, 10.25% gas in '05; in NC: 10.6% in '08; earned on avg. com. eq., '15: 10.6%. Regulatory Climate: Above Average.	<b>Company's Financial Strength</b> B++ <b>Stock's Price Stability</b> 100 <b>Price Growth Persistence</b> 55 <b>Earnings Predictability</b> 100
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# SEMPRA ENERGY NYSE-SRE

RECENT PRICE **105.06** P/E RATIO **25.8** (Trailing: 22.3; Median: 13.0) RELATIVE P/E RATIO **1.40** DIV'D YLD **3.1%** VALUE LINE

**TIMELINESS** 3 Lowered 10/28/16  
**SAFETY** 2 Raised 7/29/16  
**TECHNICAL** 2 Lowered 9/30/16  
**BETA** .80 (1.00 = Market)

High: 47.9 57.3 66.4 63.0 57.2 57.2 56.0 72.9 93.0 116.3 116.2 114.7  
 Low: 35.5 42.9 50.9 34.3 36.4 43.9 44.8 54.7 70.6 86.7 89.4 86.7

**LEGENDS**  
 0.97 x Dividends p sh divided by Interest Rate  
 Relative Price Strength  
 Options: Yes  
 Shaded area indicates recession

**2019-21 PROJECTIONS**

Price	Gain	Ann'l Total Return
High 155	(+50%)	13%
Low 115	(+10%)	6%

**Insider Decisions**

	D	J	F	M	A	M	J	J	A
to Buy	0	0	0	0	0	0	0	0	0
Options	5	0	1	0	4	1	1	1	1
to Sell	0	2	0	2	0	1	1	0	2

**Institutional Decisions**

	4Q2015	1Q2016	2Q2016
to Buy	265	270	266
to Sell	244	254	249
Hlds(000)	185015	203184	199665

Percent shares traded: 24, 16, 8

% TOT. RETURN 9/16  
 THIS STOCK: 1 yr. 14.0, 3 yr. 35.9, 5 yr. 140.1  
 VL ARITH. INDEX: 17.7, 23.7, 108.1

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
35.38	39.27	29.38	34.81	40.18	45.64	44.89	43.79	44.21	32.88	37.44	41.83	39.80	43.18	44.80	41.20	<b>39.05</b>	<b>39.90</b>	Revenues per sh	<b>48.25</b>
4.91	5.39	5.71	5.56	6.58	5.96	6.74	6.93	7.40	7.94	7.76	8.58	8.92	9.41	10.32	<b>9.20</b>	<b>10.95</b>	"Cash Flow" per sh	<b>14.50</b>	
2.06	2.55	2.79	3.01	3.93	3.52	4.23	4.26	4.43	4.78	4.02	4.47	4.35	4.22	4.63	5.23	<b>3.80</b>	<b>5.15</b>	Earnings per sh <sup>A</sup>	<b>7.50</b>
1.00	1.00	1.00	1.00	1.00	1.16	1.20	1.24	1.37	1.56	1.56	1.92	2.40	2.52	2.64	2.80	<b>3.02</b>	<b>3.28</b>	Div'd Decl'd per sh <sup>B</sup>	<b>4.00</b>
3.76	5.22	5.92	4.63	4.62	5.46	7.28	7.70	8.47	7.76	8.58	11.85	12.20	10.52	12.68	12.71	<b>14.15</b>	<b>10.30</b>	Cap'l Spending per sh	<b>11.25</b>
12.35	13.17	13.79	17.17	20.78	23.95	28.66	31.87	32.75	36.54	37.54	41.00	42.42	45.03	45.98	47.56	<b>47.95</b>	<b>49.70</b>	Book Value per sh <sup>C</sup>	<b>54.75</b>
201.90	204.48	204.91	226.60	234.18	257.19	262.01	261.21	243.32	246.51	240.45	239.93	242.37	244.46	246.33	248.30	<b>251.00</b>	<b>253.00</b>	Common Shs Outst'g <sup>D</sup>	<b>242.00</b>
9.4	9.7	8.2	9.0	8.6	11.8	11.5	14.0	11.8	10.1	12.6	11.8	14.9	19.7	21.9	19.7	<b>14.15</b>	<b>10.30</b>	Avg Ann'l P/E Ratio	<b>18.0</b>
.61	.50	.45	.51	.45	.63	.62	.74	.71	.67	.80	.74	.95	1.11	1.15	1.00	<b>1.15</b>	<b>1.00</b>	Relative P/E Ratio	<b>1.15</b>
5.2%	4.1%	4.4%	3.7%	2.9%	2.8%	2.5%	2.1%	2.6%	3.2%	3.1%	3.6%	3.7%	3.0%	2.6%	2.7%	<b>3.0%</b>	<b>2.7%</b>	Avg Ann'l Div'd Yield	<b>3.0%</b>

**CAPITAL STRUCTURE as of 6/30/16**  
 Total Debt \$15862 mill. Due in 5 Yrs \$6769 mill.  
 LT Debt \$13178 mill. LT Interest \$566 mill.  
 Incl. \$245 mill. capitalized leases.  
 (LT interest earned: 3.4x)

**Leases, Uncapitalized** Annual rentals \$71 mill.  
**Pension Assets-12/15** \$2484 mill.  
**Oblig.** \$3649 mill.

**Pfd Stock** \$20 mill. **Pfd Div'd** \$1.2 mill.  
 811,073 shs. 6% cum., \$25 par.  
**Common Stock** 249,801,432 shs.  
 as of 7/29/16  
**MARKET CAP: \$26 billion (Large Cap)**

11761	11438	10758	8106.0	9003.0	10036	9647.0	10557	11035	10231	<b>9800</b>	<b>10100</b>	Revenues (\$mill)	<b>11650</b>
1118.0	1135.0	1123.0	1193.0	1008.0	1088.0	1079.0	1060.0	1162.0	1314.0	<b>1010</b>	<b>1410</b>	Net Profit (\$mill)	<b>1960</b>
31.3%	33.6%	29.2%	30.5%	26.5%	25.3%	18.2%	26.5%	19.7%	19.2%	<b>29.5%</b>	<b>29.0%</b>	Income Tax Rate	<b>28.0%</b>
7.2%	11.5%	13.2%	10.6%	11.3%	15.2%	17.2%	11.2%	14.4%	15.3%	<b>21.0%</b>	<b>11.0%</b>	AFUDC % to Net Profit	<b>8.0%</b>
37.0%	34.8%	44.5%	44.8%	49.4%	50.4%	52.8%	50.5%	51.7%	52.6%	<b>53.5%</b>	<b>54.0%</b>	Long-Term Debt Ratio	<b>58.0%</b>
61.4%	63.7%	54.2%	54.1%	49.6%	49.2%	46.7%	49.4%	48.2%	47.3%	<b>46.5%</b>	<b>46.0%</b>	Common Equity Ratio	<b>42.0%</b>
12229	13071	14692	16646	18186	20015	22002	22281	23513	24963	<b>25975</b>	<b>27375</b>	Total Capital (\$mill)	<b>31600</b>
13175	14884	16865	18281	19876	23572	25191	25460	25902	28039	<b>30250</b>	<b>31375</b>	Net Plant (\$mill)	<b>34600</b>
10.3%	9.6%	8.5%	8.3%	6.8%	6.7%	6.1%	6.0%	6.1%	6.4%	<b>5.0%</b>	<b>6.5%</b>	Return on Total Cap'l	<b>7.5%</b>
14.5%	13.3%	13.8%	13.0%	10.9%	10.9%	10.4%	9.6%	10.2%	11.1%	<b>8.0%</b>	<b>10.5%</b>	Return on Shr. Equity	<b>14.0%</b>
14.8%	13.5%	14.0%	13.1%	11.1%	11.0%	10.4%	9.6%	10.3%	11.1%	<b>8.0%</b>	<b>10.5%</b>	Return on Com Equity <sup>E</sup>	<b>14.0%</b>
11.0%	9.7%	9.7%	9.3%	7.0%	6.5%	5.1%	4.1%	5.0%	5.8%	<b>1.5%</b>	<b>4.0%</b>	Retained to Com Eq	<b>6.5%</b>
26%	29%	31%	29%	37%	41%	52%	58%	52%	48%	<b>79%</b>	<b>63%</b>	All Div'ds to Net Prof	<b>53%</b>

**ELECTRIC OPERATING STATISTICS**

	2013	2014	2015
% Change Retail Sales (KWH)	+1.3	+1.8	+1.0
Avg. Indust. Use (MWH)	4279	4543	4683
Avg. Indust. Revs. per KWH (c)	13.10	16.55	17.58
Capacity at Peak (Mw)	NMF	NMF	NMF
Peak Load, Summer (Mw)	NMF	NMF	NMF
Annual Load Factor (%)	NMF	NMF	NMF
% Change Customers (yr-end)	+5	+6	+7

Fixed Charge Cov. (%) 307 288 295

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '13-'15 of change (per sh)

Revenues	5%	2.5%	2.0%
"Cash Flow"	4.5%	4.5%	7.0%
Earnings	3.0%	1.5%	8.0%
Dividends	9.5%	12.0%	7.0%
Book Value	8.5%	5.5%	3.0%

**BUSINESS:** Sempra Energy is a holding co. for San Diego Gas & Electric Company, which sells electricity & gas mainly in San Diego County, & Southern California Gas Company, which distributes gas to most of Southern California. Customers: 1.4 mill. electric, 6.6 mill. gas. Elec. rev. breakdown: residential, 41%; commercial, 42%; industrial, 10%; other, 7%. Purchases most of its power; the rest is

gas. Has subs. in gas pipeline & storage, power generation, & liquefied natural gas. Sold commodities business in '10. Power costs: 37% of revs. '15 reported deprec. rates: 2.7%-5.7%. Has 17,400 employees. Chairman and CEO: Debra L. Reed. President: Mark A. Snell. Inc.: CA. Address: 488 8th Avenue, San Diego, CA 92101. Tel.: 619-696-2000. Internet: www.sempra.com.

**SEMPRA ENERGY IS INVESTING IN MEXICO.**  
 The company's Mexico subsidiary, IEnova, paid \$1.1 billion for its partner's 50% stake in a midstream gas joint venture. IEnova raised the funds through a \$1.6 billion sale of common stock. Separately, IEnova is spending \$1 billion on renewable-energy projects and has bids pending for an electric transmission project (estimated investment of \$1.2 billion) and a gas pipeline (estimated investment of \$600 million). IEnova is also selling a gas-fired power plant, but will have to take a nonrecurring charge estimated at \$0.16-\$0.29 a share against third-quarter results because the facility's market value is below its book value.

**THE COMPANY HAS HAD SOME TRANSACTIONS IN THE UNITED STATES, TOO.**  
 In the second quarter, Sempra completed the sale of its 25% stake in the Rockies Express pipeline, raising \$443 million in cash. Related to the sale, the company booked a \$123 million aftertax loss (included in our earnings presentation) in the quarter stemming from the permanent release of pipeline capacity. It had already taken a \$27 million aftertax writedown in the first

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	Year
2013	2650	2651	2551	2705	10557
2014	2795	2678	2815	2747	11035
2015	2682	2367	2481	2701	10231
2016	2622	2156	2422	2600	9800
2017	2700	2200	2550	2700	10100

Cal-endar	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	Year
2013	.54	1.46	1.09	1.13	4.22
2014	.99	1.08	1.39	1.18	4.63
2015	1.74	1.03	.99	1.47	5.23
2016	1.47	.06	.97	1.30	3.80
2017	1.75	1.05	1.00	1.35	5.15

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	Year
2012	.48	.60	.60	.60	2.28
2013	.60	.63	.63	.63	2.49
2014	.63	.66	.66	.66	2.61
2015	.66	.70	.70	.70	2.76
2016	.70	.755	.755	.755	

period. In the third quarter, Sempra sold its gas utilities in the Southeast for \$323 million. It expects to record an aftertax gain of about \$70 million. Also in the third period, the company paid \$22 million for a windfarm that is under development in Michigan.

**Despite a probable bottom-line downturn in 2016, Sempra's long-term prospects for earnings growth are good.**  
 The aforementioned \$123 million loss is a negative factor in this year's results. However, Sempra's nonutility investments will boost the company's earning power, and the income of its utilities rises as their rate base expands. Most notably, however, a project to turn a liquefied natural gas import terminal to an export facility is on budget and on schedule for completion in 2018. Net profit from this is projected at \$300 million-\$350 million in 2019, the first full year of operation.

**Sempra stock offers strong dividend growth potential over the 3- to 5-year period.**  
 This should produce a long-term total return that compares favorably with other utilities.

*Paul E. Debbas, CFA*      *October 28, 2016*

**Company's Financial Strength** A  
**Stock's Price Stability** 100  
**Price Growth Persistence** 85  
**Earnings Predictability** 90

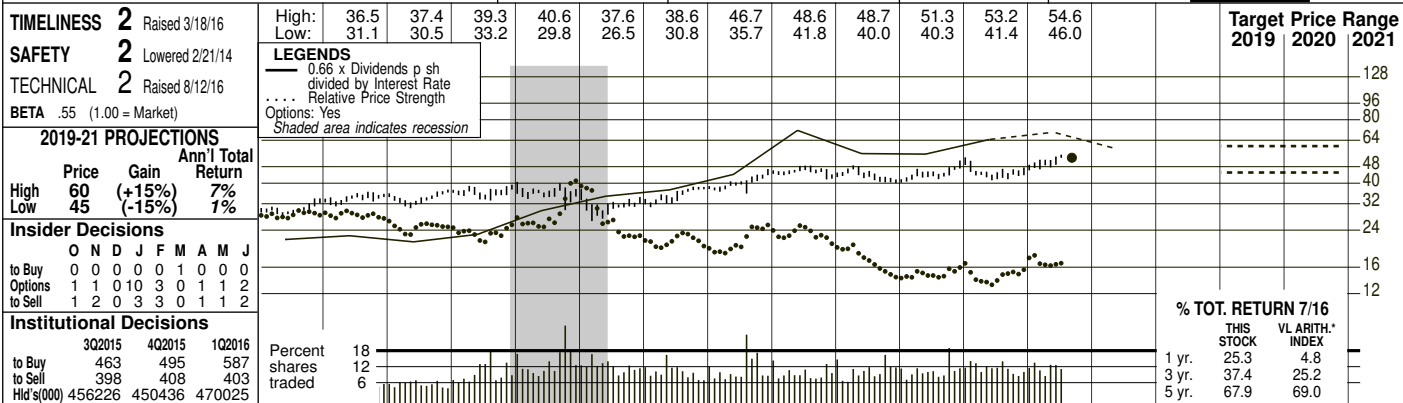
(A) Dil. EPS. Excl. nonrec. gains (losses): '05, '06, (6c); '09, (26c); '10, (\$1.05); '11, \$1.15; '12, (.98c); '13, (30c); '15, 14c; '16, (20c); gain (losses) from disc. ops.: '04, (10c); '05, (4c); '06, \$1.21; '07, (10c). '14 EPS don't sum due to rounding. Next yrs. due early Nov. (B) Div'ds paid mid-Jan., Apr., July & Oct. Div'd reinv. plan avail. (C) Incl. intang. In '15: \$18.11/sh. (D) In mill. (E) Rate base: Net orig. cost. Rate allowed on com. eq.: SDG&E in '13: 10.3%; SoCalGas in '13: 10.1%; earn. on avg. com. eq., '15: 11.2%. Regul. Climate: Average.

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**SOUTHERN COMPANY** NYSE:SO RECENT PRICE **52.84** P/E RATIO **18.7** (Trailing: 18.7; Median: 16.0) RELATIVE P/E RATIO **0.99** DIV'D YLD **4.3%** VALUE LINE



2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
14.78	14.54	14.73	15.31	16.05	18.28	19.24	20.12	22.04	19.21	20.70	20.41	19.06	19.26	20.34	19.18	19.05	21.95	Revenues per sh	24.25
3.89	3.55	3.46	3.53	3.65	4.03	4.01	4.22	4.43	4.43	4.51	4.91	5.18	5.27	5.28	5.47	5.35	5.95	"Cash Flow" per sh	6.50
2.01	1.61	1.85	1.97	2.06	2.13	2.10	2.28	2.25	2.32	2.36	2.55	2.67	2.70	2.77	2.84	2.75	2.95	Earnings per sh <sup>A</sup>	3.50
1.34	1.34	1.36	1.39	1.42	1.48	1.54	1.60	1.66	1.73	1.80	1.87	1.94	2.01	2.08	2.15	2.22	2.30	Div'd Decl'd per sh <sup>B</sup> = †	2.54
3.27	3.75	3.79	2.72	2.85	3.20	4.01	4.65	5.10	5.70	4.85	5.23	5.54	6.16	6.58	6.22	10.40	6.60	Cap'l Spending per sh	7.25
15.69	11.43	12.16	13.13	13.86	14.42	15.24	16.23	17.08	18.15	19.21	20.32	21.09	21.43	21.98	22.59	28.95	29.60	Book Value per sh <sup>C</sup>	32.00
681.16	698.34	716.40	734.83	741.50	741.45	746.27	763.10	777.19	819.65	843.34	865.13	867.77	887.09	907.78	911.72	982.00	984.00	Common Shs Outst'g <sup>D</sup>	990.00
13.2	14.6	14.6	14.8	14.7	15.9	16.2	16.0	16.1	13.5	14.9	15.8	17.0	16.2	16.0	15.8	15.0	15.0	Avg Ann'l P/E Ratio	15.0
.86	.75	.80	.84	.78	.85	.87	.85	.97	.90	.95	.99	1.08	.91	.84	.80	1.00	1.00	Relative P/E Ratio	.95
5.0%	5.7%	5.0%	4.7%	4.7%	4.4%	4.5%	4.4%	4.6%	5.5%	5.1%	4.6%	4.3%	4.6%	4.7%	4.8%	4.8%	4.8%	Avg Ann'l Div'd Yield	4.9%

CAPITAL STRUCTURE as of 3/31/16		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Revenues (\$mill)	24000
Total Debt \$29678 mill. Due in 5 Yrs \$10569 mill.		14356	15353	17127	15743	17456	17657	16537	17087	18467	17489	18700	21600	21600	21600	21600	21600	21600	21600	21600	24000
LT Debt \$26091 mill. LT Interest \$939 mill.		1608.0	1782.0	1807.0	1910.0	2040.0	2268.0	2415.0	2439.0	2567.0	2647.0	2665	2975	2975	2975	2975	2975	2975	2975	2975	3440
(LT interest earned: 5.2%)		32.7%	31.9%	33.6%	31.9%	33.5%	35.0%	35.6%	34.8%	33.8%	33.4%	33.5%	33.5%	33.5%	33.5%	33.5%	33.5%	33.5%	33.5%	33.5%	33.5%
Leases, Uncapitalized Annual rentals \$121 mill.		4.8%	9.5%	12.3%	14.9%	13.7%	10.2%	9.4%	11.6%	13.9%	13.2%	14.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%
Pension Assets-12/15 \$9234 mill. Ob \$10542 mill.		50.8%	51.2%	53.9%	53.2%	51.2%	50.0%	49.9%	51.5%	49.5%	52.8%	56.0%	56.0%	56.0%	56.0%	56.0%	56.0%	56.0%	56.0%	56.0%	60.0%
Pfd Stock \$1508 mill. Pfd Div'd \$44 mill.		46.2%	44.9%	42.6%	43.6%	45.7%	47.1%	47.3%	45.8%	47.3%	44.0%	42.0%	41.5%	41.5%	41.5%	41.5%	41.5%	41.5%	41.5%	41.5%	38.0%
Incl. 1 mill. shs. 4.2%-5.44% cum. pfd. (\$100 par);		24618	27608	31174	34091	35438	37307	38653	41483	42142	46788	67950	70000	70000	70000	70000	70000	70000	70000	76900	
1.52 mill. shs. 5.2%-5.83% cum. pfd. (\$1 par);		31092	33327	35878	39230	42002	45010	48390	51208	54868	61114	78675	82250	82250	82250	82250	82250	82250	82250	94000	
2 mill. shs. 6.0% noncum. pfd. (\$25 par); 4 mill. shs.		8.2%	7.9%	7.1%	6.9%	7.0%	7.2%	7.3%	6.8%	7.1%	6.6%	4.5%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.5%	
5.63%-6.5% noncum. pfd. (\$100 par); 8 mill. shs.		13.3%	13.2%	12.6%	12.0%	11.8%	12.2%	12.5%	12.1%	12.1%	12.0%	9.0%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	10.5%	
5.63%-6.5% noncum. pfd. (\$1 par).		13.8%	14.0%	13.1%	12.4%	12.2%	12.5%	12.8%	12.5%	12.5%	12.6%	9.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.5%	
Common Stock 918,258,425 shs.		3.8%	4.3%	3.5%	3.2%	3.0%	3.4%	3.6%	3.2%	3.2%	3.1%	2.0%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	3.0%	
MARKET CAP: \$49 billion (Large Cap)		73%	70%	74%	75%	77%	73%	73%	75%	75%	76%	81%	78%	78%	78%	78%	78%	78%	78%	74%	

ELECTRIC OPERATING STATISTICS		2013	2014	2015
% Change Retail Sales (KWH)		+3	+3.3	-7
Avg. Indust. Use (MWH)		3277	3384	3371
Avg. Indust. Revs. per KWH (c)		6.08	6.37	5.88
Capacity at Yearend (Mw)		45502	46549	44223
Peak Load, Summer (Mw) <sup>F</sup>		33557	37234	36794
Annual Load Factor (%)		63.2	59.6	59.9
% Change Customers (yr-end)		+7	+8	+9

**BUSINESS:** The Southern Company, through its subs., supplies electricity to 4.6 million customers in GA, AL, FL, and MS. Also has a competitive generation business. Acqd AGL Resources (renamed Southern Company Gas, 4.5 mill. customers in GA, FL, NJ, IL, VA, & TN) 7/16. Electric rev. breakdown: residential, 38%; commercial, 32%; industrial, 19%; other, 11%. Retail revs. by state: GA, 50%; AL, 34%; FL, 9%; MS, 7%. Generating sources: gas & oil, 44%; coal, 32%; nuclear, 15%; hydro, 3%; purchased, 6%. Fuel costs: 31% of revs. '15 reported depr. rate (utility): 3.0%. Has 32,000 employees. Chairman, President and CEO: Thomas A. Fanning, Inc.: DE. Address: 30 Ivan Allen Jr. Blvd., N.W., Atlanta, GA 30308. Tel.: 404-506-0747. Internet: www.southerncompany.com.

Cal-endar	QUARTERLY REVENUES (mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	3897	4246	5017	3927	17087
2014	4644	4467	5339	4017	18467
2015	4183	4337	5401	3568	17489
2016	3965	4453	5782	4500	18700
2017	5800	5200	6000	4600	21600

Cal-endar	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	.47	.66	1.08	.49	2.70
2014	.66	.68	1.08	.36	2.77
2015	.56	.71	1.16	.42	2.84
2016	.57	.71	1.05	.42	2.75
2017	.65	.70	1.10	.50	2.95

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B</sup> = †				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2012	.4725	.49	.49	.49	1.94
2013	.49	.5075	.5075	.5075	2.01
2014	.5075	.525	.525	.525	2.08
2015	.525	.5425	.5425	.5425	2.15
2016	.5425	.56			

**Southern Company completed its acquisition of AGL Resources in mid-2016.** The purchase price was \$7.9 billion in cash. The addition of AGL provides Southern with an entry into the gas business, with 4.5 million customers in seven states. However, because this year's results won't include the seasonally strong first quarter, the deal will be dilutive to share net in 2016. It will probably be accretive next year. We have adjusted our estimates and projections to include AGL, and have raised our 2017 earnings estimate by a nickel a share.

**Southern has another deal pending that would expand its presence in the gas business.** The company has agreed to pay Kinder Morgan \$1.5 billion in cash for a 50% stake in a gas pipeline. The purchase is expected to close later this year.

**Notwithstanding these transactions, Southern is still primarily an electric utility.** Most of the company's income will come from its regulated electric utility operations and its nonregulated power-generating operation, which is similar to a utility because Southern isn't assuming market risk. This subsidiary is increasing its focus on renewable-energy projects, and is making a push to boost its investment in wind facilities.

**Two major projects are under construction.** Mississippi Power's coal-gasification plant has been plagued by delays and cost overruns. Since 2013, the utility has taken writedowns (shown in the footnotes) to reflect the construction costs that will not be recovered in rates. It appears as if the plant is finally nearing completion. Georgia Power is building two units at the site of its Vogtle nuclear station. This project has also had delays and cost overruns, but these have not been nearly as serious as those of Mississippi Power. The Georgia commission is reviewing the Vogtle project after the utility reached a settlement with its contractors that calls for it to assume \$349 million of cost overruns.

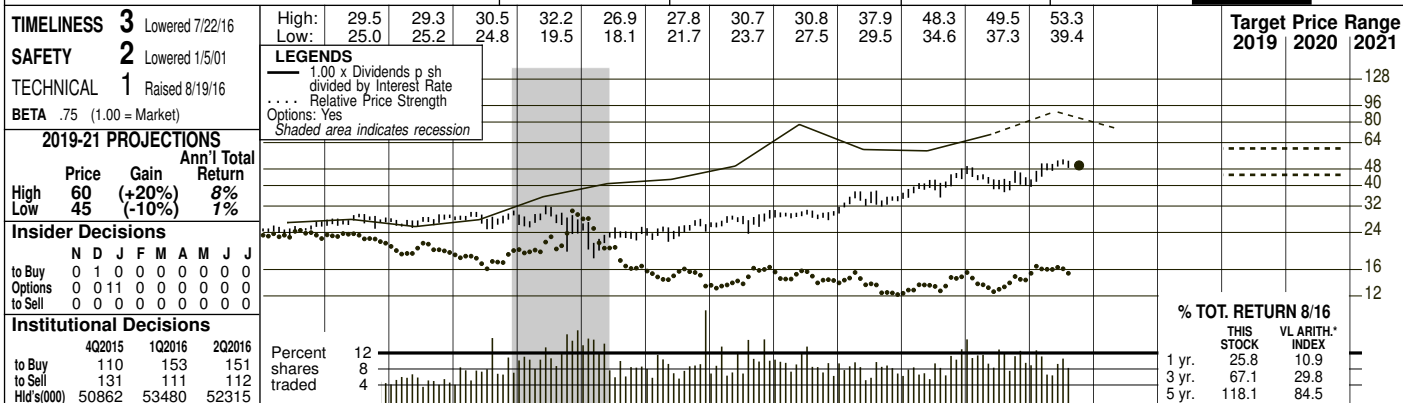
**This timely stock offers an attractive dividend yield.** It is a percentage point above the industry mean. However, like most utility issues, the recent quotation is within our 2019-2021 Target Price Range. Thus, total return potential is lackluster.

*Paul E. Debbas, CFA August 19, 2016*



# VECTREN CORP. NYSE-VVC

RECENT PRICE **49.79** P/E RATIO **20.0** (Trailing: 22.2; Median: 16.0) RELATIVE P/E RATIO **1.06** DIV'D YLD **3.3%** VALUE LINE



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
Revenues per sh	26.83	29.88	30.67	25.76	26.06	28.39	27.16	30.23	31.62	29.40	<b>28.50</b>	<b>30.95</b>		<b>38.95</b>
"Cash Flow" per sh	3.69	4.29	3.97	4.40	4.44	4.71	5.03	5.03	5.33	5.48	<b>5.55</b>	<b>6.15</b>		<b>8.00</b>
Earnings per sh <sup>A</sup>	1.44	1.83	1.63	1.79	1.65	1.73	1.94	1.66	2.02	2.39	<b>2.45</b>	<b>2.65</b>		<b>3.35</b>
Div'd Decl'd per sh <sup>B=†</sup>	1.23	1.27	1.31	1.35	1.37	1.39	1.41	1.43	1.46	1.54	<b>1.62</b>	<b>1.70</b>		<b>1.95</b>
Cap'l Spending per sh	3.70	4.38	4.83	5.33	3.39	3.92	4.45	4.77	5.43	5.76	<b>6.00</b>	<b>6.45</b>		<b>7.55</b>
Book Value per sh <sup>C</sup>	15.43	16.16	16.68	17.23	17.61	17.89	18.57	18.86	19.45	20.34	<b>21.55</b>	<b>22.90</b>		<b>26.15</b>
Common Shs Outst'g <sup>D</sup>	76.10	76.36	81.03	81.10	81.70	81.90	82.20	82.40	82.60	82.80	<b>83.50</b>	<b>84.00</b>		<b>86.00</b>
Avg Ann'l P/E Ratio	18.9	15.3	16.8	12.9	15.0	15.8	15.0	20.7	20.0	17.9	<b>15.0</b>	<b>15.0</b>		<b>15.0</b>
Relative P/E Ratio	1.02	.81	1.01	.86	.95	.99	.95	1.16	1.05	.91	<b>.95</b>	<b>.95</b>		<b>.95</b>
Avg Ann'l Div'd Yield	4.5%	4.5%	4.8%	5.9%	5.5%	5.1%	4.8%	4.2%	3.6%	3.6%	<b>3.6%</b>	<b>3.6%</b>		<b>3.9%</b>
Revenues (\$mill)	2041.6	2281.9	2484.7	2088.9	2129.5	2325.2	2232.8	2491.2	2611.7	2434.7	<b>2380</b>	<b>2600</b>		<b>3350</b>
Net Profit (\$mill)	108.8	143.1	129.0	145.0	133.7	141.6	159.0	136.6	166.9	197.3	<b>205</b>	<b>225</b>		<b>290</b>
Income Tax Rate	21.8%	34.7%	37.1%	26.5%	35.8%	37.9%	34.2%	32.9%	32.7%	33.6%	<b>35.0%</b>	<b>35.0%</b>		<b>35.0%</b>
AFUDC % to Net Profit	3.8%	2.8%	2.9%	4.1%	--	--	--	--	4.1%	4.0%	<b>4.0%</b>	<b>4.0%</b>		<b>4.0%</b>
Long-Term Debt Ratio	50.7%	50.2%	48.0%	52.4%	49.9%	51.6%	50.4%	53.3%	46.7%	50.6%	<b>50.0%</b>	<b>49.5%</b>		<b>49.0%</b>
Common Equity Ratio	49.3%	49.8%	52.0%	47.6%	50.1%	48.4%	49.6%	46.7%	53.3%	49.4%	<b>50.0%</b>	<b>50.5%</b>		<b>51.0%</b>
Total Capital (\$mill)	2382.2	2479.1	2599.5	2937.7	2874.1	3025.1	3079.5	3331.4	3013.9	3406.6	<b>3600</b>	<b>3825</b>		<b>4400</b>
Net Plant (\$mill)	2385.5	2539.7	2720.3	2878.8	2955.4	3032.6	3119.6	3224.3	3439.0	4089.5	<b>3850</b>	<b>4000</b>		<b>4450</b>
Return on Total Cap'l	6.0%	7.2%	6.5%	6.3%	6.1%	6.2%	6.4%	5.4%	6.8%	7.0%	<b>7.0%</b>	<b>7.0%</b>		<b>7.5%</b>
Return on Shr. Equity	9.3%	11.6%	9.5%	10.4%	9.3%	9.7%	10.4%	8.8%	10.4%	11.7%	<b>11.5%</b>	<b>11.5%</b>		<b>13.0%</b>
Return on Com Equity <sup>E</sup>	9.3%	11.6%	9.5%	10.4%	9.3%	9.7%	10.4%	8.8%	10.4%	11.7%	<b>11.5%</b>	<b>11.5%</b>		<b>13.0%</b>
Retained to Com Eq	1.3%	3.8%	2.0%	2.6%	1.6%	1.9%	2.9%	1.2%	2.9%	4.2%	<b>4.0%</b>	<b>4.5%</b>		<b>5.5%</b>
All Div'ds to Net Prof	86%	67%	80%	75%	83%	80%	73%	86%	72%	65%	<b>66%</b>	<b>63%</b>		<b>58%</b>

**ELECTRIC OPERATING STATISTICS**

	2013	2014	2015
% Change Retail Sales (KWH)	+3	+2.0	-2.4
Avg. Indust. Use (MWH)	NA	NA	NA
Avg. Indust. Revs. per KWH (c)	NA	NA	NA
Capacity at Peak (Mw)	1384	1407	1357
Peak Load, Summer (Mw)	1102	1095	1088
Annual Load Factor (%)	NA	NA	NA
% Change Customers (yr-end)	+6	+6	+7

Fixed Charge Cov. (%)

2013	380
2014	363
2015	428

**ANNUAL RATES**

	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-21
Revenues	2.5%	2.0%	4.0%
"Cash Flow"	4.5%	4.5%	7.0%
Earnings	2.5%	3.5%	9.0%
Dividends	2.5%	2.0%	5.0%
Book Value	3.0%	2.5%	5.0%

**BUSINESS:** Vectren is a holding company formed through the merger of Indiana Energy and SIGCORP. Supplies electricity and gas to an area nearly two-thirds of the state of Indiana. Owns gas distribution assets in Ohio. Has a customer base exceeding 1.1 million. 2015 Electricity revenues: residential, 36%; commercial, 27%; industrial, 34%; other, 3%. 2015 Gas revenues: residential, 67%;

commercial, 23%; other, 10%. Nonutility operations include Infrastructure Services and Energy Services. Est'd plant age: electric, 9 years. '15 depreciation rate: 4.2%. Has about 5,600 employees. Chairman, President, & CEO: Carl Chapman. Incorporated: Indiana. Address: One Vectren Square, Evansville, Indiana 47708. Telephone: 812-491-4000. Internet: www.vectren.com.

**Shares of Vectren have pulled back in price since reaching an all-time high early in the summer.** The company reported unimpressive overall results for the second quarter. Revenues and share earnings both declined, on a year-over-year basis. This was due to weakness on the nonutility side. The Infrastructure Services transmission operation has experienced greater competition in its primary area of pipeline maintenance work. This has resulted in lower margins and fewer jobs being won. In the plus column, the Infrastructure Services distribution business and the Energy Services line reported solid performances. Moreover, strong results from the utility segment also provided support, thanks to continued investment in the gas infrastructure program in Indiana and Ohio and efforts to control costs.

**We envision more-favorable earnings comparisons for the back half of the year, and further improvement from 2017 onward.** Vectren's utility businesses remain well positioned in their Indiana and Ohio territories, and we expect good performance will continue here going forward, especially at the gas utility operation. The Energy Services line and the Infrastructure Services distribution business should also perform well. That said, the Infrastructure Services transmission line operations will probably continue to experience challenges related to increased competition in the near term. Even so, the long-term outlook is somewhat brighter here, as upcoming pipeline projects should serve to reduce competitive pressures. The company has affirmed its consolidated earnings guidance of \$2.45 to \$2.55 per share for full-year 2016. Our estimate lies at the low end of this range.

**We expect solid growth in revenues and earnings here over the pull to 2019-2021.** Moreover, Vectren earns good marks for Safety, Financial Strength, and Earnings Predictability. Volatility is below average, too (Beta: .75). However, the stock's price-to-earnings multiple is somewhat greater than the historical average, and long-term total return potential is not compelling at this juncture. Patient investors may want to wait for a more attractive entry point.

*Michael Napoli, CFA* September 16, 2016

Cal-endar	QUARTERLY REVENUES (\$ mill.)	Full Year
	Mar.31 Jun. 30 Sep. 30 Dec. 31	
2013	700.6 531.0 579.6 680.0	2491.2
2014	796.8 542.5 595.6 676.8	2611.7
2015	706.2 551.0 573.5 604.0	2434.7
2016	584.8 533.7 <b>610</b> <b>651.5</b>	<b>2380</b>
2017	<b>650</b> <b>600</b> <b>650</b> <b>700</b>	<b>2600</b>

Cal-endar	EARNINGS PER SHARE <sup>A</sup>	Full Year
	Mar.31 Jun. 30 Sep. 30 Dec. 31	
2013	.61 d.07 .52 .60	1.66
2014	.62 .14 .57 .69	2.02
2015	.69 .43 .48 .79	2.39
2016	.58 .39 <b>.63</b> <b>.85</b>	<b>2.45</b>
2017	<b>.62</b> <b>.45</b> <b>.68</b> <b>.90</b>	<b>2.65</b>

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B=†</sup>	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2012	.350 .350 .350 .355	1.41
2013	.355 .355 .355 .360	1.43
2014	.360 .360 .360 .380	1.46
2015	.380 .380 .380 .400	1.54
2016	.400 .400 .400 .400	

**Company's Financial Strength** A  
**Stock's Price Stability** 95  
**Price Growth Persistence** 70  
**Earnings Predictability** 80

(A) Diluted EPS. Excl. nonrecurr. gain (loss): '09, 15c. Next egs report due early November. (B) Div'ds historically paid in early March, June, September, and December. †Div'd reinvest. plan avail. † Shareholder invest. plan avail. (C) Incl. intang. ln '15, \$6.66/sh. (D) In millions. (E) Electric rate base determination: fair value. Rates allowed on elect. common equity range from 10.15% to 10.4%. Regulatory Climate: Above Average.







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EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates	AEE	Industry	Sector	S&P 500
Current Qtr.	-3.50%	14.49		
Next Qtr.	50.00%	22.03		
Current Year	-0.80%	13.84		
Next Year	8.30%	0.02		
Next 5 Years (per annum)	5.20%	0.06		
Past 5 Years (per annum)	-0.25%	N/A		

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EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	LNT	Industry	Sector	S&P 500
Current Qtr.	16.20%	14.49		
Next Qtr.	N/A	22.03		
Current Year	9.20%	13.84		
Next Year	5.80%	0.02		
Next 5 Years (per annum)	6.60%	0.06		
Past 5 Years (per annum)	3.07%	N/A		

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	Current Qtr.	Next Qtr.	Current Year	Next Year
<b>90 Days Ago</b>	0.47	0.66	2.13	2.32
<b>EPS Revisions</b>				
<b>Up Last 7 Days</b>	N/A	N/A	1	N/A
<b>Up Last 30 Days</b>	N/A	N/A	1	N/A
<b>Down Last 30 Days</b>	N/A	N/A	N/A	2
<b>Down Last 90 Days</b>	N/A	N/A	N/A	N/A

	AGR	Industry	Sector	S&P 500
<b>Growth Estimates</b>				
<b>Current Qtr.</b>	N/A	14.49		
<b>Next Qtr.</b>	71.40%	22.03		
<b>Current Year</b>	101.90%	13.84		
<b>Next Year</b>	9.40%	0.02		
<b>Next 5 Years (per annum)</b>	9.00%	0.06		
<b>Past 5 Years (per annum)</b>	N/A	N/A		

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90 Days Ago	0.23	0.59	2.03	2.15
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EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

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Growth Estimates	AVA	Industry	Sector	S&P 500
Current Qtr.	-9.50%	14.49		
Next Qtr.	-1.60%	22.03		
Current Year	5.60%	13.84		
Next Year	3.80%	0.02		
Next 5 Years (per annum)	5.00%	0.06		
Past 5 Years (per annum)	12.12%	N/A		

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	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	1	N/A
Up Last 30 Days	N/A	N/A	1	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

**Growth Estimates**

	BKH	Industry	Sector	S&P 500
Current Qtr.	-34.40%	14.49		
Next Qtr.	54.90%	22.03		
Current Year	1.00%	13.84		
Next Year	17.90%	0.02		
Next 5 Years (per annum)	6.70%	0.06		
Past 5 Years (per annum)	11.95%	N/A		

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90 Days Ago 0.35 0.27 1.15 1.21

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EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	1
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

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Growth Estimates	CNP	Industry	Sector	S&P 500
Current Qtr.	5.90%	14.49		
Next Qtr.	N/A	22.03		
Current Year	4.50%	13.84		
Next Year	6.10%	0.02		
Next 5 Years (per annum)	5.26%	0.06		
Past 5 Years (per annum)	-4.09%	N/A		

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90 Days Ago 0.58 0.55 2.02 2.18

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EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	1	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

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Growth Estimates	CMS	Industry	Sector	S&P 500
Current Qtr.	3.80%	14.49		
Next Qtr.	13.20%	22.03		
Current Year	6.90%	13.84		
Next Year	7.90%	0.02		
Next 5 Years (per annum)	7.27%	0.06		
Past 5 Years (per annum)	8.22%	N/A		



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90 Days Ago	0.7	0.29	1.47	1.56
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EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates	EDE	Industry	Sector	S&P 500
Current Qtr.	N/A	-0.21		
Next Qtr.	N/A	-0.05		
Current Year	14.00%	-0.71		
Next Year	6.10%	0.46		
Next 5 Years (per annum)	5.00%	0.12		
Past 5 Years (per annum)	0.54%	N/A		

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90 Days Ago		1.36	1.17	4.95	5.26

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EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	3	2	8	2
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

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Growth Estimates	DTE	Industry	Sector	S&P 500
Current Qtr.	1.40%	14.49		
Next Qtr.	21.80%	22.03		
Current Year	6.80%	13.84		
Next Year	2.50%	0.02		
Next 5 Years (per annum)	5.51%	0.06		
Past 5 Years (per annum)	6.98%	N/A		

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90 Days Ago	2.12	0.58	5.1	5.22
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EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	1	1
Up Last 30 Days	1	1	3	1
Down Last 30 Days	1	1	N/A	1
Down Last 90 Days	N/A	N/A	N/A	N/A

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Growth Estimates	ETR	Industry	Sector	S&P 500
Current Qtr.	3.20%	14.49		
Next Qtr.	-65.80%	22.03		
Current Year	12.00%	13.84		
Next Year	-23.20%	0.02		
Next 5 Years (per annum)	-2.60%	0.06		
Past 5 Years (per annum)	1.92%	N/A		

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90 Days Ago 0.8 0.76 2.98 3.17

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EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	1	1	N/A
Up Last 30 Days	N/A	1	1	N/A
Down Last 30 Days	1	N/A	N/A	2
Down Last 90 Days	N/A	N/A	N/A	N/A

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Growth Estimates	ES	Industry	Sector	S&P 500
Current Qtr.	6.70%	14.49		
Next Qtr.	25.00%	22.03		
Current Year	5.70%	13.84		
Next Year	6.40%	0.02		
Next 5 Years (per annum)	5.39%	0.06		
Past 5 Years (per annum)	6.35%	N/A		

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90 Days Ago	0.79	0.59	2.5	2.64
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EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	2	3	2
Down Last 30 Days	1	1	1	1
Down Last 90 Days	N/A	N/A	N/A	N/A

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Growth Estimates	EXC	Industry	Sector	S&P 500
Current Qtr.	-12.00%	14.49		
Next Qtr.	31.60%	22.03		
Current Year	2.40%	13.84		
Next Year	2.70%	0.02		
Next 5 Years (per annum)	2.66%	0.06		
Past 5 Years (per annum)	-8.62%	N/A		



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90 Days Ago 0.63 1.01 3.29 3.43

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	NWE	Industry	Sector	S&P 500
Current Qtr.	23.50%	14.49		
Next Qtr.	-1.00%	22.03		
Current Year	3.80%	13.84		
Next Year	4.60%	0.02		
Next 5 Years (per annum)	5.00%	0.06		
Past 5 Years (per annum)	7.74%	N/A		

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90 Days Ago	1.11	0.81	3.72	3.68
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EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	2	2	1
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

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Growth Estimates	PCG	Industry	Sector	S&P 500
Current Qtr.	33.30%	14.49		
Next Qtr.	114.00%	22.03		
Current Year	19.20%	13.84		
Next Year	-1.60%	0.02		
Next 5 Years (per annum)	5.66%	0.06		
Past 5 Years (per annum)	-4.89%	N/A		

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	Current Qtr.	Next Qtr.	Current Year	Next Year
<b>90 Days Ago</b>	0.6	0.55	2.34	2.44
<b>EPS Revisions</b>				
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	1	N/A	1
Down Last 30 Days	1	1	1	1
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates	PPL	Industry	Sector	S&P 500
Current Qtr.	9.80%	14.49		
Next Qtr.	18.60%	22.03		
Current Year	6.30%	13.84		
Next Year	-7.20%	0.02		
Next 5 Years (per annum)	2.47%	0.06		
Past 5 Years (per annum)	-2.44%	N/A		

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	Current Qtr.	Next Qtr.	Current Year	Next Year
<b>90 Days Ago</b>	0.88	0.52	2.88	2.88
<b>EPS Revisions</b>				
<b>Up Last 7 Days</b>	N/A	1	1	2
<b>Up Last 30 Days</b>	1	4	2	3
<b>Down Last 30 Days</b>	N/A	N/A	N/A	N/A
<b>Down Last 90 Days</b>	N/A	N/A	N/A	N/A

Growth Estimates	PEG	Industry	Sector	S&P 500
Current Qtr.	10.00%	14.49		
Next Qtr.	N/A	22.03		
Current Year	-1.40%	13.84		
Next Year	0.30%	0.02		
Next 5 Years (per annum)	1.47%	0.06		
Past 5 Years (per annum)	2.53%	N/A		

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90 Days Ago	1.05	0.94	3.95	4.15
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<b>EPS Revisions</b>	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	SCG	Industry	Sector	S&P 500
Current Qtr.	2.90%	14.49		
Next Qtr.	31.90%	22.03		
Current Year	4.20%	13.84		
Next Year	5.50%	0.02		
Next 5 Years (per annum)	6.00%	0.06		
Past 5 Years (per annum)	6.93%	N/A		

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EPS Analyst Estimates	SRE	Current Qtr.	Industry	Current Year	S&P 500
7 Days Ago		0.93	1.57	4.77	5.12
30 Days Ago		0.92	1.57	4.79	5.13
60 Days Ago		0.93	1.49	4.81	5.19
90 Days Ago		0.97	1.43	4.83	5.32

EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	1	2
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates	SRE	Industry	Sector	S&P 500
Current Qtr.	-7.00%	14.49		
Next Qtr.	6.80%	22.03		
Current Year	-8.40%	13.84		
Next Year	7.30%	0.02		
Next 5 Years (per annum)	7.65%	0.06		
Past 5 Years (per annum)	3.30%	N/A		

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90 Days Ago	1.12	0.47	2.85	2.97
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<b>EPS Revisions</b>	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	1	2
Up Last 30 Days	N/A	1	1	2
Down Last 30 Days	N/A	N/A	1	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

<b>Growth Estimates</b>	SO	Industry	Sector	S&P 500
Current Qtr.	-4.30%	14.49		
Next Qtr.	2.30%	22.03		
Current Year	-1.00%	13.84		
Next Year	3.80%	0.02		
Next 5 Years (per annum)	3.16%	0.06		
Past 5 Years (per annum)	1.71%	N/A		

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90 Days Ago 0.81 0.82 2.47 2.67

EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates	VVC	Industry	Sector	S&P 500
Current Qtr.	33.30%	0.39		
Next Qtr.	6.30%	0.02		
Current Year	3.30%	-0.03		
Next Year	7.70%	0.07		
Next 5 Years (per annum)	5.00%	0.04		
Past 5 Years (per annum)	8.87%	N/A		

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90 Days Ago		0.59	0.7	2.93	3.1

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EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

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Growth Estimates	WEC	Industry	Sector	S&P 500
Current Qtr.	-4.90%	14.49		
Next Qtr.	12.70%	22.03		
Current Year	7.30%	13.84		
Next Year	5.80%	0.02		
Next 5 Years (per annum)	6.72%	0.06		
Past 5 Years (per annum)	6.87%	N/A		

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90 Days Ago 0.86 0.46 2.2 2.32

EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	1	N/A
Up Last 30 Days	N/A	1	1	1
Down Last 30 Days	N/A	N/A	N/A	1
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates	XEL	Industry	Sector	S&P 500
Current Qtr.	3.60%	14.49		
Next Qtr.	14.60%	22.03		
Current Year	5.30%	13.84		
Next Year	5.00%	0.02		
Next 5 Years (per annum)	5.34%	0.06		
Past 5 Years (per annum)	3.19%	N/A		

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**Alliant Engy Cp: (LNT)**

(Delayed Data From NYSE)

**\$37.32 USD**

+0.03 (0.08%)

Updated Oct 20, 2016 04:02 PM ET

Volume: 1,039,175

Open: \$37.41

Prior Close: \$37.29

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Style Scores [?]:

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3-Hold

Value: **C** | Growth: **C** | Momentum: **B** | VGM: **C**

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**Stock Activity**

Open 37.41

Day Low 37.22

Day High 37.63

52 Wk Low 28.07

52 Wk High 40.99

Avg. Volume 1,424,845

Market Cap 8.48 B

Dividend 1.17 ( 3.14%)

Beta 0.41

Industry

**Key Earnings Data**

Forward PE 19.76

PEG Ratio 3.26

Current Qtr Est 0.87

Current Yr Est 1.89

Most Accurate Est 0.87

Qtr Earnings ESP[?] 0.00%

Exp Earnings Date \*AMC11/3/16

Prior Year EPS 1.75

Exp EPS Growth (3-5yr) 6.07%

\*BMO = Before Market Open \*AMC = After Market Close

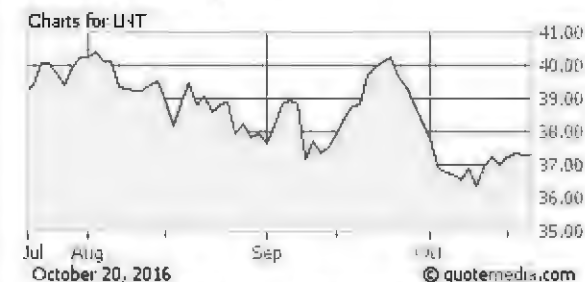
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**Alliant Energy Corporation Announces Third...**  
10/19/16-4:26PM EST PR Newswire

**My Third Quarter Portfolio Review - Focus On...**  
10/17/16-10:16AM EST Seeking Alpha

**Alliant Energy reaches agreement with customer...**  
10/12/16-4:26PM EST PR Newswire

**Large factories frustrated with Wisconsin's high...**  
10/11/16-11:36AM EST Associated Press, The

**Market Pullback Spurs Buying Frenzy - Recent...**  
10/11/16-10:30AM EST Seeking Alpha



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FINANCIALS

**Ameren Corp: (AEE)**

(Delayed Data From NYSE)

**\$48.62 USD**

-0.08 (-0.16%)

Updated Oct 20, 2016 04:00 PM ET

Volume: 757,993  
 Open: \$48.70  
 Prior Close: \$48.70

Zacks Rank <sup>[?]</sup>:

Style Scores <sup>[?]</sup>:

+ Add to portfolio

Trades from

2-Buy  2

Value: **B** | Growth: **D** | Momentum: **A** | VGM:

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

Enter Symbol

Stock Activity

Open	48.70
Day Low	48.50
Day High	48.99
52 Wk Low	41.33
52 Wk High	54.08
Avg. Volume	1,740,374
Market Cap	11.82 B
Dividend	1.70 ( 3.48%)
Beta	0.37
Industry	UTIL-ELEC PWR

Key Earnings Data

Forward PE	19.35
PEG Ratio	3.19
Current Qtr Est	1.38
Current Yr Est	2.53
Most Accurate Est	1.42
Qtr Earnings ESP <sup>[?]</sup>	2.90%
Exp Earnings Date	*BMO 11/4/16
Prior Year EPS	2.56
Exp EPS Growth (3-5yr)	6.07%

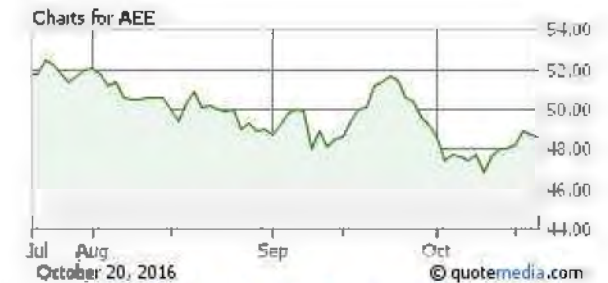
\*BMO = Before Market Open \*AMC = After Market Close

**Research Reports For AEE**

[All Zacks' Analyst Reports >](#)

**Zacks News For AEE**

**Chart for AEE**



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**Other News For AEE**

**Bullish Two Hundred Day Moving Average Cross ...**  
 10/18/16-3:15AM EST Energy Stock Channel

**Ameren Corporation Increases Quarterly Cash...**  
 10/14/16-1:58PM EST PR Newswire

**IPO Statistics: London AIM Market 2016 (ALLIPO)**  
 10/14/16-7:22AM EST Alliance News

**Ameren declares \$0.44 dividend**  
 10/14/16-1:16AM EST Seeking Alpha

**IPO Statistics: London AIM Market 2016 (ALLIPO)**  
 10/07/16-7:40AM EST Alliance News



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FINANCIALS

**Avangrid Inc: (AGR)**

(Delayed Data From NYSE)

**\$39.55 USD**

**-0.54 (-1.35%)**

Updated Oct 20, 2016 04:02 PM ET

Volume: 598,708  
 Open: \$40.09  
 Prior Close: \$40.09

Zacks Rank [?]:

Style Scores [?]:

+ Add to portfolio Trades from \$3

4-Sell

Value: C | Growth: B | Momentum: B | VGM: 3

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

**Stock Activity**

Open	40.09
Day Low	39.52
Day High	40.37
52 Wk Low	32.45
52 Wk High	46.74
Avg. Volume	384,027
Market Cap	12.39 B
Dividend	1.73 ( 4.31%)
Beta	0.00
Industry	UTIL-ELEC PWR

**Key Earnings Data**

Forward PE	18.73
PEG Ratio	2.08
Current Qtr Est	0.60
Current Yr Est	2.14
Most Accurate Est	0.65
Qtr Earnings ESP[?]	8.33%
Exp Earnings Date	*BMO 10/25/16
Prior Year EPS	NA
Exp EPS Growth (3-5yr)	9.00%

\*BMO = Before Market Open \*AMC = After Market Close

**Research Report For AGR**

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**Zacks News For AGR**

**Chart for AGR**



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**Other News For AGR**

- AVANGRID Revises its Third Quarter 2016...  
10/18/16-4:25PM EST Business Wire
- UK Dividends Calendar - Next 7 Days  
10/18/16-11:04AM EST Alliance News
- UK Dividends Calendar - Next 7 Days  
10/17/16-11:01AM EST Alliance News
- UK Dividends Calendar - Next 7 Days  
10/14/16-10:59AM EST Alliance News
- UK Dividends Calendar - Next 7 Days  
10/13/16-11:06AM EST Alliance News





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## Avista Corp: (AVA)

(Delayed Data From NYSE)

\$40.47 USD

+0.15 (0.37%)

Updated Oct 20, 2016 04:02 PM ET

Volume: 174,084

Open: \$40.41

Prior Close: \$40.32

Zacks Rank [?]:

Style Scores [?]:

+ Add to portfolio

Trades from \$3

2-Buy     

Value: C | Growth: F | Momentum: B | VGM: 0

[View All Zacks Rank #1 Strong Buys](#)

## Quote Overview

Enter Symbol

## Stock Activity

Open 40.41

Day Low 40.15

Day High 40.61

52 Wk Low 32.61

52 Wk High 45.22

Avg. Volume 259,171

Market Cap 2.57 B

Dividend 1.37 ( 3.40%)

Beta 0.40

Industry

## Key Earnings Data

Forward PE 19.26

PEG Ratio 3.63

Current Qtr Est 0.21

Current Yr Est 2.09

Most Accurate Est 0.22

Qtr Earnings ESP<sup>[?]</sup> 4.76%

Exp Earnings Date \*BMO 11/1/16

Prior Year EPS 1.89

Exp EPS Growth (3-5yr) 5.30%

UTIL-ELEC PWR

\*BMO = Before Market Open \*AMC = After Market Close

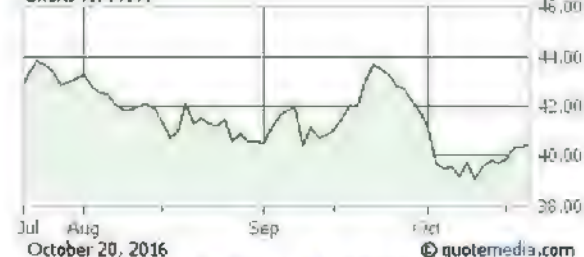
## Research Report For AVA

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## Zacks News For AVA

## Chart for AVA

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## Other News For AVA

Avista Reaches Analyst Target Price

10/14/16-8:45AM EST ETF Channel

Valuation Dashboard: Utilities - Update

10/07/16-2:30AM EST Seeking Alpha

AVA Crosses Below Key Moving Average Level

10/04/16-3:15AM EST Energy Stock Channel

Avista Corp. Third Quarter 2016 Earnings...

10/03/16-4:01PM EST Marketwire

Avista Corp. Joins Energy Impact Partners Utility  
WP-29

09/28/16-8:56AM EST Marketwire



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**Black Hills Cor: (BKH)**

(Delayed Data From NYSE)

**\$59.70 USD**

+0.16 (0.27%)

Updated Oct 20, 2016 04:02 PM ET

Volume: 230,840  
 Open: \$59.56  
 Prior Close: \$59.54

Zacks Rank [?]:

Style Scores [?]:

+ Add to portfolio Trades from \$3

2-Buy

Value: C | Growth: F | Momentum: F | VGM: F

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

Enter Symbol

Stock Activity

Open	59.56
Day Low	59.27
Day High	59.89
52 Wk Low	40.00
52 Wk High	64.58
Avg. Volume	400,757
Market Cap	3.12 B
Dividend	1.68 ( 2.85%)
Beta	0.76
Industry	UTIL-ELEC PWR

Key Earnings Data

Forward PE	19.49
PEG Ratio	3.34
Current Qtr Est	0.42
Current Yr Est	3.02
Most Accurate Est	0.36
Qtr Earnings ESP[?]	-14.29%
Exp Earnings Date	*AMC11/2/16
Prior Year EPS	2.98
Exp EPS Growth (3-5yr)	5.84%

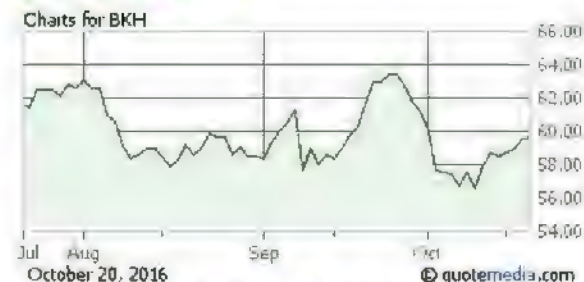
\*BMO = Before Market Open \*AMC = After Market Close

**Research Report For BKH**

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**Zacks News For BKH**

**Chart for BKH**



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**Other News For BKH**

- Which Commodity Groups Pulled KSU's Carloads...**  
10/18/16-7:16AM EST Market Realist
- Black Hills Larger Than S&P 500 Component Endo...**  
10/17/16-3:45AM EST The Online Investor
- Black Hills Stock Sees Short Interest Drop 18%**  
10/13/16-2:47AM EST Market News Video
- Which Commodity Groups Dragged on KSU's...**  
10/10/16-9:16AM EST Market Realist
- Black Hills Corp. Schedules 2016 Third Quarter**  
10/05/16-4:56PM EST Thomson Reuters





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**Centerpoint Egy: (CNP)**

(Delayed Data From NYSE)

**\$22.66 USD**

+0.03 (0.13%)

Updated Oct 20, 2016 04:00 PM ET

Volume: 2,790,600

Open: \$22.61

Prior Close: \$22.63

Zacks Rank <sup>[?]</sup>:

Style Scores <sup>[?]</sup>:

Add to portfolio

Trades from

3-Hold

Value: **C** | Growth: **C** | Momentum: **B** | VGM:

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

**Stock Activity**

Open 22.61

Day Low 22.54

Day High 22.79

52 Wk Low 16.05

52 Wk High 24.71

Avg. Volume 3,016,747

Market Cap 9.75 B

Dividend 1.03 ( 4.55%)

Beta 0.48

Industry

**Key Earnings Data**

Forward PE 19.62

PEG Ratio 3.57

Current Qtr Est 0.36

Current Yr Est 1.15

Most Accurate Est 0.37

Qtr Earnings ESP<sup>[?]</sup> 2.78%

Exp Earnings Date <sup>\*BMO</sup>11/4/16

Prior Year EPS 1.08

Exp EPS Growth (3-5yr) 5.50%

\*BMO = Before Market Open \*AMC = After Market Close

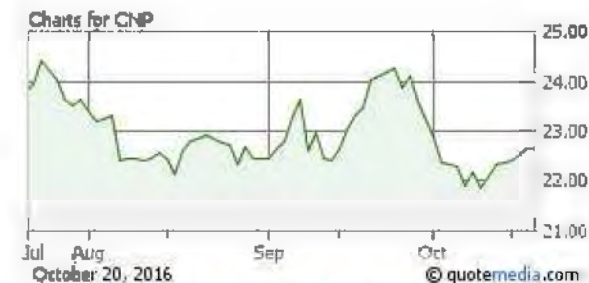
UTIL-ELEC PWR

**Research Reports For CNP**

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**Zacks News For CNP**

**Chart for CNP**



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**Other News For CNP**

Analyzing Utility Stocks' Implied Volatility  
10/20/16-9:00AM EST Market Realist

My Third Quarter Portfolio Review - Focus On...  
10/17/16-10:16AM EST Seeking Alpha

Analyzing Utility Stocks' Implied Volatility  
10/17/16-7:15AM EST Market Realist

Dividend Update - September 2016  
10/11/16-11:31AM EST Seeking Alpha

Enable Midstream Announces Third Quarter 2016  
10/07/16-4:56PM EST Business Wire



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**Cms Energy: (CMS)**

(Delayed Data From NYSE)

**\$41.35 USD**

-0.01 (-0.02%)

Updated Oct 20, 2016 04:01 PM ET

Volume: 1,808,404

Open: \$41.47

Prior Close: \$41.36

Zacks Rank [?]:

Style Scores [?]:

+ Add to portfolio

Trades from

1-Strong Buy

Value: C | Growth: C | Momentum: C | VGM:

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

Enter Symbol

**Stock Activity**

Open 41.47

Day Low 41.25

Day High 41.87

52 Wk Low 33.84

52 Wk High 46.25

Avg. Volume 1,897,182

Market Cap 11.57 B

Dividend 1.24 ( 2.99%)

Beta 0.12

Industry

**Key Earnings Data**

Forward PE 20.54

PEG Ratio 3.11

Current Qtr Est 0.57

Current Yr Est 2.02

Most Accurate Est 0.60

Qtr Earnings ESP[?] 5.26%

Exp Earnings Date \*BMO 10/27/16

Prior Year EPS 1.89

Exp EPS Growth (3-5yr) 6.60%

\*BMO = Before Market Open \*AMC = After Market Close

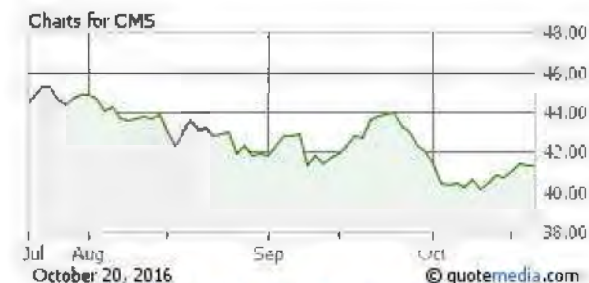
UTIL-ELEC PWR

**Research Reports For CMS**

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**Zacks News For CMS**

**Chart for CMS**



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**Other News For CMS**

**CMS Energy Board Of Directors Declares...**  
10/20/16-10:56AM EST PR Newswire

**CMS Energy declares \$0.31 dividend**  
10/20/16-1:15AM EST Seeking Alpha

**CMS Energy To Announce Third-Quarter Results...**  
10/19/16-4:26PM EST PR Newswire

**Pure Michigan Utility Summit Highlights...**  
10/18/16-8:56AM EST PR Newswire

**Consumers Energy, Partners Provide \$12 Million in...**  
10/17/16-5:56AM EST PR Newswire





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FINANCIALS

**Consol Edison: (ED)**

(Delayed Data From NYSE)

**\$73.62 USD**

+0.18 (0.25%)

Updated Oct 20, 2016 04:01 PM ET

Volume: 989,415

Open: \$73.53

Prior Close: \$73.44

Zacks Rank [?]:

Style Scores [?]:

+ Add to portfolio

Trades from \$3

3-Hold

Value: **B** | Growth: **C** | Momentum: **C** | VGM:

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

Enter Symbol

**Stock Activity**

Open 73.53

Day Low 73.34

Day High 74.25

52 Wk Low 60.30

52 Wk High 81.88

Avg. Volume 1,822,997

Market Cap 22.36 B

Dividend 2.68 ( 3.66%)

Beta 0.01

Industry

**Key Earnings Data**

Forward PE 18.43

PEG Ratio 6.52

Current Qtr Est 1.54

Current Yr Est 3.97

Most Accurate Est 1.48

Qtr Earnings ESP[?] -3.90%

Exp Earnings Date \*AMC11/3/16

Prior Year EPS 4.06

Exp EPS Growth (3-5yr) 2.83%

\*BMO = Before Market Open \*AMC = After Market Close

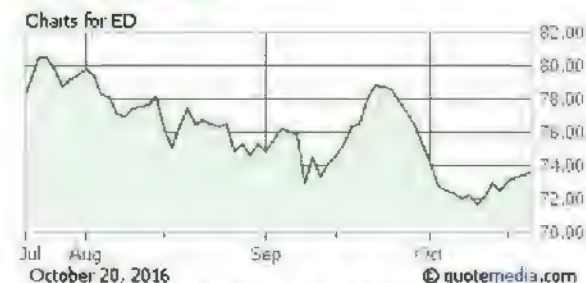
UTIL-ELEC PWR

**Research Reports For ED**

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**Zacks News For ED**

**Chart for ED**



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**Other News For ED**

**Con Edison Declares Common Stock Dividend**  
10/20/16-3:32PM EST Marketwire

**Which Utility Stocks Lead in Short Interest?**  
10/20/16-9:00AM EST Market Realist

**The Coming Bear And How To Prepare (Richard...)**  
10/20/16-8:15AM EST Seeking Alpha

**Consolidated Edison declares \$0.67 dividend**  
10/20/16-3:46AM EST Seeking Alpha

**Why Bother Monitoring Your Portfolio If You're Not**  
10/18/16-7:01AM EST Seeking Alpha



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**Dte Energy Co: (DTE)**

(Delayed Data From NYSE)

**\$93.11 USD**

+0.35 (0.38%)

Updated Oct 20, 2016 04:01 PM ET

Volume: 1,181,832

Open: \$93.00

Prior Close: \$92.76

Zacks Rank <sup>[?]</sup>:

Style Scores <sup>[?]</sup>:

+ Add to portfolio

Trades from

2-Buy  2

Value: **B** | Growth: **C** | Momentum: **A** | VGM:

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

Enter Symbol

**Stock Activity**

Open 93.00

Day Low 92.71

Day High 93.85

52 Wk Low 77.35

52 Wk High 100.45

Avg. Volume 1,747,804

Market Cap 16.64 B

Dividend 3.08 ( 3.32%)

Beta 0.25

Industry

**Key Earnings Data**

Forward PE 17.83

PEG Ratio 3.07

Current Qtr Est 1.51

Current Yr Est 5.21

Most Accurate Est 1.58

Qtr Earnings ESP<sup>[?]</sup> 4.64%

Exp Earnings Date \*BMO 10/26/16

Prior Year EPS 4.82

Exp EPS Growth (3-5yr) 5.80%

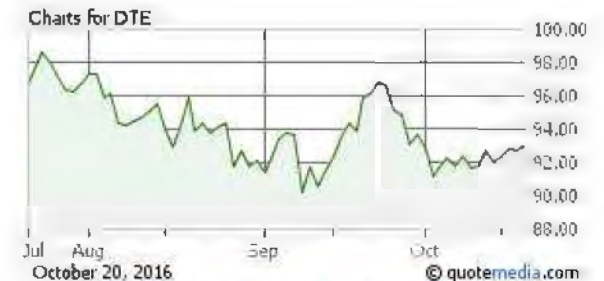
\*BMO = Before Market Open \*AMC = After Market Close

**Research Reports For DTE**

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**Zacks News For DTE**

**Chart for DTE**



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**Other News For DTE**

DTE Energy closes purchase of natural gas...  
10/20/16-4:11PM EST PR Newswire

US stocks snap 2-day winning streak, close...  
10/20/16-10:28AM EST Associated Press, The

T-Mobile to Host Q3 2016 Earnings Call on October...  
10/20/16-7:26AM EST Business Wire

EnergySavvy Introduces the Fifth Generation of its...  
10/19/16-8:56AM EST PR Web

6 Stocks To Buy As Inflation Advances In September  
10/19/16-2:30AM EST TalkMarkets





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FINANCIALS

**Entergy Corp: (ETR)**

(Delayed Data From NYSE)

**\$74.51 USD**

**-0.38 (-0.51%)**

Updated Oct 20, 2016 04:02 PM ET

Volume: 782,328  
 Open: \$74.76  
 Prior Close: \$74.89

Zacks Rank <sup>[?]</sup>:

Style Scores <sup>[?]</sup>:

+ Add to portfolio

Trades from

2-Buy  2

Value: **B** | Growth: **C** | Momentum: **B** | VGM:

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

Enter Symbol

Stock Activity

Open	74.76
Day Low	74.36
Day High	75.07
52 Wk Low	64.11
52 Wk High	82.09
Avg. Volume	1,533,218
Market Cap	13.40 B
Dividend	3.40 ( 4.54%)
Beta	0.38
Industry	UTIL-ELEC PWR

Key Earnings Data

Forward PE	10.80
PEG Ratio	-2.44
Current Qtr Est	1.86
Current Yr Est	6.94
Most Accurate Est	2.01
Qtr Earnings ESP <sup>[?]</sup>	8.07%
Exp Earnings Date	*BMO 10/25/16
Prior Year EPS	6.00
Exp EPS Growth (3-5yr)	<b>-4.43%</b>

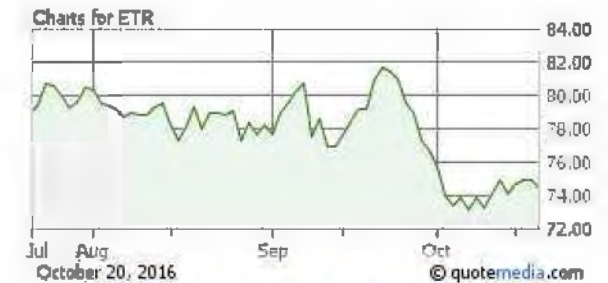
\*BMO = Before Market Open \*AMC = After Market Close

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**Other News For ETR**

- Spark Energy Is Top Utility Dog For Gains Per...  
10/19/16-3:15AM EST Seeking Alpha
- 6 Stocks To Buy As Inflation Advances In September  
10/19/16-2:30AM EST TalkMarkets
- Entergy Announces Third Quarter Earnings...  
10/18/16-4:54PM EST PR Newswire
- PG&E added to Goldman's Conviction Buy List,...  
10/17/16-2:01AM EST Seeking Alpha
- NY state probes oil spill at Indian Point nuclear  
10/03/16-11:16AM EST Seeking Alpha







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FINANCIALS

**Exelon Corp: (EXC)**

(Delayed Data From NYSE)

**\$32.84 USD**

-0.04 (-0.12%)

Updated Oct 20, 2016 04:00 PM ET

Volume: 3,584,918

Open: \$32.94

Prior Close: \$32.88

Zacks Rank <sup>[?]</sup>:

Style Scores <sup>[?]</sup>:

+ Add to portfolio

Trades from

3-Hold

Value: **A** | Growth: **B** | Momentum: **B** | VGM:

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

Enter Symbol

Stock Activity

Open 32.94

Day Low 32.66

Day High 33.02

52 Wk Low 25.09

52 Wk High 37.70

Avg. Volume 4,879,172

Market Cap 30.34 B

Dividend 1.27 ( 3.84%)

Beta 0.25

Industry UTIL-ELEC PWR

Key Earnings Data

Forward PE 12.95

PEG Ratio 3.54

Current Qtr Est 0.74

Current Yr Est 2.56

Most Accurate Est 0.73

Qtr Earnings ESP<sup>[?]</sup> -1.35%

Exp Earnings Date 11/4/16

Prior Year EPS 2.49

Exp EPS Growth (3-5yr) 3.66%

**Research Reports For EXC**

[All Zacks' Analyst Reports >](#)

**Zacks News For EXC**

Talen Energy Stockholders Approve Takeover by Riverstone

**Chart for EXC**



[Interactive Chart](#) | [Fundamental Charts](#)

**Other News For EXC**

First Year of BGE's SEED Program Provides...

10/20/16-4:30PM EST Business Wire

EXC, FE, and PEG: Analyzing Utilities' Current...

10/20/16-10:15AM EST Market Realist

Exelon's Regulated Utilities to Drive Its Earnings...

10/20/16-9:15AM EST Market Realist

With So Much at Play, Focus on This When...

10/20/16-9:15AM EST Market Realist

What Could Drive Exelon's Revenues in 3Q16?

10/20/16-7:15AM EST Market Realist





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**Northwestern Cp: (NWE)**

(Delayed Data From NYSE)

**\$55.83 USD**

**-0.20 (-0.36%)**

Updated Oct 20, 2016 04:02 PM ET

Volume: 387,304

Open: \$55.67

Prior Close: \$56.03

Zacks Rank <sup>[?]</sup>:

Style Scores <sup>[?]</sup>:

+ Add to portfolio

Trades from

4-Sell

Value: **C** | Growth: **D** | Momentum: **A** | VGM:

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

Enter Symbol

**Stock Activity**

Open 55.67

Day Low 55.67

Day High 56.75

52 Wk Low 51.27

52 Wk High 63.75

Avg. Volume 656,803

Market Cap 2.71 B

Dividend 2.00 ( 3.57%)

Beta 0.39

Industry

**Key Earnings Data**

Forward PE 17.26

PEG Ratio 3.45

Current Qtr Est 0.58

Current Yr Est 3.25

Most Accurate Est 0.54

Qtr Earnings ESP<sup>[?]</sup> -6.90%

Exp Earnings Date <sup>\*BMO</sup>10/20/16

Prior Year EPS 3.15

Exp EPS Growth (3-5yr) 5.00%

UTIL-ELEC PWR

\*BMO = Before Market Open \*AMC = After Market Close

**Research Report For NWE**

[All Zacks' Analyst Reports >](#)

**Zacks News For NWE**

**Chart for NWE**

Charts for NWE



[Interactive Chart](#) | [Fundamental Charts](#)

**Other News For NWE**

NorthWestern Corporation 2016 Q3 - Results - ...  
10/20/16-12:45PM EST Seeking Alpha

NorthWestern beats 3Q profit forecasts  
10/20/16-8:06AM EST Associated Press, The

NorthWestern Reports Third Quarter 2016 Financial...  
10/20/16-5:56AM EST PR Newswire

NorthWestern beats by \$0.05, beats on revenue  
10/20/16-5:15AM EST Seeking Alpha

Notable earnings before Thursday's open  
10/19/16-4:31AM EST Seeking Alpha

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FINANCIALS

**Pg&E Corp: (PCG)**

(Delayed Data From NYSE)

**\$60.84 USD**

**-0.05 (-0.08%)**

Updated Oct 20, 2016 04:00 PM ET

Volume: 1,532,847

Open: \$60.98

Prior Close: \$60.89

Zacks Rank <sup>[?]</sup>:

Style Scores <sup>[?]</sup>:

Add to portfolio

3-Hold

Value: **C** | Growth: **D** | Momentum: **B** | VGM:

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

**Stock Activity**

Open 60.98

Day Low 60.69

Day High 61.26

52 Wk Low 50.65

52 Wk High 65.43

Avg. Volume 2,883,166

Market Cap 30.69 B

Dividend 1.96 ( 3.22%)

Beta 0.22

Industry

**Key Earnings Data**

Forward PE 16.28

PEG Ratio 3.78

Current Qtr Est 1.24

Current Yr Est 3.74

Most Accurate Est 1.15

Qtr Earnings ESP<sup>[?]</sup> -7.26%

Exp Earnings Date <sup>\*BMO</sup>11/4/16

Prior Year EPS 3.12

Exp EPS Growth (3-5yr) 4.30%

<sup>\*BMO</sup> = Before Market Open <sup>\*AMC</sup> = After Market Close

**Research Reports For PCG**

[All Zacks' Analyst Reports >](#)

**Zacks News For PCG**

**Chart for PCG**



[Interactive Chart](#) | [Fundamental Charts](#)

**Other News For PCG**

**PG&E Recognized by the United States Hispanic...**  
10/20/16-2:56PM EST Business Wire

**PG&E (PCG) Stock Closed Higher, Goldman Adds...**  
10/17/16-3:15AM EST TheStreet.com

**PG&E added to Goldman's Conviction Buy List,...**  
10/17/16-2:01AM EST Seeking Alpha

**PPL Corp.: High Dividend Yield But Understand...**  
10/14/16-11:31AM EST Seeking Alpha

**US stocks inch higher as banks rise and...**  
10/14/16-1:10AM EST Associated Press, The

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**Ppl Corp: (PPL)**

(Delayed Data From NYSE)

**\$33.58 USD**

+0.22 (0.66%)

Updated Oct 20, 2016 04:02 PM ET

Volume: 5,049,774

Open: \$33.42

Prior Close: \$33.36

Zacks Rank <sup>[?]</sup>:

Style Scores <sup>[?]</sup>:

+ Add to portfolio

Track from

3-Hold

Value: **C** | Growth: **D** | Momentum: **B** | VGM:

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

Enter Symbol

Stock Activity

Open 33.42

Day Low 33.29

Day High 33.68

52 Wk Low 32.08

52 Wk High 39.92

Avg. Volume 5,859,879

Market Cap 22.62 B

Dividend 1.52 ( 4.55%)

Beta 0.38

Industry

Key Earnings Data

Forward PE 14.28

PEG Ratio 4.05

Current Qtr Est 0.56

Current Yr Est 2.34

Most Accurate Est 0.54

Qtr Earnings ESP<sup>[?]</sup> -3.57%

Exp Earnings Date <sup>\*BMO</sup>10/12/16

Prior Year EPS 2.21

Exp EPS Growth (3-5yr) 3.53%

UTIL-ELEC PWR

\*BMO = Before Market Open \*AMC = After Market Close

**Research Reports For PPL**

[All Zacks' Analyst Reports >](#)

**Zacks News For PPL**

**Chart for PPL**



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**Other News For PPL**

**PPL Corporation to Conduct Webcast on 2016...**  
10/19/16-2:01PM EST PR Newswire

**Analysts Expect 11% Upside for American Electric...**  
10/19/16-10:15AM EST Market Realist

**Understanding Xcel Energy's Price Targets ahead...**  
10/19/16-9:15AM EST Market Realist

**Spark Energy Is Top Utility Dog For Gains Per...**  
10/19/16-3:15AM EST Seeking Alpha

**PPL Corp.: High Dividend Yield But Understand...**  
10/14/16-11:31AM EST Seeking Alpha





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**Public Sv Entrp: (PEG)**

(Delayed Data From NYSE)

**\$41.28 USD**

**-0.14 (-0.34%)**

Updated Oct 20, 2016 04:02 PM ET

Volume: 3,119,824

Open: \$41.43

Prior Close: \$41.42

Zacks Rank <sup>[?]</sup>:

Style Scores <sup>[?]</sup>:

+ Add to portfolio

Trades from

3-Hold

Value: **B** | Growth: **D** | Momentum: **B** | VGM:

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

Enter Symbol

Stock Activity

Open 41.43

Day Low 41.21

Day High 41.71

52 Wk Low 36.80

52 Wk High 47.41

Avg. Volume 3,006,371

Market Cap 20.96 B

Dividend 1.64 ( 3.92%)

Beta 0.25

Industry

Key Earnings Data

Forward PE 14.54

PEG Ratio 3.28

Current Qtr Est 0.85

Current Yr Est 2.88

Most Accurate Est 0.81

Qtr Earnings ESP<sup>[?]</sup> -4.71%

Exp Earnings Date <sup>\*BMO</sup>10/31/16

Prior Year EPS 2.91

Exp EPS Growth (3-5yr) 4.43%

\*BMO = Before Market Open \*AMC = After Market Close

UTIL-ELEC PWR

**Research Reports For PEG**

[All Zacks' Analyst Reports >](#)

**Zacks News For PEG**

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**Other News For PEG**

**PSEG Names FERC Veteran, Larry Gasteiger...**  
10/20/16-9:56AM EST PR Newswire

**What Could Drive Exelon's Revenues in 3Q16?**  
10/20/16-7:15AM EST Market Realist

**Pattern Energy Completes Acquisition of Arrow...**  
10/18/16-7:14AM EST PR Newswire

**Hasbro and SuperValu rise, JB Hunt and Marathon...**  
10/17/16-4:30PM EST Associated Press, The

**Markets Right Now: Stocks move slightly lower on...**  
10/17/16-9:40AM EST Associated Press, The



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FINANCIALS

**Scana Corp: (SCG)**

(Delayed Data From NYSE)

**\$70.53 USD**

**-0.11 (-0.16%)**

Updated Oct 20, 2016 04:02 PM ET

Volume: 476,978

Open: \$70.64

Prior Close: \$70.64

Zacks Rank <sup>[?]</sup>:

Style Scores <sup>[?]</sup>:

+ Add to portfolio

Trade from

3-Hold

Value: C | Growth: F | Momentum: C | VGM:

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

Enter Symbol

**Stock Activity**

Open 70.64

Day Low 70.42

Day High 71.15

52 Wk Low 55.85

52 Wk High 76.41

Avg. Volume 759,758

Market Cap 10.10 B

Dividend 2.30 ( 3.26%)

Beta 0.24

Industry

**Key Earnings Data**

Forward PE 17.67

PEG Ratio 3.24

Current Qtr Est 1.05

Current Yr Est 3.99

Most Accurate Est 1.05

Qtr Earnings ESP<sup>[?]</sup> 0.00%

Exp Earnings Date <sup>\*BMO</sup>10/27/16

Prior Year EPS 3.73

Exp EPS Growth (3-5yr) 5.45%

UTIL-ELEC PWR

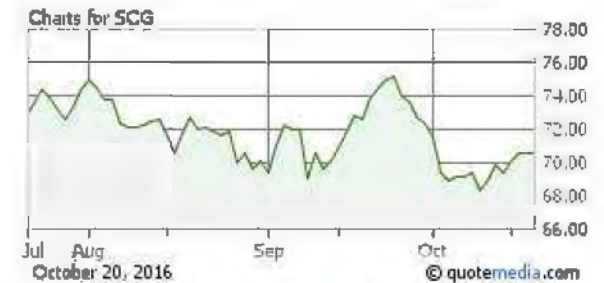
\*BMO = Before Market Open \*AMC = After Market Close

**Research Reports For SCG**

[All Zacks' Analyst Reports >](#)

**Zacks News For SCG**

**Chart for SCG**



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**Other News For SCG**

**Which Utility Stocks Lead in Short Interest?**

10/20/16-9:00AM EST Market Realist

**Public Service Commission of South Carolina...**

10/19/16-4:26PM EST PR Newswire

**My Third Quarter Portfolio Review - Focus On...**

10/17/16-10:16AM EST Seeking Alpha

**Why Investors Are Bearish on Certain Utility Stocks**

10/17/16-7:15AM EST Market Realist

**The New #109 Most Shorted S&P 500 Component...**

10/13/16-6:15AM EST Market News Video

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## Sempra Energy: (SRE)

(Delayed Data From NYSE)

\$105.35 USD

+0.70 (0.67%)

Updated Oct 20, 2016 04:02 PM ET

Volume: 1,016,996

Open: \$104.78

Prior Close: \$104.65

Zacks Rank <sup>[?]</sup>:Style Scores <sup>[?]</sup>:

+ Add to portfolio

Trade from

4-Sell

Value: D | Growth: F | Momentum: D | VGM: F

[View All Zacks Rank #1 Strong Buys](#)

## Quote Overview

Enter Symbol

## Stock Activity

Open 104.78

Day Low 104.66

Day High 105.57

52 Wk Low 86.72

52 Wk High 114.66

Avg. Volume 1,181,991

Market Cap 26.14 B

Dividend 3.02 ( 2.87%)

Beta 0.49

Industry

## Key Earnings Data

Forward PE 21.84

PEG Ratio 3.15

Current Qtr Est 0.94

Current Yr Est 4.81

Most Accurate Est 0.92

Qtr Earnings ESP<sup>[?]</sup> -2.13%

Exp Earnings Date 11/1/18

Prior Year EPS 5.21

Exp EPS Growth (3-5yr) 6.93%

UTIL-GAS DISTR

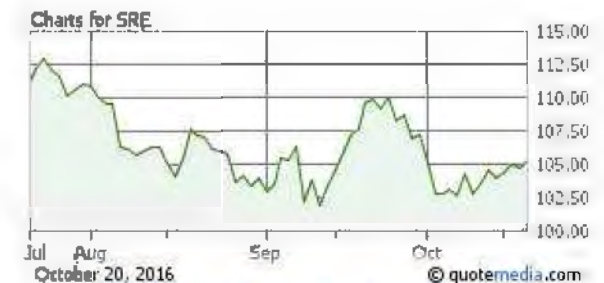
## Research Reports For SRE

[All Zacks' Analyst Reports >](#)

## Zacks News For SRE

Alliant (LNT) to Expand Wind Portfolio with 500MW Projects

## Chart for SRE

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## Other News For SRE

Sempra Energy Takes Over #174 Spot From Sysco

10/20/16-3:45AM EST The Online Investor

Sempra Energy To Report Third-Quarter 2016...

10/19/16-7:26PM EST PR Newswire

Commercial UAV Expo, October 31 - November 2:...

10/19/16-8:56AM EST PR Web

SoCalGas Provides Update on Infrastructure,...

10/19/16-6:56AM EST PR Newswire

After Calif. leak, feds seek to curtail natural gas

10/16/16-10:59AM EST Associated Press, The



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**Southern Co: (SO)**

(Delayed Data From NYSE)

**\$50.72 USD**

-0.01 (-0.02%)

Updated Oct 20, 2016 04:00 PM ET

Volume: 3,177,812

Open: \$50.85

Prior Close: \$50.73

Zacks Rank [?]:

Style Scores [?]:

+ Add to portfolio

Track from

2-Buy  2

Value: C | Growth: F | Momentum: C | VGM:

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

Enter Symbol

**Stock Activity**

Open 50.85

Day Low 50.58

Day High 51.21

52 Wk Low 43.38

52 Wk High 54.64

Avg. Volume 5,393,011

Market Cap 49.65 B

Dividend 2.24 ( 4.38%)

Beta 0.08

Industry

**Key Earnings Data**

Forward PE 17.75

PEG Ratio 4.51

Current Qtr Est 1.17

Current Yr Est 2.88

Most Accurate Est 1.17

Qtr Earnings ESP[?] 0.00%

Exp Earnings Date \*BMO 10/31/16

Prior Year EPS 2.89

Exp EPS Growth (3-5yr) 3.93%

\*BMO = Before Market Open \*AMC = After Market Close

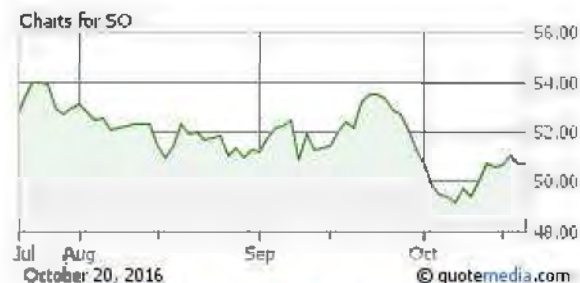
UTIL-ELEC PWR

**Research Reports For SO**

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**Zacks News For SO**

**Chart for SO**



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**Other News For SO**

With So Much at Play, Focus on This When...

10/20/16-9:15AM EST Market Realist

Returns of Utility Stocks with High and Low...

10/20/16-9:00AM EST Market Realist

Kinder Morgan Inc. Earnings Are Right on Target

10/20/16-7:15AM EST TheMotleyFool

Coal 2.0: Cleaner? Conceivably; Crucial? Certainly

10/20/16-2:00AM EST Seeking Alpha

Workers at Vogtle nuclear expansion top 25 million

10/19/16-3:49PM EST PR Newswire

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## Vectren Corp: (VVC)

(Delayed Data From NYSE)

\$48.54 USD

-0.14 (-0.29%)

Updated Oct 20, 2016 04:02 PM ET

Volume: 212,259

Open: \$48.74

Prior Close: \$48.68

Zacks Rank [?]:

Style Scores [?]:

+ Add to portfolio

Trades from \$3

3-Hold     Value: B | Growth: D | Momentum: C | VGM: [View All Zacks Rank #1 Strong Buys](#)

## Quote Overview

Enter Symbol

## Stock Activity

Open 48.74

Day Low 48.31

Day High 48.87

52 Wk Low 39.43

52 Wk High 53.33

Avg. Volume 310,174

Market Cap 4.03 B

Dividend 1.60 ( 3.29%)

Beta 0.60

Industry

## Key Earnings Data

Forward PE 19.66

PEG Ratio 3.69

Current Qtr Est 0.64

Current Yr Est 2.48

Most Accurate Est 0.64

Qtr Earnings ESP[?] 0.00%

Exp Earnings Date \*AMC11/2/16

Prior Year EPS 2.39

Exp EPS Growth (3-5yr) 5.33%

UTIL-GAS DISTR

\*BMO = Before Market Open \*AMC = After Market Close

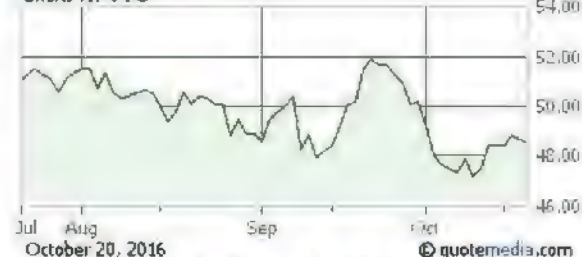
## Research Report For VVC

[All Zacks' Analyst Reports >](#)

## Zacks News For VVC

## Chart for VVC

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## Other News For VVC

Let Thermo Fisher Scientific Come Down Before...  
10/20/16-6:45AM EST Seeking Alpha

'Mad Money' Lightning Round: Stick With AMN...  
10/20/16-5:15AM EST TheStreet.com

Dividend Champions: 23 Increases Expected By...  
10/17/16-1:31AM EST Seeking Alpha

Vectren Schedules 2016 Third Quarter Earnings...  
10/14/16-10:27AM EST Marketwire

AT&T Gains Pace October Champion Dogs WP-29  
10/11/16-10:01AM EST Seeking Alpha

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FINANCIALS

**Wec Energy Grp: (WEC)**

(Delayed Data From NYSE)

**\$58.06 USD**

**-0.12 (-0.21%)**

Updated Oct 20, 2016 04:00 PM ET

Volume: 1,663,209  
 Open: \$58.24  
 Prior Close: \$58.18

Zacks Rank <sup>[?]</sup>:

Style Scores <sup>[?]</sup>:

[+ Add to portfolio](#)

[Trade from](#)

2-Buy

Value: **C** | Growth: **C** | Momentum: **B** | VGM:  

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

**Stock Activity**

Open	58.24
Day Low	57.87
Day High	58.54
52 Wk Low	47.98
52 Wk High	66.10
Avg. Volume	1,851,095
Market Cap	18.36 B
Dividend	1.98 ( 3.40%)
Beta	0.08
Industry	UTIL-ELEC PWR

**Key Earnings Data**

Forward PE	19.89
PEG Ratio	3.19
Current Qtr Est	0.59
Current Yr Est	2.93
Most Accurate Est	0.62
Qtr Earnings ESP <sup>[?]</sup>	5.09%
Exp Earnings Date <sup>*BMO</sup>	10/26/16
Prior Year EPS	2.73
Exp EPS Growth (3-5yr)	6.23%

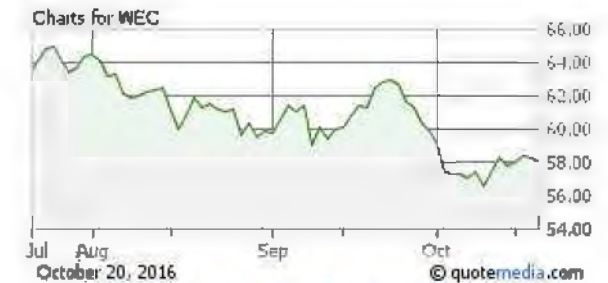
\*BMO = Before Market Open \*AMC = After Market Close

**Research Reports For WEC**

[All Zacks' Analyst Reports >](#)

**Zacks News For WEC**

**Chart for WEC**



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**Other News For WEC**

**WEC Energy Group declares quarterly dividend**  
 10/20/16-3:21PM EST PR Newswire

**Wisconsin Electric declares quarterly dividends**  
 10/20/16-3:20PM EST PR Newswire

**Which Utility Stocks Lead in Short Interest?**  
 10/20/16-9:00AM EST Market Realist

**Wisconsin Energy declares \$0.495 dividend**  
 10/20/16-3:46AM EST Seeking Alpha

**WEC Energy Group announces 2016 third-quarter**  
 10/19/16-11:20AM EST PR Newswire



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FINANCIALS

**Xcel Energy Inc: (XEL)**

(Delayed Data From NYSE)

**\$40.39 USD**

+0.07 (0.17%)

Updated Oct 20, 2016 04:00 PM ET

Volume: 2,771,403

Open: \$40.39

Prior Close: \$40.32

Zacks Rank [?]:

Style Scores [?]:

+ Add to portfolio

Trades from \$3

2-Buy

Value: **B** | Growth: **F** | Momentum: **A** | VGM:

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

Enter Symbol

Stock Activity

Open 40.39

Day Low 40.20

Day High 40.65

52 Wk Low 34.33

52 Wk High 45.42

Avg. Volume 3,525,219

Market Cap 20.48 B

Dividend 1.36 ( 3.35%)

Beta 0.13

Industry

Key Earnings Data

Forward PE 18.47

PEG Ratio 3.40

Current Qtr Est 0.88

Current Yr Est 2.19

Most Accurate Est 0.87

Qtr Earnings ESP[?] -1.14%

Exp Earnings Date \*BMO 10/27/16

Prior Year EPS 2.09

Exp EPS Growth (3-5yr) 5.44%

\*BMO = Before Market Open \*AMC = After Market Close

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**Zacks News For XEL**

**Chart for XEL**



[Interactive Chart](#) | [Fundamental Charts](#)

**Other News For XEL**

**Understanding Xcel Energy's Price Targets ahead...**  
10/19/16-9:15AM EST Market Realist

**A Key Look at Utility Valuations after the Recent...**  
10/19/16-7:15AM EST Market Realist

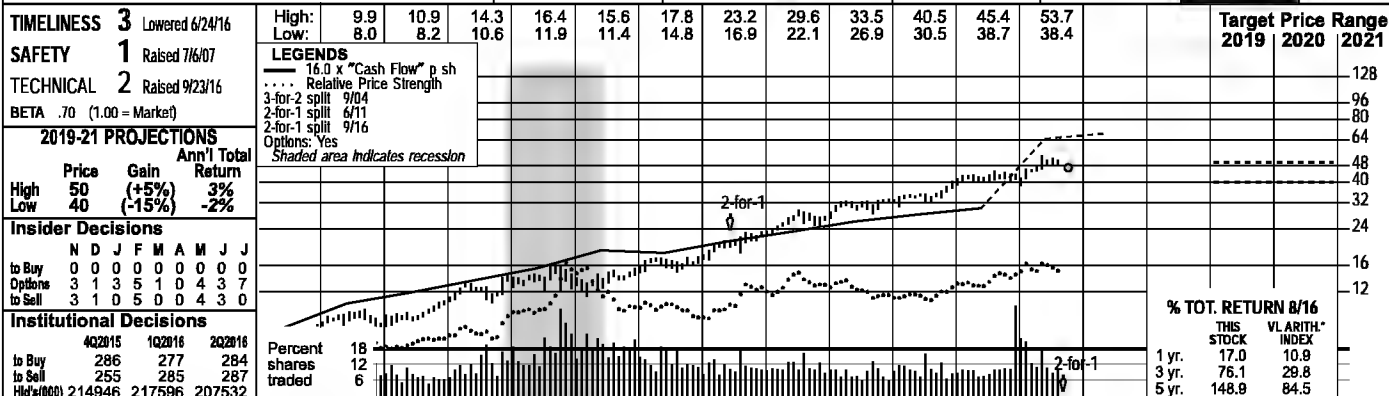
**These Factors Could Drive Xcel Energy's...**  
10/18/16-12:30PM EST Market Realist

**Is Xcel Energy Poised for Long-Term Growth?**  
10/18/16-4:15AM EST Market Realist

**Will Xcel Energy Meet Analysts' Upbeat...** WP-29  
10/18/16-2:15AM EST Market Realist

# CHURCH & DWIGHT NYSE:CHD

RECENT PRICE **46.96** P/E RATIO **25.8** (Trailing: 27.4 Median: 20.0) RELATIVE P/E RATIO **1.40** DIV'D YLD **1.5%** VALUE LINE



**TIMELINESS** 3 Lowered 6/24/16  
**SAFETY** 1 Raised 7/6/07  
**TECHNICAL** 2 Raised 9/23/16  
**BETA** .70 (1.00 = Market)

**2019-21 PROJECTIONS**

	Price	Gain	Ann'l Total Return
High	50	(+5%)	3%
Low	40	(-15%)	-2%

**Insider Decisions**

	N	D	J	F	M	A	M	J	J
to Buy	0	0	0	0	0	0	0	0	0
Options	3	1	3	5	1	0	4	3	7
to Sell	3	1	0	5	0	0	4	3	0

**Institutional Decisions**

	4Q2015	1Q2016	2Q2016
to Buy	286	277	284
to Sell	255	285	287
Net (000)	214946	217596	207532

High	Low	9.9	8.0	10.9	8.2	14.3	10.6	16.4	11.9	15.6	11.4	17.8	14.8	23.2	16.9	29.6	22.1	33.5	26.9	40.5	30.5	45.4	38.7	53.7	38.4	
Target 2019	Price 2020	Range 2021	128	96	80	64	48	40	32	24	16	12														

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
3.46	4.60	4.37	4.32	5.78	6.87	7.44	8.38	8.64	8.93	9.09	9.66	10.53	11.49	12.36	13.06	13.75	14.15	Sales per sh <sup>E</sup>	15.65
.31	.35	.40	.44	.51	.66	.74	.85	.97	1.18	1.16	1.31	1.46	1.63	1.77	1.89	2.05	2.20	"Cash Flow" per sh	2.60
.21	.22	.27	.31	.34	.46	.52	.62	.72	.87	.99	1.11	1.23	1.40	1.51	1.69	1.80	1.95	Earnings per sh <sup>A</sup>	2.25
.05	.05	.05	.05	.06	.06	.07	.07	.09	.12	.16	.34	.48	.56	.62	.67	.68	.68	Div'de Decl'd per sh <sup>B</sup>	.80
.09	.15	.16	.13	.14	.15	.18	.18	.35	.48	.22	.27	.27	.24	.26	.24	.65	.65	Cap'l Spending per sh	.75
1.02	1.20	1.45	1.79	2.22	2.76	3.30	4.08	4.75	5.68	6.57	7.17	7.43	8.28	7.88	7.78	8.20	9.45	Book Value per sh <sup>C</sup>	12.90
230.27	234.86	239.38	244.72	252.75	252.75	261.44	264.98	280.29	282.20	284.82	284.57	277.56	277.93	266.70	259.91	256.00	256.00	Common Shs Outst'g <sup>D</sup>	256.00
14.9	18.8	19.2	17.9	21.4	19.4	18.1	19.9	19.8	15.8	16.6	18.4	21.2	22.3	23.1	26.0	26.0	26.0	Avg Ann'l P/E Ratio	20.0
.97	.96	1.05	1.02	1.13	1.03	.98	1.06	1.19	1.05	1.06	1.15	1.35	1.25	1.22	1.31	1.31	1.31	Relative P/E Ratio	1.25
1.5%	1.2%	1.0%	.9%	.8%	.7%	.7%	.5%	.6%	.9%	.9%	1.7%	1.9%	1.8%	1.8%	1.6%	1.6%	1.6%	Avg Ann'l Div'd Yield	1.8%

**CAPITAL STRUCTURE** as of 6/30/16  
 Total Debt \$1082.3 mill. Due in 5 Yrs \$696.7 mill.  
 LT Debt \$700.7 mill. LT Interest \$20.0 mill.  
 (Total interest coverage: 22.8x) (26% of Cap'l)

Leases, Uncapitalized Annual rentals \$18.5 mill.  
 Pension Assets-12/15 \$64.2 mill. Oblig. \$66.2 mill.  
 Pfd Stock None  
 Common Stock 257,596,146 shares as of 8/2/16

**MARKET CAP: \$12.1 billion (Large Cap)**

**CURRENT POSITION** 2014 2015 6/30/16 (\$MILL.)

	2014	2015	6/30/16
Cash Assets	423.0	330.0	210.8
Receivables	322.9	276.2	278.9
Inventory (LIFO)	245.9	274.0	290.3
Other	40.7	25.8	37.9
Current Assets	1032.5	906.0	817.9
Accts Payable	507.7	293.9	543.7
Debt Due	396.6	357.2	381.6
Other	1.0	221.6	1.6
Current Liab.	905.3	872.7	926.9

1945.7	2220.9	2422.4	2520.9	2589.2	2749.3	2921.9	3194.3	3297.6	3394.8	3525	3625	3948.8	3525	3625	3948.8	3525	3625	3948.8	3525	3625	3948.8
15.6%	16.3%	17.2%	20.0%	18.9%	20.3%	20.6%	21.3%	21.2%	22.2%	23.0%	23.5%	23.0%	23.5%	23.0%	23.5%	23.0%	23.5%	23.0%	23.5%	23.0%	23.5%
51.7	56.7	71.4	85.4	44.1	49.8	56.0	59.7	57.1	58.3	61.0	62.0	61.0	62.0	61.0	62.0	61.0	62.0	61.0	62.0	61.0	62.0
142.6	169.0	200.9	248.7	285.9	324.2	349.8	394.4	413.9	432.3	470	495	413.9	432.3	470	495	413.9	432.3	470	495	413.9	432.3
33.1%	36.2%	36.0%	37.4%	34.1%	34.1%	36.3%	35.5%	34.0%	33.8%	34.2%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%
7.3%	7.6%	8.3%	9.9%	11.0%	11.8%	12.0%	12.3%	12.6%	12.7%	13.3%	13.7%	12.6%	12.7%	13.3%	13.7%	12.6%	12.7%	13.3%	13.7%	12.6%	12.7%
111.7	277.6	278.0	361.3	202.4	371.6	208.2	464.6	127.2	33.3	200	350	127.2	33.3	200	350	127.2	33.3	200	350	127.2	33.3
792.9	707.3	781.4	597.3	249.7	249.7	649.4	649.5	698.6	692.8	650	600	698.6	692.8	650	600	698.6	692.8	650	600	698.6	692.8
863.8	1080.3	1331.5	1601.8	1870.9	2040.8	2060.9	2299.9	2101.9	2023.2	2100	2415	2101.9	2023.2	2100	2415	2101.9	2023.2	2100	2415	2101.9	2023.2
9.4%	11.1%	10.6%	11.9%	14.1%	14.3%	13.2%	13.8%	15.3%	16.5%	17.5%	17.0%	15.3%	16.5%	17.5%	17.0%	15.3%	16.5%	17.5%	17.0%	15.3%	16.5%
16.5%	15.6%	15.1%	15.5%	15.3%	15.9%	17.0%	17.1%	19.7%	21.4%	22.5%	20.5%	19.7%	21.4%	22.5%	20.5%	19.7%	21.4%	22.5%	20.5%	19.7%	21.4%
14.6%	13.8%	13.4%	13.5%	12.9%	11.1%	10.4%	10.4%	11.7%	12.7%	13.5%	13.0%	11.7%	12.7%	13.5%	13.0%	11.7%	12.7%	13.5%	13.0%	11.7%	12.7%
12%	12%	12%	13%	15%	30%	38%	39%	40%	41%	39%	37%	40%	41%	39%	37%	40%	41%	39%	37%	40%	41%

**BUSINESS:** Church & Dwight Co., Inc. is the world's largest producer of sodium bicarbonate. Consumer products include ARM & HAMMER baking soda, laundry detergent, carpet and room deodorizer, cat litter, toothpaste, deodorant, and Brillo. Personal care products include Trojan condoms and First Response pregnancy kits, among others. Specialty products include sodium bicarbonate and potassium carbonate for industrial cleaners, animal feed, pharmaceutical applications, & glass production. '15 depreciation rate: 5.1%. Has 4,400 empl. Officers & directors own 1.8% of comm.; BlackRock, 7.7% (4/16 proxy). Pres. & CEO: James Cragie, Inc.: DE. Address: 500 Charles Ewing Blvd. Ewing, NJ 08628. Tel.: 609-683-5900. Internet: www.churchd Dwight.com.

**ANNUAL RATES** Past 10 Yrs. Past 5 Yrs. Est'd '13-'15 of change (per sh)

	10 Yrs.	5 Yrs.	Est'd '13-'15
Sales	8.0%	6.5%	4.5%
"Cash Flow"	12.5%	10.0%	6.5%
Earnings	15.0%	12.0%	7.5%
Dividends	27.0%	39.0%	4.0%
Book Value	13.5%	7.0%	7.5%

**Church & Dwight (C&D) has executed a two-for-one stock split.** Management cited strong market performance as a primary factor in the decision. Additionally, this move should make the equity more attractive to a broader investor base. The split was completed on September 2nd, and the New York Stock Exchange began reporting the adjusted number of shares outstanding and the split-adjusted per-share stock price on that date. The split increased Church & Dwight's total shares outstanding from approximately 129 million to approximately 258 million shares. We believe that when all is said and done, the company will finish 2016 with about 256 million shares outstanding.

we were strong in unmeasured channels, especially in club and online. Notably, online vitamin sales more than doubled versus last year. All told, higher volumes, as well as a favorable product mix and pricing led to good showings in the first half of 2016. **We look for healthy top- and bottom-line advances into 2017 and beyond.** Although there are a number of macro-economic factors that continue to create headwinds in C&D's markets, the company is on track to achieve its business targets this year and next. C&D is well positioned to continue to deliver strong sales and earnings growth, owing to its balanced portfolio of value and premium products, successful product launches, aggressive productivity programs, and effective management of overhead costs. These factors will likely drive revenue and profits over the coming years.

**QUARTERLY SALES (\$ mill.)<sup>E</sup>**

Cal-endar	Mar.	Per.	Jun.	Per.	Sep.	Per.	Dec.	Per.	Full Year
2013	779.3	787.6	804.8	822.6	819.3	829.7	841.8	865.5	3194.3
2014	782.0	808.3	841.8	865.5	819.3	829.7	841.8	865.5	3297.6
2015	812.3	847.1	861.8	873.6	819.3	829.7	841.8	865.5	3394.8
2016	849.0	877.4	890	908.6	819.3	829.7	841.8	865.5	3525
2017	870	905	920	930	819.3	829.7	841.8	865.5	3625

**On the performance front, C&D has continued to deliver solid results.** The company benefited from decent core sales driven by products like VITAFUSION gummy vitamins, BATISTE dry shampoo, and OXICLEAN additives. Furthermore, ARM & HAMMER laundry detergent continued to gain share at an impressive pace. New product packaging innovations, including its bi-layer and dual chamber deliver designs, have done well. Too, sales

**On the downside, while the recent stock split may make the equity more affordable, the equity is unappealing at the current P/E multiple.** To wit, CHD's capital appreciation potential is limited out to late decade. *Simon R. Shoucair September 23, 2016*

**EARNINGS PER SHARE<sup>A</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	.38	.31	.38	.33	1.40
2014	.37	.33	.43	.39	1.51
2015	.40	.37	.45	.41	1.69
2016	.43	.43	.49	.45	1.80
2017	.45	.43	1.07	.96	1.95

**QUARTERLY DIVIDENDS PAID<sup>B</sup>**

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.12	.12	.12	.12	.96
2013	.14	.14	.14	.14	1.12
2014	.155	.155	.155	.155	1.24
2015	.168	.168	.168	.168	1.34
2016	.168	.168	.168	.168	1.34

**Company's Financial Strength**

Stock's Price Stability	A+
Price Growth Persistence	100
Earnings Predictability	85
	100

(A) Diluted earnings. Excl. nonrecr. gns.: '02, 24; '03, 64; losses: '00, 204; '01, 84; '08, 44; '09, 34; '10, (104); '11, (54). Egs. may not sum due to rounding. Incl. acquisition related charges: '04, 154. Next egs. rpt. due late Oct. (B) Div'd are hist. paid in Mar., June, Sep., and Dec. = Dividend reinvestment plan available. (C) Incl. intang. in '15: \$2624.4 mill., \$20.20/sh. (D) In millions, adjusted for stock splits. (E) Sales from 2002 onward reflect accounting policies EITF 00-14 and EITF 00-25. Excl. amort. after 2009.

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# COCA-COLA NYSE-KO

RECENT PRICE **41.54** P/E RATIO **21.7** (Trailing: 21.4 Median: 19.0) RELATIVE P/E RATIO **1.19** DIV'D YLD **3.5%** VALUE LINE

<b>TIMELINESS</b> 2 Raised 10/14/16	High: 22.6	24.7	32.2	32.8	29.7	32.9	35.9	40.7	43.4	45.0	43.9	47.1		Target Price	Range
<b>SAFETY</b> 1 New 7/27/90	Low: 20.2	19.7	22.8	20.1	18.7	24.7	30.6	33.3	36.5	36.9	36.6	40.8		2019	2021
<b>TECHNICAL</b> 2 Raised 10/21/16	<b>LEGENDS</b> 16.0 x "Cash Flow" p sh ... Relative Price Strength 2-for-1 split 8/12 Options: Yes Shaded area indicates recession														
<b>BETA</b> .70 (1.00 = Market)	<b>2019-21 PROJECTIONS</b> Price Gain Ann'l Total High 55 (+30%) 10% Low 45 (+10%) 6%														
<b>Insider Decisions</b>	D J F M A M J J A to Buy 0 0 0 0 0 0 0 0 to Sell 2 0 2 9 4 1 1 0 Options 1 0 1 8 4 1 1 0														
<b>Institutional Decisions</b>	4Q2015 1Q2016 2Q2016 to Buy 676 688 729 to Sell 796 791 783 Held % (000) 276987028565832785127														
Percent shares traded: 15, 10, 5													% TOT. RETURN 9/16 THIS STOCK VL ARITH. INDEX 1 yr. 8.8 17.7 3 yr. 22.6 23.7 5 yr. 45.4 108.1		

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
4.12	3.53	3.96	4.31	4.56	4.88	5.20	6.22	6.91	6.73	7.66	10.29	10.74	10.64	10.54	10.24	9.65	7.90	Sales per sh	8.90
.89	.96	.99	1.16	1.23	1.29	1.40	1.54	1.79	1.75	2.09	2.41	2.46	2.58	2.53	2.49	2.40	2.40	"Cash Flow" per sh	3.00
.74	.80	.83	.98	1.03	1.09	1.19	1.29	1.51	1.47	1.75	1.92	1.97	2.08	2.04	2.00	1.90	2.00	Earnings per sh <sup>A</sup>	2.55
.34	.36	.40	.44	.50	.56	.62	.68	.76	.82	.88	.94	1.02	1.12	1.22	1.32	1.40	1.48	Div'ds Decl'd per sh <sup>B</sup>	1.85
.15	.15	.17	.17	.16	.19	.30	.36	.43	.43	.48	.65	.62	.58	.55	.59	.65	.50	Cap'l Spending per sh	.50
1.87	2.29	2.39	2.89	3.31	3.45	3.65	4.69	4.43	5.38	6.76	6.99	7.34	7.54	6.94	5.91	5.80	5.55	Book Value per sh <sup>C</sup>	5.05
4969.5	4972.5	4942.0	4883.1	4818.7	4738.0	4636.0	4636.0	4624.0	4606.0	4584.0	4526.0	4469.0	4402.0	4366.0	4324.0	4275.0	4200.0	Common Shs Outst'g <sup>D</sup>	4000.0
37.5	30.5	30.2	22.6	22.6	19.7	18.5	21.0	17.8	16.6	16.2	17.4	18.8	19.1	20.0	20.6	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	19.0
2.44	1.56	1.65	1.29	1.19	1.05	1.00	1.11	1.07	1.11	1.03	1.09	1.20	1.07	1.05	1.04			Relative P/E Ratio	1.20
1.2%	1.5%	1.6%	2.0%	2.2%	2.6%	2.8%	2.5%	2.8%	3.4%	3.1%	2.8%	2.8%	2.8%	3.0%	3.2%			Avg Ann'l Div'd Yield	3.7%

**CAPITAL STRUCTURE as of 7/1/16**  
 Total Debt \$48.048 bill. Due in 5 Yrs. \$28.7 bill.  
 LT Debt \$29.252 bill. Total Int. \$550.0 mill.  
 (Total interest coverage: 19.9x)  
 (52% of Cap'l)

**Pension Assets-12/15** \$7.7 bill. **Oblig.** \$9.2 bill.

**Pfd Stock** None

**Common Stock** 4,315,000,000 shs.

**MARKET CAP: \$179 billion (Large Cap)**

CURRENT POSITION	2014	2015	7/1/16
Cash Assets (\$BILL)	18010	19900	24075
Receivables	4466	3941	4768
Inventory (Avg Cst)	3100	2902	3005
Other	7410	6652	4025
Current Assets	32986	33395	35873
Accts Payable	2089	2795	2750
Debt Due	22682	15806	18796
Other	7603	8329	7998
Current Liab.	32374	26930	29544

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
24088	28857	31944	30990	35123	46554	48017	46854	45998	44294
31.3%	30.0%	30.3%	30.5%	31.4%	27.9%	26.6%	28.3%	28.1%	27.9%
938.0	1163.0	1228.0	1236.0	1443.0	1954.0	1982.0	1977.0	1976.0	1970.0
5568.0	5981.0	7050.0	6824.0	8144.0	8932.0	9019.0	9374.0	9091.0	8797.0
22.4%	24.0%	22.2%	22.8%	22.7%	23.9%	23.1%	23.0%	22.5%	22.5%
23.1%	20.7%	22.1%	22.0%	23.2%	19.2%	18.8%	20.0%	19.8%	19.9%
d1449.0	d1120	d812.0	3830.0	3071.0	1214.0	2507.0	3493.0	612.0	6465.0
1314.0	3277.0	2781.0	5059.0	14041	13656	14736	19154	19063	28407
16920	21744	20472	24799	31003	31635	32790	33173	30320	25554
30.7%	24.2%	30.6%	23.4%	18.5%	20.2%	19.4%	18.3%	18.7%	16.5%
32.9%	27.5%	34.4%	27.5%	26.3%	28.2%	27.5%	28.3%	30.0%	34.4%
15.7%	13.0%	17.2%	12.2%	13.1%	14.6%	13.5%	13.3%	12.3%	12.0%
52%	53%	50%	56%	50%	48%	51%	53%	59%	65%

**BUSINESS:** The Coca-Cola Company is the world's largest beverage company. Markets over 500 nonalcoholic beverage brands through a network of company-owned and independent bottlers/distributors, wholesalers, and retailers. Leading company/licensed brands include Coca-Cola, Diet Coke, Sprite, Fanta, Fresca, Dasani, gaceau vitaminwater, Powerade, and Minute Maid.

Int'l markets accounted for 54% of 2015 net sales; Advertising expenses, 9.0% of 2015 revenues. Has about 123,250 employees. Directors and Officers own 1.5% of stock; Berkshire Hathaway, 9.2%; Vanguard, 6.1%; BlackRock, 5.4% (3/16 Proxy). Chairman and CEO: Muhtar Kent. Inc.: DE. Address: One Coca-Cola Plaza, Atlanta, GA 30313. Tel.: 404-676-2121. Web: www.coca-cola.com.

ANNUAL RATES	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15
of change (per sh)			to '19-'21
Sales	8.5%	8.0%	-2.5%
"Cash Flow"	7.5%	6.0%	3.0%
Earnings	7.0%	5.5%	4.0%
Dividends	9.5%	8.5%	7.0%
Book Value	8.0%	4.0%	-5.0%

**Earnings at The Coca-Cola Company remain under pressure.** The biggest headwinds are foreign currency translation and structural changes (more below), which are likely to reduce pretax profits by 8%-9% and 4%, respectively, this year. The former has been particularly pronounced in Latin America, where the company generates about 20% of its operating profits. Absent these factors, the beverage giant's performance would look more encouraging, with pretax profits likely advancing at a mid-single-digit rate in 2016.

**Coca-Cola continues to slim down.** The company is putting more of its bottling operations, including all of those in North America, in the hands of independent partners. This refranchising effort, which is slated to wrap up by the end of 2017, will cause sales to shrink, but Coke should emerge as a higher-margin, less capital-intensive business. Too, incremental savings from productivity initiatives, as well as a continued emphasis on pricing and mix, ought to support wider margins. In all, we look for earnings climb 5% in 2017, to \$2.00 a share.

Cal-endar	QUARTERLY SALES (\$ mill.)	Full Year
	Mar.Per Jun.Per Sep.Per Dec.Per	
2013	11035 12749 12030 11040	46854
2014	10576 12574 11976 10872	45998
2015	10711 12156 11427 10000	44294
2016	10282 11539 10429 9000	41250
2017	8000 9250 8500 7500	33250

Cal-endar	EARNINGS PER SHARE <sup>A</sup>	Full Year
	Mar.Per Jun.Per Sep.Per Dec.Per	
2013	.46 .63 .53 .46	2.08
2014	.44 .64 .53 .43	2.04
2015	.48 .63 .51 .38	2.00
2016	.45 .60 .47 .38	1.90
2017	.46 .61 .52 .41	2.00

Cal-endar	QUARTERLY DIVIDENDS PAID <sup>B</sup>	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2012	-- .255 .255 .51	1.02
2013	-- .28 .28 .56	1.12
2014	-- .305 .305 .61	1.22
2015	-- .33 .33 .66	1.32
2016	-- .35 .35 .35	

**China has been a trouble spot this year.** The June period was particularly weak, as case volumes there fell at a high single-digit pace year over year. This decline, as well as softness in Argentina and Venezuela, caused overall volumes to come in flat with the prior-year period, a slowdown from the 2%-3% growth registered in the previous five quarters. The sluggishness in China is likely to carry through the second half of 2016, as the rapid rate of economic growth in that country slows. On the positive side, favorable price/mix changes companywide are supporting overall revenues.

**Conservative investors will likely want to take a closer look here.** These shares have endured a rough stretch, declining 7% since the release of June-quarter earnings, but still possess a number of appealing attributes. This equity carries our Highest rank (1) for Safety, and offers a dividend that is more than 100 basis points above the Value Line median. In addition, this equity has climbed a notch in our Timeliness Ranking System, which now pegs it to outperform the broader market in the year ahead.

*Robert M. Greene* October 21, 2016

(A) Based on diluted shares. Next earnings report due Oct. 26th. Excludes nonrecurring gain/(losses): '00, (30¢); '01, (1¢); '02, (22¢); '03, (9¢); '04, (3¢); '05, (7¢); '06, (11¢); '08, (27¢); '10, 79¢; '11, (8¢); '13, (18¢); '14, (44¢); '15, (\$0.33); '16 H1, (8¢). (B) Div'ds historically paid about the first April, July, Oct., Dec. (C) Includes intangibles. In '15: \$24.1 bill., '15, (\$0.33); '16 H1, (8¢). (D) In millions. (E) Reflects reclassification of sales and expenses.







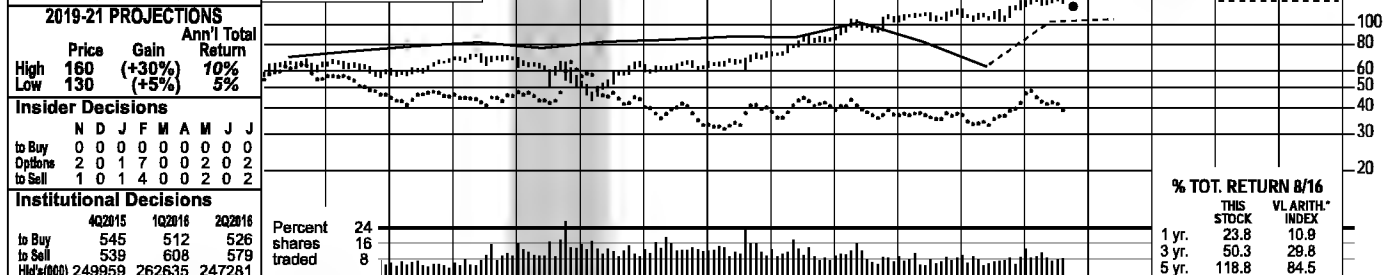


KELLOGG CO. NYSE-K		RECENT PRICE	76.05	P/E RATIO	20.6	(Trailing: 21.6) Median: 16.0	RELATIVE P/E RATIO	1.13	DIV'D YLD	2.7%	VALUE LINE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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LLC</td> <td>19-21</td> </tr> <tr> <td>17.15</td> <td>21.77</td> <td>20.36</td> <td>21.51</td> <td>23.28</td> <td>25.11</td> <td>27.42</td> <td>30.19</td> <td>33.58</td> <td>32.97</td> <td>33.91</td> <td>36.94</td> <td>39.30</td> <td>40.77</td> <td>40.95</td> <td>38.64</td> <td>38.10</td> <td>38.10</td> <td>Sales per sh</td> <td>44.10</td> </tr> <tr> <td>2.32</td> <td>2.39</td> <td>2.60</td> <td>2.83</td> <td>3.15</td> <td>3.39</td> <td>3.41</td> <td>3.78</td> <td>3.99</td> <td>4.18</td> <td>4.48</td> <td>4.48</td> <td>4.83</td> <td>5.27</td> <td>5.34</td> <td>5.12</td> <td>5.25</td> <td>5.25</td> <td>"Cash Flow" per sh</td> <td>6.90</td> </tr> <tr> <td>1.61</td> <td>1.31</td> <td>1.73</td> <td>1.93</td> <td>2.16</td> <td>2.36</td> <td>2.51</td> <td>2.76</td> <td>2.99</td> <td>3.16</td> <td>3.30</td> <td>3.38</td> <td>3.37</td> <td>3.77</td> <td>3.87</td> <td>3.53</td> <td>3.65</td> <td>3.65</td> <td>Earnings per sh A</td> <td>5.00</td> </tr> <tr> <td>1.00</td> <td>1.01</td> <td>1.01</td> <td>1.01</td> <td>1.01</td> <td>1.06</td> <td>1.14</td> <td>1.20</td> <td>1.30</td> <td>1.43</td> <td>1.56</td> <td>1.67</td> <td>1.74</td> <td>1.80</td> <td>1.90</td> <td>1.98</td> <td>2.04</td> <td>2.10</td> <td>Div'de Decl'd per sh B</td> <td>2.50</td> </tr> <tr> <td>.57</td> <td>.68</td> <td>.62</td> <td>.60</td> <td>.67</td> <td>.92</td> <td>1.14</td> <td>1.21</td> <td>1.21</td> <td>.99</td> <td>1.30</td> <td>1.66</td> <td>1.48</td> <td>1.76</td> <td>1.63</td> <td>1.58</td> <td>1.70</td> <td>1.75</td> <td>Cap'l Spending per sh</td> <td>1.90</td> </tr> <tr> <td>2.21</td> <td>2.14</td> <td>2.19</td> <td>3.52</td> <td>5.47</td> <td>5.63</td> <td>5.20</td> <td>6.48</td> <td>3.79</td> <td>5.96</td> <td>5.90</td> <td>4.93</td> <td>6.70</td> <td>9.77</td> <td>7.83</td> <td>6.08</td> <td>6.75</td> <td>8.35</td> <td>Book Value per sh C</td> <td>14.15</td> </tr> <tr> <td>405.64</td> <td>406.61</td> <td>407.85</td> <td>409.70</td> <td>413.02</td> <td>405.33</td> <td>397.70</td> <td>390.05</td> <td>381.86</td> <td>381.38</td> <td>365.60</td> <td>357.30</td> <td>361.27</td> <td>362.80</td> <td>356.00</td> <td>350.02</td> <td>344.00</td> <td>340.00</td> <td>Common Shs Outst'g D</td> <td>330.00</td> </tr> <tr> <td>16.1</td> <td>21.8</td> <td>19.5</td> <td>17.3</td> <td>19.2</td> <td>18.9</td> <td>18.9</td> <td>19.0</td> <td>17.0</td> <td>14.5</td> <td>15.7</td> <td>15.8</td> <td>15.3</td> <td>16.5</td> <td>16.5</td> <td>18.7</td> <td colspan="2">Bold figures are Value Line estimates</td> <td>Avg Ann'l P/E Ratio</td> <td>19.0</td> </tr> <tr> <td>1.05</td> <td>1.12</td> <td>1.07</td> <td>.99</td> <td>1.01</td> <td>1.01</td> <td>1.02</td> <td>1.01</td> <td>1.02</td> <td>.97</td> <td>1.00</td> <td>.99</td> <td>.97</td> <td>.93</td> <td>.87</td> <td>.95</td> <td colspan="2"></td> <td>Relative P/E Ratio</td> <td>1.20</td> </tr> <tr> <td>3.9%</td> <td>3.5%</td> <td>3.0%</td> <td>3.0%</td> <td>2.4%</td> <td>2.4%</td> <td>2.4%</td> <td>2.3%</td> <td>2.6%</td> <td>3.1%</td> <td>3.0%</td> <td>3.1%</td> <td>3.4%</td> <td>2.9%</td> <td>3.0%</td> <td>3.0%</td> <td colspan="2"></td> <td>Avg Ann'l Div'd Yield</td> <td>2.6%</td> </tr> <tr> <td colspan="2">CAPITAL STRUCTURE as of 7/2/16</td> <td colspan="14">           Total Debt \$9201 mill. Due in 5 Yrs \$4860 mill.            LT Debt \$6277 mill. LT Interest \$400 mill.            (Total interest coverage: 5.3X) (76% of Cap'l)         </td> </tr> <tr> <td colspan="2">Pension Assets-1/16 \$4.58 bill. Oblig. \$5.32 bill.</td> <td colspan="14"> <table border="1"> <tr> <td>10907</td> <td>11776</td> <td>12822</td> <td>12575</td> <td>12397</td> <td>13198</td> <td>14197</td> <td>14792</td> <td>14580</td> <td>13525</td> <td>13100</td> <td>13200</td> <td>Sales (\$mill)</td> <td>14550</td> </tr> <tr> <td>19.4%</td> <td>19.0%</td> <td>18.2%</td> <td>19.0%</td> <td>19.2%</td> <td>17.8%</td> <td>16.7%</td> <td>18.2%</td> <td>18.2%</td> <td>16.3%</td> <td>19.3%</td> <td>20.0%</td> <td>Operating Margin</td> <td>21.5%</td> </tr> <tr> <td>352.7</td> <td>372.0</td> <td>375.0</td> <td>384.0</td> <td>392.0</td> <td>369.0</td> <td>448.0</td> <td>532.0</td> <td>503.0</td> <td>534.0</td> <td>520</td> <td>525</td> <td>Depreciation (\$mill)</td> <td>575</td> </tr> <tr> <td>1004.1</td> <td>1103.0</td> <td>1148.0</td> <td>1212.0</td> <td>1247.0</td> <td>1231.0</td> <td>1297.2</td> <td>1379.7</td> <td>1397.3</td> <td>1258.0</td> <td>1285</td> <td>1390</td> <td>Net Profit (\$mill)</td> <td>1705</td> </tr> <tr> <td>31.7%</td> <td>28.7%</td> <td>29.7%</td> <td>28.3%</td> <td>28.8%</td> <td>29.0%</td> <td>22.7%</td> <td>28.4%</td> <td>28.2%</td> <td>11.2%</td> <td>27.0%</td> <td>27.0%</td> <td>Income Tax Rate</td> <td>27.0%</td> </tr> <tr> <td>9.2%</td> <td>9.4%</td> <td>9.0%</td> <td>9.6%</td> <td>10.1%</td> <td>9.3%</td> <td>9.1%</td> <td>9.3%</td> <td>9.6%</td> <td>9.3%</td> <td>9.8%</td> <td>10.5%</td> <td>Net Profit Margin</td> <td>11.7%</td> </tr> <tr> <td>d1593</td> <td>d1327</td> <td>d1031</td> <td>270.0</td> <td>d269.0</td> <td>d286.0</td> <td>d1143</td> <td>d568.0</td> <td>d1024</td> <td>d2503</td> <td>d1725</td> <td>d1450</td> <td>Working Cap'l (\$mill)</td> <td>900</td> </tr> <tr> <td>3053.0</td> <td>3270.0</td> <td>4068.0</td> <td>4835.0</td> <td>4908.0</td> <td>5037.0</td> <td>6082.0</td> <td>6330.0</td> <td>5935.0</td> <td>5289.0</td> <td>6250</td> <td>6000</td> <td>Long-Term Debt (\$mill)</td> <td>6200</td> </tr> <tr> <td>2069.0</td> <td>2526.0</td> <td>1448.0</td> <td>2272.0</td> <td>2158.0</td> <td>1760.0</td> <td>2419.0</td> <td>3545.0</td> <td>2789.0</td> <td>2128.0</td> <td>2325</td> <td>2835</td> <td>Shr. Equity (\$mill)</td> <td>4675</td> </tr> <tr> <td>21.8%</td> <td>21.3%</td> <td>23.1%</td> <td>19.1%</td> <td>19.9%</td> <td>20.1%</td> <td>16.8%</td> <td>15.1%</td> <td>17.3%</td> <td>18.6%</td> <td>17.5%</td> <td>18.0%</td> <td>Return on Total Cap'l</td> <td>17.5%</td> </tr> <tr> <td>48.5%</td> <td>43.7%</td> <td>79.3%</td> <td>53.3%</td> <td>57.8%</td> <td>69.9%</td> <td>53.6%</td> <td>38.9%</td> <td>50.1%</td> <td>59.1%</td> <td>55.0%</td> <td>49.0%</td> <td>Return on Shr. Equity</td> <td>36.5%</td> </tr> <tr> <td>26.8%</td> <td>24.9%</td> <td>45.1%</td> <td>29.3%</td> <td>30.7%</td> <td>35.6%</td> <td>27.9%</td> <td>20.5%</td> <td>25.7%</td> <td>26.2%</td> <td>24.0%</td> <td>23.0%</td> <td>Retained to Com Eq</td> <td>18.5%</td> </tr> <tr> <td>45%</td> <td>43%</td> <td>43%</td> <td>45%</td> <td>47%</td> <td>49%</td> <td>48%</td> <td>47%</td> <td>49%</td> <td>56%</td> <td>56%</td> <td>53%</td> <td>All Div'ds to Net Prof</td> <td>50%</td> </tr> </table> </td> </tr> <tr> <td colspan="2">CURRENT POSITION (\$MILL.)</td> <td>2014</td> <td>2015</td> <td>7/2/16</td> <td colspan="12"></td> </tr> <tr> <td>Cash Assets</td> <td>443</td> <td>251</td> <td>531</td> <td colspan="12"></td> </tr> <tr> <td>Receivables</td> <td>1276</td> <td>1344</td> <td>1473</td> <td colspan="12"></td> </tr> <tr> <td>Inventory (Avg Cst)</td> <td>1279</td> <td>1250</td> <td>1216</td> <td colspan="12"></td> </tr> <tr> <td>Other</td> <td>342</td> <td>391</td> <td>201</td> <td colspan="12"></td> </tr> <tr> <td>Current Assets</td> <td>3340</td> <td>3236</td> <td>3421</td> <td colspan="12"></td> </tr> <tr> <td>Accts Payable</td> <td>1528</td> <td>1907</td> <td>1988</td> <td colspan="12"></td> </tr> <tr> <td>Debt Due</td> <td>1435</td> <td>2470</td> <td>1924</td> <td colspan="12"></td> </tr> <tr> <td>Other</td> <td>1401</td> <td>1362</td> <td>1359</td> <td colspan="12"></td> </tr> <tr> <td>Current Liab.</td> <td>4364</td> <td>5739</td> <td>5271</td> <td colspan="12"></td> </tr> <tr> <td colspan="2">ANNUAL RATES of change (per sh)</td> <td>Past 10 Yrs.</td> <td>Past 5 Yrs.</td> <td>Est'd '13-'15 to '19-'21</td> <td colspan="12"></td> </tr> <tr> <td>Sales</td> <td>5.5%</td> <td>3.5%</td> <td>1.5%</td> <td colspan="12"></td> </tr> <tr> <td>"Cash Flow"</td> <td>5.5%</td> <td>4.5%</td> <td>5.0%</td> <td colspan="12"></td> </tr> <tr> <td>Earnings</td> <td>5.5%</td> <td>3.5%</td> <td>5.5%</td> <td colspan="12"></td> </tr> <tr> <td>Dividends</td> <td>6.5%</td> <td>6.0%</td> <td>5.5%</td> <td colspan="12"></td> </tr> <tr> <td>Book Value</td> <td>5.0%</td> <td>8.5%</td> <td>10.0%</td> <td colspan="12"></td> </tr> <tr> <td colspan="2">QUARTERLY SALES (\$ mill.)</td> <td>Cal-endar</td> <td>Mar.Per</td> <td>Jun.Per</td> <td>Sep.Per</td> <td>Dec.Per</td> <td>Full Year</td> <td colspan="12"></td> </tr> <tr> <td>2013</td> <td>3861</td> <td>3714</td> <td>3716</td> <td>3501</td> <td>14792</td> <td colspan="12"></td> </tr> <tr> <td>2014</td> <td>3742</td> <td>3685</td> <td>3639</td> <td>3514</td> <td>14580</td> <td colspan="12"></td> </tr> <tr> <td>2015</td> <td>3556</td> <td>3498</td> <td>3329</td> <td>3142</td> <td>13525</td> <td colspan="12"></td> </tr> <tr> <td>2016</td> <td>3395</td> <td>3268</td> <td>3325</td> <td>3112</td> <td>13100</td> <td colspan="12"></td> </tr> <tr> <td>2017</td> <td>3410</td> <td>3295</td> <td>3350</td> <td>3145</td> <td>13200</td> <td colspan="12"></td> </tr> <tr> <td colspan="2">EARNINGS PER SHARE A</td> <td>Cal-endar</td> <td>Mar.Per</td> <td>Jun.Per</td> <td>Sep.Per</td> <td>Dec.Per</td> <td>Full Year</td> <td colspan="12"></td> </tr> <tr> <td>2013</td> <td>.99</td> <td>1.00</td> <td>.95</td> <td>.83</td> <td>3.77</td> <td colspan="12"></td> </tr> <tr> <td>2014</td> <td>1.01</td> <td>1.02</td> <td>.94</td> <td>.90</td> <td>3.87</td> <td colspan="12"></td> </tr> <tr> <td>2015</td> <td>.98</td> <td>.92</td> <td>.85</td> <td>.79</td> <td>3.53</td> <td colspan="12"></td> </tr> <tr> <td>2016</td> <td>.97</td> <td>.91</td> <td>.85</td> <td>.92</td> <td>3.65</td> <td colspan="12"></td> </tr> <tr> <td>2017</td> <td>1.02</td> <td>1.01</td> <td>.99</td> <td>.98</td> <td>4.00</td> <td colspan="12"></td> </tr> <tr> <td colspan="2">QUARTERLY DIVIDENDS PAID B</td> <td>Cal-endar</td> <td>Mar.31</td> <td>Jun.30</td> <td>Sep.30</td> <td>Dec.31</td> <td>Full Year</td> <td colspan="12"></td> </tr> <tr> <td>2012</td> <td>.43</td> <td>.43</td> <td>.44</td> <td>.44</td> <td>1.74</td> <td colspan="12"></td> </tr> <tr> <td>2013</td> <td>.44</td> <td>.44</td> <td>.46</td> <td>.46</td> <td>1.80</td> <td colspan="12"></td> </tr> <tr> <td>2014</td> <td>.46</td> <td>.46</td> <td>.49</td> <td>.49</td> <td>1.90</td> <td colspan="12"></td> </tr> <tr> <td>2015</td> <td>.49</td> <td>.49</td> <td>.50</td> <td>.50</td> <td>1.98</td> <td colspan="12"></td> </tr> <tr> <td>2016</td> <td>.50</td> <td>.50</td> <td>.52</td> <td></td> <td></td> <td colspan="12"></td> </tr> <tr> <td colspan="2">BUSINESS:</td> <td colspan="14">           Kellogg Company and its subsidiaries manufacture and market ready-to-eat cereals and convenience foods, such as cookies, savory snacks, toaster pastries, cereal bars, fruit-flavored snacks, frozen waffles, and veggie foods. Brand names include: Kellogg's, Keebler, Pringles, Cheez-It, Murray, Austin, Famous Amos, Pop-Tarts, Eggo, and Nutri-Grain. Foreign operations: 45% of sales in 2015. Adv. costs: 6.6% of sales. Acquired Keebler, 3/01; Pringles, 5/12. Has about 33,575 employees. W.K. Kellogg Foundation controls 21.3% of common; KeyCorp, 7.8%; off/dir., 8.8% (3/16 proxy). Chairman &amp; Chief Executive Officer: John Bryant, Inc.: DE. Address: One Kellogg Square, Battle Creek, MI 49016-3599. Telephone: 269-961-2000. Internet: www.kelloggs.com.         </td> </tr> <tr> <td colspan="2">Kellogg Company is making some changes to its operating strategy.</td> <td colspan="14">           This has been prompted by continued top-line erosion both here and abroad. In the June period, sales fell in North America, Europe, Latin America, and Asia/Pacific, hurt by foreign currency translation, but also by weakness in the cereal and snacks categories. Excluding the foreign exchange impact, sales would still have been down in all of the aforementioned regions. The weakness in the cereal and snacks categories may well continue for a few more years. In response, management recently announced that it will now focus more on price/mix rather than chasing volume, which, simply put, might not be there. The plan is to raise prices on high-volume products, increase the mix of smaller "on-the-go" products, and reduce package sizes. This strategy has proven successful at a number of other large food/beverage companies, but it will likely take some time to see if it takes hold at Kellogg. Focus on cost reduction remains a top priority. For one reason, it has helped stem the bottom-line setback from decreased sales. Kellogg is currently im-         </td> </tr> <tr> <td colspan="2">plementing two efficiency programs:</td> <td colspan="14">           Project K and Zero-Based Budgeting. The company plans to use the savings to support the bottom line and fund the sales initiatives discussed above. Our sense is that Kellogg, which spends a lot on advertising, will cut back in this area, as it will be focusing less on volume generation. Many food companies have been trimming non-working advertising with a level of success, helped by the switch to more digital platforms. While we are still lowering our 2016 earnings estimate, we think that the aforementioned efficiency initiatives will help the bottom line next year and provide some support until Kellogg can remedy the top-line problems. That said, Kellogg stock is timely. Despite the recent top-line disappointments, the stock has held its own for a few reasons, not the least of which is because of the safety it provides investors during periods of heightened equity market volatility. It maintains our Highest rank (1) for Safety and has a below-average Beta. Plus, Kellogg pays a well-covered dividend, supported by excellent cash flow generation.         </td> </tr> <tr> <td colspan="2">Company's Financial Strength</td> <td colspan="14">A</td> </tr> <tr> <td colspan="2">Stock's Price Stability</td> <td colspan="14">100</td> </tr> <tr> <td colspan="2">Price Growth Persistence</td> <td colspan="14">35</td> </tr> <tr> <td colspan="2">Earnings Predictability</td> <td colspan="14">100</td> </tr> </table>														2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	% VALUE LINE PUB. LLC	19-21	17.15	21.77	20.36	21.51	23.28	25.11	27.42	30.19	33.58	32.97	33.91	36.94	39.30	40.77	40.95	38.64	38.10	38.10	Sales per sh	44.10	2.32	2.39	2.60	2.83	3.15	3.39	3.41	3.78	3.99	4.18	4.48	4.48	4.83	5.27	5.34	5.12	5.25	5.25	"Cash Flow" per sh	6.90	1.61	1.31	1.73	1.93	2.16	2.36	2.51	2.76	2.99	3.16	3.30	3.38	3.37	3.77	3.87	3.53	3.65	3.65	Earnings per sh A	5.00	1.00	1.01	1.01	1.01	1.01	1.06	1.14	1.20	1.30	1.43	1.56	1.67	1.74	1.80	1.90	1.98	2.04	2.10	Div'de Decl'd per sh B	2.50	.57	.68	.62	.60	.67	.92	1.14	1.21	1.21	.99	1.30	1.66	1.48	1.76	1.63	1.58	1.70	1.75	Cap'l Spending per sh	1.90	2.21	2.14	2.19	3.52	5.47	5.63	5.20	6.48	3.79	5.96	5.90	4.93	6.70	9.77	7.83	6.08	6.75	8.35	Book Value per sh C	14.15	405.64	406.61	407.85	409.70	413.02	405.33	397.70	390.05	381.86	381.38	365.60	357.30	361.27	362.80	356.00	350.02	344.00	340.00	Common Shs Outst'g D	330.00	16.1	21.8	19.5	17.3	19.2	18.9	18.9	19.0	17.0	14.5	15.7	15.8	15.3	16.5	16.5	18.7	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	19.0	1.05	1.12	1.07	.99	1.01	1.01	1.02	1.01	1.02	.97	1.00	.99	.97	.93	.87	.95			Relative P/E Ratio	1.20	3.9%	3.5%	3.0%	3.0%	2.4%	2.4%	2.4%	2.3%	2.6%	3.1%	3.0%	3.1%	3.4%	2.9%	3.0%	3.0%			Avg Ann'l Div'd Yield	2.6%	CAPITAL STRUCTURE as of 7/2/16		Total Debt \$9201 mill. Due in 5 Yrs \$4860 mill. LT Debt \$6277 mill. LT Interest \$400 mill. (Total interest coverage: 5.3X) (76% of Cap'l)														Pension Assets-1/16 \$4.58 bill. Oblig. \$5.32 bill.		<table border="1"> <tr> <td>10907</td> <td>11776</td> <td>12822</td> <td>12575</td> <td>12397</td> <td>13198</td> <td>14197</td> <td>14792</td> <td>14580</td> <td>13525</td> <td>13100</td> <td>13200</td> <td>Sales (\$mill)</td> <td>14550</td> </tr> <tr> <td>19.4%</td> <td>19.0%</td> <td>18.2%</td> <td>19.0%</td> <td>19.2%</td> <td>17.8%</td> <td>16.7%</td> <td>18.2%</td> <td>18.2%</td> <td>16.3%</td> <td>19.3%</td> <td>20.0%</td> <td>Operating Margin</td> <td>21.5%</td> </tr> <tr> <td>352.7</td> <td>372.0</td> <td>375.0</td> <td>384.0</td> <td>392.0</td> <td>369.0</td> <td>448.0</td> <td>532.0</td> <td>503.0</td> <td>534.0</td> <td>520</td> <td>525</td> <td>Depreciation (\$mill)</td> <td>575</td> </tr> <tr> <td>1004.1</td> <td>1103.0</td> <td>1148.0</td> <td>1212.0</td> <td>1247.0</td> <td>1231.0</td> <td>1297.2</td> <td>1379.7</td> <td>1397.3</td> <td>1258.0</td> <td>1285</td> <td>1390</td> <td>Net Profit (\$mill)</td> <td>1705</td> </tr> <tr> <td>31.7%</td> <td>28.7%</td> <td>29.7%</td> <td>28.3%</td> <td>28.8%</td> <td>29.0%</td> <td>22.7%</td> <td>28.4%</td> <td>28.2%</td> <td>11.2%</td> <td>27.0%</td> <td>27.0%</td> <td>Income Tax Rate</td> <td>27.0%</td> </tr> <tr> <td>9.2%</td> <td>9.4%</td> <td>9.0%</td> <td>9.6%</td> <td>10.1%</td> <td>9.3%</td> <td>9.1%</td> <td>9.3%</td> <td>9.6%</td> <td>9.3%</td> <td>9.8%</td> <td>10.5%</td> <td>Net Profit Margin</td> <td>11.7%</td> </tr> <tr> <td>d1593</td> <td>d1327</td> <td>d1031</td> <td>270.0</td> <td>d269.0</td> <td>d286.0</td> <td>d1143</td> <td>d568.0</td> <td>d1024</td> <td>d2503</td> <td>d1725</td> <td>d1450</td> <td>Working Cap'l (\$mill)</td> <td>900</td> </tr> <tr> <td>3053.0</td> <td>3270.0</td> <td>4068.0</td> <td>4835.0</td> <td>4908.0</td> <td>5037.0</td> <td>6082.0</td> <td>6330.0</td> <td>5935.0</td> <td>5289.0</td> <td>6250</td> <td>6000</td> <td>Long-Term Debt (\$mill)</td> <td>6200</td> </tr> <tr> <td>2069.0</td> <td>2526.0</td> <td>1448.0</td> <td>2272.0</td> <td>2158.0</td> <td>1760.0</td> <td>2419.0</td> <td>3545.0</td> <td>2789.0</td> <td>2128.0</td> <td>2325</td> <td>2835</td> <td>Shr. Equity (\$mill)</td> <td>4675</td> </tr> <tr> <td>21.8%</td> <td>21.3%</td> <td>23.1%</td> <td>19.1%</td> <td>19.9%</td> <td>20.1%</td> <td>16.8%</td> <td>15.1%</td> <td>17.3%</td> <td>18.6%</td> <td>17.5%</td> <td>18.0%</td> <td>Return on Total Cap'l</td> <td>17.5%</td> </tr> <tr> <td>48.5%</td> <td>43.7%</td> <td>79.3%</td> <td>53.3%</td> <td>57.8%</td> <td>69.9%</td> <td>53.6%</td> <td>38.9%</td> <td>50.1%</td> <td>59.1%</td> <td>55.0%</td> <td>49.0%</td> <td>Return on Shr. Equity</td> <td>36.5%</td> </tr> <tr> <td>26.8%</td> <td>24.9%</td> <td>45.1%</td> <td>29.3%</td> <td>30.7%</td> <td>35.6%</td> <td>27.9%</td> <td>20.5%</td> <td>25.7%</td> <td>26.2%</td> <td>24.0%</td> <td>23.0%</td> <td>Retained to Com Eq</td> <td>18.5%</td> </tr> <tr> <td>45%</td> <td>43%</td> <td>43%</td> <td>45%</td> <td>47%</td> <td>49%</td> <td>48%</td> <td>47%</td> <td>49%</td> <td>56%</td> <td>56%</td> <td>53%</td> <td>All Div'ds to Net Prof</td> <td>50%</td> </tr> </table>														10907	11776	12822	12575	12397	13198	14197	14792	14580	13525	13100	13200	Sales (\$mill)	14550	19.4%	19.0%	18.2%	19.0%	19.2%	17.8%	16.7%	18.2%	18.2%	16.3%	19.3%	20.0%	Operating Margin	21.5%	352.7	372.0	375.0	384.0	392.0	369.0	448.0	532.0	503.0	534.0	520	525	Depreciation (\$mill)	575	1004.1	1103.0	1148.0	1212.0	1247.0	1231.0	1297.2	1379.7	1397.3	1258.0	1285	1390	Net Profit (\$mill)	1705	31.7%	28.7%	29.7%	28.3%	28.8%	29.0%	22.7%	28.4%	28.2%	11.2%	27.0%	27.0%	Income Tax Rate	27.0%	9.2%	9.4%	9.0%	9.6%	10.1%	9.3%	9.1%	9.3%	9.6%	9.3%	9.8%	10.5%	Net Profit Margin	11.7%	d1593	d1327	d1031	270.0	d269.0	d286.0	d1143	d568.0	d1024	d2503	d1725	d1450	Working Cap'l (\$mill)	900	3053.0	3270.0	4068.0	4835.0	4908.0	5037.0	6082.0	6330.0	5935.0	5289.0	6250	6000	Long-Term Debt (\$mill)	6200	2069.0	2526.0	1448.0	2272.0	2158.0	1760.0	2419.0	3545.0	2789.0	2128.0	2325	2835	Shr. Equity (\$mill)	4675	21.8%	21.3%	23.1%	19.1%	19.9%	20.1%	16.8%	15.1%	17.3%	18.6%	17.5%	18.0%	Return on Total Cap'l	17.5%	48.5%	43.7%	79.3%	53.3%	57.8%	69.9%	53.6%	38.9%	50.1%	59.1%	55.0%	49.0%	Return on Shr. Equity	36.5%	26.8%	24.9%	45.1%	29.3%	30.7%	35.6%	27.9%	20.5%	25.7%	26.2%	24.0%	23.0%	Retained to Com Eq	18.5%	45%	43%	43%	45%	47%	49%	48%	47%	49%	56%	56%	53%	All Div'ds to Net Prof	50%	CURRENT POSITION (\$MILL.)		2014	2015	7/2/16													Cash Assets	443	251	531													Receivables	1276	1344	1473													Inventory (Avg Cst)	1279	1250	1216													Other	342	391	201													Current Assets	3340	3236	3421													Accts Payable	1528	1907	1988													Debt Due	1435	2470	1924													Other	1401	1362	1359													Current Liab.	4364	5739	5271													ANNUAL RATES of change (per sh)		Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21													Sales	5.5%	3.5%	1.5%													"Cash Flow"	5.5%	4.5%	5.0%													Earnings	5.5%	3.5%	5.5%													Dividends	6.5%	6.0%	5.5%													Book Value	5.0%	8.5%	10.0%													QUARTERLY SALES (\$ mill.)		Cal-endar	Mar.Per	Jun.Per	Sep.Per	Dec.Per	Full Year													2013	3861	3714	3716	3501	14792													2014	3742	3685	3639	3514	14580													2015	3556	3498	3329	3142	13525													2016	3395	3268	3325	3112	13100													2017	3410	3295	3350	3145	13200													EARNINGS PER SHARE A		Cal-endar	Mar.Per	Jun.Per	Sep.Per	Dec.Per	Full Year													2013	.99	1.00	.95	.83	3.77													2014	1.01	1.02	.94	.90	3.87													2015	.98	.92	.85	.79	3.53													2016	.97	.91	.85	.92	3.65													2017	1.02	1.01	.99	.98	4.00													QUARTERLY DIVIDENDS PAID B		Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year													2012	.43	.43	.44	.44	1.74													2013	.44	.44	.46	.46	1.80													2014	.46	.46	.49	.49	1.90													2015	.49	.49	.50	.50	1.98													2016	.50	.50	.52															BUSINESS:		Kellogg Company and its subsidiaries manufacture and market ready-to-eat cereals and convenience foods, such as cookies, savory snacks, toaster pastries, cereal bars, fruit-flavored snacks, frozen waffles, and veggie foods. Brand names include: Kellogg's, Keebler, Pringles, Cheez-It, Murray, Austin, Famous Amos, Pop-Tarts, Eggo, and Nutri-Grain. Foreign operations: 45% of sales in 2015. Adv. costs: 6.6% of sales. Acquired Keebler, 3/01; Pringles, 5/12. Has about 33,575 employees. W.K. Kellogg Foundation controls 21.3% of common; KeyCorp, 7.8%; off/dir., 8.8% (3/16 proxy). Chairman & Chief Executive Officer: John Bryant, Inc.: DE. Address: One Kellogg Square, Battle Creek, MI 49016-3599. Telephone: 269-961-2000. Internet: www.kelloggs.com.														Kellogg Company is making some changes to its operating strategy.		This has been prompted by continued top-line erosion both here and abroad. In the June period, sales fell in North America, Europe, Latin America, and Asia/Pacific, hurt by foreign currency translation, but also by weakness in the cereal and snacks categories. Excluding the foreign exchange impact, sales would still have been down in all of the aforementioned regions. The weakness in the cereal and snacks categories may well continue for a few more years. In response, management recently announced that it will now focus more on price/mix rather than chasing volume, which, simply put, might not be there. The plan is to raise prices on high-volume products, increase the mix of smaller "on-the-go" products, and reduce package sizes. This strategy has proven successful at a number of other large food/beverage companies, but it will likely take some time to see if it takes hold at Kellogg. Focus on cost reduction remains a top priority. For one reason, it has helped stem the bottom-line setback from decreased sales. Kellogg is currently im-														plementing two efficiency programs:		Project K and Zero-Based Budgeting. The company plans to use the savings to support the bottom line and fund the sales initiatives discussed above. Our sense is that Kellogg, which spends a lot on advertising, will cut back in this area, as it will be focusing less on volume generation. Many food companies have been trimming non-working advertising with a level of success, helped by the switch to more digital platforms. While we are still lowering our 2016 earnings estimate, we think that the aforementioned efficiency initiatives will help the bottom line next year and provide some support until Kellogg can remedy the top-line problems. That said, Kellogg stock is timely. Despite the recent top-line disappointments, the stock has held its own for a few reasons, not the least of which is because of the safety it provides investors during periods of heightened equity market volatility. It maintains our Highest rank (1) for Safety and has a below-average Beta. Plus, Kellogg pays a well-covered dividend, supported by excellent cash flow generation.														Company's Financial Strength		A														Stock's Price Stability		100														Price Growth Persistence		35														Earnings Predictability		100													
2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	% VALUE LINE PUB. LLC	19-21																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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Equity (\$mill)	4675	21.8%	21.3%	23.1%	19.1%	19.9%	20.1%	16.8%	15.1%	17.3%	18.6%	17.5%	18.0%	Return on Total Cap'l	17.5%	48.5%	43.7%	79.3%	53.3%	57.8%	69.9%	53.6%	38.9%	50.1%	59.1%	55.0%	49.0%	Return on Shr. Equity	36.5%	26.8%	24.9%	45.1%	29.3%	30.7%	35.6%	27.9%	20.5%	25.7%	26.2%	24.0%	23.0%	Retained to Com Eq	18.5%	45%	43%	43%	45%	47%	49%	48%	47%	49%	56%	56%	53%	All Div'ds to Net Prof	50%																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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BUSINESS:		Kellogg Company and its subsidiaries manufacture and market ready-to-eat cereals and convenience foods, such as cookies, savory snacks, toaster pastries, cereal bars, fruit-flavored snacks, frozen waffles, and veggie foods. Brand names include: Kellogg's, Keebler, Pringles, Cheez-It, Murray, Austin, Famous Amos, Pop-Tarts, Eggo, and Nutri-Grain. Foreign operations: 45% of sales in 2015. Adv. costs: 6.6% of sales. Acquired Keebler, 3/01; Pringles, 5/12. Has about 33,575 employees. W.K. Kellogg Foundation controls 21.3% of common; KeyCorp, 7.8%; off/dir., 8.8% (3/16 proxy). Chairman & Chief Executive Officer: John Bryant, Inc.: DE. Address: One Kellogg Square, Battle Creek, MI 49016-3599. Telephone: 269-961-2000. Internet: www.kelloggs.com.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
Kellogg Company is making some changes to its operating strategy.		This has been prompted by continued top-line erosion both here and abroad. In the June period, sales fell in North America, Europe, Latin America, and Asia/Pacific, hurt by foreign currency translation, but also by weakness in the cereal and snacks categories. Excluding the foreign exchange impact, sales would still have been down in all of the aforementioned regions. The weakness in the cereal and snacks categories may well continue for a few more years. In response, management recently announced that it will now focus more on price/mix rather than chasing volume, which, simply put, might not be there. The plan is to raise prices on high-volume products, increase the mix of smaller "on-the-go" products, and reduce package sizes. This strategy has proven successful at a number of other large food/beverage companies, but it will likely take some time to see if it takes hold at Kellogg. Focus on cost reduction remains a top priority. For one reason, it has helped stem the bottom-line setback from decreased sales. Kellogg is currently im-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
plementing two efficiency programs:		Project K and Zero-Based Budgeting. The company plans to use the savings to support the bottom line and fund the sales initiatives discussed above. Our sense is that Kellogg, which spends a lot on advertising, will cut back in this area, as it will be focusing less on volume generation. Many food companies have been trimming non-working advertising with a level of success, helped by the switch to more digital platforms. While we are still lowering our 2016 earnings estimate, we think that the aforementioned efficiency initiatives will help the bottom line next year and provide some support until Kellogg can remedy the top-line problems. That said, Kellogg stock is timely. Despite the recent top-line disappointments, the stock has held its own for a few reasons, not the least of which is because of the safety it provides investors during periods of heightened equity market volatility. It maintains our Highest rank (1) for Safety and has a below-average Beta. Plus, Kellogg pays a well-covered dividend, supported by excellent cash flow generation.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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(A) Based on diluted shares. Excludes non-recurring gains (losses): '00, (\$0.16); '01, (\$0.14); '02, \$0.02; '12, (\$0.09); '13, \$1.17; '14, (\$2.12); '15, (\$1.81); '16 Q1-Q2, (\$0.59). Quarterly earnings may not sum to total due to a change in the share count. Next earnings report due November 1st. (B) Dividends historically paid mid-Mar, June, Sept, and Dec. (C) Includes intangibles. In '15: \$7.236 billion, \$20.67/sh. (D) In millions.

**KIMBERLY-CLARK** NYSE:KMB RECENT PRICE **122.39** P/E RATIO **22.3** (Trailing: 22.7 Median: 17.0) RELATIVE P/E RATIO **1.21** DIV'D YLD **3.0%** VALUE LINE

TIMELINESS <b>2</b> Lowered 7/22/16	High: 68.3	68.6	72.8	69.7	67.0	67.2	74.1	88.3	111.7	118.8	129.9	138.9	Target Price 2019	Price 2020	Range 2021
SAFETY <b>1</b> New 7/27/90	Low: 55.6	56.6	63.8	50.3	43.1	58.3	61.0	70.5	83.9	102.8	103.0	121.5			
TECHNICAL <b>2</b> Raised 9/23/16	LEGENDS ..... 13.0 x "Cash Flow" p sh - - - - - Relative Price Strength Options: Yes Shaded area indicates recession														
BETA .65 (1.00 = Market)	2019-21 PROJECTIONS Price Gain Ann'l Total High 160 (+30%) 10% Low 130 (+5%) 5%														



Insider Decisions	N D J F M A M J J to Buy 0 0 0 0 0 0 0 0 0 Options 2 0 1 7 0 0 2 0 2 to Sell 1 0 1 4 0 0 2 0 2																		
Institutional Decisions	4Q2015 1Q2016 2Q2016 to Buy 545 512 526 to Sell 539 608 579 Hld's(000) 249959 262635 247281																		
© VALUE LINE PUB. LLC 19-21 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017																			
26.21	27.96	26.56	28.60	31.23	34.46	36.76	43.40	46.94	45.84	48.53	52.68	54.10	55.55	53.99	51.51	51.85	54.55	Sales per sh	63.85
4.64	4.78	4.81	4.91	5.39	5.74	6.10	6.34	5.98	6.40	6.53	6.78	6.70	7.89	6.40	4.87	7.95	8.15	"Cash Flow" per sh	10.60
3.31	3.27	3.36	3.38	3.61	3.78	3.90	4.25	4.06	4.52	4.45	3.99	4.42	5.53	3.91	2.77	5.50	5.75	Earnings per sh <sup>A</sup>	7.25
1.08	1.12	1.20	1.36	1.60	1.80	1.96	2.08	2.27	2.38	2.58	2.76	2.96	3.24	3.36	3.52	3.64	3.85	Div'de Decl'd per sh <sup>B</sup>	4.25
2.19	2.12	1.70	1.75	1.11	1.54	2.13	2.35	2.19	2.03	2.37	2.45	2.81	2.50	2.84	2.93	3.00	3.00	Cap'l Spending per sh	3.50
10.81	10.87	11.06	13.49	13.73	12.04	13.38	12.41	9.38	12.96	14.54	13.27	12.81	12.75	2.00	d.48	1.05	1.95	Book Value per sh <sup>C</sup>	6.75
533.40	519.50	510.80	501.60	482.90	461.50	455.60	420.90	413.60	417.00	406.90	395.70	389.30	380.80	365.30	360.90	355.00	350.00	Common Shs Outst'g <sup>D</sup>	330.00
17.9	18.8	17.5	14.9	17.6	16.5	15.9	16.3	15.2	12.2	14.1	16.9	18.2	17.8	28.1	40.6	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	20.0
1.16	.96	.96	.85	.93	.88	.86	.87	.91	.81	.90	1.06	1.16	1.00	1.48	2.06			Relative P/E Ratio	1.25
1.8%	1.8%	2.0%	2.7%	2.5%	2.9%	3.2%	3.0%	3.7%	4.3%	4.1%	4.1%	3.7%	3.3%	3.1%	3.1%			Avg Ann'l Div'd Yield	2.9%

<b>CAPITAL STRUCTURE as of 6/30/16</b> Total Debt \$7677 mill. Due 5 Yrs \$4625 mill. LT Debt \$6905 mill. LT Interest \$350 mill. (LT interest earned: 6.0x)																16747	18266	19415	19115	19746	20846	21063	21152	19724	18591	18400	19100	Sales (\$mill)	21065
(94% of Cap'l)																21.4%	18.5%	17.2%	19.4%	18.7%	16.7%	16.8%	19.3%	17.2%	12.7%	18.5%	19.0%	Operating Margin	22.0%
Leases, Uncapitalized Annual rentals \$142.0 mill. Pension Assets-12/15 \$3.51 bill. Oblig. \$3.96 bill.																932.8	806.5	775.0	783.0	813.0	1091.0	857.0	863.0	862.0	746.0	875	885	Depreciation (\$mill)	1100
Pfd Stock None Common Stock 359,636,074 shs. as of 7/18/16																1844.5	1861.6	1698.0	1884.0	1843.0	1591.0	1750.0	2142.0	1476.0	1013.0	1940	1960	Net Profit (\$mill)	2400
<b>MARKET CAP: \$44.0 billion (Large Cap)</b>																26.1%	21.5%	27.0%	29.0%	30.9%	30.2%	31.7%	31.5%	38.0%	31.3%	31.5%	31.5%	Income Tax Rate	31.5%
Pensions, Uncapitalized Annual rentals \$142.0 mill. Pension Assets-12/15 \$3.51 bill. Oblig. \$3.96 bill.																11.0%	10.2%	8.7%	9.9%	9.3%	7.6%	8.3%	10.1%	7.5%	5.4%	10.5%	10.3%	Net Profit Margin	11.4%
Pfd Stock None Common Stock 359,636,074 shs. as of 7/18/16																253.9	1168.0	1061.0	932.0	990.0	886.0	498.0	702.0	d667.0	d923.0	d750	d675	Working Cap'l (\$mill)	d150
<b>ANNUAL RATES</b>																2276.0	4393.9	4882.0	4792.0	5120.0	5426.0	5070.0	5386.0	5630.0	6106.0	7000	6750	Long-Term Debt (\$mill)	6000
of change (per sh)																6097.4	5223.7	3878.0	5406.0	5917.0	5249.0	4985.0	4856.0	729.0	d174.0	380	675	Shr. Equity (\$mill) <sup>C</sup>	2225
Past 10 Yrs. Past 5 Yrs. Est'd '13-'15 to '19-'21																22.9%	20.7%	20.9%	19.7%	17.7%	16.1%	18.8%	22.3%	25.4%	19.6%	26.5%	26.5%	Return on Total Cap'l	29.0%
Sales 5.5% 2.5% 3.0% "Cash Flow" 2.0% .5% 9.0% Earnings 1.5% -1.5% 10.0% Dividends 8.0% 7.0% 4.0% Book Value -9.5% -17.5% 6.0%																30.3%	35.6%	43.8%	34.9%	31.1%	30.3%	35.1%	44.1%	202.5%	NMF	NMF	NMF	Return on Shr. Equity	NMF
15.8% 17.8% 19.3% 16.6% 13.1% 9.4% 12.0% 18.9% 30.2% 30.2% NMF NMF NMF 70% 69%																48%	50%	56%	52%	58%	69%	66%	57%	85%	NMF	NMF	NMF	Retained to Com Eq	45.0%
48% 50% 56% 52% 58% 69% 66% 57%																48%	50%	56%	52%	58%	69%	66%	57%	85%	NMF	NMF	NMF	All Div'ds to Net Prof	58%

<b>CURRENT POSITION</b> 2014 2015 6/30/16 (\$MILL.)			
Cash Assets	789	619	656
Receivables	2223	2281	2249
Inventory (LIFO) <sup>E</sup>	1892	1909	1807
Other	655	617	402
Current Assets	5559	5426	5114
Accts Payable	2616	2612	2448
Debt Due	1326	1669	772
Other	2284	2068	2008
Current Liab.	6226	6349	5228

<b>QUARTERLY SALES (\$ mill.)</b>					
Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	5318	5267	5262	5305	21152
2014	4887	4953	5056	4828	19724
2015	4691	4643	4718	4539	18591
2016	4476	4588	4720	4616	18400
2017	4750	4775	4825	4750	19100

<b>EARNINGS PER SHARE <sup>A</sup></b>					
Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	1.36	1.36	1.42	1.40	5.53
2014	1.26	1.32	1.49	d.18	3.91
2015	1.27	d.83	1.41	.91	2.77
2016	1.50	1.56	1.45	.99	5.50
2017	1.50	1.60	1.50	1.15	5.75

<b>QUARTERLY DIVIDENDS PAID <sup>B</sup></b>					
Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.70	.74	.74	.74	2.92
2013	.74	.81	.81	.81	3.17
2014	.84	.84	.84	.84	3.36
2015	.88	.88	.88	.88	3.52
2016	.88	.92	.92		

**BUSINESS:** Kimberly-Clark develops, manufactures, and markets personal care products (incl. Huggies, Pull-Ups, Little Swimmers, GoodNights, Kotex, Lightdays, Depend and Poise) and consumer tissue products (incl. Kleenex, Scott, Cottonelle, and Viva). KC Professional focuses on workplace health/safety (supporting products incl. apparel, wipers, soaps, sanitizers, tissues and towels), and Health Care provides medical supplies, infection prevention & health education. Wal-Mart accounted for 14% of '15 sales. Employs 43,000. Off./dir. own less than 1% of common; BlackRock, 6.9%; Vanguard, 5.9% (3/16 Proxy). Chairman/CEO: Thomas J. Falk, Inc. DE. Address: P.O. Box 619100, Dallas, TX 75261. Telephone: 972-281-1200. Internet: www.kimberly-clark.com.

**Kimberly-Clark registered strong profit growth during the first half of the year.** Over the past few months, the company's strong brand positions enabled it to see healthy volume growth, despite facing a competitive market. Still, currency headwinds overshadowed the good news, and hindered the top line during the first few months of the year. Nevertheless, Kimberly's financial discipline, lower commodity and input expenses, and the benefits from its widespread cost-reduction measures (discussed below) lifted earnings over the past couple of quarters. **The company ought to post a solid bottom-line rebound this year.** Kimberly's ongoing cost-savings program, Project FORCE, should continue to lift totals in the back half of 2016. Indeed, the consumer goods maker achieve between \$350 million and \$400 million for the full year. What's more, the company's prior restructuring efforts and its continued margin improvements should also bolster profitability moving forward. In all, share earnings ought to climb between 55% and 60% this year. Still, the currency drag may cause revenues to come in flat for 2016. Next

year, however, we look for the top and bottom lines to advance at a 3%-5% clip. **Kimberly's strategic growth efforts should set the stage for the long haul.** The company's Global Business Plan is well under way. To wit, it will likely concentrate on targeted growth initiatives and improving its distribution channels. Plus, product innovation, pricing improvements, and branding efforts should help Kimberly gain market share. In the meantime, the company has also been returning its cash to investors through dividends and stock buybacks. That said, Kimberly-Clark remains heavily leveraged at this juncture. And we think it would behoove the company to use some of its cost savings to strengthen the balance sheet. **These top-quality shares may appeal to a number of investors.** KMB is favorably ranked for the year ahead. Plus, the equity holds an above-average dividend yield. This issue does not stand out for its long-term appreciation potential. But its low Beta (.65) and perfect scores for Financial Strength (A++) and Price Stability (100) give it good conservative luster. *Orly Seidman* September 23, 2016

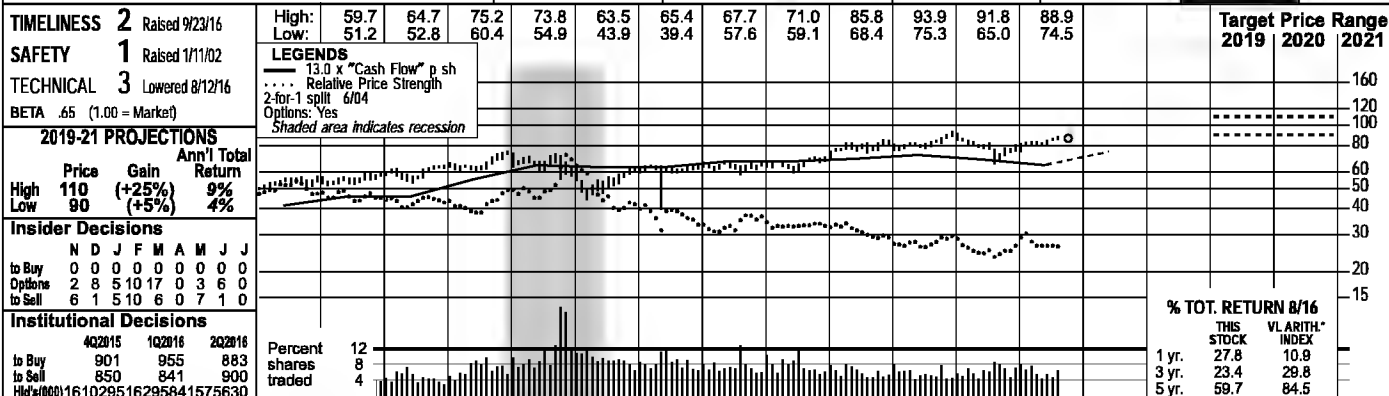
(A) Dil. earnings. Excl. non-recurring gains/(losses): '01, (\$0.25); '02, (\$0.12); '03, (\$0.05); '04, (\$0.01); '05, (\$0.50); '06, (\$0.65); '07, (\$0.16); '08, (\$0.04). EPS may not sum due to change in shares out. Next earnings report due late October.  
 (B) Div's hist. paid in early Jan., Apr., Jul., and Oct. Div'd reinvestment plan available.  
 (C) Incl. intang. In '15: \$1,446.0 mill., \$4.01/sh. (D) In millions.  
 (E) Foreign: FIFO.  
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Company's Financial Strength	A++
Stock's Price Stability	100
Price Growth Persistence	80
Earnings Predictability	45

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# PROCTER & GAMBLE NYSE-PG

RECENT PRICE **87.05** P/E RATIO **20.3** (Trailing: 23.7; Median: 18.0) RELATIVE P/E RATIO **1.10** DIV'D YLD **3.1%** VALUE LINE



2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
15.30	15.14	15.47	16.72	20.21	22.95	21.46	24.42	27.53	27.09	27.81	29.85	30.45	30.69	30.64	28.10	24.47	25.15	Sales per sh <sup>A</sup>	32.90
2.41	2.53	2.55	2.82	3.18	3.51	3.51	4.25	4.97	4.86	4.87	5.21	5.20	5.33	5.57	5.31	4.97	5.75	"Cash Flow" per sh	7.40
1.48	1.56	1.80	2.04	2.32	2.53	2.64	3.04	3.64	3.58	3.53	3.93	3.85	4.05	4.22	4.02	3.67	4.50	Earnings per sh <sup>AB</sup>	6.15
.64	.70	.76	.82	.93	1.03	1.15	1.28	1.45	1.64	1.80	1.97	2.14	2.29	2.45	2.59	2.66	2.85	Div'de Decl'd per sh <sup>C</sup>	3.30
1.16	.96	.85	.57	.80	.88	.84	.94	1.00	1.11	1.08	1.20	1.44	1.46	1.42	1.38	1.24	1.40	Cap'l Spending per sh	1.45
4.04	3.98	4.64	5.63	6.19	6.47	19.33	20.87	22.46	21.18	21.20	24.14	22.87	24.64	25.40	22.83	21.34	24.55	Book Value per sh <sup>D</sup>	29.55
2611.7	2591.5	2601.5	2594.4	2543.8	2472.9	3178.8	3131.9	3032.7	2917.0	2838.5	2765.7	2748.0	2742.3	2710.8	2714.5	2668.1	2635.0	Common Shs Outst'g <sup>E</sup>	2600.0
29.7	21.4	22.4	21.6	21.3	21.5	21.5	20.5	18.6	16.4	17.0	16.0	16.7	17.8	19.0	20.9	21.4		Avg Ann'l P/E Ratio	16.0
1.93	1.10	1.22	1.23	1.13	1.14	1.16	1.09	1.12	1.09	1.08	1.00	1.06	1.00	1.00	1.05	1.14		Relative P/E Ratio	1.00
1.5%	2.1%	1.9%	1.9%	1.9%	1.9%	2.0%	2.1%	2.1%	2.8%	3.0%	3.1%	3.3%	3.2%	3.1%	3.1%	3.4%		Avg Ann'l Div'd Yield	3.4%

CAPITAL STRUCTURE as of 6/30/16		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Sales (\$mill) <sup>A</sup>	85550
Total Debt \$30,598 bill. Due in 5 Yrs \$18.950 bill.		68222	76476	83503	79029	78938	82559	83680	84167	83062	76279	65299	66280							Operating Margin	26.5%
LT Debt \$19,134 bill. LT Interest \$4.65 bill.		23.3%	24.3%	24.2%	24.3%	24.2%	22.6%	22.6%	22.3%	23.7%	23.4%	26.2%	26.5%							Depreciation (\$mill)	3250
(Tot. Int. Coverage: 24.3x)		2627.0	3130.0	3166.0	3082.0	3108.0	2838.0	3204.0	2982.0	3141.0	3134.0	3078.0	3185							Net Profit (\$mill)	16000
(25% of Tot. Cap'l)		8684.0	10340	12075	11293	10946	11797	11344	11869	12220	11535	10441	11925							Income Tax Rate	24.0%
Leases, Uncapitalized Annual Rentals \$259 mill.		30.0%	29.7%	24.9%	26.3%	27.3%	22.3%	24.2%	23.2%	23.5%	20.2%	24.6%	24.0%							Net Profit Margin	18.7%
Pension Assets-6/16 \$10.3 bill.		12.7%	13.5%	14.5%	14.3%	13.9%	14.3%	13.6%	14.1%	14.7%	15.1%	16.0%	18.0%							Working Cap'l (\$mill)	d100
Oblig. \$17.3 bill.		4344.0	d6686	d6443	d8996	d5500	d5323	d2997	d6047	d2109	d144.0	3012.0	d180							Long-Term Debt (\$mill)	19000
Pfd Stock \$1.1 bill. Pfd Div'd \$255 mill.		35976	23375	23581	20652	21360	22033	21080	19111	19811	18329	18945	19000							Shr. Equity (\$mill)	76875
(ESOP owns 49.3 mill Class A shares and 57.2 mill Class B shares; convertible into common stock.)		62908	66760	69494	63099	61439	68001	64035	68709	69976	63050	57983	64650							Return on Total Cap'l	16.5%
Common Stock 2,668,751,125 shares as of 7/31/16		9.3%	12.1%	13.8%	14.3%	13.8%	13.5%	13.8%	13.9%	14.0%	14.6%	13.9%	14.5%							Return on Shr. Equity	21.0%
MARKET CAP: \$232 billion (Large Cap)		13.8%	15.5%	17.4%	17.9%	17.8%	17.3%	17.7%	17.3%	17.5%	18.3%	18.0%	18.5%							Retained to Com Eq	9.5%
CURRENT POSITION		8.1%	9.4%	10.9%	10.1%	9.1%	9.0%	8.3%	7.9%	7.7%	6.9%	5.3%	7.0%							All Div'ds to Net Prof	54%
(\$MILL.)		43%	41%	39%	45%	50%	49%	54%	55%	57%	63%	71%									

**BUSINESS:** The Procter & Gamble Company makes branded consumer packaged goods, which are marketed and sold in more than 180 countries around the world. Has five reportable segments: Beauty/Hair/Personal care (18% of fiscal 2016 sales); Grooming (11%); Health Care (11%); Fabric Care & Home Care (32%); Baby, Feminine & Family Care (28%). International sales accounted for 59% of fiscal 2016 sales and Wal-Mart Stores accounted for 15%. Div. battery business in 2/16. Has 105,000 employees. Off. & dir. own less than 1% of stock; BlackRock, 5.8%; Vanguard, 6.3% (8/15 proxy). Chairman: A. G. Lafley. President/CEO: David S. Taylor. Inc.: Ohio. Address: 1 Procter & Gamble Plaza, Cincinnati, Ohio 45202. Tel.: 513-983-1100. Internet: www.pg.com.

**Procter & Gamble should begin to recover this year.** (Fiscal year began July 1st.) Indeed, the consumer goods conglomerate has been hard hit by an unfavorable foreign exchange environment. The currency drag, deconsolidation of its Venezuelan assets, and minor brand divestitures weighed on its top and bottom lines, causing revenues and core earnings to slip 14% and 9%, respectively, in fiscal 2016. Nevertheless, management's efforts (discussed below) ought to bear fruit in the coming quarters. All told, we look for share profits to rebound between 20% and 25% this year. The strength of the U.S. dollar, however, will likely continue to temper top-line growth, and revenues may tick up only slightly in fiscal 2017.

**Restructuring efforts are well under way.** The company completed the spinoff of its battery business last year, and plans to divest its beauty brands early next quarter. In the meanwhile, P&G will likely continue to strengthen its remaining businesses. It may well turn to productivity improvements, increase the scale of its manufacturing capabilities, and reduce overhead costs to bolster margins.

Ongoing cost-savings initiatives should boost profitability, as well.

**P&G has been widening its reach.** The company will likely invest heavily in research & development and product innovation in the near term. It ought to launch new offerings to help it gain shelf space, and spur organic revenue growth. What's more, management anticipates to step up advertising spending by nearly \$1 billion, and this move should bolster its brand equity. To this end, P&G has magnified its media presence, both on social media and more traditional channels to capture additional market share.

**This issue appears to be fairly valued at this juncture.** Even though these shares are ranked to outperform the broader market averages in the year ahead (Timeliness: 2), much of the capital gains we envision over the long haul is already factored into the recent quotation. That said, this blue chip holds good conservative appeal, and earns top scores for Financial Strength (A++) and Safety (1). Plus, it may appeal to investors seeking a good risk-adjusted income vehicle.

*Orly Seidman* *September 23, 2016*

Fiscal Year Ends	Q1	Q2	Q3	Q4	Full Fiscal Year
2013	20739	22175	20598	20655	84167
2014	20830	21897	20178	20157	83062
2015	20186	20161	18142	17790	76279
2016	16527	16915	15755	16102	65299
2017	16620	16975	16460	16225	66280

(A) Fiscal years end June 30th. (B) Diluted core earnings. Excludes nonrecurring: '00, (24¢); '01, (53¢); '02, (25¢); '03, (19¢); '08, (12¢); '09, (64¢); '10, 58¢; '11, (61¢); '12, (73¢); '13, d19¢; '14, d21¢. EPS not sum. Next earnings report due late October. (C) Dividends historically paid in Feb., May, Aug., and Nov. ■ DRIP available. (D) Includes intangibles. In '15: \$74.1 bill., \$27.30 a share. (E) In millions, adjusted for split.

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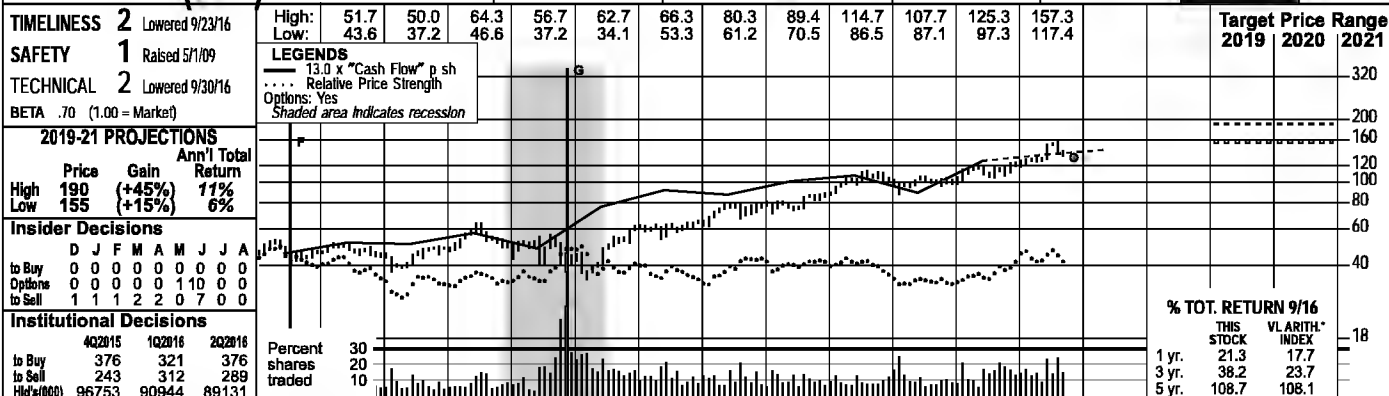
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Company's Financial Strength	A++
Stock's Price Stability	100
Price Growth Persistence	25
Earnings Predictability	100



# SMUCKER (J.M.) CO. NYSE-SJM

RECENT PRICE **132.17** P/E RATIO **20.2** (Trailing: 21.5; Median: 16.0) RELATIVE P/E RATIO **1.10** DIV'D YLD **2.3%** VALUE LINE



2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
26.73	27.63	26.36	28.24	34.91	37.84	37.83	46.22	31.73	38.66	42.27	50.10	55.38	55.17	47.61	67.16	<b>65.25</b>	<b>67.25</b>	Sales per sh <sup>A</sup>	<b>79.65</b>
2.46	2.52	2.86	3.20	3.52	3.97	3.94	4.42	3.73	5.90	7.06	6.75	7.85	8.30	6.87	9.75	<b>10.45</b>	<b>11.05</b>	"Cash Flow" per sh	<b>13.50</b>
1.28	1.37	2.19	2.40	2.60	2.89	2.89	3.15	3.77	4.37	4.79	4.73	5.37	5.84	5.35	5.89	<b>6.55</b>	<b>7.00</b>	Earnings per sh <sup>A,B</sup>	<b>8.60</b>
.63	.64	.83	.92	1.02	1.08	1.14	1.22	1.31	1.45	1.68	1.92	2.08	2.32	2.56	2.68	<b>2.92</b>	<b>3.00</b>	Div'de Decl'd per sh <sup>C</sup>	<b>3.50</b>
1.21	.94	1.00	2.00	1.50	1.11	1.00	1.40	.92	1.15	1.58	2.49	1.94	2.75	2.07	1.73	<b>2.05</b>	<b>2.15</b>	Cap'l Spending per sh	<b>2.65</b>
10.14	11.26	22.59	24.13	28.88	30.34	31.62	32.95	41.71	44.71	46.35	46.82	48.35	49.46	59.27	60.26	<b>63.70</b>	<b>67.40</b>	Book Value per sh <sup>D</sup>	<b>79.80</b>
24.36	24.87	49.77	50.17	58.54	56.95	56.78	54.62	118.42	119.12	114.17	110.28	106.49	101.70	119.58	116.31	<b>116.50</b>	<b>116.00</b>	Common Shs Outst'g <sup>E</sup>	<b>113.00</b>
17.7	22.4	16.5	18.4	18.1	17.1	16.5	16.9	12.0	12.5	13.2	16.2	16.0	18.3	19.6	20.1	<b>20.1</b>	<b>20.1</b>	Avg Ann'l P/E Ratio	<b>20.0</b>
1.15	1.15	.90	1.05	.96	.91	.89	.90	.72	.83	.84	1.02	1.02	1.03	1.03	1.01	<b>1.03</b>	<b>1.01</b>	Relative P/E Ratio	<b>1.25</b>
2.8%	2.1%	2.3%	2.1%	2.2%	2.4%	2.4%	2.3%	2.9%	2.7%	2.7%	2.5%	2.4%	2.2%	2.4%	2.3%	<b>2.4%</b>	<b>2.3%</b>	Avg Ann'l Div'd Yield	<b>1.9%</b>

CAPITAL STRUCTURE as of 7/31/16		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Debt \$5351.7 mill. Due in 5 Yrs \$1300 mill.		2148.0	2524.8	3757.9	4605.3	4825.7	5525.8	5897.7	5610.6	5692.7	7811.2	7600	7800	7811.2	7600	7800	7811.2	7600	7800
LT Debt \$5045.7 mill. LT Interest \$162.0 mill.		15.3%	14.1%	17.5%	22.1%	23.0%	20.1%	20.5%	21.4%	19.2%	20.0%	21.0%	21.5%	19.2%	20.0%	21.0%	21.5%	19.2%	20.0%
(Total interest coverage: 8.0x)		58.9	62.6	119.8	181.9	239.6	208.4	250.9	256.4	268.4	430.1	450	475	268.4	430.1	450	475	268.4	430.1
(42% of Cap'l)		164.6	178.9	321.4	520.3	565.5	535.6	584.5	588.0	552.9	704.2	765	805	552.9	704.2	765	805	552.9	704.2
Leases, Uncapitalized Annual rentals \$39.4 mill.		35.0%	33.1%	32.9%	33.1%	29.6%	35.3%	32.6%	32.8%	26.6%	29.1%	33.5%	34.0%	26.6%	29.1%	33.5%	34.0%	26.6%	29.1%
Pension Assets 4/16 \$505.6 mill.		7.7%	7.1%	8.6%	11.3%	11.7%	9.7%	9.9%	10.5%	9.7%	9.0%	10.1%	10.3%	9.7%	9.0%	10.1%	10.3%	9.7%	9.0%
Oblig. \$745.9 mill.		402.9	536.8	337.7	744.7	1154.3	1026.5	998.4	648.1	1029.7	360.4	550	725	1029.7	360.4	550	725	1029.7	360.4
Pfd Stock None		392.6	789.7	910.0	900.0	1304.0	2020.5	1967.8	1879.8	5944.9	5146.0	4900	4700	5944.9	5146.0	4900	4700	5944.9	5146.0
Common Stock 116,417,978 shs.		1795.7	1799.9	4939.9	5326.3	5292.4	5163.4	5148.8	5029.6	7086.9	7008.5	7425	7820	7086.9	7008.5	7425	7820	7086.9	7008.5
as of 8/24/16		8.1%	7.7%	6.0%	8.9%	9.1%	8.0%	8.9%	9.1%	4.5%	6.5%	7.0%	7.0%	4.5%	6.5%	7.0%	7.0%	4.5%	6.5%
MARKET CAP: \$15.4 billion (Large Cap)		9.2%	9.9%	6.5%	9.8%	10.7%	10.4%	11.4%	11.7%	7.8%	10.0%	10.5%	10.5%	7.8%	10.0%	10.5%	10.5%	7.8%	10.0%
CURRENT POSITION		5.6%	6.2%	4.3%	6.6%	7.0%	6.2%	7.0%	7.0%	4.2%	5.5%	5.5%	6.0%	4.2%	5.5%	5.5%	6.0%	4.2%	5.5%
2014		39%	38%	34%	32%	34%	40%	38%	40%	46%	45%	44%	43%	46%	45%	44%	43%	46%	45%
2015																			
7/31/16																			

**BUSINESS:** The J.M. Smucker Co. is a leading manufacturer of jams, jellies, coffee, and peanut butter. Also produces cooking oils, ice-cream toppings, juices, baking ingredients, and pet foods. In addition to the Smucker's brand, the company markets products under numerous other brands including Jif, Crisco, Folgers, Pillsbury, Dunkin' Donuts, Dickinson's, Carnation, Borden, Eagle Brand, Bick's, Uncrustables, R.W. Knudsen, Hungry Jack, Martha White, Meow Mix and Milk-Bone. Has about 6,910 employees. Smucker family owns 3.8% of stock. Off/dir. own 3.5%; The Vanguard Group 9.2% (7/16 Proxy). Chmn.: Richard Smucker. CEO: Mark Smucker. Inc.: Ohio. Address: One Strawberry Lane, Orville, OH 44667. Telephone: 330-682-3000. Internet: www.jmsmucker.com.

**After hitting its 2016 peak in late August, J.M. Smucker stock has since backtracked.** Indeed, the company's market capitalization is more than \$2 billion lower since the release of mixed fiscal first-quarter (ended July 31st) results. Although Smucker surpassed earnings expectations in the July term, the investment community was disappointed by a weak top-line showing. Net sales fell 7% during the period, hurt some by the divestiture of the U.S. canned milk business, but mostly by the underperformance of the recently acquired Big Heart Pet Brands business. The company's pet foods, particularly *Kibbles n Bits*, *Meow Mix*, and *9Lives*, were hurt by aggressive promotional activity in the category by industry leaders Nestle and Mars. More significant, we think this trend may continue over the balance of fiscal 2016. The weak showing from pet foods, along with price reductions for the *Folgers* coffee line (there is a lag time before the price cuts result in higher volume), offset a solid showing from the Consumer Foods unit, which benefited from lower input (i.e., ingredient) costs. **We still like the company's long-term story.** Ironically, the pet foods business, which was expanded recently for its high-growth potential, was the main problem in the first quarter. And while we expect it to remain a drag on operating profits over the next few quarters, we still think it will contribute nicely over the next three to five years. It has higher-growth potential than some of Smucker's traditional food lines (i.e., *Jif* peanut butter, *Smucker* fruit spreads, *Crisco* cooking oil and *Pillsbury* baking). Too, Smucker's *Folgers* and *Dunkin' Donuts* (retail distribution) should produce solid results to 2019-2021. **Smucker maintains a healthy balance sheet.** Even after completing some sizable acquisitions last decade (Multifoods and Folgers), the debt-to-total capital ratio is very manageable, which gives SJM the flexibility to pursue any attractive opportunities that may arise. **We think the recent pullback in Smucker stock's price may provide an excellent entry point for conservative, income-oriented investors who don't already have a position in this high-quality stock.**

*William G. Ferguson* October 21, 2016

Company's Financial Strength	A++
Stock's Price Stability	95
Price Growth Persistence	90
Earnings Predictability	95

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SYSCO CORP. NYSE:SY										RECENT PRICE	P/E RATIO					RELATIVE P/E RATIO		DIV'D YLD	VALUE LINE																																																																																																																																																																																																																																																											
										48.01	21.2 (Trailing: 22.9; Median: 18.0)					1.16		2.6%																																																																																																																																																																																																																																																												
TIMELINESS	2	Lowered 9/23/16	High:	38.0	37.0	36.7	35.0	29.5	32.0	32.8	32.4	43.4	41.2	42.0	54.0																																																																																																																																																																																																																																																															
SAFETY	1	Raised 11/13/99	Low:	30.0	26.5	29.9	20.7	19.4	27.0	25.1	27.0	30.5	34.1	35.4	38.8	Target Price	Range	2021																																																																																																																																																																																																																																																												
TECHNICAL	1	Raised 10/14/16	<b>LEGENDS</b> ..... 11.0 x "Cash Flow" p sh - - - - - Relative Price Strength Options: Yes Shaded area indicates recession																																																																																																																																																																																																																																																																											
BETA	.75 (1.00 = Market)																																																																																																																																																																																																																																																																													
2019-21 PROJECTIONS																																																																																																																																																																																																																																																																														
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Low	50	(+5%)	4%																																																																																																																																																																																																																																																																											
Insider Decisions																																																																																																																																																																																																																																																																														
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<table border="1"> <tr><th></th><th>4Q2015</th><th>1Q2016</th><th>2Q2016</th><th>Percent shares traded</th></tr> <tr><td>to Buy</td><td>351</td><td>406</td><td>426</td><td>30</td></tr> <tr><td>to Sell</td><td>452</td><td>453</td><td>430</td><td>20</td></tr> <tr><td>Net Buy/Sell</td><td>452188</td><td>447934</td><td>430127</td><td>10</td></tr> </table>																			4Q2015	1Q2016	2Q2016	Percent shares traded	to Buy	351	406	426	30	to Sell	452	453	430	20	Net Buy/Sell	452188	447934	430127	10																																																																																																																																																																																																																																									
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<tr><td>Earnings per sh</td><td>.68</td><td>.90</td><td>1.01</td><td>1.18</td><td>1.37</td><td>1.47</td><td>1.36</td><td>1.60</td><td>1.81</td><td>1.77</td><td>1.99</td><td>1.96</td><td>1.90</td><td>1.87</td><td>1.58</td><td>1.84</td><td>2.10</td><td>2.30</td><td>2.50</td><td>2.70</td><td>2.90</td><td>3.15</td></tr> <tr><td>Div'de Decl'd per sh</td><td>.23</td><td>.28</td><td>.36</td><td>.40</td><td>.48</td><td>.56</td><td>.66</td><td>.74</td><td>.85</td><td>.94</td><td>.99</td><td>1.03</td><td>1.07</td><td>1.11</td><td>1.16</td><td>1.19</td><td>1.23</td><td>1.27</td><td>1.30</td><td>1.35</td><td>1.40</td><td>1.40</td></tr> <tr><td>Cap'l Spending per sh</td><td>.40</td><td>.51</td><td>.64</td><td>.68</td><td>.83</td><td>.82</td><td>.83</td><td>.99</td><td>.86</td><td>.79</td><td>1.01</td><td>1.07</td><td>1.34</td><td>.87</td><td>.89</td><td>.91</td><td>.94</td><td>1.10</td><td>1.20</td><td>1.30</td><td>1.40</td><td>1.50</td></tr> <tr><td>Book Value per 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<tr><td>Relative P/E Ratio</td><td>1.72</td><td>1.45</td><td>1.48</td><td>1.39</td><td>1.37</td><td>1.26</td><td>1.26</td><td>1.10</td><td>1.04</td><td>.95</td><td>.88</td><td>.94</td><td>.96</td><td>1.08</td><td>1.17</td><td>1.05</td><td>1.08</td><td>1.05</td><td>1.00</td><td>0.90</td><td>0.80</td><td>0.70</td></tr> <tr><td>Avg Ann'l Div'd Yield</td><td>1.3%</td><td>1.1%</td><td>1.3%</td><td>1.4%</td><td>1.4%</td><td>1.6%</td><td>2.1%</td><td>2.2%</td><td>2.7%</td><td>3.7%</td><td>3.6%</td><td>3.5%</td><td>3.7%</td><td>3.5%</td><td>3.3%</td><td>3.1%</td><td>2.9%</td><td>2.5%</td><td>2.0%</td><td>1.5%</td><td>1.0%</td><td>0.5%</td></tr> </table>																		Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Sales per sh	29.12	32.75	35.73	40.61	46.09	48.18	52.72	57.27	62.41	62.46	63.30	66.35	72.33	75.77	79.36	81.91	90.01	102.80	112.00	120.00	128.00	136.00	"Cash Flow" per sh	1.02	1.27	1.47	1.63	1.87	2.03	1.92	2.23	2.46	2.44	2.67	2.62	2.83	2.57	2.54	2.78	3.22	3.65	4.00	4.40	4.80	5.20	Earnings per sh	.68	.90	1.01	1.18	1.37	1.47	1.36	1.60	1.81	1.77	1.99	1.96	1.90	1.87	1.58	1.84	2.10	2.30	2.50	2.70	2.90	3.15	Div'de Decl'd per sh	.23	.28	.36	.40	.48	.56	.66	.74	.85	.94	.99	1.03	1.07	1.11	1.16	1.19	1.23	1.27	1.30	1.35	1.40	1.40	Cap'l Spending per sh	.40	.51	.64	.68	.83	.82	.83	.99	.86	.79	1.01	1.07	1.34	.87	.89	.91	.94	1.10	1.20	1.30	1.40	1.50	Book Value per sh	2.66	3.23	3.26	3.41	4.03	4.39	4.93	5.36	5.67	5.85	6.51	7.94	8.00	8.86	8.99	8.85	6.22	5.00	4.00	3.00	2.00	1.00	Common Shs Outst'g	662.97	665.14	653.54	643.66	636.54	628.57	618.90	611.84	601.23	590.03	588.38	592.70	585.95	586.11	586.12	594.32	559.60	537.50	500.00	450.00	400.00	350.00	Avg Ann'l P/E Ratio	26.4	28.2	27.1	24.3	25.9	23.6	23.4	20.8	17.2	14.3	13.8	15.0	15.1	19.2	22.2	20.8	20.3	17.0	15.0	13.0	11.0	9.0	Relative P/E Ratio	1.72	1.45	1.48	1.39	1.37	1.26	1.26	1.10	1.04	.95	.88	.94	.96	1.08	1.17	1.05	1.08	1.05	1.00	0.90	0.80	0.70	Avg Ann'l Div'd Yield	1.3%	1.1%	1.3%	1.4%	1.4%	1.6%	2.1%	2.2%	2.7%	3.7%	3.6%	3.5%	3.7%	3.5%	3.3%	3.1%	2.9%	2.5%	2.0%	1.5%	1.0%	0.5%
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<b>CAPITAL STRUCTURE as of 7/2/16</b> Total Debt \$7345.8 mill. Due in 5 Yrs \$2574.2 mill. LT Debt \$7336.9 mill. LT Interest \$290.0 mill. (Total interest coverage: 11.2x)																																																																																																																																																																																																																																																																														
Leases, Uncapitalized Annual rentals \$49.9 mill. Pension assets-6/16 \$3115.0 mill. Pfd Stock None Common Stock 559,597,000 shs.																																																																																																																																																																																																																																																																														
<b>MARKET CAP: \$26.9 billion (Large Cap)</b>																																																																																																																																																																																																																																																																														
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**Business:** Sysco Corporation is the leading distributor of food, equipment, supplies, and related products to the North American foodservice industry. It has approx. 425,000 customers in the U.S. and Canada. Brakes Group (acq'd 7/16) has leading market positions in the U.K., France, and Sweden. The company serves restaurants, educational institutions, hospitals, nursing homes, and hotels. Sysco has 197 distribution facilities and self-service centers in the U.S., Canada, and Ireland. Has about 52,000 employees. Nelson Peiz (Triam Fund) owns 8.0% of common stock outstanding; other offs. and dirs., .8% (10/16 proxy). CEO: William J. DeLaney, Incorp.: DE. Address: 1390 Enclave Parkway, Houston, TX 77077-2099. Telephone: 281-584-1390. Internet: www.sysco.com.

**Sysco Corp. has expanded its presence overseas.** The company has historically generated almost all of its revenues in the U.S. and Canada, but its July purchase of Brakes Group makes it a leading supplier to the foodservice industry in the United Kingdom, France, and Sweden. The timing was less than ideal, coming only weeks after the U.K. voted to leave the European Union. Despite this added uncertainty, the addition still ought to be modestly accretive to earnings in fiscal 2017, while providing a platform for further expansion into Europe. (Fiscal year began July 3, 2016.)

**Top-line growth is likely to remain modest in the U.S. and Canada.** On the positive side, volumes trends have been solid, including local case volumes, which rose 2.7% last fiscal year. However, like many other food-related businesses, Sysco has been feeling the effects of deflationary pressures, and these headwinds seem likely to persist at least through the December quarter. Moreover, the company expressed some concerns over the summer because traffic trends in the domestic restaurant industry had softened. Still,

**The bottom line should continue to move ahead at a decent clip.** Notably, category-management initiatives, favorable mix shifts, and good expense controls helped to expand operating margins in fiscal 2016, and we see room for further improvement in the current year. Meanwhile, a \$3 billion share repurchase program, which was announced last September and should wrap up this fiscal year, ought to add a few pennies to share net. In all, we look for earnings to climb nearly 10% in 2017, to \$2.30.

**These shares are a timely selection for the year ahead.** In addition to the company's improving operating performance, speculative interest is likely helping to underpin support for the stock, which is up 25% in value since August, 2015, when Triam Fund disclosed it had acquired a sizable stake in Sysco. (The activist investor currently owns about 8% of SYC's shares.) The biggest drawback to establishing a position here appears to be an elevated P/E multiple, which leaves this equity with limited price appreciation potential to 2019-2021, in our view.

*Robert M. Greene*      *October 21, 2016*

**VERIZON NYSE-VZ** RECENT PRICE **53.51** P/E RATIO **13.5** (Trailing: 13.6 Median: 14.0) RELATIVE P/E RATIO **0.72** DIV'D YLD **4.3%** VALUE LINE

<b>TIMELINESS</b> 3 Lowered 5/6/16	High: 41.1 38.9 46.2 44.3 34.8 36.0 40.3 48.8 54.3 53.7 50.9 56.9	Target Price 2019	Price 2020	Range 2021
<b>SAFETY</b> 1 Raised 9/28/07	Low: 29.1 30.0 35.6 23.1 26.1 26.0 32.3 36.8 41.5 45.1 38.1 43.8			
<b>TECHNICAL</b> 1 Raised 8/19/16	<b>LEGENDS</b> — 1.35 x Dividends p sh divided by Interest Rate ..... Relative Price Strength Options: Yes Shaded area indicates recession			
<b>BETA</b> .70 (1.00 = Market)	<b>2019-21 PROJECTIONS</b> Price Gain Ann'l Total High 85 (+60%) 15% Low 70 (+30%) 10%			
<b>Insider Decisions</b> N D J F M A M J J to Buy 0 0 0 1 0 0 0 0 0 Options 0 0 0 8 0 0 0 0 0 to Sell 0 0 0 1 1 1 1 1 1		% TOT. RETURN 8/16 THIS STOCK VL ARITH. INDEX 1 yr. 19.0 10.9 3 yr. 26.5 29.8 5 yr. 80.3 84.5		
<b>Institutional Decisions</b> 4Q2015 1Q2016 2Q2016 to Buy 890 994 954 to Sell 828 776 795 Held % (000) 260399826634412604348		Percent shares traded 24 16 8		

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
23.93	24.73	24.63	24.46	25.73	25.59	30.29	32.56	34.27	38.02	37.68	39.10	40.53	29.11	30.58	32.31	31.30	32.15	Revenues per sh	34.80
7.53	8.11	7.93	7.55	7.64	7.24	7.07	7.40	7.65	8.12	8.01	7.96	7.85	6.79	7.19	7.94	5.80	5.70	"Cash Flow" per sh	6.15
2.92	3.00	3.05	2.62	2.59	2.56	2.54	2.34	2.54	2.40	2.21	2.15	2.32	4.00	3.35	3.99	3.95	4.05	Earnings per sh (A)	4.50
1.54	1.54	1.54	1.54	1.54	1.62	1.62	1.65	1.78	1.87	1.93	1.96	2.02	2.08	2.16	2.23	2.29	2.35	Div'ds Decl'd per sh (B)	2.44
6.52	6.39	4.36	4.29	4.79	5.24	5.88	6.11	6.07	6.01	5.82	5.73	5.66	4.01	4.14	4.36	4.20	4.25	Cap'l Spending per sh	4.45
12.79	11.98	11.88	12.08	13.56	13.56	16.68	17.62	14.68	14.67	13.64	12.69	11.60	9.38	2.96	4.03	4.00	4.25	Book Value per sh	7.50
2703.6	2717.2	2745.8	2769.4	2770.0	2926.8	2909.9	2871.0	2840.6	2835.7	2828.1	2835.5	2858.3	4141.1	4155.4	4073.2	4050.0	4000.0	Common Shs Outst'g (C)	3950.0
18.1	17.3	13.0	13.7	14.8	13.2	13.4	17.6	13.7	12.7	13.8	17.1	18.1	12.2	14.5	11.8	<i>Bold figures are Value Line estimates</i>		Avg Ann'l P/E Ratio	17.5
1.18	.89	.71	.78	.78	.70	.72	.93	.82	.85	.88	1.07	1.15	.69	.76	.59			Relative P/E Ratio	1.10
2.9%	3.0%	3.9%	4.3%	4.0%	4.8%	4.8%	4.0%	5.1%	6.1%	6.3%	5.3%	4.8%	4.3%	4.4%	4.7%			Avg Ann'l Div'd Yield	3.1%

CAPITAL STRUCTURE as of 6/30/16		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Debt \$99725 mill. Due in 5 Yrs \$32097 mill.	LT Debt \$92922 mill. LT Interest \$1795 mill.	88144	93469	97354	107808	106565	110875	115846	120550	127079	131620	126800	128500	126800	16200	16200	16000	16200	16000	16200	16000	16200	16000	16200	16000
Incl. \$302.0 mill. capitalized leases.	(Total interest coverage: 7.1x)	33.3%	35.6%	34.4%	33.1%	19.5%	2.7%	--	19.6%	29.9%	34.6%	35.0%	36.0%	35.0%	36.0%	35.0%	36.0%	35.0%	36.0%	35.0%	36.0%	35.0%	36.0%	35.0%	36.0%
Leases, Uncapitalized Annual rentals \$2744 mill.	Pension Assets-12/15 \$16124 mill. Oblig. \$22016 mill.	6.8%	7.3%	7.4%	6.3%	5.9%	5.5%	5.2%	9.5%	10.5%	12.4%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%
		27.1%	25.4%	37.3%	39.5%	34.2%	36.9%	35.8%	48.4%	89.0%	85.3%	85.0%	84.0%	85.0%	84.0%	85.0%	84.0%	85.0%	84.0%	85.0%	84.0%	85.0%	84.0%	85.0%	84.0%
		46.0%	45.5%	33.1%	29.8%	29.2%	26.4%	24.9%	21.0%	9.9%	13.5%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	
		105518	111072	125864	139418	132164	136211	133151	185074	124212	121547	120000	121500	120000	85000	86000	85000	86000	85000	86000	85000	86000	85000	86000	
		82356	85294	86546	91466	87711	88434	88642	88956	89947	83541	85000	86000	85000	86000	85000	86000	85000	86000	85000	86000	85000	86000	85000	
		7.9%	8.8%	8.3%	7.2%	7.6%	7.2%	7.5%	9.0%	11.0%	13.7%	13.5%	13.0%	13.5%	13.0%	13.5%	13.0%	13.5%	13.0%	13.5%	13.0%	13.5%	13.0%	13.5%	
		12.4%	13.6%	17.3%	16.4%	16.2%	16.9%	18.0%	29.6%	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	
		12.4%	13.6%	17.3%	16.4%	16.2%	16.9%	18.0%	29.6%	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	
		2.7%	4.1%	5.4%	3.7%	2.2%	1.5%	2.2%	14.3%	45.0%	47.4%	48.0%	48.0%	48.0%	48.0%	48.0%	48.0%	48.0%	48.0%	48.0%	48.0%	48.0%	48.0%	48.0%	
		78%	70%	69%	77%	87%	91%	88%	52%	59%	52%	58%	58%	58%	58%	58%	58%	58%	58%	58%	58%	58%	58%	58%	

**BUSINESS:** Verizon Communications was created by the merger of Bell Atlantic and GTE in June of 2000. It is a diversified telecom company with a network that covers a population of about 298 million and provides service to nearly 98.2 million. Acquired MCI, 1/06; Alltel, 1/09; Verizon Wireless, 2/14. Also the largest provider of print and on-line directory information. Has a wireline presence in 28 states & Washington, D.C.; a wireless presence in 50 states & D.C.; operations in 19 countries. 2015 revenue breakdown: wireline (includes telecom & business), 29%; domestic wireless, 71%. Has approximately 177,700 employees. Chairman and CEO: Lowell McAdam, Inc.: Delaware. Addr.: 1095 Avenue of the Americas, NY, NY 10036. Tel.: 212-395-1000. Internet: www.verizon.com.

**Verizon's share net will likely remain stagnant for the next couple of years.** Indeed, the company posted June-quarter earnings of \$0.94 a share, four cents shy of our estimate and 10% below the year-earlier figure, on a 5.3% drop in revenues. And this came as no great surprise, as we had warned, in our June review, that the outlook for the next couple of years was none too impressive. This was due to the combined effects of the April 1st sale of the company's high-margined wireline operations in California, Florida, and Texas to Frontier Communications; the continued shift of wireless customers to device payment plans; and the ramping up of its new business model. Finally, a seven-week work stoppage in the Wireline division certainly did the company no favors, paring about \$0.07 off second-quarter share net.

Cal-endar	QUARTERLY REVENUES (\$mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	29420	29786	30279	31065	120550
2014	30818	31483	31586	33192	127079
2015	31984	32224	33158	34254	131620
2016	32171	30532	31307	32790	126800
2017	31535	31500	31960	33505	128500

Cal-endar	EARNINGS PER SHARE (A)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	.68	.78	.78	1.76	4.00
2014	.84	.91	.89	.71	3.35
2015	1.02	1.04	1.04	.89	3.99
2016	1.06	.94	1.03	.92	3.95
2017	1.06	1.02	1.04	.93	4.05

Cal-endar	QUARTERLY DIVIDENDS PAID (B)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2012	.50	.50	.50	.515	2.02
2013	.515	.515	.515	.53	2.08
2014	.53	.53	.53	.55	2.16
2015	.55	.55	.565	.565	2.23
2016	.565	.565	.58		

**The company has been active on the acquisition trail.** Verizon recently inked an agreement to acquire Yahoo!'s operating business for roughly \$4.8 billion in cash, thereby making Verizon a major competitor in mobile media. The addition of Yahoo! would create one of the largest portfolios of owned and partnered global brands with exclusive distribution capabilities. The transaction, which we expect will close in the first quarter of 2017, is subject to the typical closing conditions, approval of Yahoo! shareholders, and regulatory acceptance.

**Verizon is in enviable financial shape.** The company finished the June interim with \$2.9 billion in cash on its ledger and long-term debt of \$92.9 billion, down from \$109.5 million this time last year. **The company's board of directors is certainly dedicated to boosting shareholder value.** In keeping with its impressive track record of increasing the annual dividend (see above array), the board recently upped the quarterly dividend by \$0.0125 a share, to \$0.5775, bringing the annual payout to \$2.31 a share. **Long-term investors may wish to consider Verizon stock.** Indeed, at the recent quotation, the issue's 3- to 5-year appreciation potential is above average. What's more, this blue chip equity could well be the darling of income-seeking investors, as its dividend yield is almost double that of the Value Line median.

WAL-MART STORES NYSE-WMT																	RECENT PRICE	P/E RATIO	Trailing: 15.3 Median: 15.0	RELATIVE P/E RATIO	DIV'D YLD	2.9%	VALUE LINE
TIMELINESS	2	Raised 8/26/16	High: 54.6	52.2	51.4	63.8	57.5	56.3	60.0	77.6	81.4	88.1	91.0	75.2			Target Price	2019	2020	2021			
SAFETY	1	Raised 2/15/02	Low: 42.3	42.3	42.1	43.1	46.3	47.8	48.3	57.2	67.7	72.3	56.3	60.2									
TECHNICAL	2	Raised 10/21/16	<b>LEGENDS</b> --- 10.0 x "Cash Flow" p sh ... Relative Price Strength Options: Yes Shaded area indicates recession																				
BETA	.65	(1.00 = Market)	<b>2019-21 PROJECTIONS</b> Price Gain Ann'l Total High 95 (+40%) 11% Low 80 (+15%) 7%																				
<b>Insider Decisions</b> D J F M A M J J A to Buy 1 0 0 0 0 0 0 0 Options 0 15 1 10 5 0 12 6 to Sell 0 0 0 1 0 0 0 1			<b>Institutional Decisions</b> 4Q2015 1Q2016 2Q2016 to Buy 649 682 655 to Sell 726 644 689 Hld's(000) 956404 973646 920655														Percent 12 shares 8 traded 4			% TOT. RETURN 9/16 THIS STOCK VL ARITH. INDEX 1 yr. 14.6 17.7 3 yr. 5.6 23.7 5 yr. 58.0 108.1			
2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC		19-21			
42.80	49.36	56.09	60.00	68.02	75.79	84.40	95.34	103.34	107.82	119.98	130.76	141.57	147.32	150.45	152.48	157.10	166.65	Sales per sh <sup>A</sup>	195.00				
2.05	2.25	2.61	2.95	3.47	3.78	4.27	4.83	5.16	5.64	6.42	6.92	7.69	7.92	7.93	7.64	7.60	7.85	"Cash Flow" per sh	9.10				
1.40	1.50	1.81	2.03	2.41	2.63	2.92	3.16	3.42	3.66	4.07	4.45	5.02	5.11	5.07	4.57	4.35	4.50	Earnings per sh <sup>A B</sup>	5.50				
.24	.28	.30	.36	.52	.60	.67	.88	.95	1.09	1.21	1.46	1.59	1.88	1.92	1.96	2.00	2.04	Div'de Decl'd per sh <sup>C</sup>	2.25				
7.01	7.88	8.95	10.12	11.67	12.77	14.91	16.26	16.63	18.69	19.49	20.86	23.04	23.59	25.22	25.47	26.70	27.90	Book Value per sh	30.00				
4470.0	4453.0	4395.0	4311.0	4234.0	4165.0	4131.0	3973.0	3925.0	3786.0	3516.0	3418.0	3314.0	3233.0	3228.0	3162.0	3100.0	3000.0	Common Shs Outst'g <sup>D</sup>	2900.0				
38.0	34.9	30.3	26.9	22.8	18.3	16.0	14.9	16.2	13.9	13.1	12.4	13.5	14.9	15.4	15.5	15.5	15.5	Avg Ann'l P/E Ratio	16.0				
2.47	1.79	1.66	1.53	1.20	.97	.86	.79	.97	.93	.83	.78	.86	.84	.81	.78	.81	.78	Relative P/E Ratio	1.00				
.5%	.5%	.5%	.7%	.9%	1.2%	1.4%	1.9%	1.7%	2.1%	2.3%	2.7%	2.3%	2.5%	2.5%	2.8%	2.8%	2.8%	Avg Ann'l Div'd Yield	2.6%				
<b>CAPITAL STRUCTURE as of 7/31/16</b> Total Debt \$47491 mill. Due in 5 Yrs \$17881 mill. LT Debt \$42743 mill. LT Interest \$2300 mill. Incl. \$6070 mill. capitalized leases. (Total interest coverage: 10.0x) (54% of Cap'l)			348650	378799	405607	408214	421849	446950	469162	476294	485651	482130	487000	500000	Sales (\$mill) <sup>A</sup>	565500							
<b>Leases, Uncapitalized Annual rentals \$2057 mill.</b>			24.2%	24.4%	24.5%	25.4%	25.3%	25.0%	24.9%	24.8%	24.8%	25.1%	25.0%	25.0%	Gross Margin	25.0%							
<b>No Defined Benefit Pension Plan Pfd Stock None</b>			7.4%	7.5%	7.3%	7.6%	7.9%	7.7%	7.7%	7.6%	7.0%	6.7%	7.0%	Operating Margin	7.0%								
<b>Common Stock 3,093,257,531 shs. as of 8/29/16</b>			6779	7262	7720	8416	8970	10130	10773	10942	11453	11528	11725	12050	Number of Stores	12750							
<b>MARKET CAP: \$213 billion (Large Cap)</b>			12178	12884	13512	14204	14921	15523	16999	16728	16426	14694	13700	13500	Net Profit (\$mill)	15950							
<b>CURRENT POSITION 2014 2015 7/31/16 (\$MILL.)</b>			33.6%	34.2%	34.2%	34.1%	34.0%	33.4%	31.0%	32.2%	31.9%	30.3%	33.0%	33.0%	Income Tax Rate	33.0%							
<b>Cash Assets</b>			9135	8705	7676	6166	d10869	d6441	d7230	d6591	d7325	d11878	d8160	d1994	d4380	d8500	d5800	Working Cap'l (\$mill)	5300				
<b>Receivables</b>			6778	5624	5275	30735	33402	34549	36401	43842	47079	41417	44559	43692	44030	43500	45200	Long-Term Debt (\$mill)	48000				
<b>Inventory (LIFO)</b>			45141	44469	43453	61573	64608	65285	70749	68542	71315	76343	76255	81394	80546	82770	83700	Shr. Equity (\$mill)	87000				
<b>Other</b>			2224	1441	1828	14.1%	14.1%	14.5%	14.1%	14.1%	14.0%	15.3%	14.7%	14.0%	12.6%	11.0%	10.5%	Return on Total Cap'l	12.0%				
<b>Current Assets</b>			63278	60239	58232	19.8%	19.9%	20.7%	20.1%	21.8%	21.8%	22.3%	21.9%	20.2%	18.2%	16.5%	16.0%	Return on Shr. Equity	18.5%				
<b>Accts Payable</b>			38410	38487	39902	15.2%	14.4%	15.0%	14.1%	15.3%	14.7%	15.2%	13.9%	12.6%	10.4%	9.0%	9.0%	Retained to Com Eq	11.0%				
<b>Debt Due</b>			6402	6004	4748	23%	28%	28%	30%	30%	33%	32%	37%	38%	43%	46%	45%	All Div'ds to Net Prof	41%				
<b>Other</b>			20460	20128	23472	<b>BUSINESS:</b> Wal-Mart Stores, Inc. owns the world's largest retail chain, operating 3,465 supercenters (includes grocery departments), 442 discount stores, 655 Sam's Clubs, and 667 Neighborhood Markets in the U.S., plus 6,299 foreign stores, many in Latin America, with the rest in Asia, Canada, and the U.K. as of 1/31/16. Total store space: 1.149 billion square feet. Retail space is largely owned, and most stores are within 400 miles of a distribution center. Groceries accounted for 56% of U.S. sales; sales per square foot in 2015: about \$420. Has 2,300,000 employees. Off/dir. own 51.6% of shares (4/16 proxy). Chairman: S. Robson Walton. CEO and Pres.: Doug McMillon. Inc. DE. Addr.: 702 S.W. 8th St., Bentonville, AR 72716. Tel.: 479-273-4000. Internet: www.walmart.com.																	
<b>Current Liab.</b>			65272	64619	68122	<b>Wal-Mart is making deals.</b> The company plans on buying e-tailer Jet.com for \$3 billion in cash and \$300 million in stock (pending regulatory approval). If successful, this would be the largest e-commerce acquisition in U.S. history. Jet.com has proven popular with value-conscious urban millennials, thanks largely to its innovative Smart Cart technology. This functionality entices shoppers with lower unit prices when more of the same item are added to the shopping cart. With Wal-Mart also being a favorite of young adult shoppers, the customer bases should prove complementary. Elsewhere, the company announced an increased stake in JD.com from 5.9% to 10.8%. That business is China's answer to Amazon. JD.com should help WMT gain customers in that region (the world's largest market for e-commerce), as Wal-Mart's goods are expected to be sold through the Chinese website. The deals make sense since WMT can learn from these young companies and increase its share of digital spending. <b>The company hosted its annual meeting with investment analysts.</b> The main takeaway was that digital platform is becoming increasingly important to Wal-Mart's long-term investment case. In fact, there should be around 25% fewer U.S. store openings next year as focus shifts away from physical footprint expansion. Items sold online have more than doubled in the past six months, and the online offering is expanding at around a million products a month. The company aims to achieve online sales growth of 20%-30% per quarter, a far cry from the 12% achieved in the most recent period. Focus on creating new ways to make the customer shopping experience faster and easier should help augment increased sales from the aforementioned new businesses. Nonetheless, building out Web properties and capabilities ought to result in modestly higher earnings in fiscal 2017, before 5%-10% growth can be achieved in fiscal 2018. <b>These shares are favorably ranked.</b> Conservative investors may find Wal-Mart's solid dividend yield and dependable business model appealing. However, near-term sales catalysts appear limited, and investors will have to be patient in order to capitalize on earnings improvement.																	
<b>ANNUAL RATES</b>			Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15	<b>Kevin Downing</b>																	
<b>of change (per sh)</b>			10 Yrs.	5 Yrs.	'19-'21	<b>October 28, 2016</b>																	
<b>Sales</b>			8.0%	6.5%	4.5%	<b>Company's Financial Strength</b> A++																	
<b>"Cash Flow"</b>			8.5%	6.5%	2.5%	<b>Stock's Price Stability</b> 95																	
<b>Earnings</b>			7.5%	6.0%	2.0%	<b>Price Growth Persistence</b> 30																	
<b>Dividends</b>			14.5%	12.0%	2.5%	<b>Earnings Predictability</b> 95																	
<b>Book Value</b>			8.0%	6.5%	3.5%	<b>To subscribe call 1-800-VALUELINE</b>																	
<b>Fiscal Year Begins</b>			Apr.30	Jul.31	Oct.31	Jan.31	Full Fiscal Year																
<b>2013</b>			114071	116829	115688	129706	476294																
<b>2014</b>			114960	120125	119001	131565	485651																
<b>2015</b>			114826	120229	117408	129667	482130																
<b>2016</b>			115904	120900	118500	131696	487700																
<b>2017</b>			119000	125000	122000	134000	500000																
<b>Fiscal Year Begins</b>			Apr.30	Jul.31	Oct.31	Jan.31	Full Fiscal Year																
<b>2013</b>			1.14	1.24	1.14	1.59	5.11																
<b>2014</b>			1.10	1.21	1.15	1.61	5.07																
<b>2015</b>			1.03	1.08	1.03	1.43	4.57																
<b>2016</b>			.98	1.07	.95	1.35	4.35																
<b>2017</b>			1.01	1.05	1.00	1.44	4.50																
<b>Calendar</b>			Mar.31	Jun.30	Sep.30	Dec.31	Full Year																
<b>2012</b>			.365	.795	.3975	.3975	1.96																
<b>2013</b>			.47	.47	.47	.47	1.88																
<b>2014</b>			.48	.48	.48	.48	1.92																
<b>2015</b>			.49	.49	.49	.49	1.96																
<b>2016</b>			.50	.50	.50																		
<b>(A) Fiscal year ends Jan. 31st of following calendar year. Sales exclude rentals from licensed depts. (B) Based on diluted shares. May not sum due to rounding. Excls. n/r</b>			<b>(losses)/gains: '01, (\$0.01); '05, \$0.03; '08, (\$0.07); '09, \$0.04; '10, \$0.40; '11, \$0.03; '13, (\$0.23); '15 (\$0.08). Next earnings report due November 17th. (C) Divs. historically paid in early Mar., May, Aug., and Dec. Dividend reinvestment plan available. (D) In millions.</b>																				

(A) Fiscal year ends Jan. 31st of following calendar year. Sales exclude rentals from licensed depts. (B) Based on diluted shares. May not sum due to rounding. Excls. n/r (losses)/gains: '01, (\$0.01); '05, \$0.03; '08, (\$0.07); '09, \$0.04; '10, \$0.40; '11, \$0.03; '13, (\$0.23); '15 (\$0.08). Next earnings report due November 17th. (C) Divs. historically paid in early Mar., May, Aug., and Dec. Dividend reinvestment plan available. (D) In millions.

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Up Last 7 Days		1	N/A	N/A	N/A
Up Last 30 Days		3	1	2	1
Down Last 30 Days		N/A	N/A	N/A	2
Down Last 90 Days		N/A	N/A	N/A	N/A

Growth Estimates	CHD	Industry	Sector	S&P 500
Current Qtr.	4.40%	-0.13		
Next Qtr.	7.30%	0.09		
Current Year	4.70%	0.11		
Next Year	7.90%	0.14		
Next 5 Years (per annum)	9.78%	0.13		
Past 5 Years (per annum)	9.81%	N/A		

**NEW** My Screeners My Portfolio

Stifel: Hold U.S. Markets open 10/27/2016

↓ Downgrade BofA/Merrill: Neutral to Underperform 4/18/2016

↓ Downgrade Goldman: Neutral to Sell 1/13/2016

Societe Generale: Hold 10/13/2015

↓ Downgrade UBS: Neutral to Sell 9/11/2015

Sterne Agee CRT: Neutral 7/21/2015

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EPS Revisions		Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days		1	1	1	N/A
Up Last 30 Days		3	1	3	1
Down Last 30 Days		1	1	1	1
Down Last 90 Days		N/A	N/A	N/A	N/A

**My Screeners** <sup>NEW</sup> **My Portfolio**

	Credit Suisse	Buy	2/10/2016
Upgrade	Societe Generale	Sell to Hold	2/10/2016
Upgrade	Stifel	Hold to Buy	1/12/2016
	Sterne Agee CRT	Buy	7/21/2015
Upgrade	UBS	Neutral to Buy	7/14/2015
Downgrade	UBS	Buy to Neutral	7/14/2015

Growth Estimates	KQ	Industry	Sector	S&P 500
Current Qtr.	-5.90%	1.05		
Next Qtr.	N/A	2.40		
Current Year	-4.50%	-0.85		
Next Year	5.20%	0.12		
Next 5 Years (per annum)	2.59%	0.14		
Past 5 Years (per annum)	-0.13%	N/A		

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90 Days Ago	0.66	0.67	2.41	2.63	

EPS Revisions	Current Qtr	Next Qtr	Current Year	Next Year
Up Last 7 Days	1	1	3	3
Up Last 30 Days	3	3	10	7
Down Last 30 Days	2	2	1	1
Down Last 90 Days	N/A	N/A	N/A	N/A

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U.S. Markets open in 4 mins. 10/14/2016

Upgrade RBC Capital Mkts: Sector Perform to Outperform

Upgrade BofA/Merrill: Neutral to Buy 2/12/2016

Upgrade Morgan Stanley: Equal-Weight to Overweight 7/2/2015

Upgrade BofA/Merrill: Underperform to Neutral 7/1/2015

Upgrade JP Morgan: Neutral to Overweight 6/22/2015

RBC Capital Mkts: Sector Perform 11/26/2013

Growth Estimates	CAG	Industry	Sector	S&P 500
Current Qtr.	12.10%	0.62		
Next Qtr.	15.80%	N/A		
Current Year	19.20%	0.05		
Next Year	7.70%	0.12		
Next 5 Years (per annum)	10.33%	0.14		
Past 5 Years (per annum)	7.31%	N/A		

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90 Days Ago		1.22	1.38	5.99	6.64
EPS Revisions		Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days		1	1	1	1
Up Last 30 Days		5	6	7	4
Down Last 30 Days		N/A	N/A	1	N/A
Down Last 90 Days		N/A	N/A	N/A	N/A

Growth Estimates	COST	Industry	Sector	S&P 500
Current Qtr.	11.00%	0.36		
Next Qtr.	10.50%	0.62		
Current Year	11.40%	0.06		
Next Year	10.60%	0.16		
Next 5 Years (per annum)	10.21%	0.13		
Past 5 Years (per annum)	8.88%	N/A		

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Upgrade Northcoast: Neutral to Buy 10/18/2016

Wells Fargo: Market Perform 10/18/2016

Upgrade Goldman: Neutral to Buy 6/1/2016

RBC Capital Mkts: Outperform 5/3/2016

Citigroup: Neutral 11/9/2015

Downgrade Northcoast: Buy to Neutral 11/3/2015

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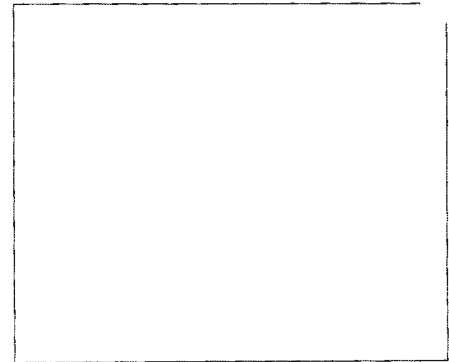
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30 Days Ago							
60 Days Ago		0.88	0.74	3.11	3.45	↑ Upgrade	BofA/Merrill: Underperform to Neutral 6/30/2016
90 Days Ago		0.88	0.74	3.11	3.45	↓ Downgrade	Goldman: Neutral to Sell 5/24/2016
<b>EPS Revisions</b>		Current Qtr.	Next Qtr.	Current Year	Next Year		Susquehanna: Neutral 10/27/2015
Up Last 7 Days		N/A	N/A	N/A	N/A	↑ Upgrade	Morgan Stanley: Underweight to Equal-Weight 9/2/2015
Up Last 30 Days		1	1	1	1	↑ Upgrade	RBC Capital Mkts: Sector Perform to Outperform 7/21/2015
Down Last 30 Days		N/A	N/A	N/A	N/A	↑ Upgrade	Goldman: Sell to Neutral 4/20/2015
Down Last 90 Days		N/A	N/A	N/A	N/A	↑ Upgrade	

Growth Estimates	GIS	Industry	Sector	S&P 500
Current Qtr.	6.10%	0.62		
Next Qtr.	12.30%	N/A		
Current Year	6.20%	0.05		
Next Year	10.30%	0.12		
Next 5 Years (per annum)	6.95%	0.14		
Past 5 Years (per annum)	3.02%	N/A		

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90 Days Ago		0.91	0.9	3.69	3.96
EPS Revisions	Current Qtr	Next Qtr	Current Year	Next Year	
Up Last 7 Days	N/A	N/A	N/A	N/A	
Up Last 30 Days	N/A	N/A	N/A	N/A	
Down Last 30 Days	2	2	2	3	
Down Last 90 Days	N/A	N/A	N/A	N/A	

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U.S. Markets open in 3 mins.

Upgrade	Goldman: Sell to Neutral	3/16/2016
Upgrade	Credit Agricole: Underperform to Outperform	1/8/2016
Upgrade	Credit Suisse: Neutral to Outperform	11/23/2015
Upgrade	Credit Suisse: Underperform to Neutral	11/4/2015
	Susquehanna: Neutral	10/27/2015
	Buckingham Research: Buy	10/19/2015

Growth Estimates	K	Industry	Sector	S&P 500
Current Qtr.	2.40%	0.62		
Next Qtr	11.40%	N/A		
Current Year	2.80%	0.05		
Next Year	10.20%	0.12		
Next 5 Years (per annum)	7.13%	0.14		
Past 5 Years (per annum)	2.48%	N/A		

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60 Days Ago		1.49	1.61	6.08	6.52
90 Days Ago		1.49	1.61	6.08	6.52

EPS Revisions	Current Qtr	Next Qtr	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	9	5	9	10
Down Last 90 Days	N/A	N/A	N/A	N/A

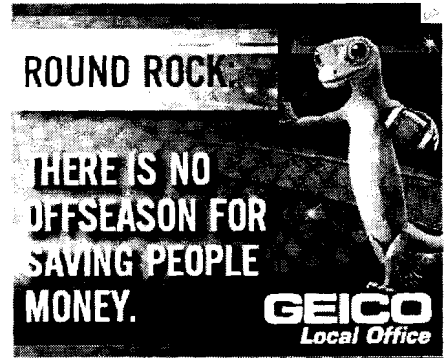
Growth Estimates	KMB	Industry	Sector	S&P 500
Current Qtr.	0.70%	0.57		
Next Qtr	4.60%	4.00		
Current Year	4.50%	0.08		
Next Year	6.50%	0.12		
Next 5 Years (per annum)	7.20%	0.28		
Past 5 Years (per annum)	4.06%	N/A		

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- ↓ Downgrade Deutsche Bank: Buy to Hold U.S. Markets Close in 6:42:20 mins
- ↑ Upgrade Societe Generale: Hold to Buy 10/23/2015
- ↑ Upgrade Deutsche Bank: Hold to Buy 9/15/2015
- Sterne Agee CRT: Neutral 7/21/2015
- ↑ Upgrade Barclays: Equal Weight to Overweight 5/13/2015
- ↓ Downgrade BMO Capital Markets: Outperform to Market Perform 4/2/2015

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90 Days Ago		1.11	0.98	3.96	4.27

EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	2	1	6	1
Up Last 30 Days	2	1	7	3
Down Last 30 Days	4	4	1	2
Down Last 90 Days	N/A	N/A	N/A	N/A

My Screeners	NEW My Portfolio
Upgrade	Argus: Hold to Buy Markets of 10/16/16
Upgrade	B. Riley & Co.: Neutral to Buy 8/15/2016
	Jefferies: Buy 6/15/2016
Upgrade	Sterne Agee CRT: Neutral to Buy 2/16/2016
Upgrade	Stifel: Hold to Buy 1/19/2016
Upgrade	Sun Trust Rbsn Humphrey: Neutral to Buy 9/8/2015

Growth Estimates	PG	Industry	Sector	S&P 500
Current Qtr.	3.80%	0.57		
Next Qtr.	14.00%	4.00		
Current Year	6.00%	0.08		
Next Year	8.20%	0.12		
Next 5 Years (per annum)	8.60%	0.28		
Past 5 Years (per annum)	-0.97%	N/A		

More Upgrades & Downgrades

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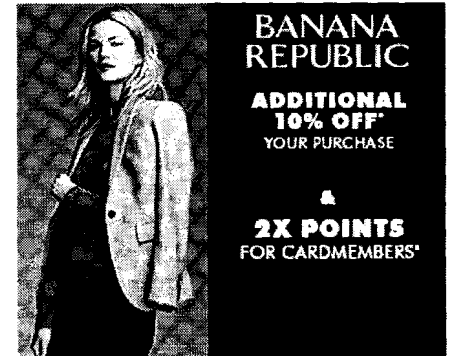


Finance Home	Yahoo Originals	Personal Finance	Tech	Market Data	Industry News
30 Days Ago		1.88	2.00	7.7	8.18
60 Days Ago		1.95	2.08	7.7	8.21
90 Days Ago		2.1	2.1	7.7	8.22
EPS Revisions		Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days		1	N/A	N/A	N/A
Up Last 30 Days		2	N/A	N/A	N/A
Down Last 30 Days		N/A	1	2	2
Down Last 90 Days		N/A	N/A	N/A	N/A

Growth Estimates	SJM	Industry	Sector	S&P 500
Current Qtr.	19.10%	0.62		
Next Qtr.	27.80%	N/A		
Current Year	28.00%	0.05		
Next Year	6.30%	0.12		
Next 5 Years (per annum)	9.08%	0.14		
Past 5 Years (per annum)	5.31%	N/A		

NEW	My Screeners	My Portfolio
↓ Downgrade	Credit Suisse: Outperform to Neutral	U.S. Markets close in 69.25/70.16mins
↑ Upgrade	Hilliard Lyons: Underperform to Neutral	9/22/2016
↓ Downgrade	Jefferies: Buy to Hold	6/10/2016
	KeyBanc Capital Mkts: Sector Weight	5/26/2016
↓ Downgrade	Goldman: Neutral to Sell	4/4/2016
	Susquehanna: Neutral	10/27/2015

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Finance Home	Yahoo Originals	Personal Finance	Tech	Market Data	Industry News
60 Days Ago	0.59	0.5	2.3	2.58	
90 Days Ago	0.59	0.5	2.3	2.57	
EPS Revisions	Current Qtr	Next Qtr.	Current Year	Next Year	
Up Last 7 Days	N/A	1	1	1	
Up Last 30 Days	2	3	2	2	
Down Last 30 Days	1	N/A	N/A	N/A	
Down Last 90 Days	N/A	N/A	N/A	N/A	

NEW My Screeners My Portfolio

U.S. Markets close in 6 hrs 30 mins  
Barclays: Underweight 9/23/2016

BofA/Merrill: Neutral 6/20/2016

Upgrade Argus: Hold to Buy 2/5/2016

Downgrade Morgan Stanley: Equal-Weight to Underweight 2/2/2016

Wells Fargo: Outperform 11/19/2015

Pivotal Research Group: Sell 8/6/2015

Growth Estimates	SY	Industry	Sector	S&P 500
Current Qtr.	11.50%	0.46		
Next Qtr.	13.30%	1.08		
Current Year	10.50%	0.03		
Next Year	11.60%	0.16		
Next 5 Years (per annum)	10.03%	0.14		
Past 5 Years (per annum)	0.18%	N/A		

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60 Days Ago		0.91	1.04	3.89	4.03
90 Days Ago		0.91	1.04	3.9	4.04
<b>EPS Revisions</b>		Current Qtr	Next Qtr	Current Year	Next Year
Up Last 7 Days		3	2	9	4
Up Last 30 Days		7	3	15	9
Down Last 30 Days		8	3	4	7
Down Last 90 Days		N/A	N/A	N/A	N/A

Growth Estimates	VZ	Industry	Sector	S&P 500
Current Qtr.	1.10%	-0.19		
Next Qtr.	-3.80%	-0.06		
Current Year	-2.50%	-0.72		
Next Year	3.10%	0.44		
Next 5 Years (per annum)	1.68%	0.12		
Past 5 Years (per annum)	15.35%	N/A		

**NEW** My Screeners My Portfolio

↑ Upgrade Drexel Hamilton: Hold to Buy  
U.S. Markets close in 60 mins

↓ Downgrade Hilliard Lyons: Buy to Neutral 7/27/2016

↓ Downgrade Oppenheimer: Outperform to Perform 7/20/2016

↓ Downgrade Bemstein: Outperform to Mkt Perform 4/7/2016

↓ Downgrade Jefferies: Buy to Hold 4/7/2016

Macquarie: Neutral 4/5/2016

More Upgrades & Downgrades



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30 Day Range		0.88	1.00	4.27	4.40
60 Days Ago		0.96	1.33	4.33	4.48
90 Days Ago		0.93	1.35	4.26	4.41
EPS Revisions		Current Qtr	Next Qtr	Current Year	Next Year
Up Last 7 Days		N/A	N/A	N/A	N/A
Up Last 30 Days		2	3	4	2
Down Last 30 Days		N/A	N/A	N/A	N/A
Down Last 90 Days		N/A	N/A	N/A	N/A

**NEW** My Screeners My Portfolio

U.S. Markets close in 6 hrs 29 mins

Piper Jaffray: Neutral 10/21/2016

Guggenheim: Buy 9/30/2016

KeyBanc Capital Mkts. Overweight 9/30/2016

Upgrade Barclays: Equal Weight to Overweight 9/23/2016

Upgrade Cowen: Market Perform to Outperform 9/12/2016

Downgrade Northcoast: Buy to Neutral 7/12/2016

Growth Estimates	WMT	Industry	Sector	S&P 500
Current Qtr.	-3.00%	0.46		
Next Qtr.	-10.70%	1.08		
Current Year	-5.40%	0.03		
Next Year	0.50%	0.16		
Next 5 Years (per annum)	1.81%	0.14		
Past 5 Years (per annum)	-0.91%	N/A		

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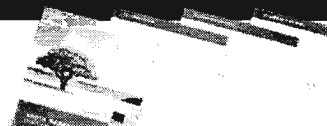
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- \* [Detailed Estimates](#)
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### Church & Dwight: (CHD)

(Real Time Quote From BATS)

\$47.95 USD

-0.16 (-0.33%)

Updated Oct 26, 2016 09:54 AM ET

Volume: 12.801

Open: \$48.01

Prior Close: \$48.11

Zacks Rank <sup>[?]</sup>:

Style Scores <sup>[?]</sup>:

Add to portfolio

Trades from \$3

3-Hold    3

Value: D | Growth: B | Momentum: B | VGM:

[View All Zacks Rank #1 Strong Buys](#)

#### Quote Overview

##### Stock Activity

Open	48.01
Day Low	47.99
Day High	48.11
52 Wk Low	38.43
52 Wk High	53.68
Avg. Volume	1,735,362
Market Cap	12.39 B
Dividend	0.71 ( 1.48%)
Beta	0.37
Industry	SOAP&CLNG PREPS

##### Key Earnings Data

Forward PE	27.18
PEG Ratio	2.83
Current Qtr Est	0.47
Current Yr Est	1.77
Most Accurate Est	0.47
Qtr Earnings ESP <sup>[?]</sup>	0.00%
Exp Earnings Date	*BMO11/3/16
Prior Year EPS	1.63
Exp EPS Growth (3-5yr)	9.59%

\*BMO = Before Market Open \*AMC = After Market Close

#### Research Report For CHD

[All Zacks' Analyst Reports »](#)

#### Zacks News For CHD

Procter & Gamble (PG) Q1 Earnings & Sales Top. [View Intact](#)  
10/25/16-9:05AM EST Zacks

Cosmetic Stocks' Earnings Slated on Aug 4: NUS, RDEN, CHD  
08/03/16-5:43AM EST Zacks

The U.S. Expansion Carries On  
06/16/16-4:17PM EST Zacks

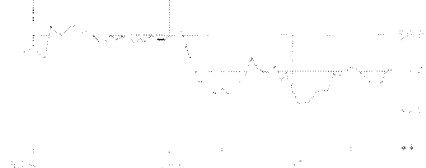
June Market Strategy: U.S. Expansion Carries On  
06/06/16-2:11PM EST Zacks

Does the Fed Raise Rates This Summer?  
06/03/16-9:06AM EST Zacks

[More Zacks News for CHD »](#)

#### Chart for CHD

Charts for CHD



October 26, 2016 © quote tick.com

[Interactive Chart | Fundamental Charts](#)

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#### Other News For CHD

3 Attractive Income Stocks Whose Dividends...  
10/13/16-7:15AM EST TheMotleyFool

6 Stocks With Growing Yield and Strong Returns  
10/10/16-3:47AM EST GuruFocus

Church & Dwight - Did This Consumer Cash Flow...  
09/28/16-11:01AM EST Seeking Alpha

Ignore Procter & Gamble: Here Are 3 Better Stocks  
09/25/16-6:15AM EST TheMotleyFool

Church & Dwight to Report Third Quarter 2016...

Momentum Trader  
Method for Trading  
Options Trader  
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**Coca Cola Co: (KO)**

(Real Time Quote From BATS)

\$42.84 USD

+0.30 (0.71%)

Updated Oct 26, 2016 09:54 AM ET

Volume: 1,928,883 Zacks Rank [?]:

Open: \$43.00 Style Scores [?]:

Prior Close: \$42.54

Add to portfolio Trades from \$3

3-Hold

Value: D | Growth: D | Momentum: B | VGM

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

Enter Symbol

**Stock Activity**

Open 43.00  
Day Low 42.41  
Day High 43.03  
52 Wk Low 40.75  
52 Wk High 47.13  
Avg. Volume 12,463,076  
Market Cap 183.60 B  
Dividend 1.40 (3.29%)  
Beta 0.59  
Industry BEVERAGES-SOFT

**Key Earnings Data**

Forward PE 22.33  
PEG Ratio 3.75  
Current Qtr Est 0.48  
Current Yr Est 1.91  
Most Accurate Est 0.49  
Qtr Earnings ESP<sup>[1]</sup> 2.08%  
Exp Earnings Date <sup>BMO</sup>10/26/16  
Prior Year EPS 2.00  
Exp EPS Growth (3-5yr) 5.95%

\*BMO = Before Market Open \*AMC = After Market Close

**Research Reports For KO**

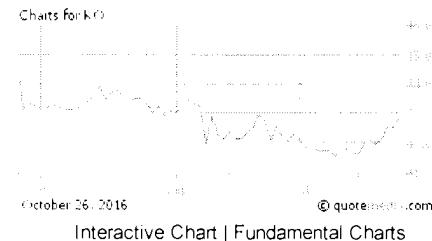
[All Zacks' Analyst Reports »](#)

**Zacks News For KO**

- Q3 Earnings, Earnings, Earnings! BA, HLT, KO, MDLZ, AAPL  
10/26/16-9:08AM EST Zacks
- Coca-Cola (KO) Beats on Earnings & Revenues in Q3  
10/26/16-7:22AM EST Zacks
- These Companies are Earnings All-Stars  
10/25/16-4:21PM EST Zacks
- B&G Foods (BGS) to Report Q3 Earnings: What's in Store?  
10/25/16-7:47AM EST Zacks
- Can Mondelez (MDLZ) Pull a Surprise This Earnings Season?  
10/24/16-3:51PM EST Zacks

[More Zacks News for KO »](#)

**Chart for KO**



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**Other News For KO**

- Stocks Poised For Early Weakness Following...  
10/26/16-8:59AM EST Alliance News
- Coca-Cola Third Quarter Profit Down, But Results...  
10/26/16-7:45AM EST Alliance News
- Coke profit falls 28 percent, but beats expectations  
10/26/16-6:58AM EST Associated Press, The
- The Coca-Cola Company Reports Third Quarter...  
10/26/16-6:51AM EST Business Wire

Business events scheduled for Wednesday

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### Conagra Foods: (CAG)

(Real Time Quote From BATS)

\$47.77 USD

-0.07 (-0.15%)

Updated Oct 26, 2016 09:56 AM ET

Volume: 45,441 Zacks Rank <sup>[?]</sup>:

Open: \$47.86 Style Scores <sup>[?]</sup>:

Prior Close: \$47.84

Add to portfolio  Trades from \$3

2-Buy  2

Value: C | Growth: B | Momentum: B | VGM:  B

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### Quote Overview

Enter Symbol

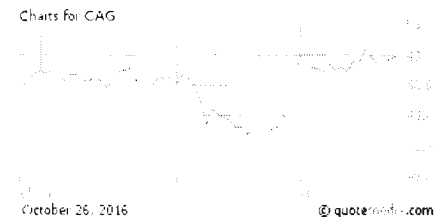
#### Stock Activity

Open	47.86
Day Low	47.70
Day High	48.01
52 Wk Low	37.97
52 Wk High	48.81
Avg. Volume	3,461,063
Market Cap	20.94 B
Dividend	1.00 (2.09%)
Beta	0.34
Industry	FOOD-MISC/DIVERSIFIED

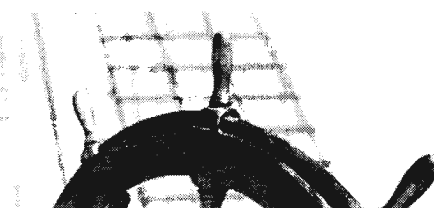
#### Key Earnings Data

Forward PE	19.30
PEG Ratio	2.19
Current Qtr Est	0.65
Current Yr Est	2.48
Most Accurate Est	0.64
Qtr Earnings ESP <sup>[?]</sup>	-1.54%
Exp Earnings Date	12/27/16
Prior Year EPS	2.08
Exp EPS Growth (3-5yr)	8.82%

### Chart for CAG



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### Zacks News For CAG

- 5 Top ROE Picks as Q3 Earnings Bells Chime  
10/26/16-7:05AM EST Zacks
- Consumer Staples Stocks' Earnings on Oct 25: PG and CSV  
10/24/16-8:48AM EST Zacks
- SUPERVALU (SVU) Q2 Earnings In Line, Sales Miss Estimates  
10/20/16-9:45AM EST Zacks
- How Will SUPERVALU (SVU) Gain from Selling Save-A-Lot?  
10/19/16-3:03PM EST Zacks
- General Mills (GIS) Unit Launches Healthy Vegetable Soups  
10/18/16-8:36AM EST Zacks

[More Zacks News for CAG »](#)

### Other News For CAG

- Stocks Going Ex-Dividend The Fourth Week Of...  
10/20/16-12:00PM EST Seeking Alpha
- Q4 2016 Sector Ratings For ETFs And Mutual...  
10/19/16-9:30AM EST Seeking Alpha
- ConAgra Foods in the spotlight  
10/18/16-10:01AM EST Seeking Alpha
- Piper Jaffray Upgrades Under Armour to...  
10/17/16-10:15AM EST Market Realist
- RBC Capital Upgrades ConAgra Foods to...

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### Costco Whole Cp: (COST)

(Real Time Quote From BATS)

\$150.38 USD

-0.61 (-0.40%)

Updated Oct 26, 2016 09:56 AM ET

Volume: 126.644 Zacks Rank [?]:

Open: \$150.35 Style Scores [?]:

Prior Close: \$150.99

Add to portfolio

Trades from \$3

3-Hold    3

Value: B | Growth: C | Momentum: F | VGM: C

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#### Quote Overview

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##### Stock Activity

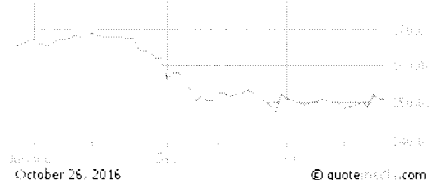
Open	150.35
Day Low	150.35
Day High	151.23
52 Wk Low	138.57
52 Wk High	169.73
Avg. Volume	2,579,076
Market Cap	66.06 B
Dividend	1.80 ( 1.19%)
Beta	0.71
Industry	RETAIL-DISCOUNT

##### Key Earnings Data

Forward PE	25.50
PEG Ratio	2.40
Current Qtr Est	1.20
Current Yr Est	5.92
Most Accurate Est	1.20
Qtr Earnings ESP[?]	0.00%
Exp Earnings Date	12/13/16
Prior Year EPS	5.33
Exp EPS Growth (3-5yr)	10.61%

#### Chart for COST

Charts for COST



Interactive Chart | Fundamental Charts

#### Research Reports For COST

All Zacks' Analyst Reports »

#### Zacks News For COST

Staples (SPLS) Remains Well Poised for Long-Term Growth  
10/10/16-9:07AM EST Zacks

Cato Corp Repeats Dismal Trend, September Comps Fall 8%  
10/10/16-8:30AM EST Zacks

Buckle Continues with its Dismal Comparable Sales Trend  
10/10/16-8:26AM EST Zacks

Costco Wholesale Banks on Expansion Strategy for Growth  
10/10/16-8:00AM EST Zacks

L Brands Comps Up in September, October View Promising  
10/07/16-5:34AM EST Zacks

More Zacks News for COST »



#### Other News For COST

PediaPlex Hosts Allergy-Friendly Halloween...  
10/24/16-10:56AM EST PR Web

Sapura Appoints Chairman And Interim Chief...  
10/24/16-3:21AM EST Alliance News

Alibaba Pulls Out All the Stops For Singles Day...  
10/21/16-11:30AM EST Investors Business Daily

Here's Why Investors Should Still Be Skeptical of...  
10/21/16-11:30AM EST TheStreet.com

Can Results Boost American Express' Confidence?





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**Kellogg Co: (K)**

(Real Time Quote From BATS)

**\$74.02 USD**

-0.19 (-0.26%)

Updated Oct 26, 2016 09:56 AM ET

Volume: 27,316

Open: \$74.19

Prior Close: \$74.21

**Zacks Rank** [?]:

**Style Scores** [?]:

Add to portfolio  Trades from \$3

3-Hold

Value: C | Growth: B | Momentum: F | VGM: C

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**Quote Overview**

Enter Symbol

**Stock Activity**

Open	74.19
Day Low	74.16
Day High	74.41
52 Wk Low	64.65
52 Wk High	87.16
Avg. Volume	1,636,114
Market Cap	25.99 B
Dividend	2.08 (2.80%)
Beta	0.47
Industry	FOOD-MISC/DIVERSIFIED

**Key Earnings Data**

Forward PE	20.50
PEG Ratio	3.26
Current Qtr Est	0.87
Current Yr Est	3.62
Most Accurate Est	0.86
Qtr Earnings ESP[?]	-1.15%
Exp Earnings Date	*BMO 11/1/16
Prior Year EPS	3.53
Exp EPS Growth (3-5yr)	6.28%

\*BMO = Before Market Open \*AMC = After Market Close

**Research Reports For K**

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**Zacks News For K**

Stock Market News for October 14, 2016

10/14/16-9:10AM EST Zacks

Kellogg (K) to Buy Brazilian Food Maker, Buyback Trimmed

10/14/16-7:12AM EST Zacks

Salesforce Buys Artificial Intelligence Company Krux Digital

10/04/16-11:58AM EST Zacks

Nutanix's NASDAQ Debut Set on Sep 30, to Raise \$241.5M...

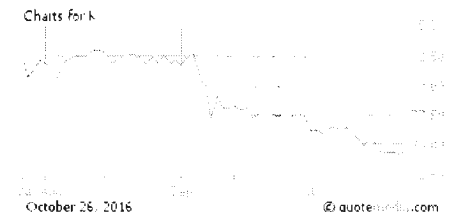
10/03/16-8:57AM EST Zacks

Nutanix's NASDAQ Debut Set on Sep 30, to Raise \$241.5M

09/30/16-9:45AM EST Zacks

[More Zacks News for K »](#)

**Chart for K**



[Interactive Chart](#) | [Fundamental Charts](#)

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**Other News For K**

Prepare To Be Bowled Over: MorningStar Farms®

10/24/16-6:57AM EST PR Newswire

Kellogg Company Declares Regular Dividend of...

10/21/16-10:12AM EST PR Newswire

Kellogg declares \$0.52 dividend

10/21/16-9:30AM EST Seeking Alpha

Coca-Cola Co./PepsiCo Inc.: Two Dividend...

10/21/16-8:45AM EST Seeking Alpha

Digital Realty Trust not a buy yet

- Momentum Trader
- Method for Trading
- Options Trader
- Reitmeister Trader
- Research Wizard
- Short List
- Stocks Under \$10
- Surprise Trader
- Tactical Trader
- Top 10 Stocks
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- \* Detailed Estimates
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- Options Greek Montage

**Access Zacks Data Feed**

**Kimberly Clark: (KMB)**

(Real Time Quote From BATS)

\$113.25 USD

-0.48 (-0.42%)

Updated Oct 26 2016 09:58 AM ET

Volume: 171,720 Zacks Rank <sup>[?]</sup>:

Open: \$112.96 Style Scores <sup>[?]</sup>:

Prior Close: \$113.73

Add to portfolio

Trades from \$3

4-Sell

Value: D | Growth: B | Momentum: C | VGM:

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

Enter Symbol

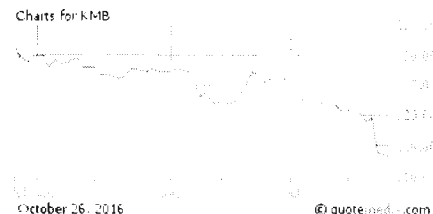
**Stock Activity**

Open	112.96
Day Low	112.64
Day High	113.68
52 Wk Low	112.64
52 Wk High	138.87
Avg. Volume	1,949,958
Market Cap	40.90 B
Dividend	3.68 ( 3.24%)
Beta	0.42
Industry	CONSUMER PRD-MISC STPL

**Key Earnings Data**

Forward PE	18.92
PEG Ratio	2.66
Current Qtr Est	1.45
Current Yr Est	6.01
Most Accurate Est	1.43
Qtr Earnings ESP <sup>[?]</sup>	-1.38%
Exp Earnings Date	1/23/17
Prior Year EPS	5.76
Exp EPS Growth (3-5yr)	7.11%

**Chart for KMB**



October 26, 2016 @ quote.med.com

[Interactive Chart](#) | [Fundamental Charts](#)

**Research Reports For KMB**

[All Zacks' Analyst Reports »](#)

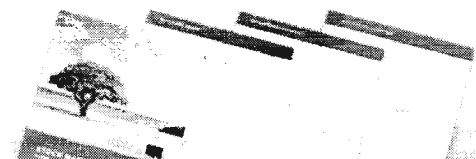
**Zacks News For KMB**

- Company News for October 25, 2016  
10/25/16-9:10AM EST Zacks
- Q3 Earnings Continue Amid AT&T/Time Warner News  
10/24/16-9:24AM EST Zacks
- Kimberly-Clark (KMB) Lags Q3 Earnings, Tightens 2016 View  
10/24/16-9:21AM EST Zacks
- Kimberly-Clark (KMB) Misses on Q3 Earnings and Revenue  
10/24/16-6:48AM EST Zacks
- Consumer Stocks to Report Earnings on Oct 24: VFC, KMB, ERI  
10/20/16-5:59AM EST Zacks

[More Zacks News for KMB »](#)

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**Other News For KMB**

- B/E Aerospace, Microsoft and T-Mobile rise; AT&T...  
10/24/16-4:42PM EST Associated Press, The
- Kimberly-Clark Sees Full Year Profit Falling Below...  
10/24/16-8:31AM EST Alliance News
- Kimberly-Clark misses 3Q profit forecasts  
10/24/16-7:34AM EST Associated Press, The
- Kimberly-Clark Announces Third Quarter 2016...  
10/24/16-7:26AM EST PR Newswire

LONDON MARKET MIDDAY: Stocks Lose Gains...

- Momentum Trader
- Method for Trading
- Options Trader
- Reitmeister Trader
- Research Wizard
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**Procter & Gambl: (PG)**

(Real Time Quote From BATS)

**\$87.16 USD**

+0.19 (0.22%)

Updated Oct 26, 2016 09:58 AM ET

Volume: 452,948

Zacks Rank <sup>[?]</sup>:

3-Hold

Open: \$86.91

Style Scores <sup>[?]</sup>:

Value: D | Growth: C | Momentum: F | VGM:

Prior Close: \$86.97

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

Enter Symbol

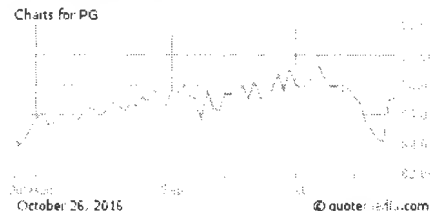
**Stock Activity**

Open	86.91
Day Low	86.78
Day High	87.16
52 Wk Low	73.95
52 Wk High	90.33
Avg. Volume	31,714,560
Market Cap	232.16 B
Dividend	2.68 ( 3.08%)
Beta	0.54
Industry	SOAP&CLNG PREPS

**Key Earnings Data**

Forward PE	22.48
PEG Ratio	3.26
Current Qtr Est	1.08
Current Yr Est	3.87
Most Accurate Est	1.07
Qtr Earnings ESP <sup>[?]</sup>	-0.93%
Exp Earnings Date	1/24/17
Prior Year EPS	3.67
Exp EPS Growth (3-5yr)	6.90%

**Chart for PG**



Interactive Chart | Fundamental Charts

**Research Reports For PG**

[All Zacks' Analyst Reports »](#)

**Zacks News For PG**

- Company News for October 26, 2016  
10/26/16-9:16AM EST Zacks
- Helen of Troy's Oxo Brand to Develop New Injection Device  
10/25/16-3:29PM EST Zacks
- Under Armour Beats Q3 Earnings, Stock Down 14%  
10/25/16-9:17AM EST Zacks
- Procter & Gamble (PG) Q1 Earnings & Sales Top, View Intact  
10/25/16-9:05AM EST Zacks
- Procter & Gamble (PG) Q1 Earnings, Sales Beat Estimates  
10/25/16-7:17AM EST Zacks

[More Zacks News for PG »](#)

**Other News For PG**

- Dreft and Actress Molly Sims Celebrate Launch of...  
10/26/16-8:56AM EST Business Wre
- Stocks Close Firmly In Negative Territory - US...  
10/25/16-4:35PM EST Alliance News
- Under Armour, Sherwin-Williams slump; Procter &...  
10/25/16-4:25PM EST Associated Press, The
- Stocks Remain Stuck In Negative Territory In...  
10/25/16-12:02PM EST Alliance News
- Stocks Move To The Downside Amid Slew Of...

- Momentum Trader
- Motivo for Trading
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- Option Chain
- Options Greek Montage

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**Smucker Jm: (SJM)**

(Real Time Quote From NASDAQ)

\$130.81 USD

+0.62 (+0.48%)

Updated Oct 26, 2016 10:00 AM ET

Volume: 32,010  
Open: \$130.50  
Prev Close: \$130.19

Zacks Rank <sup>TM</sup>

Style Scores <sup>TM</sup>

Aut in portfolio Trades from 93

4 Sell

Value: C Growth: A | Momentum: C | YGM: B

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

Enter Symbol

**Stock Activity**

Open	130.50
Day Low	130.15
Day High	131.50
52 Wk Low	111.01
52 Wk High	157.51
Avg Volume	749,844
Market Cap	15.16 B
Dividend	3.00 (+2.80%)
Beta	0.68
Industry	FOOD-WISCD/DIVERSIFD

**Key Earnings Data**

Forward PE	16.62
PEG Ratio	2.56
Current Qtr Est	1.44
Current Yr Est	7.31
Most Accurate Est	1.96
Qtr Earnings FSDP%	1.63%
Exp Earnings Date	11/17/16
Prior Year EPS	6.57
Exp EPS Growth (year)	7.18%

**Chart for SJM**

Open: 10/26/2016

Close: 10/26/2016

Interactive Chart | Fundamental Charts

**Research Reports For SJM**

[All Zacks Analyst Reports »](#)

**Zacks News For SJM**

What to Expect from Robert Hall (RHI) of Q3 Earnings?  
10/17/16 8:00AM EST Zacks

Will Global Worries Limit Consumer Staples Stocks?  
09/28/16 3:47PM ET Zacks

4 Great Dividend Stocks in the Consumer Staples Sector  
08/30/16 8:34AM EST Zacks

Company News for August 24, 2016  
08/24/16 8:59AM EST Zacks

J.M. Smucker Tops Q1 Earnings, Sales Lag on Ex. Divestiture  
08/23/16 8:16AM EST Zacks

[More Zacks News for SJM »](#)

**Other News For SJM**

The J. M. Smucker Company Declares Dividend  
10/21/16 4:17PM EST PRNewswire

J. M. Smucker declares \$0.75 dividend  
10/21/16 4:15AM EST Seeking Alpha

John Rogers Comments on J.M. Smucker Co  
10/21/16 3:47AM EST GuruFocus

John Rogers Comments on J.M. Smucker Co  
10/21/16 3:47AM EST GuruFocus

Digital Realty Trust not a buy yet



- Momentum Trader
- Method for Trading
- Options Trader
- Reitmeister Trader
- Research Wizard
- Short List
- Stocks Under \$10
- Surprise Trader
- Tactical Trader
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**Sysco Corp: (SYU)**

(Real Time Quote From BATS)

\$47.37 USD

-0.07 (-0.15%)

Updated Oct 26, 2016 10:00 AM ET

Volume: 91,735 Zacks Rank <sup>[?]</sup>:  
 Open: \$47.38 Style Scores <sup>[?]</sup>:  
 Prior Close: \$47.44

[+](#) Add to portfolio [Trades from \\$3](#)

2-Buy  2

Value: B | Growth: A | Momentum: B | VGM: **A**

[View All Zacks Rank #1 Strong Buys](#)

Quote Overview

Enter Symbol

Stock Activity	Key Earnings Data
Open 47.38	Forward PE 20.43
Day Low 47.38	PEG Ratio 2.31
Day High 47.49	Current Qtr Est 0.59
52 Wk Low 38.84	Current Yr Est 2.32
52 Wk High 53.97	Most Accurate Est 0.60
Avg. Volume 3,287,681	Qtr Earnings ESP <sup>[?]</sup> 1.70%
Market Cap 26.15 B	Exp Earnings Date <sup>*BMO</sup> 11/7/16
Dividend 1.24 (2.61%)	Prior Year EPS 2.10
Beta 0.51	Exp EPS Growth (3-5yr) 8.83%
Industry	FOOD-MISC/DIVERSIFIED

\*BMO = Before Market Open \*AMC = After Market Close

Chart for SYU

Charts for SYU



Interactive Chart | Fundamental Charts

Research Reports For SYU

[All Zacks' Analyst Reports »](#)

Zacks News For SYU

- What's in Store for Molson Coors (TAP) in Q3 Earnings?  
10/26/16-8:21AM EST Zacks
- Kellogg (K) to Buy Brazilian Food Maker, Buyback Trimmed  
10/14/16-7:12AM EST Zacks
- 4 Low Beta Consumer Staples Stocks for a Risky October  
10/04/16-1:43PM EST Zacks
- Is an Improving Economy Driving Consumer Staples Stocks?  
09/28/16-2:56PM EST Zacks
- This Week's Top Growth & Income Stocks: (SYU) (TATYY)  
09/28/16-1:46PM EST Zacks

[More Zacks News for SYU »](#)

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Other News For SYU

- Sysco to Release First Quarter Fiscal 2017...  
10/24/16-5:12PM EST GlobeNewswire
- Supervalu Wants to Boost Its Sluggish Wholesale...  
10/19/16-7:15AM EST Market Realist
- SYSCO Is An Investment To Consider Seriously  
10/15/16-4:30AM EST Seeking Alpha
- Sysco Becomes #99 Most Shorted S&P 500...  
10/13/16-6:15AM EST Market News Video
- Free Market Capitalist September Dividend Income

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**Verizon Comm: (VZ)**

(Real Time Quote From BATS)

**\$47.80 USD**

-0.04 (-0.08%)

Updated Oct 26, 2016 10:00 AM ET

Volume: 845,931

Zacks Rank <sup>[?]</sup>:

3-Hold

Open: \$47.74

Style Scores <sup>[?]</sup>:

Value: B | Growth: D | Momentum: B | VM: B

Prior Close: \$47.84

[View All Zacks Rank #1 Strong Buys](#)

Add to portfolio  Trades from \$3

**Quote Overview**

Enter Symbol

**Stock Activity**

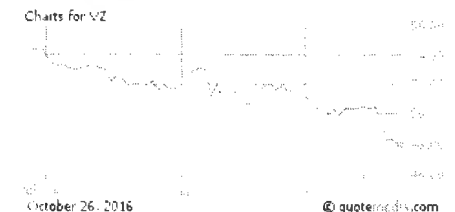
Open	47.74
Day Low	47.74
Day High	47.93
52 Wk Low	43.79
52 Wk High	56.95
Avg. Volume	13,689,246
Market Cap	195.04 B
Dividend	2.31 ( 4.83%)
Beta	0.30
Industry	WIRELESS NATIONAL

**Key Earnings Data**

Forward PE	12.23
PEG Ratio	2.96
Current Qtr Est	0.90
Current Yr Est	3.91
Most Accurate Est	0.91
Qtr Earnings ESP <sup>[?]</sup>	1.11%
Exp Earnings Date <sup>*BMO</sup>	1/24/17
Prior Year EPS	3.99
Exp EPS Growth (3-5yr)	4.13%

\*BMO = Before Market Open \*AMC = After Market Close

**Chart for VZ**



Interactive Chart | Fundamental Charts

**Research Reports For VZ**

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**Zacks News For VZ**

- Comcast (CMCSA) Q3 Earnings in Line. Revenues Beat  
10/26/16-8:55AM EST Zacks
- Sprint (S) Q2 Loss Narrower than Expected. '16 View Raised  
10/25/16-9:08AM EST Zacks
- T-Mobile US (TMUS) Tops Q3 Earnings Estimates. Lifts View  
10/24/16-9:05AM EST Zacks
- AT&T (T) Earnings Meet. Revenues Miss Estimates in Q3  
10/24/16-9:03AM EST Zacks
- AT&T (T) to Acquire Time Warner in \$85.4 Billion Mega Deal  
10/24/16-8:11AM EST Zacks

[More Zacks News for VZ »](#)

**Other News For VZ**

- Major Keynotes & Education Featured at New York...  
10/26/16-7:56AM EST PR Web
- Cheaper phones are fine \_ if top-end camera isn't...  
10/25/16-11:44AM EST Associated Press, The
- Building Tomorrow's Networks: Best Practices for...  
10/25/16-8:41AM EST PR Web
- AT&T's \$85.4B deal for Time Warner: A new bet...  
10/23/16-12:03AM EST Associated Press, The
- AT&T agrees to buy Time Warner for \$85 billion

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**Wal-Mart Stores: (WMT)**

(Real Time Quote From BATS)

\$ **69.30** (USD)

-0.06 (-0.09%)

Updated Oct 18, 2016 10:00 AM ET

Volume: 233,681

Open: 69.30

Prior Close: 69.36

Zacks Rank #1

Style Scores (A)

Add to portfolio

Trades from 53

3-Hold



Value A | Growth A | Momentum C | VGM (A)

[View All Zacks Rank #1 Strong Buys](#)

**Quote Overview**

**Stock Activity**

Open: 69.30

Day Low: 69.20

Day High: 69.48

52 Wk Low: 66.30

52 Wk High: 75.18

Avg Volume: 6,462,648

Market Cap: 244.62 B

Dividend: 2.00 (+2.88%)

Yield: 0.29%

Industry: RETAIL SUPERMKT

**Key Earnings Data**

Forward PE: 16.04

P/E10 Ratio: 11.04

Current Qtr Est: 0.96

Current Yr Est: 4.62

Most Accurate Est: 0.96

Qtr Earnings ESP: +0.00%

Exp Earnings Date: 10/25/16 (1/16)

Trailing Year EPS: 6.52

Exp EPS Growth Yr-1: 5.28%

**Chart for WMT**

10/26/2016 WMT



10/26/2016

10/26/2016

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**Research Reports For WMT**

[All Zacks' Analyst Reports »](#)

**Zacks News For WMT**

Central Gender & Per-Adult Res Segres; for \$63 Million  
10/26/16 1:53AM EST Zacks

Hydrex Offers Vizio TV and Soundbars for Holiday Season  
10/21/16 4:13PM EST Zacks

Wal-Mart to Invest in China's Grocery Platform New Data  
10/21/16 7:59AM EST Zacks

China Stock Roundup: JD.com, Wal-Mart Launch New Customer  
10/20/16 4:41PM EST Zacks

Wal-Mart & JD.com Expand Online Shopping Options in China  
10/20/16 6:02AM EST Zacks

[More Zacks News for WMT »](#)

**Other News For WMT**

MoneyGram and Wal-Mart Launch New  
10/26/16 1:19AM EST All-India News

Wal and Walmart Expand Walmart2Walmart...  
10/25/16 5:05PM EST GlobalNewsWire

Walmart Delivers Lowest Prices Ever for Domestic...  
10/25/16 4:58PM EST Business Wire

What is the best Nootropic Brain Supplement?  
10/25/16 9:03AM EST PR Web

AviDar Brings Instant Touchscreen Capabilities to...

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# **2016** Valuation Handbook Guide to Cost of Capital

Market Results Through 2015

Duff & Phelps

**WILEY**

**Exhibit 7.3:** CRSP (NYSE/NYSE MKT/NASDAQ) Deciles; Returns in Excess of CAPM (i.e. beta-adjusted Size Premium, as of December 31, 2015)

Size Grouping	OLS Beta	Arithmetic Mean	Return in Excess of Risk-free Rate (actual)	Return in Excess of Risk-free Rate (as predicted by CAPM)	Size Premium
Mid-Cap (3–5)	1.12	13.80%	8.75%	7.75%	1.00%
Low-Cap (6–8)	1.22	15.19%	10.14%	8.44%	1.70%
Micro-Cap (9–10)	1.35	17.93%	12.88%	9.31%	3.58%

#### Breakdown of Deciles 1–10

1-Largest	0.92	11.05%	6.00%	6.36%	-0.36%
2	1.04	12.78%	7.73%	7.16%	0.57%
3	1.10	13.53%	8.49%	7.63%	0.86%
4	1.12	13.80%	8.75%	7.76%	0.99%
5	1.17	14.59%	9.54%	8.05%	1.49%
6	1.17	14.77%	9.72%	8.09%	1.63%
7	1.25	15.29%	10.25%	8.62%	1.62%
8	1.30	16.08%	11.03%	8.99%	2.04%
9	1.34	16.81%	11.77%	9.23%	2.54%
10-Smallest	1.39	20.26%	15.21%	9.61%	5.60%

#### Breakdown of 10th Decile

10a	1.40	18.78%	13.74%	9.70%	4.04%
10w	1.38	17.62%	12.57%	9.53%	3.04%
10x	1.44	20.31%	15.27%	9.97%	5.30%
10b	1.37	23.26%	18.21%	9.45%	8.76%
10y	1.42	22.18%	17.13%	9.81%	7.32%
10z	1.28	25.69%	20.65%	8.86%	11.79%

**Source of underlying data:** Calculated (or derived) based on data from CRSP ©2016 Center for Research in Security Prices (CRSP®), The University of Chicago Booth School of Business (2016). Calculations by Duff & Phelps LLC.

### Size Premium Calculation: Risk Premium Report

In the *2016 Valuation Handbook*, the Risk Premium Report size studies are calculated over the years 1963–2015. The following statistics are calculated over this time period:

- The “historical” average annual long-term equity risk premium is 4.93%.
- The average annual risk-free rate is 6.54%.
- In Risk Premium Report Exhibit B-3 (25 portfolios sorted from largest companies to smallest companies by net income), portfolio 25 average annual return equals 21.08%
- In Risk Premium Report Exhibit B-3, portfolio 25 has a sum beta of 1.31



**Average Equity Returns Authorized January 1990 - December 2015**

Year	Period	Electric Utilities		Gas Utilities	
		ROE %	(# Cases)	ROE %	(# Cases)
1990	Full Year	12.70	(44)	12.67	(31)
1991	Full Year	12.55	(45)	12.46	(35)
1992	Full Year	12.09	(48)	12.01	(29)
1993	Full Year	11.41	(32)	11.35	(45)
1994	Full Year	11.34	(31)	11.35	(28)
1995	Full Year	11.55	(33)	11.43	(16)
1996	Full Year	11.39	(22)	11.19	(20)
1997	Full Year	11.40	(11)	11.29	(13)
1998	Full Year	11.66	(10)	11.51	(10)
1999	Full Year	10.77	(20)	10.66	(9)
2000	Full Year	11.43	(12)	11.39	(12)
2001	Full Year	11.09	(18)	10.95	(7)
2002	Full Year	11.16	(22)	11.03	(21)
2003	Full Year	10.97	(22)	10.99	(25)
2004	Full Year	10.75	(19)	10.59	(20)
2005	Full Year	10.54	(29)	10.46	(26)
2006	Full Year	10.36	(26)	10.43	(16)
2007	Full Year	10.36	(39)	10.24	(37)
2008	Full Year	10.46	(37)	10.37	(30)
2009	Full Year	10.48	(39)	10.19	(29)
2010	Full Year	10.37	(61)	10.15	(39)
	1st Quarter	10.32	(13)	10.10	(5)
	2nd Quarter	10.12	(10)	9.88	(5)
	3rd Quarter	10.36	(8)	9.65	(2)
	4th Quarter	10.34	(11)	9.88	(4)
<b>2011</b>	<b>Full Year</b>	<b>10.29</b>	<b>(42)</b>	<b>9.92</b>	<b>(16)</b>
	1st Quarter	10.84	(12)	9.63	(5)
	2nd Quarter	9.92	(13)	9.83	(8)
	3rd Quarter	9.78	(8)	9.75	(1)
	4th Quarter	10.10	(25)	10.07	(21)
<b>2012</b>	<b>Full Year</b>	<b>10.17</b>	<b>(58)</b>	<b>9.94</b>	<b>(35)</b>
	1st Quarter	10.28	(14)	9.57	(3)
	2nd Quarter	9.84	(7)	9.47	(6)
	3rd Quarter	10.06	(7)	9.60	(1)
	4th Quarter	9.91	(21)	9.83	(11)
<b>2013</b>	<b>Full Year</b>	<b>10.03</b>	<b>(49)</b>	<b>9.68</b>	<b>(21)</b>
	1st Quarter	10.23	(8)	9.54	(6)
	2nd Quarter	9.83	(5)	9.84	(8)
	3rd Quarter	9.87	(12)	9.45	(6)
	4th Quarter	9.78	(13)	10.28	(6)
<b>2014</b>	<b>Full Year</b>	<b>9.91</b>	<b>(38)</b>	<b>9.78</b>	<b>(26)</b>
	1st Quarter	10.37	(9)	9.47	(3)
	2nd Quarter	9.73	(7)	9.43	(3)
	3rd Quarter	9.40	(2)	9.75	(1)
	4th Quarter	9.62	(12)	9.68	(9)
<b>2015</b>	<b>Year-to-Date</b>	<b>9.85</b>	<b>(30)</b>	<b>9.60</b>	<b>(16)</b>

2.

Average Equity Returns Authorized January 1960 - December 1969

(Return Percent - No. of Observations)

Period	Electric Utilities	Gas Utilities	Telephone Utilities
1960 1st Quarter	13.97 (21)	13.45 (19)	12.63 (6)
2nd Quarter	14.35 (25)	14.38 (9)	12.63 (10)
3rd Quarter	14.30 (25)	13.87 (12)	12.63 (12)
4th Quarter	14.32 (23)	14.38 (23)	12.52 (12)
1960 Full Year	14.23(104)	14.05 (57)	12.64 (40)
1961 1st Quarter	14.87 (21)	14.69 (9)	13.68 (19)
2nd Quarter	15.03 (40)	14.61 (10)	14.18 (18)
3rd Quarter	15.31 (26)	14.88 (18)	14.37 (18)
4th Quarter	15.58 (36)	15.79 (23)	14.71 (20)
1961 Full Year	15.22(123)	15.11 (60)	14.33 (64)
1962 1st Quarter	15.71 (29)	15.55 (15)	14.65 (12)
2nd Quarter	15.60 (35)	15.62 (18)	15.09 (17)
3rd Quarter	15.83 (27)	15.72 (22)	15.81 (11)
4th Quarter	15.97 (34)	15.82 (30)	15.65 (14)
1962 Full Year	15.78(125)	15.62 (83)	15.12 (64)
1963 1st Quarter	15.53 (26)	15.41 (15)	14.75 (15)
2nd Quarter	15.10 (18)	14.84 (14)	14.75 (17)
3rd Quarter	15.39 (23)	15.24 (18)	14.95 (9)
4th Quarter	15.35 (28)	15.41 (20)	14.72 (20)
1963 Full Year	15.38 (95)	15.25 (65)	14.93 (71)
1964 1st Quarter	15.08 (19)	15.39 (8)	14.15 (12)
2nd Quarter	15.07 (15)	15.07 (7)	14.75 (8)
3rd Quarter	15.38 (22)	15.37 (12)	14.39 (10)
4th Quarter	15.69 (19)	15.33 (12)	14.79 (7)
1964 Full Year	15.32 (75)	15.31 (39)	14.59 (38)
1965 1st Quarter	15.51 (15)	15.03 (8)	14.63 (10)
2nd Quarter	15.27 (12)	15.44 (4)	14.99 (10)
3rd Quarter	14.91 (14)	14.84 (8)	14.88 (6)
4th Quarter	15.11 (17)	14.44 (13)	14.58 (14)
1965 Full Year	15.20 (58)	14.75 (34)	14.89 (40)
1966 1st Quarter	14.35 (14)	14.05 (4)	14.08 (9)
2nd Quarter	14.27 (18)	13.38 (9)	14.03 (7)
3rd Quarter	13.18 (10)	13.69 (5)	13.88 (5)
4th Quarter	13.52 (9)	13.63 (7)	13.58 (3)
1966 Full Year	13.93 (49)	13.45 (26)	13.88 (18)
1967 1st Quarter	12.82 (12)	12.81 (7)	12.35 (1)
2nd Quarter	13.15 (10)	13.13 (5)	12.81 (4)
3rd Quarter	13.17 (16)	12.58 (6)	12.88 (4)
4th Quarter	12.79 (19)	12.73 (12)	12.85 (4)
1967 Full Year	12.99 (57)	12.74 (39)	12.88 (19)
1968 1st Quarter	12.74 (8)	12.94 (5)	12.79 (2)
2nd Quarter	12.70 (7)	12.48 (4)	12.88 (1)
3rd Quarter	12.83 (8)	12.79 (9)	12.37 (2)
4th Quarter	12.98 (10)	12.88 (13)	12.39 (7)
1968 Full Year	12.79 (33)	12.85 (31)	12.19 (12)
1969 1st Quarter	13.04 (9)	13.09 (4)	12.86 (5)
2nd Quarter	13.22 (7)	13.35 (3)	12.79 (8)
3rd Quarter	12.38 (2)	12.84 (7)	12.78 (2)
4th Quarter	12.84 (9)	12.94 (16)	12.83 (7)
1969 Full Year	12.97 (27)	12.85 (31)	12.87 (19)

*Special Research Study  
January 1986*

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*RETURNS AUTHORIZED  
JULY 1974 — DECEMBER 1985*



<u>Year</u>	<u>ROE</u>	<u>Year</u>	<u>ROE</u>
1974	13.1	1980	14.1
1975	13.2	1981	15.2
1976	13.1	1982	15.8
1977	13.3	1983	15.4
1978	13.2	1984	15.4
1979	13.5	1985	15.2

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NOTE: This Research Study has been prepared solely for the use of our clients and under no circumstance is it to be duplicated or disseminated to a party or parties outside your organization.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 283**

**Responding Witness: Adrien M. McKenzie**

- Q-283. Provide copies of the source documents, work papers, and underlying data used in the development of all exhibits for Mr. McKenzie (Exhibit No. 2 through Exhibit No. 11). Provide the data and work papers in both hard copy and electronic formats (Microsoft Excel), with all data and formulas intact.
- A-283. See the response to Question Nos. 281 and 282.



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**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 284**

**Responding Witness: Adrien M. McKenzie**

- Q-284. With reference to pages 20-23 of Mr. McKenzie's testimony: (1) indicate the universe of electric and utility companies as indicated by Value Line Investment Survey, (2) the companies eliminated from each group from each of the screens; and (3) the reasons each of the companies were eliminated.
- A-284. The requested information is contained in the Excel spreadsheet file provided in response to PSC 1-54.

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**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 285**

**Responding Witness: Adrien M. McKenzie**

- Q-285. With reference to pages 20-23 of Mr. McKenzie's testimony, provide copies of all studies performed that compare the business, financial, and overall investment risk of Louisville Gas & Electric to: (1) PPL Corporation and (2) the proxy group of electric and gas companies.
- A-285. Mr. McKenzie discusses the development of the comparable-risk proxy group that served as the basis for applying quantitative models to estimate the cost of equity in Section IV of his Direct Testimony (pp. 19-26). As discussed there, this evaluation focused on published risk indicators that provide an objective assessment of investors' risk perceptions for Louisville Gas and Electric Company and the proxy group companies. Mr. McKenzie did not conduct any independent empirical studies to compare the risks of Louisville Gas and Electric Company with PPL Corporation or the proxy group companies; nor was such an analysis necessary or relevant to his analyses and conclusions in this case.

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**Question No. 286**

**Responding Witness: Adrien M. McKenzie**

- Q-286. With reference to pages 45-46 of Mr. McKenzie's testimony, provide the theoretical and empirical studies that support the use of the size premium.
- A-286. Copies of the source documents cited in Mr. McKenzie's testimony pertaining to the modification of the CAPM results to account for firm size are contained in the work papers provided in response to Question No. 282.

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**Question No. 287**

**Responding Witness: Adrien M. McKenzie**

- Q-287. With reference to page 47 of Mr. McKenzie's testimony, provide the theoretical and empirical studies that support the use of the ECAPM with the .25/.75 weights versus the traditional CAPM.
- A-287. Copies of the source documents cited on page 47 of Mr. McKenzie's testimony with respect to the ECAPM equation and the referenced weighting factors are contained in his work papers provided in response to Question No. 282.

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**Question No. 288**

**Responding Witness: Adrien M. McKenzie**

Q-288. With reference to pages 49-52 of Mr. McKenzie's testimony and Exhibit No. 9, provide the following: (1) the individual authorized ROEs that are used in computing the annual Allowed ROEs in Column (a); (2) for each of the individual ROEs, include all of the following: the order or docket number, the state, the utility, the decision date, the authorized ROE, the authorized common equity ratio, whether the rate case was fully litigated or settled, and whether the authorized included any specific ROE adders and/or penalties; and (3) the data and work papers for (1) and (2) in both hard copy and electronic formats (Microsoft Excel), with all data and formulas intact. Also include electronic copies (Microsoft Excel) of the Schedule, leaving all data and formulas intact.

A-288.

(1) As stated in Mr. McKenzie's testimony at page 50, the risk premium study shown on Exhibit No. 9 was based on the annual average allowed ROEs for electric utilities reported by Regulatory Research Associates in each year between 1974 and 2015, with copies of the source documents being provided in response to Question No. 282. Mr. McKenzie did not undertake a study to identify the case-by-case information requested in this question as it was not necessary or relevant to his analysis; nor does he have the information necessary to compile the requested information over the study period encompassed by his risk premium analysis.

(2) See the response to subpart (1).

(3) See the response to subpart (2).



**LOUISVILLE GAS AND ELECTRIC COMPANY**

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**Question No. 289**

**Responding Witness: Adrien M. McKenzie**

Q-289. With reference to page 59 of Mr. McKenzie's testimony, provide: (1) the details of the 3.6% flotation cost and how much is associated with the underwriting spread, company issuance costs, market pressure, and other expenses; and (2) the equity flotation costs paid by Louisville Gas & Electric over the past two years.

A-289.

(1) Supporting documents pertaining to Mr. McKenzie's reference to the 3.6% flotation cost cited at page 59 of his testimony are included in his work papers provided in response to Question No. 282. This percentage refers only to underwriting spread.

(2) As explained at page 11-12 of Mr. McKenzie's testimony, Louisville Gas and Electric Company is a wholly owned subsidiary of LG&E and KU Energy LLC, which in turn is a wholly owned subsidiary of PPL Corporation ("PPL"). As a result, Louisville Gas and Electric Company does not incur flotation costs directly because it is not publicly traded and does not issue common stock. Nevertheless, the common equity investment in Louisville Gas and Electric Company has been supported through the sale of common stock, with the need for an adjustment to recognize past flotation costs being supported at pages 56-59 of Mr. McKenzie's Direct Testimony.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

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**Response to Attorney General's Initial Data Requests for Information  
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**Question No. 290**

**Responding Witness: Adrien M. McKenzie**

Q-290. With reference to pages 59-63 of Mr. McKenzie's testimony: (1) list the screens applied to the Value Line database in establishing the Non-Utility Proxy Group; (2) indicate the justification for each of the screens applied to the companies in the Value Line Investment Survey in establishing the Non-Utility Proxy Group; (3) the companies eliminated from the group from each of the five screens; and (4) the reasons that each of the companies were eliminated.

A-290.

(1) Refer to page 61 of Mr. McKenzie's testimony.

(2) As indicated in Mr. McKenzie's testimony, consistent with the principles underlying the *Hope* and *Bluefield* standards, the purpose of the Non-Utility Group was to apply the opportunity cost standard by developing estimates of investors' required return for a low-risk group of firms in the competitive sector of the economy. Accordingly, the screening criteria identified in Mr. McKenzie's testimony at page 61 were applied in order to restrict the Non-Utility Group to firms with exceedingly conservative risk profiles. As noted on page 62 of Mr. McKenzie's testimony, a review of objective risk indicators suggests that this select group of non-regulated firms has less risk than LGE, KU, or Mr. McKenzie's utility proxy group.

(3) Because the screening criteria were applied interactively using Value Line's proprietary software, Mr. McKenzie does not have a list of each of the approximately 1,700 firms covered by Value Line and the basis upon which each firm did not meet the required criteria specified in his testimony at page 61.

(4) Refer to the response to subpart (3).

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 291**

**Responding Witness: William S. Seelye / David S. Sinclair**

- Q-291. With regard to Mr. Seelye's Loss of Load Probability ("LOLP") study, he indicates that hourly loads were utilized for individual classes. In this respect, provide:
- a. a detailed narrative description of how class hourly loads were developed;
  - b. each class hourly load for the forecasted test year (or the period utilized by Mr. Seelye within his CCOSS). Because of the joint dispatch of the Companies' generation facilities, include both KU and LG&E classes (showing KU and LG&E classes separately). In addition, also include each non-jurisdictional class;
  - c. a detailed explanation of how curtailable load or curtailable load credits are reflected within the class hourly loads;
  - d. all workpapers, analyses, spreadsheets, etc. showing the development of each hourly load for each class; and,
  - e. an explanation of whether the hourly loads provided in (b) are measured at the meter or generation level.

Provide all data in hardcopy as well as in executable electronic format. Excel preferred. If data is not available in Excel format, provide ASCII comma-delimited format with all fields defined.

A-291.

- a. The following process was used to develop hourly class load profiles for the forecasted test year.
  1. Hourly class load profiles for the 12 months ending June 2016 ("Historical Period") are developed using 5- and 15-minute interval data from the MV-90 system.
    - a. For each month in the Historical Period, the sum of each class's hourly loads equals the class's actual monthly energy

- consumption derived from monthly billing data in the Customer Care System (“CCS”).
- b. For each hour in the Historical Period, each class’s share of the Company’s actual hourly load is computed with an appropriate adjustment for losses (“Hourly Class Ratio”).
  - c. For each hour in the Historical Period, the sum of all class loads plus distribution and transmission losses and company uses equals the Company’s actual hourly load in the Energy Management System (“EMS”).
2. For each month in the Historical Period, the Company’s hourly class loads are totaled for each day and the daily totals are sorted from highest to lowest.
  3. For each month in the forecasted test period, the Company’s hourly load forecast is totaled for each day and the daily totals are sorted from highest to lowest.
  4. To develop hourly class load profiles for the forecasted test period (July 2017 to June 2018), the hourly load for each day in the hourly load forecast (as ordered in Step 3) is multiplied by the corresponding day’s Hourly Class Ratios (as ordered in Step 2).
    - a. For each month in the forecasted test period, the sum of each class’s hourly loads equals the class’s forecasted monthly energy consumption.
    - b. For each hour in the forecasted test period, the sum of class loads plus forecasted distribution and transmission losses and forecasted company uses equals the Companies’ forecasted hourly load.
- b. See the attachment to PSC 2-109.
  - c. The impact of curtailable loads is not reflected in the hourly class load profiles. See the response to KIUC 1-55.
  - d. See the attachments being provided in Excel format.
  - e. The hourly loads used in developing the LOLP allocator were based on hourly loads including losses. Therefore, the loads measured were at the generation level.

The attachments are  
being provided in  
separate files in Excel  
format.



**LOUISVILLE GAS AND ELECTRIC COMPANY**

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**Response to Attorney General's Initial Data Requests for Information  
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**Question No. 292**

**Responding Witness: William S. Seelye / David S. Sinclair**

Q-292. With regard to Mr. Seelye's LOLP study, he indicates that hourly characteristics of LG&E and KU's generating facilities were utilized. In this respect, provide:

- a. a detailed narrative description of how hourly generation output was developed;
- b. each hourly generation output (by unit) for the forecasted test year (or the period utilized by Mr. Seelye within his CCOSS). Because of the joint dispatch of the Companies' generation facilities, include both KU and LG&E generation resources. For facilities jointly-owned by LG&E and KU, provide total unit output by hour. For facilities partially owned by LG&E and KU combined, provide KU and LG&E (combined) percentage output;
- c. hourly purchases of electricity (KU and LG&E combined); and,
- d. hourly wholesale sales of electricity (KU and LG&E combined).

Provide all data in hardcopy as well as in executable electronic format, Excel preferred. If data is not available in Excel format, provide ASCII comma-delimited format with all fields defined.

A-292.

- a. See the "Annual Generation Forecast Process" attached at Tab 16, Section 16(7)(c), Item G of the Companies' Applications.
- b. See the attachment being provided in Excel format.
- c. See the response to part b for hourly purchases from the Companies' capacity purchase and tolling agreement with Bluegrass Generation/EKPC, Inter-Company Power Agreement with the Ohio Valley Electric Corporation, and the Companies' Reserve Sharing Group. No market purchases were modeled for the LOLP study.
- d. No wholesale market sales were modeled for the LOLP study.

The attachment is being provided in a separate file in Excel format.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

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**Response to Attorney General's Initial Data Requests for Information  
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**Question No. 293**

**Responding Witness: William S. Seelye / David S. Sinclair**

- Q-293. With regard to Mr. Seelye's LOLP study, provide a detailed explanation along with all mathematical formulae showing how hourly LOLP was calculated. In this response, specifically explain how off-system sales, wholesale purchases of power, curtailment capabilities, reserve margin requirements, and outage rates are considered, evaluated, and quantified in developing hourly LOLP.
- A-293. See attached. The information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection. Also, see the responses to Question No. 292(c) and Question No. 292(d). CSR customers' capacities were considered as supply resources. The resources in the LOLP study reflect the Companies' existing resources that were acquired to meet the Companies' forecasted load obligations, based on the reserve margin target range developed in the Companies' 2014 Integrated Resource Plan.

The entire attachment is  
Confidential and  
provided separately  
under seal.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

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**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 294**

**Responding Witness: William S. Seelye / David S. Sinclair**

Q-294. With regard to Mr. Seelye's LOLP study, provide all analyses, workpapers, spreadsheets, etc. showing the following:

- a. hourly system Loss of Load Probability;
- b. hourly system load (MW);
- c. hourly forced outage MW (by unit as available);
- d. hourly planned outage MW (by unit as available);
- e. available generation production from KU/LG&E-owned facilities;
- f. wholesale sales (if applicable or utilized in determining hourly LOLP);
- g. wholesale purchased power (if applicable or utilized in determining hourly LOLP); and,
- h. required reserve margin (percent or MW as applicable).

In this response, provide all data and formulae necessary to replicate each hourly system Loss of Load Probability. Provide all data in hardcopy as well as in executable electronic format, Excel preferred. If data is not available in Excel format, provide ASCII comma-delimited format with all fields defined.

A-294.

- a. See the attachment being provided in Excel format.
- b. See the response to part a.
- c. PROSYM's process for calculating LOLP does not simulate forced outages for each unit on an hourly basis. See the response to Question No. 293.
- d. Planned outages were not considered in the LOLP calculation.



- e. See the attachments being provided in Excel format. Note that maximum capacity in the outage rate table varies by month.
- f. See the response to Question No. 292(d).
- g. See the response to Question No. 292(c).
- h. See the responses to Question No. 293 and Question No. 296.

In addition, a number of PROSYM files are being provided in response to this request. The Company is providing them on separate electronic storage media subject to a motion to deviate because the files cannot be uploaded to the Commission's website. The Company will supply copies on electronic storage media to the Commission and the Attorney General. The Company will provide the files to any other party to this proceeding upon request.

The attachments are  
being provided in  
separate files in Excel  
format.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
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**Question No. 295**

**Responding Witness: David S. Sinclair**

- Q-295. Provide LG&E and KU combined generation reserve margin for the following period:
- a. fully forecasted test year;
  - b. most recent actual period; and,
  - c. December 31, 2015.
- A-295. The Companies develop a target reserve margin range for planning sufficient supply resources to reliably meet the Companies' anticipated peak hour load obligation and account for resource outage risk and load variability. At any point in time, the Companies take actions to address momentary demand and system operational issues. The planning reserve margin is designed to allow the Companies to reliably address these uncertainties at the lowest reasonable cost. For further information regarding the development of the Companies' reserve margin, see the Companies' 2014 Integrated Resource Plan referenced in the response to Question No. 296.
- a. The generation reserve margin for the forecasted test period is 21.6 percent.
  - b. The generation reserve margin for 2016 was 18.9 percent.
  - c. The generation reserve margin for 2015 was 21.0 percent.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 296**

**Responding Witness: Robert M. Conroy**

- Q-296. Provide a copy of the Company's most recent Integrated Resource Plan.
- A-296. The case number for the Company's most recent Integrated Resource Plan is 2014-00131 and the full record can be found at:  
[http://www.psc.state.ky.us/PSC\\_WebNet/ViewCaseFilings.aspx?Case=2014-00131](http://www.psc.state.ky.us/PSC_WebNet/ViewCaseFilings.aspx?Case=2014-00131).

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 297**

**Responding Witness: William S. Seelye**

Q-297. Provide all workpapers, analyses, spreadsheets, etc. showing the development of each class' weighted LOLP as shown in Exhibit WSS-17 (LG&E) and Exhibit WSS-12 (KU). Provide in hardcopy as well as in executable electronic (Excel) format.

A-297. See the attachment to PSC 2-109.



**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 298**

**Responding Witness: William S. Seelye**

- Q-298. If not previously provided, explain and provide all analyses, workpapers, spreadsheets, etc. showing the development of:
- a. minimum system demand of 2,303 MW;
  - b. winter system peak demand 6,021 MW; and,
  - c. summer system peak demand 6,698 MW,

As shown in Exhibit WSS-16 (LG&E) and Exhibit WSS-11 (KU).

A-298.

- a. The minimum system demand of 2,303MW is the lowest integrated hourly demand of the joint LG&E and KU system forecast during the test year in this case.
- b. The Winter System Peak Demand of 6,021MW is the highest integrated hourly demand during the month of October through April of the joint LG&E and KU system forecast during the test year in this case.
- c. The Summer System Peak Demand of 6,698MW is the highest integrated hourly demand during the month of May through September of the joint LG&E and KU system forecast during the test year in this case.

See the attachment to PSC 2-109 for detailed analysis.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 299**

**Responding Witness: David S. Sinclair**

- Q-299. For each of the last ten years, provide the following:
- a. annual minimum system demand (KU and LG&E combined);
  - b. annual minimum native load (jurisdictional) demand (KU and LG&E combined);
  - c. annual winter system peak demand (KU and LG&E combined);
  - d. annual winter native load (jurisdictional) peak demand (KU and LG&E combined);
  - e. annual summer system peak demand (KU and LG&E combined); and,
  - f. annual summer native load (jurisdictional) peak demand (KU and LG&E combined).
- A-299.
- a. See attached.
  - b. See attached.
  - c. See attached.
  - d. See attached.
  - e. See attached.
  - f. See attached.

## AG Q299a

Year	Minimum System Demand
2007	2,417
2008	2,355
2009	2,287
2010	2,415
2011	2,321
2012	2,377
2013	2,400
2014	2,439
2015	2,273
2016	2,413

## AG Q299b

Year	Minimum Jurisdictional Demand
2007	Not Available
2008	Not Available
2009	Not Available
2010	2,228
2011	2,138
2012	2,190
2013	2,224
2014	2,263
2015	2,104
2016	2,234

## AG Q299c

Year	Maximum Winter System Demand*
2007	6,137
2008	6,357
2009	6,555
2010	6,340
2011	6,017
2012	5,704
2013	5,907
2014	7,114
2015	7,079
2016	6,223

\*Winter defined as the months from October through March

## AG Q299d

Year	Maximum Winter Jurisdictional Demand*
2007	Not Available
2008	Not Available
2009	Not Available
2010	5,725
2011	5,477
2012	5,179
2013	5,368
2014	6,482
2015	6,402
2016	5,653

\*Winter defined as the months from October through March

## AG Q299e

Year	Maximum Summer System Demand*
2007	7,132
2008	6,352
2009	6,367
2010	7,175
2011	6,756
2012	6,856
2013	6,434
2014	6,313
2015	6,392
2016	6,458

\*Summer defined as the months from April through September

## AG Q299f

Year	Maximum Summer Jurisdictional Demand*
2007	Not Available
2008	Not Available
2009	Not Available
2010	6,622
2011	6,221
2012	6,333
2013	5,955
2014	5,845
2015	5,923
2016	5,983

\*Summer defined as the months from April through September

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 300**

**Responding Witness: William S. Seelye**

- Q-300. With regard to the minimum system demand, winter system peak demand, and summer system peak demand utilized in Mr. Seelye's Modified BIP CCOSS, do these loads include off-system sales and/or other non-jurisdictional loads? If these amounts include non-jurisdictional loads, provide forecasted test year, minimum system demand, winter system peak demand, and summer system peak demand for jurisdictional business only.
- A-300. The Modified BIP calculation includes only Kentucky jurisdictional all-requirements customers served by the Company and does not include off-system sales.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 301**

**Responding Witness: Valerie L. Scott**

- Q-301. For each KU and LG&E generating unit owned individually, jointly, or partially, provide the following for the most recent actual 12-month available:
- a. names of owners (and ownership percentages);
  - b. type of fuel(s);
  - c. total nameplate (rated) capacity (MW);
  - d. total and individual company gross investment at the end of the period;
  - e. total individual company depreciation reserve at the end of the period;
  - f. total and individual company annual book depreciation expense;
  - g. gross KWH produced during the period; and,
  - h. net (less station use) KWH produced during the period.

Provide this information in hardcopy as well as in executable electronic (Excel) format.

- A-301. See the attachments.



The attachment is being provided in a separate file in Excel format.

Generating Unit (a)	Owner (a)	Ownership Percentage (a)			Fuels (b)	Generator Nameplate Ratings (MW) (c)	Generator Nameplate Ownership (MW) (c)		
		KU	LGE	Other			KU	LGE	Other
Brown 1	KU	100%			Coal	114	114		
Brown 2	KU	100%			Coal	180	180		
Brown 3	KU	100%			Coal	464	464		
Brown 5	Joint	47%	53%		Gas	123	58	65	
Brown 6	Joint	62%	38%		Gas, Oil	177	110	67	
Brown 7	Joint	62%	38%		Gas, Oil	177	110	67	
Brown 8	KU	100%			Gas, Oil	126	126		
Brown 9	KU	100%			Gas, Oil	126	126		
Brown 10	KU	100%			Gas, Oil	126	126		
Brown 11	KU	100%			Gas, Oil	126	126		
Brown Solar	Joint	61%	39%		Solar	10	6	4	
Cane Run 7	Joint	78%	22%		Gas	808	630	178	
Dix Dam 1 (1)	KU	100%			Hydro	11	11		
Dix Dam 2	KU	100%			Hydro	11	11		
Dix Dam 3	KU	100%			Hydro	11	11		
Ghent 1	KU	100%			Coal	557	557		
Ghent 2	KU	100%			Coal	556	556		
Ghent 3	KU	100%			Coal	557	557		
Ghent 4	KU	100%			Coal	556	556		
Haefling 1	KU	100%			Gas, Oil	21	21		
Haefling 2	KU	100%			Gas, Oil	21	21		
Mill Creek 1	LGE		100%		Coal	356		356	
Mill Creek 2	LGE		100%		Coal	356		356	
Mill Creek 3	LGE		100%		Coal	463		463	
Mill Creek 4	LGE		100%		Coal	544		544	
Ohio Falls 1 (1)	LGE		100%		Hydro	13		13	
Ohio Falls 2	LGE		100%		Hydro	13		13	
Ohio Falls 3	LGE		100%		Hydro	13		13	

Generating Unit (a)	Owner (a)	Ownership Percentage (a)			Fuels (b)	Generator Nameplate Ratings (MW) (c)	Generator Nameplate Ownership (MW) (c)		
		KU	LGE	Other			KU	LGE	Other
Ohio Falls 4	LGE		100%		Hydro	10		10	
Ohio Falls 5	LGE		100%		Hydro	13		13	
Ohio Falls 6	LGE		100%		Hydro	13		13	
Ohio Falls 7	LGE		100%		Hydro	13		13	
Ohio Falls 8	LGE		100%		Hydro	10		10	
Paddys Run 13	Joint	47%	53%		Gas	178	84	94	
Trimble County 1	LGE		75%	25%	Coal	566		425	141
Trimble County 2	Joint	60.75%	14.25%	25%	Coal	838	510	119	209
Trimble County 5	Joint	71%	29%		Gas	199	141	58	
Trimble County 6	Joint	71%	29%		Gas	199	141	58	
Trimble County 7	Joint	63%	37%		Gas	199	125	74	
Trimble County 8	Joint	63%	37%		Gas	199	125	74	
Trimble County 9	Joint	63%	37%		Gas	199	125	74	
Trimble County 10	Joint	63%	37%		Gas	199	125	74	
Cane Run 11	LGE		100%		Gas, Oil	16		16	
Paddy's Run 11	LGE		100%		Gas	16		16	
Paddy's Run 12	LGE		100%		Gas	33		33	
Zorn 1	LGE		100%		Gas	18		18	

Generating Unit (a)	KU Gross Investment (d) (3) 12/31/2016	LGE Gross Investment (d) (3) 12/31/2016	Total Gross Investment (d) (3) 12/31/2016	KU Depr. Reserve (e) (3) 12/31/2016	LGE Depr. Reserve (e) (3) 12/31/2016	Total Depr. Reserve (e) (3) 12/31/2016	KU Depr. Expense (f) 12/31/2016	LGE Depr. Expense (f) 12/31/2016	Total Depr. Expense (f) 12/31/2016	2016 Gross KWH Produced (g)	2016 Net KWH Produced (h)
Brown 1	\$ 84,714,615		\$ 84,714,615	\$ (49,774,309)		\$ (49,774,309)	\$ (4,176,429)		\$ (4,176,429)	264,274,000	224,581,000
Brown 2	\$ 65,243,804		\$ 65,243,804	\$ (32,878,787)		\$ (32,878,787)	\$ (1,483,834)		\$ (1,483,834)	464,409,000	410,767,000
Brown 3	\$ 959,593,511		\$ 959,593,511	\$ (242,160,971)		\$ (242,160,971)	\$ (27,894,255)		\$ (27,894,255)	1,266,947,000	1,107,092,000
Brown 5	\$ 23,887,880	\$ 26,261,285	\$ 50,149,164	\$ (11,691,544)	\$ (13,315,421)	\$ (25,006,965)	\$ (962,188)	\$ (1,061,129)	\$ (2,023,317)	44,450,000	42,992,000
Brown 6	\$ 41,682,017	\$ 24,425,319	\$ 66,107,337	\$ (19,464,327)	\$ (9,915,899)	\$ (29,380,226)	\$ (2,032,873)	\$ (1,385,856)	\$ (3,418,729)	28,473,000	27,126,000
Brown 7	\$ 39,171,356	\$ 22,442,089	\$ 61,613,444	\$ (18,840,386)	\$ (11,166,233)	\$ (30,006,619)	\$ (1,872,980)	\$ (1,105,384)	\$ (2,978,363)	29,513,000	27,852,000
Brown 8	\$ 37,676,408		\$ 37,676,408	\$ (23,561,898)		\$ (23,561,898)	\$ (1,792,466)		\$ (1,792,466)	111,378,000	107,213,000
Brown 9	\$ 56,321,311		\$ 56,321,311	\$ (30,101,446)		\$ (30,101,446)	\$ (1,692,226)		\$ (1,692,226)	128,213,000	125,950,000
Brown 10	\$ 36,511,347		\$ 36,511,347	\$ (17,190,238)		\$ (17,190,238)	\$ (1,154,581)		\$ (1,154,581)	127,725,000	125,608,000
Brown 11	\$ 45,748,645		\$ 45,748,645	\$ (28,812,153)		\$ (28,812,153)	\$ (1,958,189)		\$ (1,958,189)	6,487,500	53,727,000
Brown Solar	\$ 15,534,585	\$ 9,940,989	\$ 25,475,574	\$ (369,958)	\$ (236,336)	\$ (606,294)	\$ (369,958)	\$ (236,336)	\$ (606,294)	13,328,000	13,328,000
Cane Run 7	\$ 411,976,848	\$ 118,444,417	\$ 530,421,264	\$ (18,008,470)	\$ (8,881,381)	\$ (26,889,850)	\$ (11,676,881)	\$ (3,357,521)	\$ (15,034,402)	4,978,568,000	4,882,121,000
Dix Dam 1 (1)	\$ 42,370,919		\$ 42,370,919	\$ (11,849,566)		\$ (11,849,566)	\$ (1,249,773)		\$ (1,249,773)	78,769,000	78,652,000
Dix Dam 2											
Dix Dam 3											
Ghent 1	\$ 732,470,922		\$ 732,470,922	\$ (259,713,146)		\$ (259,713,146)	\$ (36,280,478)		\$ (36,280,478)	3,312,291,000	3,050,212,000
Ghent 2	\$ 426,925,817		\$ 426,925,817	\$ (196,618,842)		\$ (196,618,842)	\$ (6,559,022)		\$ (6,559,022)	3,216,590,000	2,970,771,000
Ghent 3	\$ 694,725,329		\$ 694,725,329	\$ (305,345,314)		\$ (305,345,314)	\$ (14,934,923)		\$ (14,934,923)	2,755,017,000	2,082,760,000
Ghent 4	\$ 1,197,830,397		\$ 1,197,830,397	\$ (328,607,490)		\$ (328,607,490)	\$ (30,348,173)		\$ (30,348,173)	3,712,315,000	3,104,203,000
Haefling 1 (2)	\$ 4,366,959		\$ 4,366,959	\$ (2,938,524)		\$ (2,938,524)	\$ (192,176)		\$ (192,176)	173,000	137,000
Haefling 2										138,000	111,000
Mill Creek 1		\$ 328,252,201	\$ 328,252,201		\$ (103,671,701)	\$ (103,671,701)		\$ (13,132,140)	\$ (13,132,140)	2,025,981,000	1,801,866,000
Mill Creek 2		\$ 376,161,674	\$ 376,161,674		\$ (52,151,574)	\$ (52,151,574)		\$ (7,868,990)	\$ (7,868,990)	1,868,921,000	1,652,298,000
Mill Creek 3		\$ 534,353,330	\$ 534,353,330		\$ (121,539,258)	\$ (121,539,258)		\$ (9,446,819)	\$ (9,446,819)	2,199,137,000	2,007,708,000
Mill Creek 4		\$ 837,207,205	\$ 837,207,205		\$ (234,853,089)	\$ (234,853,089)		\$ (17,432,845)	\$ (17,432,845)	2,690,695,000	2,469,155,000
Ohio Falls 1 (1)		\$ 127,492,914	\$ 127,492,914		\$ (16,553,807)	\$ (16,553,807)		\$ (2,926,403)	\$ (2,926,403)	320,139,000	313,166,000
Ohio Falls 2											
Ohio Falls 3											

Generating Unit (a)	KU Gross Investment (d) (3) 12/31/2016	LGE Gross Investment (d) (3) 12/31/2016	Total Gross Investment (d) (3) 12/31/2016	KU Depr. Reserve (e) (3) 12/31/2016	LGE Depr. Reserve (e) (3) 12/31/2016	Total Depr. Reserve (e) (3) 12/31/2016	KU Depr. Expense (f) (3) 12/31/2016	LGE Depr. Expense (f) (3) 12/31/2016	Total Depr. Expense (f) (3) 12/31/2016	2016 Gross KWH Produced (g)	2016 Net KWH Produced (h)
Ohio Falls 4											
Ohio Falls 5											
Ohio Falls 6											
Ohio Falls 7											
Ohio Falls 8											
Paddy's Run 13	\$ 39,533,731	\$ 44,713,975	\$ 84,247,706	\$ (12,871,621)	\$ (14,947,826)	\$ (27,819,447)	\$ (1,355,497)	\$ (1,564,315)	\$ (2,919,813)	102,461,000	98,877,000
Trimble County 1		\$ 641,927,268	\$ 641,927,268		\$ (273,134,472)	\$ (273,134,472)		\$ (18,475,348)	\$ (18,475,348)	3,877,925,000	3,564,930,000
Trimble County 2	\$ 895,564,525	\$ 215,665,458	\$ 1,111,229,983	\$ (196,333,030)	\$ (34,201,277)	\$ (230,534,307)	\$ (22,668,458)	\$ (5,107,953)	\$ (27,776,411)	4,463,670,000	4,149,652,000
Trimble County 5	\$ 48,024,015	\$ 19,749,374	\$ 67,773,389	\$ (21,468,112)	\$ (9,137,369)	\$ (30,605,481)	\$ (1,820,711)	\$ (806,681)	\$ (2,627,392)	210,330,000	206,990,000
Trimble County 6	\$ 48,401,815	\$ 19,721,281	\$ 68,123,095	\$ (20,509,557)	\$ (8,466,438)	\$ (28,975,996)	\$ (1,886,879)	\$ (782,730)	\$ (2,669,609)	89,553,000	87,941,000
Trimble County 7	\$ 37,111,111	\$ 21,748,073	\$ 58,859,184	\$ (14,092,328)	\$ (8,369,489)	\$ (22,461,817)	\$ (1,415,758)	\$ (847,146)	\$ (2,262,904)	183,534,000	180,137,000
Trimble County 8	\$ 35,586,166	\$ 20,841,603	\$ 56,427,769	\$ (13,484,437)	\$ (8,016,653)	\$ (21,501,089)	\$ (1,351,303)	\$ (807,225)	\$ (2,158,527)	47,164,000	46,199,000
Trimble County 9	\$ 35,858,471	\$ 21,159,129	\$ 57,017,600	\$ (13,452,087)	\$ (8,164,384)	\$ (21,616,471)	\$ (1,372,297)	\$ (820,162)	\$ (2,192,459)	179,212,000	176,880,000
Trimble County 10	\$ 39,682,022	\$ 23,329,266	\$ 63,011,288	\$ (15,183,533)	\$ (9,125,708)	\$ (24,309,241)	\$ (1,525,659)	\$ (908,913)	\$ (2,434,572)	158,908,000	158,030,000
Cane Run 11		\$ 3,698,729	\$ 3,698,729		\$ (3,249,923)	\$ (3,249,923)		\$ (213,712)	\$ (213,712)	139,000	49,000
Paddy's Run 11		\$ 2,151,053	\$ 2,151,053		\$ (1,759,750)	\$ (1,759,750)		\$ (1,447)	\$ (1,447)	99,000	47,000
Paddy's Run 12		\$ 4,318,568	\$ 4,318,568		\$ (4,114,083)	\$ (4,114,083)		\$ (126,270)	\$ (126,270)	230,000	107,000
Zorn 1		\$ 1,974,690	\$ 1,974,690		\$ (2,086,548)	\$ (2,086,548)		\$ (2,643)	\$ (2,643)	129,000	96,000

(1) Gross, net generation, investment and depreciation reserve reported for Dix Dam, and Ohio Falls represents total plant.

Generation is not reported on a per unit basis and fixed asset costs are not accumulated on a per unit basis.

(2) Investment and depreciation reserve reported for Haefling represents total plant. Fixed asset costs are not accumulated on a per unit basis

(3) Investment and depreciation reserve is shown for active units only. This does not include structural components still in place, land, and ARO costs associated with retired units.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 302**

**Responding Witness: David S. Sinclair / Lonnie E. Bellar**

- Q-302. For each KU and LG&E generating unit owned individually, jointly, or partially, provide the following for the fully forecasted test year ending June 30, 2018:
- a. names of owners (and ownership percentages);
  - b. type of fuel(s);
  - c. total nameplate (rated) capacity (MW);
  - d. total and individual company gross investment at the end of the period;
  - e. total individual company depreciation reserve at the end of the period;
  - f. total and individual company annual book depreciation expense;
  - g. gross KWH produced during the period; and,
  - h. net (less station use) KWH produced during the period.

Provide this information in hardcopy as well as in executable electronic (Excel) format.

- A-302.
- a. See the attachment being provided in Excel format.
  - b. See the response to part a.
  - c. See the response to part a.
  - d. Louisville Gas and Electric does not maintain gross investment information in the forecasted test period at a generating unit level.



- e. Louisville Gas and Electric does not maintain depreciation reserve information in the forecasted test period at a generating unit level.
- f. Louisville Gas and Electric does not maintain book depreciation expense in the forecasted test period at a generating unit level.
- g. The Companies do not forecast gross generation.
- h. See the response to part a.

The attachment is being provided in a separate file in Excel format.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 303**

**Responding Witness: David S. Sinclair**

- Q-303. Provide the combined KU and LG&E generating order of dispatch by unit and the basis for this order of dispatch.
- A-303. See response to PSC 2-96. The dispatch order will vary depending on the price of natural gas and coal and other variables.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 304**

**Responding Witness: David S. Sinclair**

- Q-304. For each KU and LG&E generating unit, provide average monthly and annual fuel costs per KWH during the most recent 12-months available.
- A-304. See attached.

**Average Monthly and Annual Fuel Costs By Generating Unit (cents/kWh)**

Unit	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	2016 Total
Brown 1	3.69	3.59	-	3.86	3.54	3.53	3.46	3.45	3.36	3.52	2.92	(0.62)	3.49
Brown 2	3.16	3.28	-	3.32	3.31	3.14	3.09	3.04	2.98	2.91	2.66	(0.93)	3.07
Brown 3	3.32	3.32	4.42	3.37	3.32	3.19	3.14	3.16	2.97	2.87	2.98	3.01	3.16
Brown 5	3.61	(0.01)	2.54	2.38	4.71	3.46	4.54	4.51	5.35	(1.80)	(0.03)	(0.06)	3.04
Brown 6	2.68	39.30	(0.05)	2.36	2.47	3.12	3.31	3.33	3.60	3.40	(0.02)	45.07	3.68
Brown 7	2.91	(278.67)	(0.00)	2.58	2.50	3.04	3.35	3.44	3.64	3.38	(1.04)	5.13	3.41
Brown 8	3.33	5.68	2.27	2.34	2.60	3.44	3.66	3.83	4.26	3.77	3.39	5.80	3.61
Brown 9	3.54	2.78	2.27	2.51	2.59	3.43	3.76	3.93	4.28	3.87	4.00	4.94	3.18
Brown 10	3.33	2.87	2.24	2.31	2.59	3.40	3.74	3.83	4.32	3.95	3.51	5.07	2.90
Brown 11	3.41	(0.01)	2.44	2.61	2.86	3.57	3.86	4.19	4.30	3.99	3.73	5.95	3.55
Bluegrass	2.49	-	-	2.02	-	3.10	3.08	3.21	3.49	3.27	2.86	-	3.08
Cane Run 7	1.55	1.41	1.14	1.29	1.28	1.70	1.86	1.87	1.98	1.95	2.02	2.37	1.68
Cane Run 11	(2.81)	(12.08)	(6.05)	(8.59)	(15.23)	7.74	(44.20)	14.26	(45.85)	(0.28)	-	(9.04)	(16.29)
Ghent 1	2.22	2.20	2.25	2.15	2.20	2.18	2.21	2.21	2.17	2.14	2.11	2.15	2.18
Ghent 2	2.16	1.96	2.34	2.14	2.15	2.11	2.15	2.13	2.11	2.26	1.98	2.08	2.12
Ghent 3	2.40	2.28	2.34	2.27	2.31	2.32	2.27	2.25	2.24	2.15	2.34	2.25	2.28
Ghent 4	2.30	2.24	2.29	2.43	2.18	2.21	2.27	2.22	2.20	2.20	2.13	2.15	2.22
Haefling 1&2	(0.19)	(0.20)	(0.31)	32.41	22.67	5.98	14.42	7.61	(0.47)	(0.44)	(0.35)	(86.63)	23.35
Mill Creek 1	2.34	2.33	2.34	2.27	2.43	2.29	2.39	2.33	2.31	2.21	2.27	2.28	2.31
Mill Creek 2	2.40	2.35	2.46	2.36	2.39	2.38	2.41	2.41	2.36	2.26	2.43	2.27	2.37
Mill Creek 3	2.49	2.45	2.66	2.68	-	2.37	2.39	2.43	2.37	2.40	2.22	2.33	2.40
Mill Creek 4	2.21	2.61	2.35	2.38	2.39	2.33	2.35	2.36	2.40	-	2.41	2.21	2.35
Paddy's Run 11	(2.54)	(19.33)	-	(28.52)	99.88	94.78	57.93	58.86	76.83	(157.65)	(12.12)	(3.82)	348.05
Paddy's Run 12	(1.26)	(10.35)	(7.93)	(16.54)	(170.81)	117.47	35.10	35.79	116.29	(93.31)	(6.27)	(5.68)	(164.93)
Paddy's Run 13	(0.68)	2.16	(5.34)	2.09	2.01	2.79	3.04	3.14	3.27	3.28	4.11	6.70	3.00
Trimble County 1	2.47	2.29	2.32	2.29	2.32	2.25	2.24	2.21	2.28	2.30	2.21	2.22	2.28
Trimble County 2	2.10	2.03	2.13	(6.53)	2.76	-	2.23	2.02	2.01	1.97	1.94	1.93	2.04
Trimble County 5	2.46	2.05	1.96	2.04	2.22	2.90	3.20	3.27	3.92	3.93	2.53	4.28	2.58
Trimble County 6	2.37	4.09	1.95	1.98	2.24	2.92	3.18	3.28	3.92	3.30	2.42	3.81	2.85
Trimble County 7	2.40	2.25	1.99	2.02	2.25	2.89	3.22	3.31	3.73	3.49	2.43	4.45	2.66
Trimble County 8	4.15	0.33	1.92	2.02	2.21	2.79	3.15	3.29	3.68	-	4.86	3.17	2.96
Trimble County 9	2.38	2.20	2.01	-	2.14	2.81	3.11	3.17	3.58	3.45	2.37	4.50	2.80
Trimble County 10	2.87	3.20	2.01	2.07	2.52	2.83	3.16	3.17	3.58	3.48	2.39	4.10	2.93
Zorn 1	(60.19)	-	-	24.01	-	6.17	8.40	8.56	0.81	-	-	-	12.12

Notes:

- 1) Fuel expense excludes firm gas transportation costs.
- 2) Negative fuel expense values are a result of auxiliary load exceeding gross generation within a period.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 305**

**Responding Witness: David S. Sinclair**

Q-305. For each KU and LG&E generating unit, provide forecasted average monthly and annual fuel costs per KWH for the fully forecasted test year ending June 30, 2018.

A-305. See attached.



**Forecasted Test Period (July 2017 - June 2018) Average Monthly and Annual Fuel Costs By Generating Unit (cents/kWh)**

Unit	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Total
Brown 1	3.55	3.69	3.43	3.53	3.48	3.55	3.53	3.59	3.44	3.50	4.03	3.47	3.53
Brown 2	3.13	3.15	3.21	3.21	3.14	3.20	3.22	3.19	3.13	-	3.19	3.04	3.16
Brown 3	3.50	3.51	3.56	3.57	3.55	3.56	3.53	3.54	3.50	3.54	3.50	3.45	3.52
Brown 5	4.39	4.32	4.08	-	5.06	-	-	4.66	5.09	4.33	4.50	4.35	4.49
Brown 6	3.55	3.56	3.40	-	3.60	-	3.87	3.81	4.12	3.46	3.46	3.53	3.61
Brown 7	3.58	3.55	3.40	3.79	3.58	-	4.03	3.95	3.76	3.46	3.48	3.59	3.60
Brown 8	4.85	4.69	4.50	-	4.56	-	-	-	5.60	4.26	4.58	4.60	4.85
Brown 9	4.78	4.60	5.09	-	5.09	-	-	-	5.62	4.19	4.70	4.46	4.88
Brown 10	4.71	4.46	5.09	-	5.54	-	-	5.00	5.60	4.31	4.54	4.48	4.80
Brown 11	4.81	4.73	5.09	-	4.87	-	-	-	5.59	4.39	4.37	4.59	4.82
Bluegrass	4.51	4.58	3.87	3.98	5.48	4.37	5.72	5.05	5.63	4.55	4.19	4.43	4.79
Cane Run 7	2.14	2.15	2.12	2.13	2.16	2.25	2.34	2.33	2.28	2.07	2.08	2.11	2.18
Cane Run 11	-	5.04	-	-	-	-	-	-	-	-	-	4.96	5.02
Ghent 1	2.17	2.17	2.15	2.15	2.15	2.13	2.10	2.09	2.21	2.11	2.12	2.12	2.14
Ghent 2	2.14	2.14	2.14	2.13	2.15	2.12	2.09	2.08	2.08	2.08	2.10	2.10	2.11
Ghent 3	2.28	2.28	2.30	2.30	2.31	2.31	2.27	2.26	2.24	2.25	2.26	2.23	2.27
Ghent 4	2.26	2.25	2.28	2.23	2.24	2.25	2.22	2.22	2.19	2.26	2.29	2.21	2.24
Haefling 1&2	19.57	19.60	-	-	-	-	-	-	-	-	-	-	19.59
Mill Creek 1	2.12	2.11	2.11	2.10	2.10	2.11	2.10	2.10	2.08	2.10	2.10	2.08	2.10
Mill Creek 2	2.19	2.18	2.16	2.14	2.15	2.13	2.12	2.13	2.15	-	2.18	2.16	2.15
Mill Creek 3	2.19	2.18	2.17	2.15	2.44	2.15	2.14	2.14	2.15	2.15	2.15	2.16	2.16
Mill Creek 4	2.14	2.13	2.12	2.14	2.11	2.10	2.09	2.09	2.09	2.10	2.11	2.11	2.11
Paddy's Run 11	-	4.86	-	-	-	-	-	-	5.22	-	-	4.79	4.96
Paddy's Run 12	-	-	-	-	-	-	-	-	5.74	-	-	-	5.74
Paddy's Run 13	3.41	3.42	3.47	3.51	3.47	3.64	3.84	3.87	3.61	3.34	3.31	3.37	3.52
Trimble County 1	2.21	2.21	2.22	-	2.32	2.20	2.16	2.14	2.13	2.12	2.15	2.12	2.17
Trimble County 2	1.95	1.95	1.94	1.94	1.94	1.94	1.90	1.89	2.00	4.77	1.89	1.90	1.93
Trimble County 5	3.48	3.49	3.42	3.43	3.49	3.57	3.78	3.73	3.81	3.41	3.36	3.44	3.53
Trimble County 6	3.48	3.49	3.43	3.45	3.48	3.57	3.77	3.73	3.80	3.40	3.35	3.43	3.52
Trimble County 7	3.48	3.48	3.42	3.45	3.48	3.62	3.81	3.74	3.78	-	3.35	3.44	3.55
Trimble County 8	3.47	3.45	3.41	3.45	3.50	3.57	-	3.74	3.72	3.37	3.27	3.41	3.50
Trimble County 9	3.48	3.48	3.41	3.46	3.47	3.59	3.79	3.71	3.79	3.38	3.34	3.42	3.51
Trimble County 10	3.45	3.44	3.42	3.45	3.53	3.71	-	3.82	3.70	3.37	3.33	3.41	3.45
Zorn 1	6.88	6.88	-	-	-	-	-	-	-	-	-	-	6.88

Notes:

1) Fuel expense excludes firm gas transportation costs.

Attachment to Response to AG-1 Question No. 305

Page 1 of 1

Sinclair

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 306**

**Responding Witness: David S. Sinclair**

- Q-306. With regard to wholesale sales, resale sales, and all other non-jurisdictional sales of electricity, provide the following for each customer for the fully forecasted test year for KU and LG&E separately:
- a. identification of customer;
  - b. sales of electricity revenue;
  - c. KWH at meter;
  - d. maximum peak demand;
  - e. maximum contract demand; and,
  - f. voltage level at delivered service.
- A-306. No such customers exist for LG&E.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 307**

**Responding Witness: William S. Seelye**

Q-307. Explain or verify that within Mr. Seelye's CCOSs, sales for resale customers are not allocated any costs but rather, revenues are credited back to jurisdictional customers.

A-307. Confirmed.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 308**

**Responding Witness: William S. Seelye**

Q-308. Provide the most recent loss factors for energy and demand separated by voltage level; i.e., transmission, sub-transmission, primary, secondary.

A-308. See below:

Demand (kW)

Transmission – 2.728%

Primary Substation – 3.302%

Primary – 5.290%

Secondary – 7.098%

Energy (kWh)

Transmission – 2.221%

Primary Substation – 2.785%

Primary – 4.087%

Secondary – 6.125%

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 309**

**Responding Witness: John P. Malloy**

Q-309. Provide the current number of electric customers (accounts) by rate schedule for each zip code within the Company's service area. Note: street lighting accounts may be excluded from this data set. Provide this data in executable electronic (Excel) format.

A-309. See the attachment being provided in Excel format.

The attachment is being provided in a separate file in Excel format.



**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 310**

**Responding Witness: John P. Malloy**

Q-310. Provide the current number of natural gas customers (accounts) by rate schedule for each zip code within the Company's service area. Note: street lighting accounts may be excluded from this data set. Provide this data in executable electronic (Excel) format.

A-310. See the attachment being provided in Excel format.

The attachment is being provided in a separate file in Excel format.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 311**

**Responding Witness: Counsel**

- Q-311. For each electric residential account, provide an electronic database of each account's billed KWH for each month during the most recent 12-month period as well as the number of days within each billing cycle (as readily available). In this response, exact account numbers are not required, however, provide a unique numerical identification for each account. Provide this data in ASCII, comma-delimited format with all fields defined or in Microsoft Access format.
- A-311. See the Company's objection filed on January 20, 2017.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 312**

**Responding Witness: Counsel**

Q-312. For each natural gas residential account, provide an electronic database of each account's billed Ccf or Therm usage for each month during the most recent 12-month period as well as the number of days within each billing cycle (as readily available). In this response, exact account numbers are not required, however, provide a unique numerical identification for each account. Provide this data in ASCII, comma-delimited format with all fields defined or in Microsoft Access format.

A-312. See the Company's objection filed on January 20, 2017.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 313**

**Responding Witness: John P. Malloy**

Q-313. With regard to the discussion of distributed generation at Pages 15 and 16 of LG&E witness Seelye, provide the following for the most recent period available:

- a. the KW capacity of the distributed generation by type;
- b. the annual KWH output of the distributed generation by type; and,
- c. the number of customers by rate class participating in distributed generation.

A-313.

- a. The Company is aware of the following kW capacity of distributed generation connected to the system, including net metering customers' generation:

	<b>Connected kW</b>
Solar	3,570
Wind	9
Fossil	53,800
<b>Total</b>	<b>57,379</b>

- b. The Company does not know the amount of kWh output of the customer owned distributed generation because net metering measures the difference between what is being consumed and what is being generated.
- c. See the response to PSC 2-87a.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 314**

**Responding Witness: William S. Seelye**

Q-314. With regard to Mr. Seelye's Exhibit WSS-27, explain and define what "Category II" and "Category III" represents.

A-314. Category II pipelines are high pressure distribution pipelines which were installed for the primary purpose of transporting gas to regulator stations or major customer use areas within developed areas.

Category III pipelines are high pressure distribution pipelines which were installed with the purpose of serving customers, or which would cause minimal interruption or impact to the gas system if damaged.



**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 315**

**Responding Witness: William S. Seelye**

- Q-315. Provide Handy-Whitman Cost Indices for natural gas mains for the period 1935 through the present (or as available).
- A-315. See attached. The information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.

**G-2**

**COST TRENDS OF GAS UTILITY CONSTRUCTION**

Seelye

**SOUTH ATLANTIC REGION (1973=100)**

L i n e	CONSTRUCTION AND EQUIPMENT	F E R C	COST INDEX NUMBERS												
			1	1	1	1	1	1	1	1	1	1	1	1	
			9	9	9	9	9	9	9	9	9	9	9	9	
1	Total Plant	2	2	3	4	5	6	7	8	9	0	1	2	3	4
2															
3	<b>Production Plant</b>														
4	L. P. G. Equipment														
5	S. N. G. Equipment														
6															
7															
8															
9															
10															
11															
12															
13	<b>Storage Plant</b>														
14	Gas Holders Excl. of Found														
15															
16															
17															
18															
19															
20															
21															
22															
23															
24	<b>Transmission Plant</b>														
25	Total Transmission Plant														
26	Structures & Improvements														
27	Mains														
28															
29	Compressor Station Equipment														
30	Meas. & Reg. Sta. Equipment														
31															
32															
33															
34															
35															
36															
37															
38															
39															
40															
41	<b>Distribution Plant</b>														
42	Structures & Improvements														
43	Mains, Cast Iron														
44	Mains, Steel														
45	Mains, Plastic														
46	Compressor Station Equipment														
47	Meas. & Reg. Sta. Equipment														
48	Meas. & Reg. Sta. Equipment-City Gt.														
49	Services, Steel														
50	Services, Plastic														
51	Meters														
52	Meter Installations														
53	House Regulators														
54	House Regulators Installations														
55															
56															

**G-2**

**COST TRENDS OF GAS UTILITY CONSTRUCTION**

Seelye

**SOUTH ATLANTIC REGION (1973=100)**

L i n e	CONSTRUCTION AND EQUIPMENT	F E R C	COST INDEX NUMBERS														
			1	1	1	1	1	1	1	1	1	1	1	1	1	1	
			9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
1	Total Plant		2	2	2	2	2	3	3	3	3	3	3	3	3	3	3
2			5	6	7	8	9	0	1	2	3	4	5	6	7	8	
3	<b>Production Plant</b>																
4	L. P. G. Equipment																
5	S. N. G. Equipment																
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13	<b>Storage Plant</b>																
14	Gas Holders Excl. of Found																
15																	
16																	
17																	
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19																	
20																	
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23																	
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27	Mains																
28																	
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31																	
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37																	
38																	
39																	
40																	
41	<b>Distribution Plant</b>																
42	Structures & Improvements																
43	Mains, Cast Iron																
44	Mains, Steel																
45	Mains, Plastic																
46	Compressor Station Equipment																
47	Meas. & Reg. Sta. Equipment																
48	Meas. & Reg. Sta. Equipment-City Gt.																
49	Services, Steel																
50	Services, Plastic																
51	Meters																
52	Meter Installations																
53	House Regulators																
54	House Regulators Installations																
55																	
56																	

**G-2**

**COST TRENDS OF GAS UTILITY CONSTRUCTION**

Seelye

**SOUTH ATLANTIC REGION (1973=100)**

L i n e	CONSTRUCTION AND EQUIPMENT	F E R C	COST INDEX NUMBERS													
			1	1	1	1	1	1	1	1	1	1	1	1	1	1
			9	9	9	9	9	9	9	9	9	9	9	9	9	9
1	Total Plant		3	4	4	4	4	4	4	4	4	4	4	5	5	5
2			9	0	1	2	3	4	5	6	7	8	9	0	1	2
3	<b>Production Plant</b>															
4	L. P. G. Equipment															
5	S. N. G. Equipment															
6																
7																
8																
9																
10																
11																
12																
13	<b>Storage Plant</b>															
14	Gas Holders Excl. of Found															
15																
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19																
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21																
22																
23																
24	<b>Transmission Plant</b>															
25	Total Transmission Plant															
26	Structures & Improvements															
27	Mains															
28																
29	Compressor Station Equipment															
30	Meas. & Reg. Sta. Equipment															
31																
32																
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36																
37																
38																
39																
40																
41	<b>Distribution Plant</b>															
42	Structures & Improvements															
43	Mains, Cast Iron															
44	Mains, Steel															
45	Mains, Plastic															
46	Compressor Station Equipment															
47	Meas. & Reg. Sta. Equipment															
48	Meas. & Reg. Sta. Equipment-City Gt.															
49	Services, Steel															
50	Services, Plastic															
51	Meters															
52	Meter Installations															
53	House Regulators															
54	House Regulators Installations															
55																
56																

**G-2**

**COST TRENDS OF GAS UTILITY CONSTRUCTION**

Seelye

**SOUTH ATLANTIC REGION (1973=100)**

L i n e	CONSTRUCTION AND EQUIPMENT	F E R C	COST INDEX NUMBERS													
			1	1	1	1	1	1	1	1	1	1	1	1	1	
			9	9	9	9	9	9	9	9	9	9	9	9	9	9
1	Total Plant		3	4	5	6	7	8	9	0	1	2	3	4	5	6
2																
3	<b>Production Plant</b>															
4	L. P. G. Equipment															
5	S. N. G. Equipment															
6																
7																
8																
9																
10																
11																
12																
13	<b>Storage Plant</b>															
14	Gas Holders Excl. of Found															
15																
16																
17																
18																
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21																
22																
23																
24	<b>Transmission Plant</b>															
25	Total Transmission Plant															
26	Structures & Improvements															
27	Mains															
28																
29	Compressor Station Equipment															
30	Meas. & Reg. Sta. Equipment															
31																
32																
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37																
38																
39																
40																
41	<b>Distribution Plant</b>															
42	Structures & Improvements															
43	Mains, Cast Iron															
44	Mains, Steel															
45	Mains, Plastic															
46	Compressor Station Equipment															
47	Meas. & Reg. Sta. Equipment															
48	Meas. & Reg. Sta. Equipment-City Gt.															
49	Services, Steel															
50	Services, Plastic															
51	Meters															
52	Meter Installations															
53	House Regulators															
54	House Regulators Installations															
55																
56																

**G-2**

**COST TRENDS OF GAS UTILITY CONSTRUCTION**

Seelye

**SOUTH ATLANTIC REGION (1973=100)**

L i n e	CONSTRUCTION AND EQUIPMENT	F E R C	COST INDEX NUMBERS														
			1	1	1	1	1	1	1	1	1	1	1	1	1		
			9	9	9	9	9	9	9	9	9	9	9	9	9	9	
			6	6	6	7	7	7	7	7	7	7	7	7	7	7	8
			7	8	9	0	1	2	3	4	5	6	7	8	9	0	
1	Total Plant																
2																	
3	<b>Production Plant</b>																
4	L. P. G. Equipment																
5	S. N. G. Equipment																
6																	
7																	
8																	
9																	
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11																	
12																	
13	<b>Storage Plant</b>																
14	Gas Holders Excl. of Found																
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22																	
23																	
24	<b>Transmission Plant</b>																
25	Total Transmission Plant																
26	Structures & Improvements																
27	Mains																
28																	
29	Compressor Station Equipment																
30	Meas. & Reg. Sta. Equipment																
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41	<b>Distribution Plant</b>																
42	Structures & Improvements																
43	Mains, Cast Iron																
44	Mains, Steel																
45	Mains, Plastic																
46	Compressor Station Equipment																
47	Meas. & Reg. Sta. Equipment																
48	Meas. & Reg. Sta. Equipment-City Gt.																
49	Services, Steel																
50	Services, Plastic																
51	Meters																
52	Meter Installations																
53	House Regulators																
54	House Regulators Installations																
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**G-2**

**COST TRENDS OF GAS UTILITY CONSTRUCTION**

Seelye

**SOUTH ATLANTIC REGION (1973=100)**

L i n e	CONSTRUCTION AND EQUIPMENT	F E R C	COST INDEX NUMBERS														
			1	1	1	1	1	1	1	1	1	1	1	1	1	1	
			9	9	9	9	9	9	9	9	9	9	9	9	9	9	
1	Total Plant		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2			8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
3	<b>Production Plant</b>		1	2	3	4	5	6	7	8	9	0	1	2	3	4	
4	L. P. G. Equipment																
5	S. N. G. Equipment																
6																	
7																	
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9																	
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13	<b>Storage Plant</b>																
14	Gas Holders Excl. of Found																
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52	Meter Installations																
53	House Regulators																
54	House Regulators Installations																
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**G-2**

**COST TRENDS OF GAS UTILITY CONSTRUCTION Seelye**

**SOUTH ATLANTIC REGION (1973=100)**

L i n e	CONSTRUCTION AND EQUIPMENT	F E R C	COST INDEX NUMBERS														
			1	1	1	1	1	2	2001		2002		2003		2004		
									9	9	9	9	9	0	Jan.	Jul.	Jan.
			5	6	7	8	9	0	1	1	1	1	1	1	1	1	1
1	Total Plant																
2																	
3	<b>Production Plant</b>																
4	L. P. G. Equipment																
5	S. N. G. Equipment																
6																	
7																	
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53	House Regulators																
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**G-2**

**COST TRENDS OF GAS UTILITY CONSTRUCTION**

Seelye

**SOUTH ATLANTIC REGION (1973=100)**

L i n e	CONSTRUCTION AND EQUIPMENT	F E R C	COST INDEX NUMBERS												
			2005		2006		2007		2008		2009		2010		
			Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	
1	Total Plant														
2															
3	<b>Production Plant</b>														
4	L. P. G. Equipment														
5	S. N. G. Equipment														
6															
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30	Meas. & Reg. Sta. Equipment														
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48	Meas. & Reg. Sta. Equipment-City Gt.														
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53	House Regulators														
54	House Regulators Installations														
55															
56															

**G-2**

**COST TRENDS OF GAS UTILITY CONSTRUCTION**

Seelye

**SOUTH ATLANTIC REGION (1973=100)**

L i n e	CONSTRUCTION AND EQUIPMENT	F E R C	COST INDEX NUMBERS														
			2011		2012		2013		2014		2015		2016		2017		
			Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	Jan. 1	Jul. 1	
1	Total Plant																
2																	
3	<b>Production Plant</b>																
4	L. P. G. Equipment																
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**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 316**

**Responding Witness: Lonnie E. Bellar**

- Q-316. Explain to what extent the Company's cast iron and bare steel replacement program is increasing the existing distribution system's delivery capacity. Include in this response, increases in pressurization due to newer piping materials and joining methods and the ability to use more looping with newer piping, as applicable.
- A-316. The Company's systematic approach to replacing cast iron and bare steel mains and associated services with modern materials (plastic and cathodically protected steel) has allowed the majority of distribution systems previously operating at low (utilization) pressure to be upgraded to medium pressure. This allows the Company to offer higher delivery pressures than were previously available to customers in the main replacement areas. The Company does not have a set criteria for increasing the existing system's delivery capacity. However, the program's systematic approach allows the Company to provide delivery capacity to meet the distribution system's needs while often installing smaller diameter pipe due to operating at medium pressure. The Company has not quantified the extent that this program has increased the distribution system's delivery capacity.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 317**

**Responding Witness: William S. Seelye**

Q-317. Specify the number of residential (RGS) and Commercial (CGS) customers (separately) who take service from high pressure mains.

A-317. There are no RGS or CGS customers who take service from high pressure mains.



**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 318**

**Responding Witness: William S. Seelye**

- Q-318. With regard to Mr. Seelye's Exhibit WSS-27, explain why it is reasonable to assume that the unit costs of high pressure mains are the same as low and medium pressure mains for each size and type of main.
- A-318. LG&E's accounting system does not distinguish between high pressure and medium/low pressure mains; therefore, we do not know the specific costs of the high-pressure mains that have been installed. We therefore assumed that the unit costs for high pressure and medium/low pressure mains are the same by size and by type for the purpose of cost assignment in a cost of service study. The Company does not know the vintage of the high-pressure mains in comparison to medium/low pressure mains, nor does the Company know the relative topography in which both types of mains were installed. Both of those factors would affect the unit cost of both main types. Because of those factors, the Company does not know that the high-pressure mains would be more expensive than medium/low pressure mains of the same size.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 319**

**Responding Witness: John P. Malloy**

Q-319. Provide the number of multiple meters by rate schedule served with a common service line; i.e., multiple customers served by a single service line.

A-319. See attached.

**Count of Electric Meters by Rate Type where Multiple Electric  
Meters are Served By a Single Service Line**

<u>Rate Category</u>	<u>Count of Electric Meters</u>
COMPANY USE - ELECTRIC	33
GS SINGLE PHASE - COMMERCIAL	16,820
GS SINGLE PHASE - INDUSTRIAL, DSM	17
GS SINGLE PHASE SPACE HEATING - COMM	116
GS SINGLE PHASE, NMS - COMMERCIAL	9
GS SINGLE PHASE, WATER HEATING - COMM	63
GS THREE PHASE - COMMERCIAL	10,261
GS THREE PHASE - INDUSTRIAL, DSM	89
GS THREE PHASE, NMS - COMMERCIAL	4
GS THREE PHASE, SPACE HEATING - COMM	684
LIGHTING ENERGY (METERED)	54
NA- N/A	2
PS PRIMARY - COMMERCIAL	3
PS PRIMARY PF ADJ - COMMERCIAL	1
PS SECONDARY - COMMERCIAL	1,032
PS SECONDARY - INDUSTRIAL, DSM	13
PS SECONDARY PF ADJ - INDUSTRIAL, DSM	58
PS SECONDARY PF ADJUSTED - COMMERCIAL	134
RESIDENTIAL ELECTRIC NET METERING	29
RESIDENTIAL ELECTRIC SERVICE	113,469
RESIDENTIAL ELECTRIC, WATER HEATING	3,361
RESIDENTIAL SERVICE	1
RETIRED: GS THREE PHASE - COMMERCIAL	1
RTOD-E: RESIDENTIAL TIME-OF-DAY ENERGY	13
RTS - INDUSTRIAL, DSM	1
TEMPORARY SUSPENSION	54
TEMPORARY SUSPENSION - COMMERCIAL	93
TODP - COMMERCIAL	3
TODP - INDUSTRIAL, DSM	2
TODS - COMMERCIAL	197
TODS - INDUSTRIAL, DSM	30
TRAFFIC ENERGY (METERED)	84
VOLUNTEER FIRE DEPARTMENT SERVICE	3
<b>Grand Total</b>	<b>146,734</b>

**Gas Meter Count by Rate Type Where the Service Line to the Gas  
Meter Serves Multiple Meters**

Rate Category	Count of Gas Meters
AAGS - COMMERCIAL	1
AAGS - INDUSTRIAL, DSM	6
CGS: FIRM COMMERCIAL GAS SERVICE	13,319
COMPANY USE - GAS	9
DGGS: DISTRIBUTED GENERATION GAS SERVICE	1
FT - COMMERCIAL	16
FT - INDUSTRIAL DSM OPT-OUT	2
FT - INDUSTRIAL WITH DSM	114
GAS SPECIAL CONTRACTS - LG&E	1
IGS: INDUSTRIAL GAS SERVICE DSM OPT-OUT	2
IGS: INDUSTRIAL GAS SERVICE, DSM	106
NA- N/A	1
RESIDENTIAL GAS SERVICE	51,435
TEMPORARY SUSPENSION	305
TEMPORARY SUSPENSION - COMMERCIAL	400
TEMPORARY SUSPENSION - INDUSTRIAL	2
TS-2 FIRM BALANCING AAGS IND, DSM	4
TS-2 FIRM BALANCING IGS, DSM	7
<b>Grand Total</b>	<b>65,731</b>

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 320**

**Responding Witness: William S. Seelye**

- Q-320. Provide all documents, analyses, workpapers, spreadsheets, etc. showing the development of the Company's design day demands as utilized within Mr. Seelye's CCOSS. In this response, also specifically explain how any interruptible or As-Available Gas Service loads are estimated or determined.
- A-320. As Available Gas Service (Rate AAGS) loads for distribution allocation were determined in the same manner as all other classes of service. See attachment being provided in Excel format.

The attachment is being provided in a separate file in Excel format.



**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 321**

**Responding Witness: Lonnie E. Bellar**

- Q-321. For each of the last five years, provide a list of each curtailment to interruptible or AAGS customers indicating the date, duration, reason for interruption, and estimate curtailment Dth.
- A-321. During the last five years, LG&E has curtailed customers served under Rate AAGS a total of eighteen (18) days as follows:
- January 5, 6, and 7, 2014 (3 days)
  - February 7, 8, 9, 10, 11, 12, 2014 (6 days)
  - February 19, 20, 21, 22, 23, 24, 25, 26, 27, 2015 (9 days)

Customers under Rate AAGS were interrupted as the result of colder-than-normal weather.

LG&E estimates that on average the total gas load subject to interruption was about 1,000 Mcf/day.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 322**

**Responding Witness: William S. Seelye**

- Q-322. Provide references to each instance known to Mr. Seelye that the LOLP method has been proposed before State regulatory commissions to allocate generation plant for retail class cost allocations purposes. In this response, provide the name of the utility, year, jurisdiction, docket number, and proposing party as available.
- A-322. See the response to PSC 2-89.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 323**

**Responding Witness: Christopher M. Garrett**

- Q-323. Reference the Garret LG&E testimony at page 45, line 12, regarding the Companies' plans to create a regulatory asset for the estimated \$12.079 million in net book value of in-service meters to be retired in the event the CPCN is awarded. Mr. Garret testifies that the creation of the regulatory asset will have no impact on base rates proposed in this proceeding, as the Companies propose to delay cost recovery of the regulatory asset until after the AMS program is implemented. Confirm or deny that the Companies will neither charge nor accrue carrying costs, such as interest expense and return on equity, or depreciation expense, on the regulatory asset during AMS implementation.
- A-323. LG&E will not begin amortization and the associated recovery of the estimated \$12.079 million regulatory asset until approved in a future rate proceeding. With regards to carrying costs, historically, LG&E's base rates have been established based on capitalization. As retirements typically do not impact utility capitalization, LG&E has assumed the retirement of the legacy meter costs will also not impact utility capitalization.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 324**

**Responding Witness: Christopher M. Garrett**

- Q-324. Reference the Malloy testimony at page 23, line 23, regarding the Companies' plans to recover the cost of the retired meter regulatory asset. Mr. Malloy testifies that these costs, estimated initially at \$12.079 million, will be recovered over a five-year period once the AMS implementation is complete at a total cost of about \$40 million. Confirm or deny that the Companies will neither charge nor accrue carrying costs, such as interest expense and return on equity, or depreciation expense, on the regulatory asset balance in associated cost recovery calculations.
- A-324. See the response to Question No. 323.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 325**

**Responding Witness: John P. Malloy**

- Q-325. Reference the Malloy testimony at page 3, line 5, regarding the Companies' Residential Competitive Customer Satisfaction Study. Provide the results of the most recently completed Study.
- A-325. See attached. Certain information requested is confidential and is being provided under seal pursuant to a petition for confidential protection. The competitive peer set utilities were redacted on slide 8.



PPL companies

## Customer Satisfaction Survey

Residential Customers

Mid-Year 2016 Report

08.30.2016

PREPARED BY





- **Background and Methodology**
- **Performance versus Peer Group**
- **2016 Mid-Year Update on Satisfaction**
- **Three Customer Types**
- **Utility Communications**
- **Billing & Payment**
- **LG&E Low Income Update**
- **Executive Summary**
- **Demographics**
- **Operation Centers**

**Background:**

Since January 2010, Bellomy Research, Inc. has conducted and analyzed customer satisfaction research for residential customers of LG&E and KU, as well as a peer group of 6 competitive investor-owned utilities in surrounding areas from Iowa to Georgia.

**Objectives:**

The overall objective is to assess LG&E/KU and peer group performance on a quarterly basis, specifically to:

- ✓ Measure residential customer satisfaction
- ✓ Identify strengths and areas for improvement
- ✓ Understand general performance trends
- ✓ Determine Team Incentive Award (TIA)

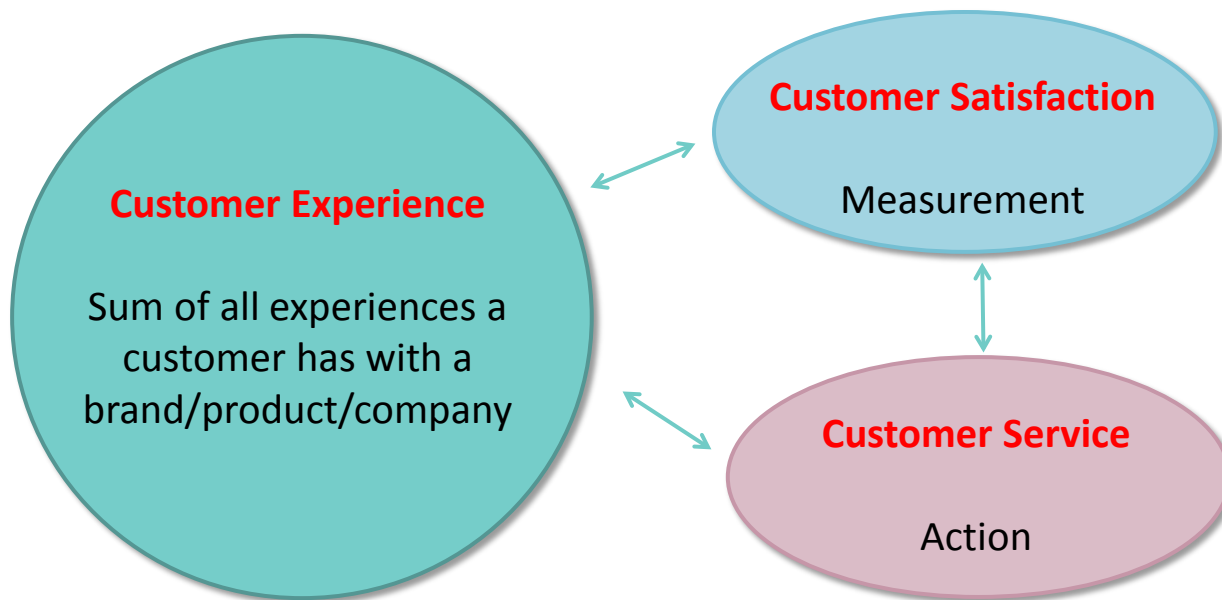
**Methodology:**

A 15-minute telephone survey is conducted among residential customers of LG&E, KU and 6 peer competitors (Duke Energy Midwest, MidAmerican Energy, SCE&G, Duke Energy Carolinas, AEP Midwest, Georgia Power).

The sponsor of the study is not identified to ensure comparability of results across utilities.

Interviews are conducted Monday-Friday, primarily 5 PM to 9 PM in the customer's time zone, and Saturday from 9 AM to 5 PM. No dialing is done on Sunday.

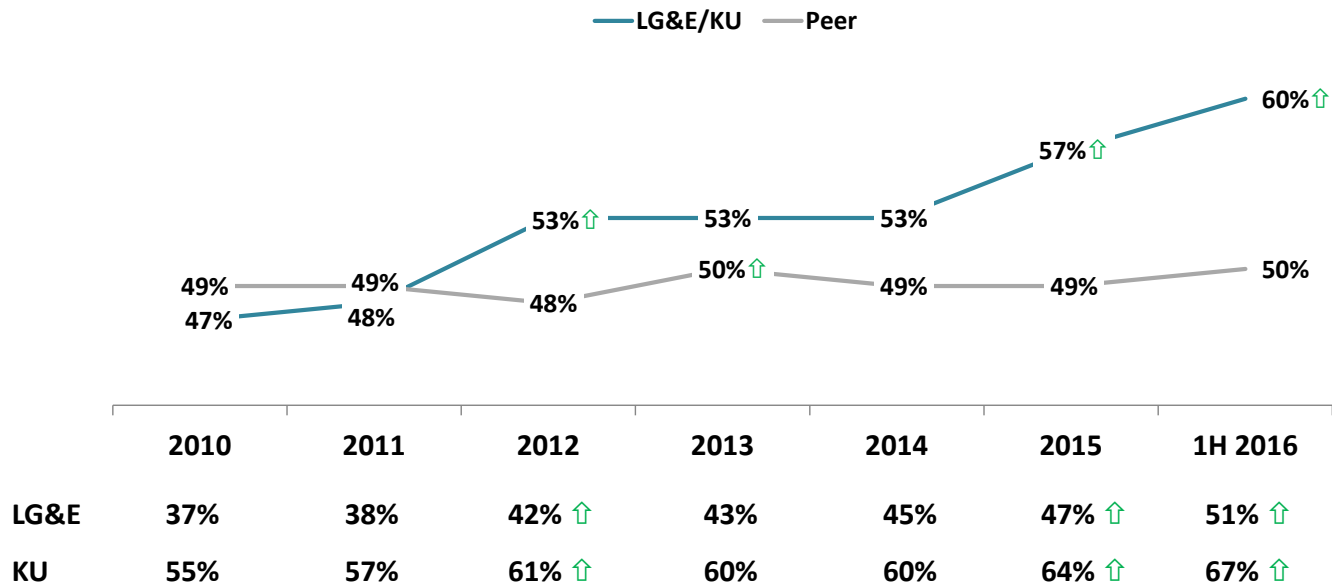
All satisfaction questions are based on a 10-point scale. Means are reported to understand overall performance. Statistical testing is conducted at the 90% confidence level.





Overall Satisfaction among LG&E/KU customers continued its positive momentum through the first half of the year, while the Peer trend remains flat.

### Overall Satisfaction – Top 2 Box Annual Trend

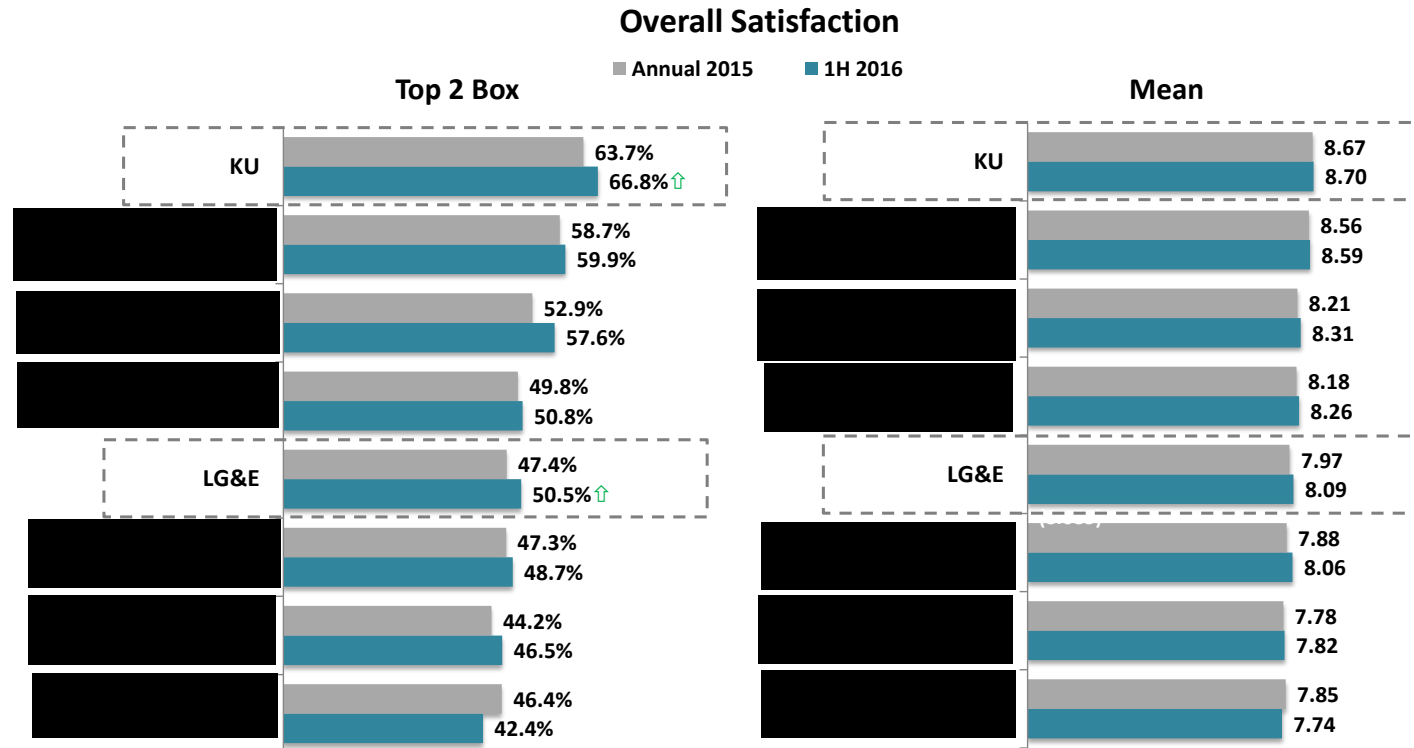


Note: ↑/↓ indicates significant difference vs. prior year at the 90% confidence level



Both KU and LG&E held their positions in ranking at numbers one and five, respectively, and were the only two companies that improved significantly in terms of Top 2 Box Satisfaction over Annual 2015.

**CONFIDENTIAL INFORMATION REDACTED**



Note: ↑/↓ indicates significant difference vs. Annual 2015 at the 90% confidence level.

KU now holds the number one spot in the Peer ranking in 5 out of 6 key areas. LG&E moved up one spot in four of the key areas.

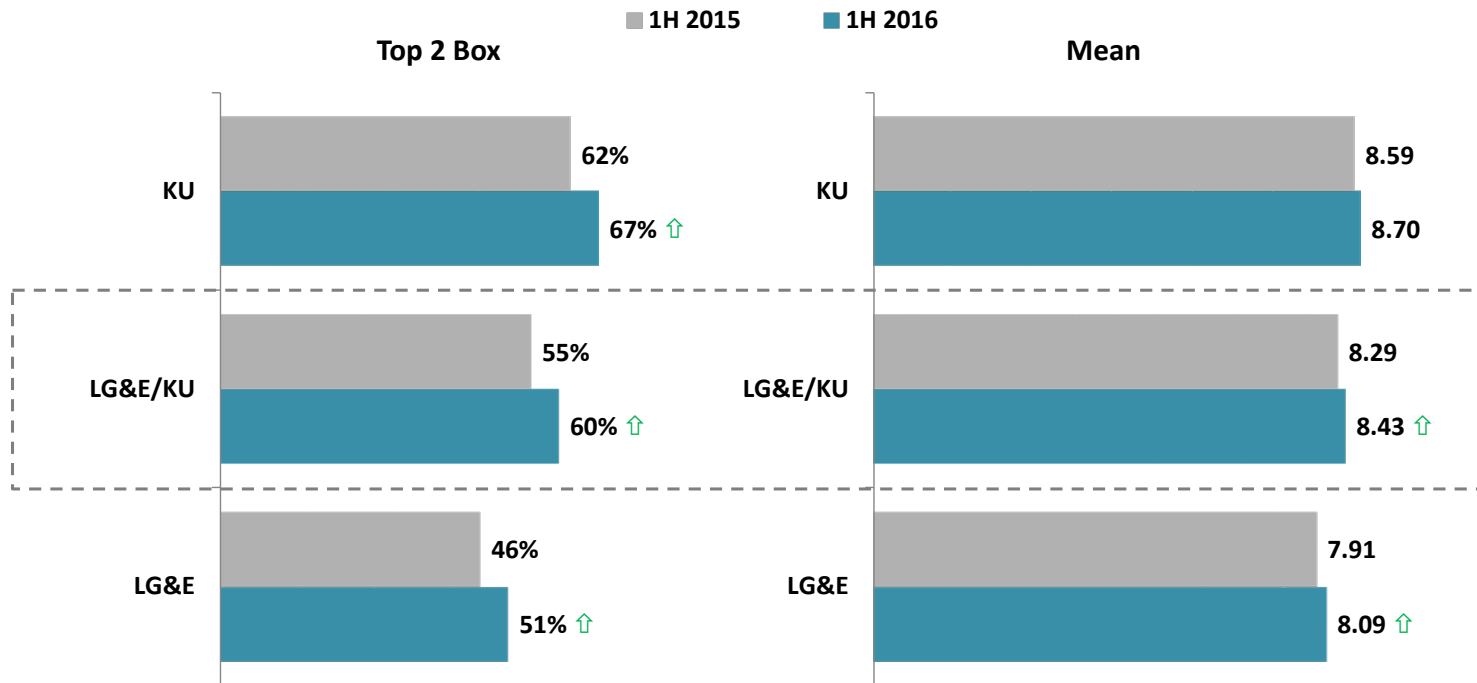
### Overall Mean Rankings by Key Segment

		LG&E		KU	
		1H 2016	Change vs. Annual 2015	1H 2016	Change vs. Annual 2015
Operations	<b>Overall Satisfaction</b>	5	-	1	-
	Power Quality & Reliability	4	+1	1	-
	Billing	4	+1	1	+1
	Payment	6	-	1	+1
	Price (electric)	4	+1	2	-1
Engagement	Corporate Citizenship	2	+1	1	-
	Communications	3	-	1	-



During the first half of 2016, LG&E and KU customers were more satisfied with the service provided by their respective utility than the same timeframe last year.

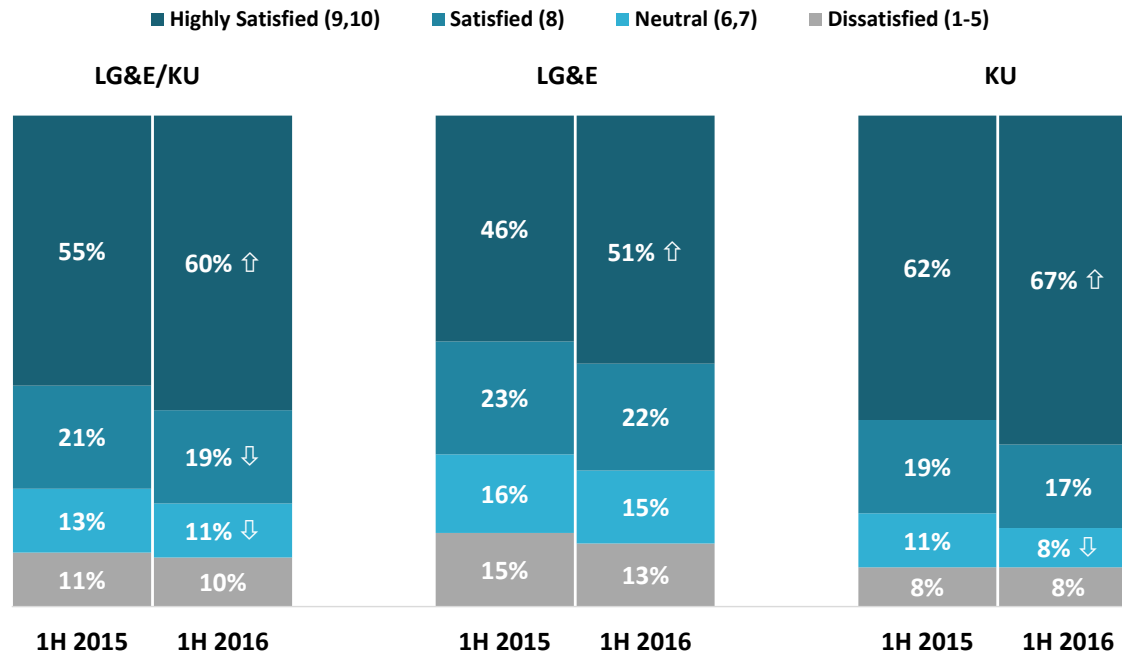
**Overall Satisfaction – LG&E/KU**



Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level

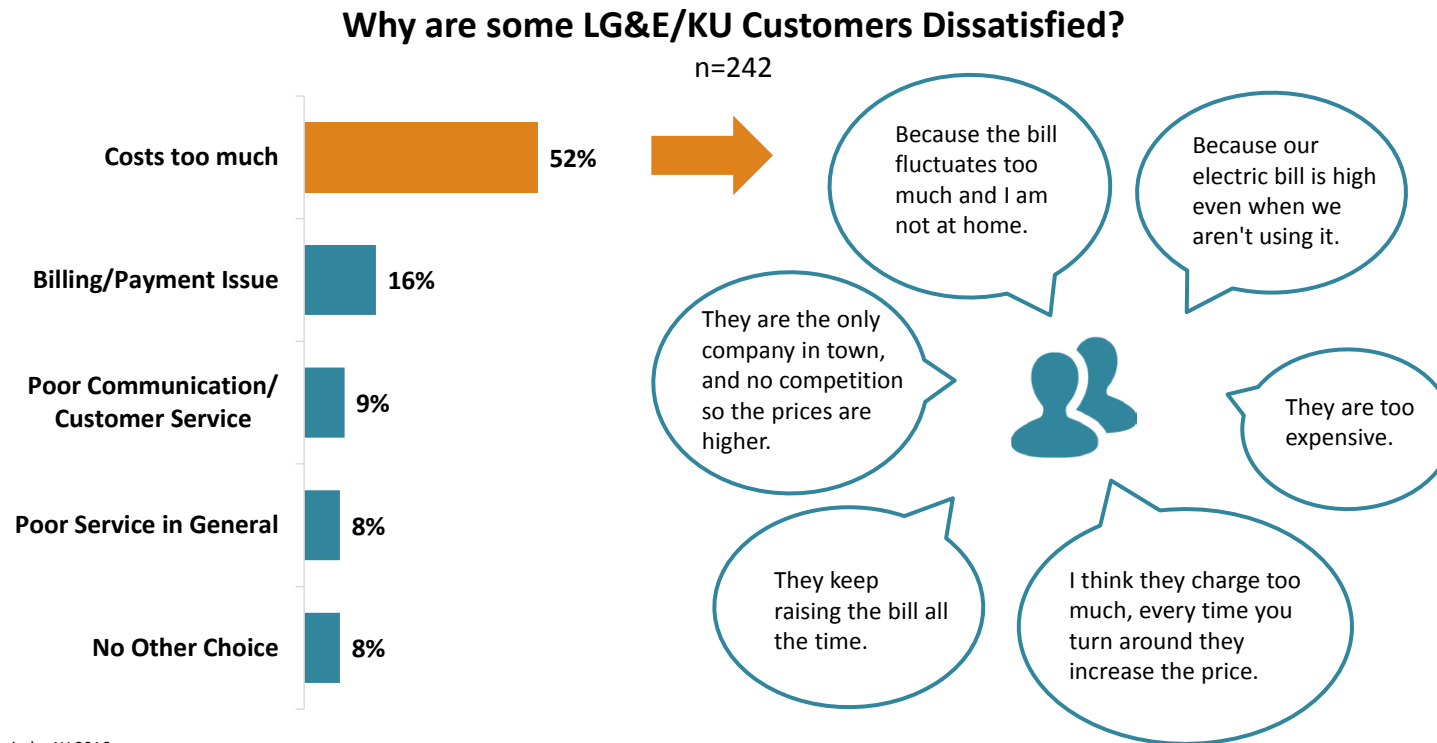
Although more LG&E and KU customers were *highly satisfied* with the service provided, the percentage who were *dissatisfied* held.

### Overall Satisfaction



Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level

While only 10% of LG&E/KU customers were dissatisfied (rating 1-5), cost was the primary reason those customers were unhappy.



Time Period = 1H 2016



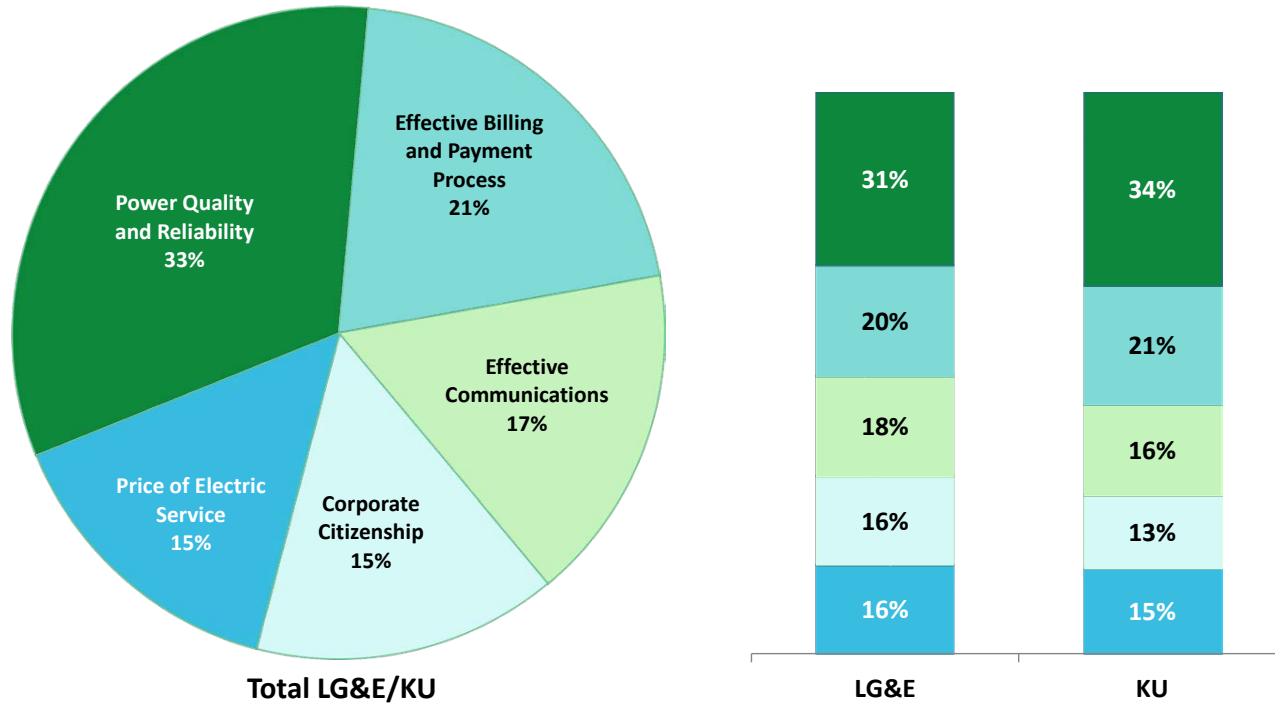
## More about LG&E/KU dissatisfied customers...

1H 2016

	Total	Dissatisfied
<b>Utility</b>		
LG&E Combo	36%	44%
LG&E Electric Only	8%	11%
KU	56%	45%
<b>Age</b>		
18-34	10%	12%
35-44	15%	19%
45-54	19%	25%
55-64	22%	24%
65+	34%	20%
HH Size (mean)	2.4	2.6
<b>Income</b>		
\$40k or less	41%	49%
Over \$40k	43%	33%
<b>Employment Situation</b>		
Full-Time	43%	44%
Part-Time	5%	7%
Unemployed	8%	12%
Retired	36%	29%
Stay At Home	4%	5%

All key areas play a role in driving customer satisfaction.

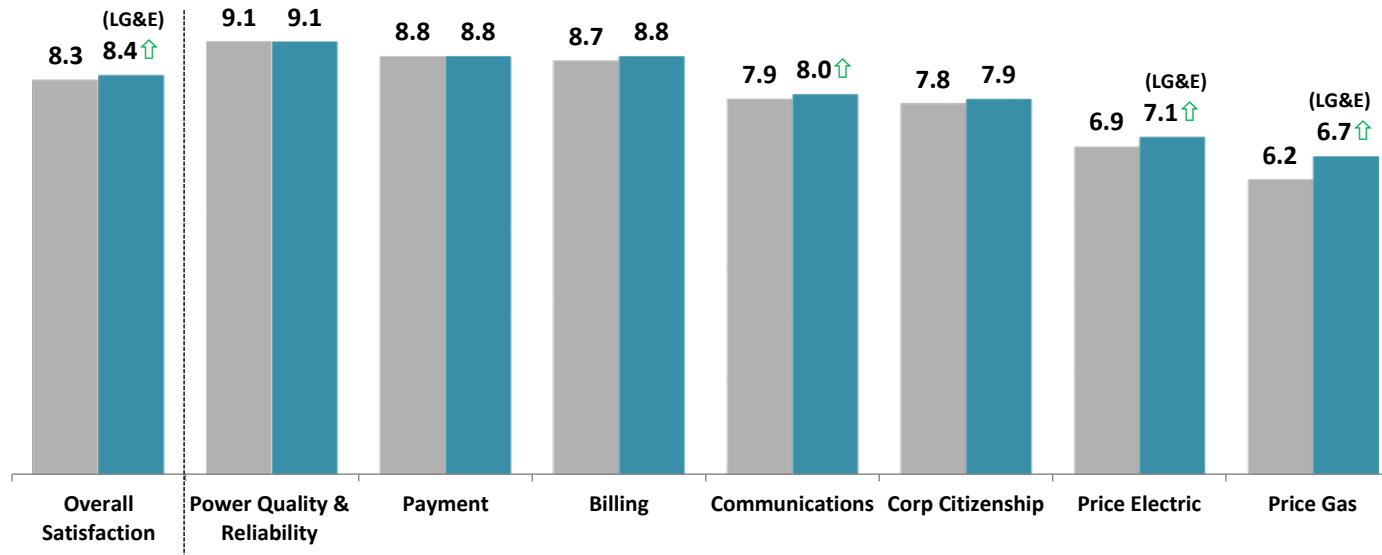
**Drivers of Overall Satisfaction – Annual 2015**



Higher Overall Satisfaction through the first half of the year traces to increased Price and Communications Satisfaction, while all other areas were flat versus year-ago.

### Overall Satisfaction (Mean) – LG&E/KU

■ 1H 2015 ■ 1H 2016



Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level

## Power Quality & Reliability Satisfaction

1H 2016 Difference vs. 1H 2015

	LG&E	Mean	KU	Mean
<b>Power Quality &amp; Reliability</b>	<b>0.0</b>	<b>8.9</b>	<b>0.0</b>	<b>9.2</b>
Supply electricity in extreme temperatures (23%)*	0.1 ↑	9.0	0.0	9.3
Quality power free from spikes, drops, surges (20%)	0.0	8.7	0.1	9.1
Promptly restore power after an outage (17%)	-0.1	8.1	0.0	8.8
Avoid brief interruptions (17%)	0.0	8.5	0.1	9.0
Avoid lengthy outages (15%)	-0.2	8.0	-0.1 ↓	8.6
Keep informed about an outage (8%)	0.3 ↑	7.7	0.1	8.0

\*2015 Key Driver Contribution (importance in driving PQR Satisfaction)  
Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level

Impact of bill redesign will be evaluated in the year-end report.

### Billing/Payment Satisfaction









1H 2016 Difference vs. 1H 2015

	LG&E	Mean	KU	Mean
<b>Billing</b>	0.0	8.5	0.1	9.0
Easy to find payment due date (15%)*	0.0	9.4	0.1	9.6
Easy to find the exact amount to pay (14%)	0.1	9.4	0.0	9.5
Bills are clear and easy to understand (12%)	0.0	8.9	0.1	9.3
Provides useful information on bill (11%)	0.2 ↑	8.7	0.1	9.0
Bills are accurate (11%)	0.1	8.8	0.1	9.2
<b>Payment</b>	0.1	8.6	0.1	9.0
Ease of paying bill (13%)	0.1 ↑	9.0	0.2 ↑	9.3
Payment options meet needs (11%)	0.2 ↑	8.8	0.1	9.0
Length of time given to pay (11%)	0.1	8.8	0.1	9.1

\*2015 Key Driver Contribution (importance in driving Billing & Payment Satisfaction)  
 Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level

## Communications Satisfaction

1H 2016 Difference vs. 1H 2015










	LG&E	Mean	KU	Mean
<b>Communications</b>	 0.1	7.8	 0.2	8.2
Ways to reduce energy usage (21%)*	 0.2	7.8	0.0	8.0
Changes that might affect account or service (20%)	 0.2	7.5	 0.1	7.8
How to be safe around electricity (20%)	 0.1	8.1	0.0	8.2
Messages that get attention (19%)	 0.1	7.0	0.0	7.4
Keeping overall energy costs low (19%)	 0.2↑	7.0	0.0	7.3

\*2015 Key Driver Contribution (importance in driving Communications Satisfaction)  
 Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level



### Corporate Citizenship Satisfaction










1H 2016 Difference vs. 1H 2015

	LG&E	Mean	KU	Mean
<b>Corporate Citizenship</b>	 0.2	7.8	0.0	8.0
Get involved in community (18%)*	 0.1	7.6	-0.2 	7.4
Develop future energy supply plans (17%)	 0.2↑	7.6	0.0	8.0
Provide useful energy saving tips (17%)	 0.1↑	8.3	0.0	8.6
Take action to protect environment (17%)	 0.1	7.6	0.0	8.2
Offer energy efficiency programs (16%)	 0.1	7.9	0.0	8.2
Help low income customers manage bill (14%)	-0.1 	7.5	-0.2 	7.7

\*2015 Key Driver Contribution (importance in driving Corp Citizenship Satisfaction)  
 Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level

## Price Satisfaction

1H 2016 Difference vs. 1H 2015

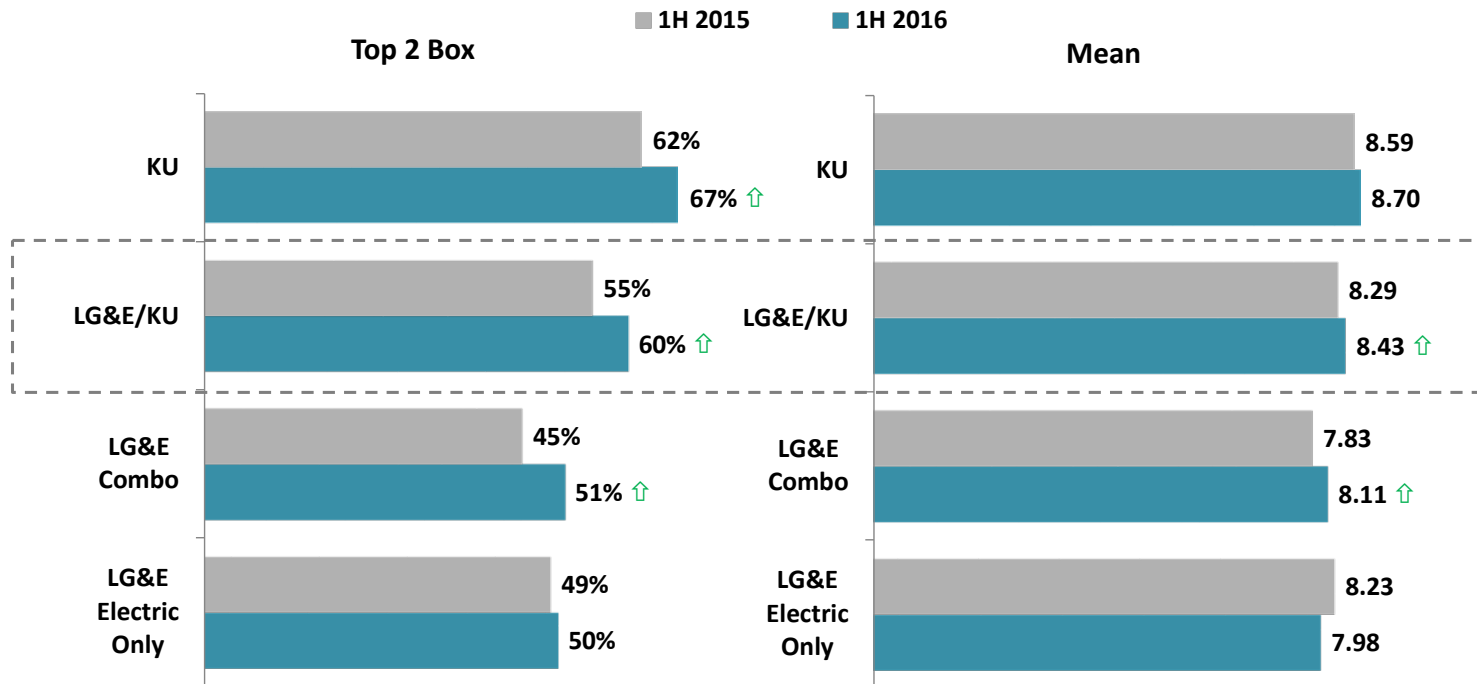
	LG&E	Mean	KU	Mean
<b>Price (Electric)</b>	 <b>0.4</b> ↑	6.8	0.0	7.3
<b>Price (Gas)</b>	 <b>0.5</b> ↑	6.7	na	na
Fair pricing (23%)*	 <b>0.4</b> ↑	7.1	0.0	7.8
Good value for the money spent (23%)	 <b>0.4</b> ↑	7.5	0.0	8.1
Offers pricing options that meet needs (19%)	 <b>0.4</b> ↑	7.5	 <b>0.1</b>	8
Pricing options easy to understand (18%)	 <b>0.3</b> ↑	8.1	 <b>0.3</b> ↑	8.7
Provides tips to help reduce bill (18%)	 <b>0.3</b> ↑	7.8	0.0	8.1

\*2015 Key Driver Contribution (importance in driving Electric Price Satisfaction)  
 Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level



Improved ratings for Total LG&E/KU trace to higher satisfaction among KU and LG&E Combo customers, while LG&E Electric Only ratings were fairly flat. LG&E Combo customer ratings are now more in line with Electric Only.

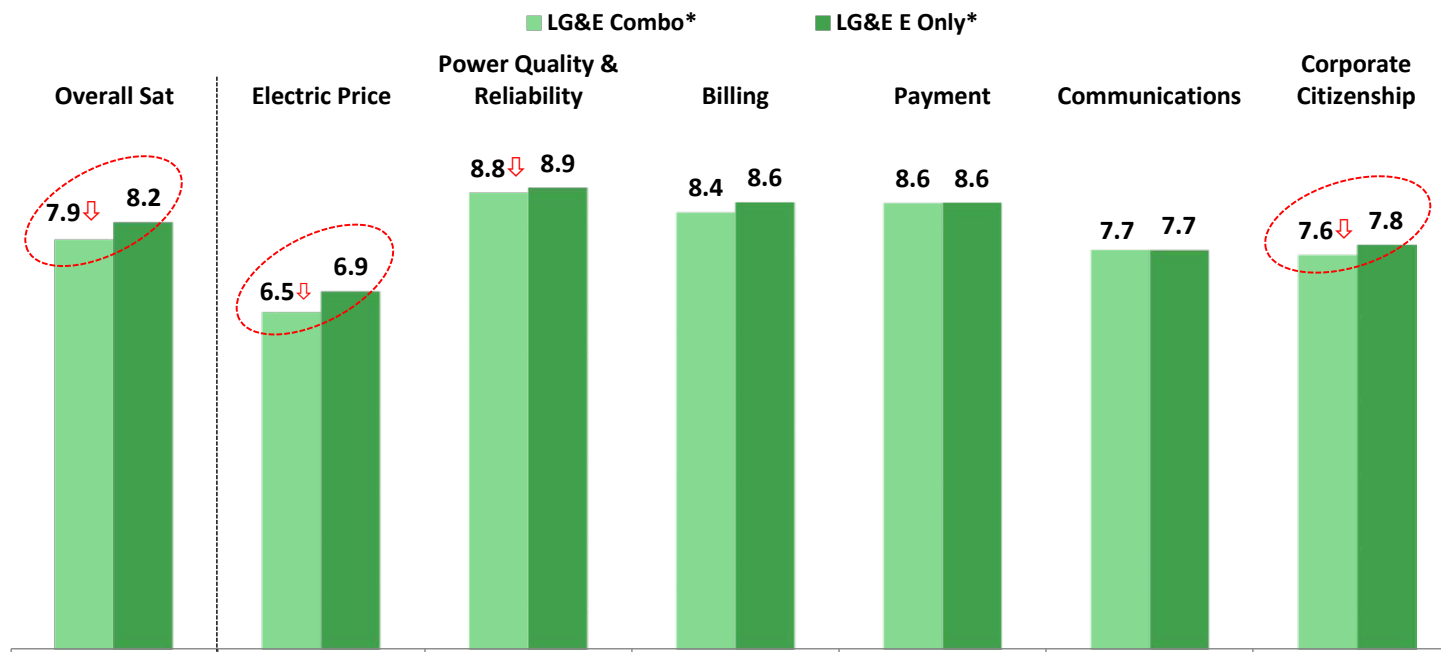
### Overall Satisfaction – LG&E/KU



\*Among LG&E customers surveyed: 82% were Electric and Gas, 18% were electric only  
 Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level

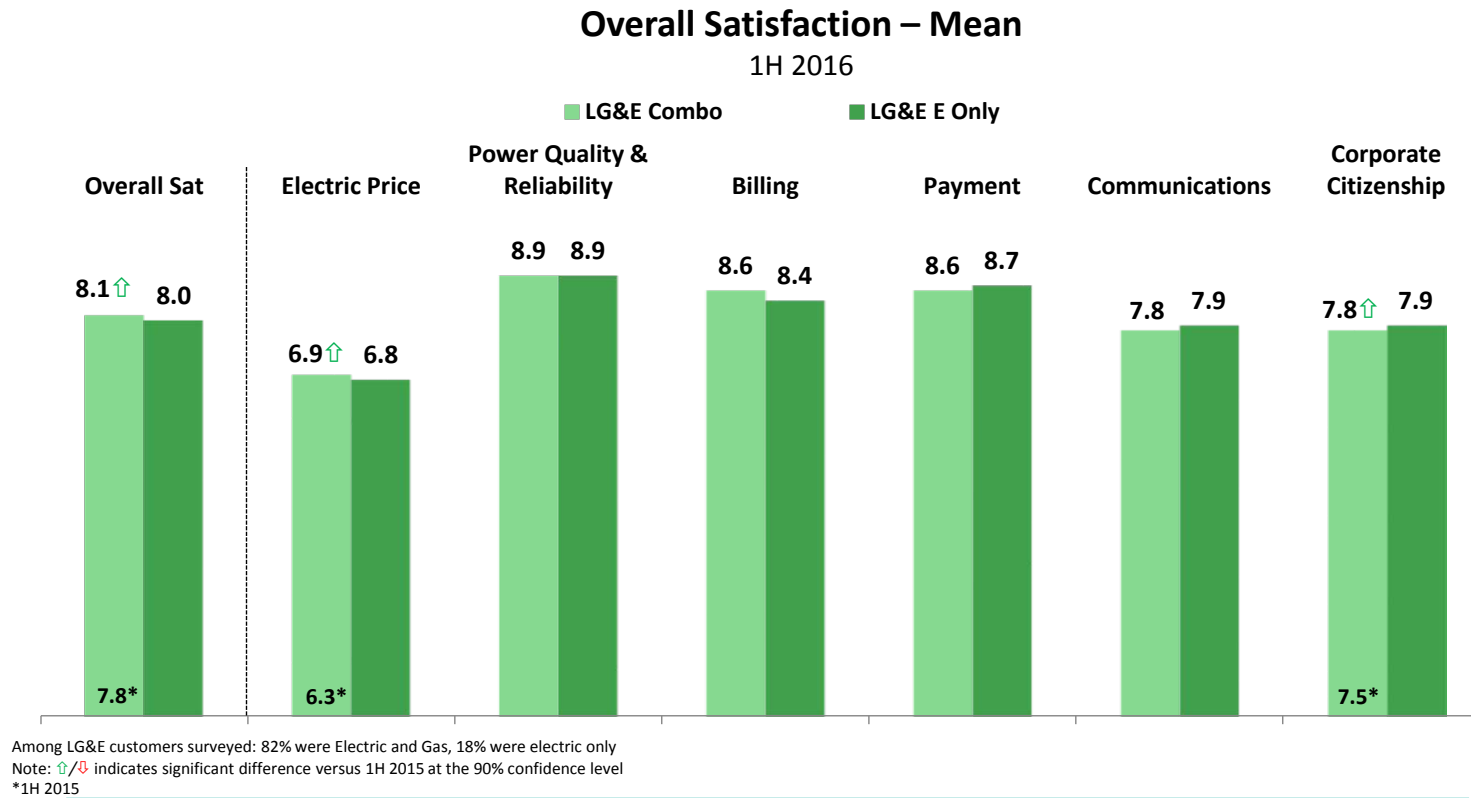
In the year-end report for 2015 it was reported that LG&E Combo customers were less satisfied than LG&E Electric Only, overall and in the areas of Price and Corporate Citizenship. However, through the first half of 2016.....

### Overall Satisfaction – Mean – 2015



\*Among LG&E customers surveyed: 79% were Electric and Gas, 21% were electric only  
 Note: ↑/↓ indicates significant difference for LG&E Combo versus Electric Only at the 90% confidence level  
 Time Period = 2015

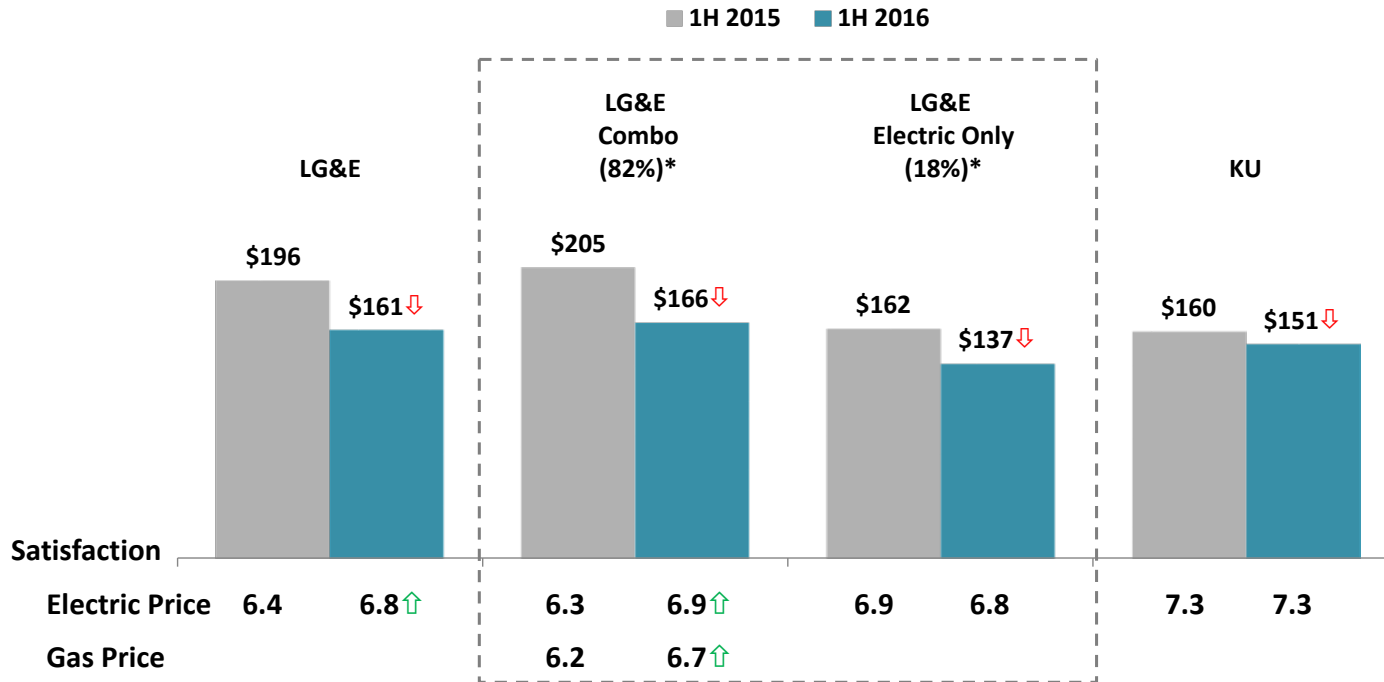
Ratings among LG&E Combo customers are now in line with LG&E Electric Only customers across all key areas, closing the gaps that existed last year for Price and Corporate Citizenship.





Although average bill amounts declined significantly for LG&E and KU customers (milder temperatures Feb/Mar), LG&E Combo customers reported the greatest net decline (lower natural gas prices?) and this resulted in significantly higher Price Satisfaction.

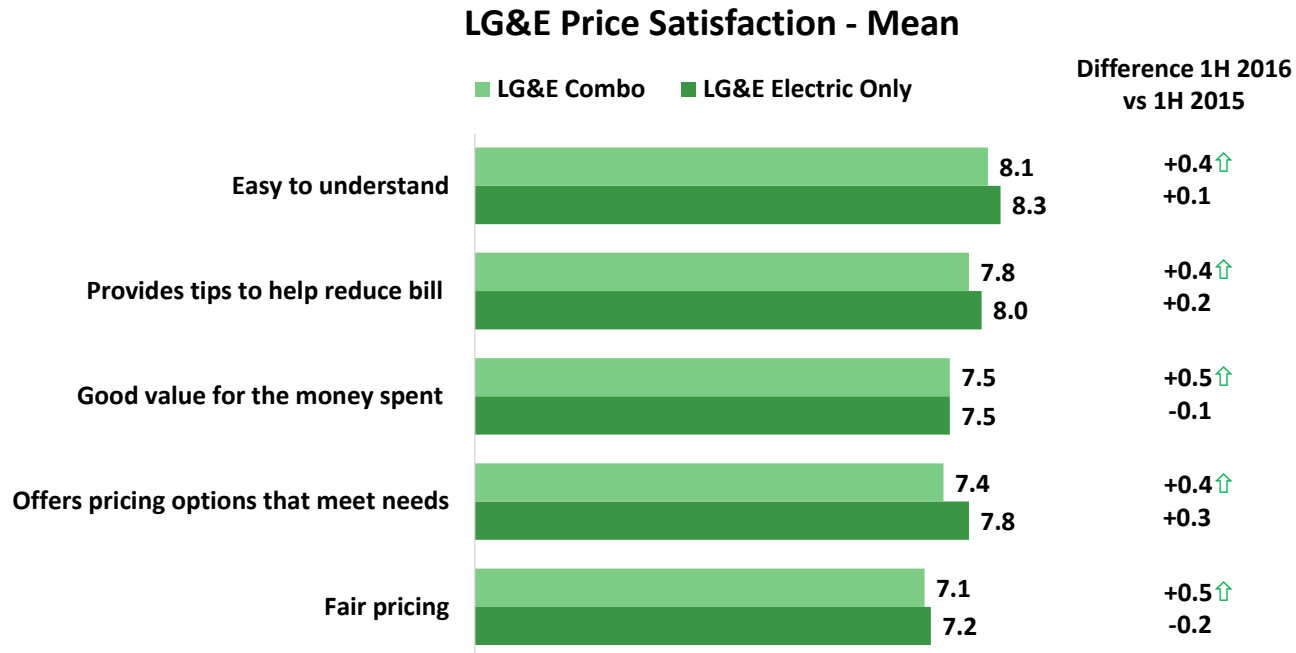
### Most Recent Average Bill Amount and Satisfaction



\*Percent of LG&E Customers Surveyed (1H 2016)

Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level

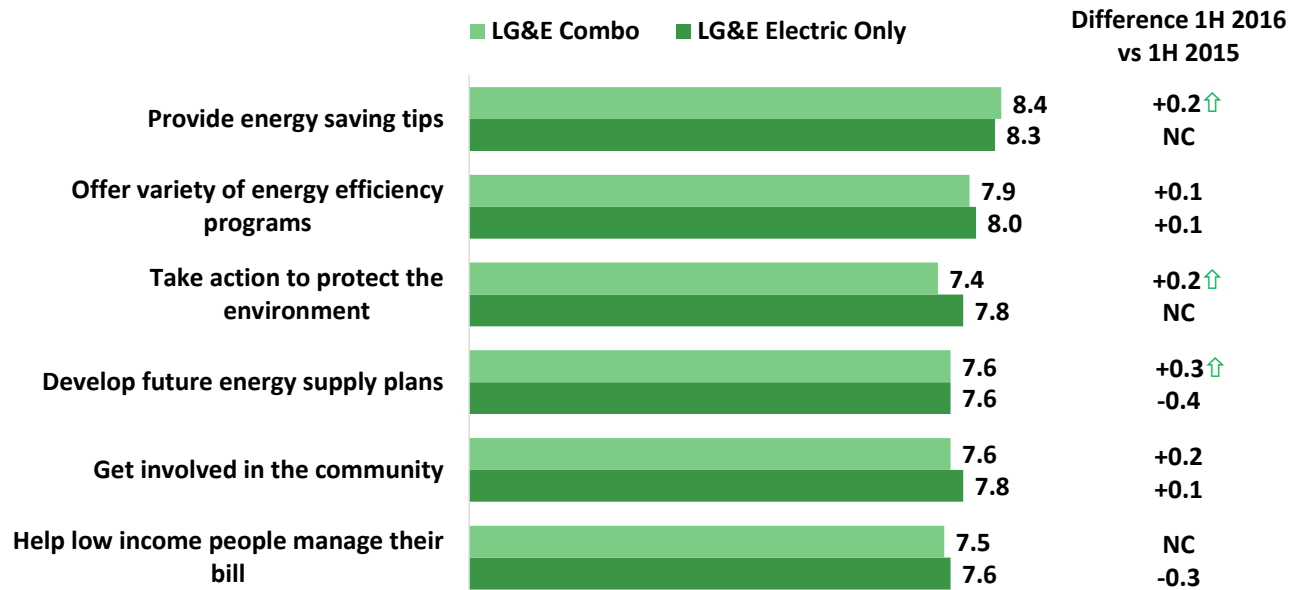
LG&E Combo customers were significantly more satisfied across all Price attributes, now rating mostly in line with LG&E Electric Only.



Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level

LG&E Combo customers rated most Corporate Citizenship attributes higher than the prior year, while ratings among Electric Only were mainly flat or down slightly.

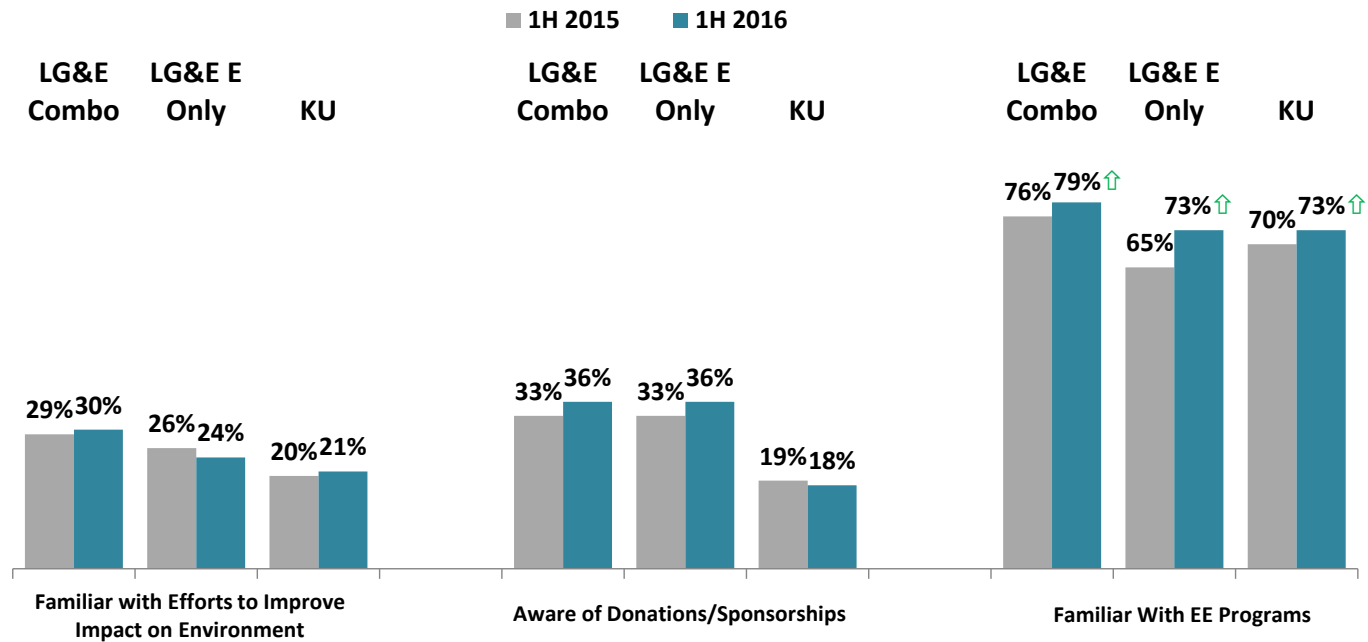
### LG&E Corporate Citizenship - Mean



Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level

Awareness of utility energy efficiency programs increased versus year-ago among all customers, but was flat for donations/sponsorships and environmental impacts. LG&E Combo customers are most aware of utility efforts to improve the impact on the environment, but awareness is still low at 30%.

### Corporate Citizenship Awareness Trend



Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level

LG&E Combo customers are more likely to be homeowners, while about half of LG&E Electric Only customers rent. LG&E Combo customers skewed more heavily to owners than renters versus year-ago.

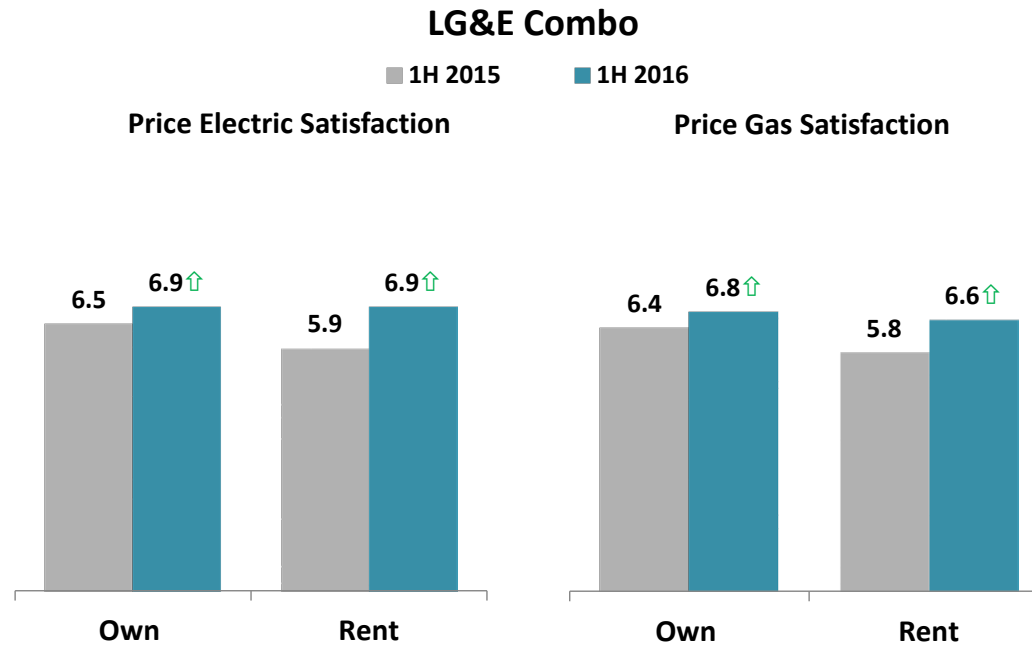
### Demographics – LG&E Combo versus E Only

	LG&E Combo		LG&E E only	
	1H 2015	1H 2016	1H 2015	1H 2016
	n = 954	n = 991	n = 248	n = 212
<b>Avg Bill Amount</b>	\$205	\$166 ↓	\$162	\$137 ↓
<b>Own/Rent</b>				
Own	68%	78% ↑	49%	52%
Rent	27%	19% ↓	49%	45%
<b>Current Employment Situation</b>				
Working full-time	46%	43%	45%	50%
Working part-time	7%	6%	9%	8%
Unemployed	8%	5% ↓	8%	10%
Retired	31%	38% ↑	30%	26%
<b>Household Income*</b>				
≤ \$40k	49%	44% ↓	56%	48%
> \$40k	51%	56% ↑	44%	52%
<b>Age</b>				
18-34	10%	9%	22%	20%
35-44	16%	14%	13%	16%
45-54	21%	20%	17%	17%
55-64	22%	23%	22%	22%
65+	31%	34%	25%	26%

\*Excludes Prefer Not to Answer

Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level

LG&E Combo customers who own and rent were significantly more satisfied with Price. Renters demonstrated the greatest increase in satisfaction, now in line with owners.

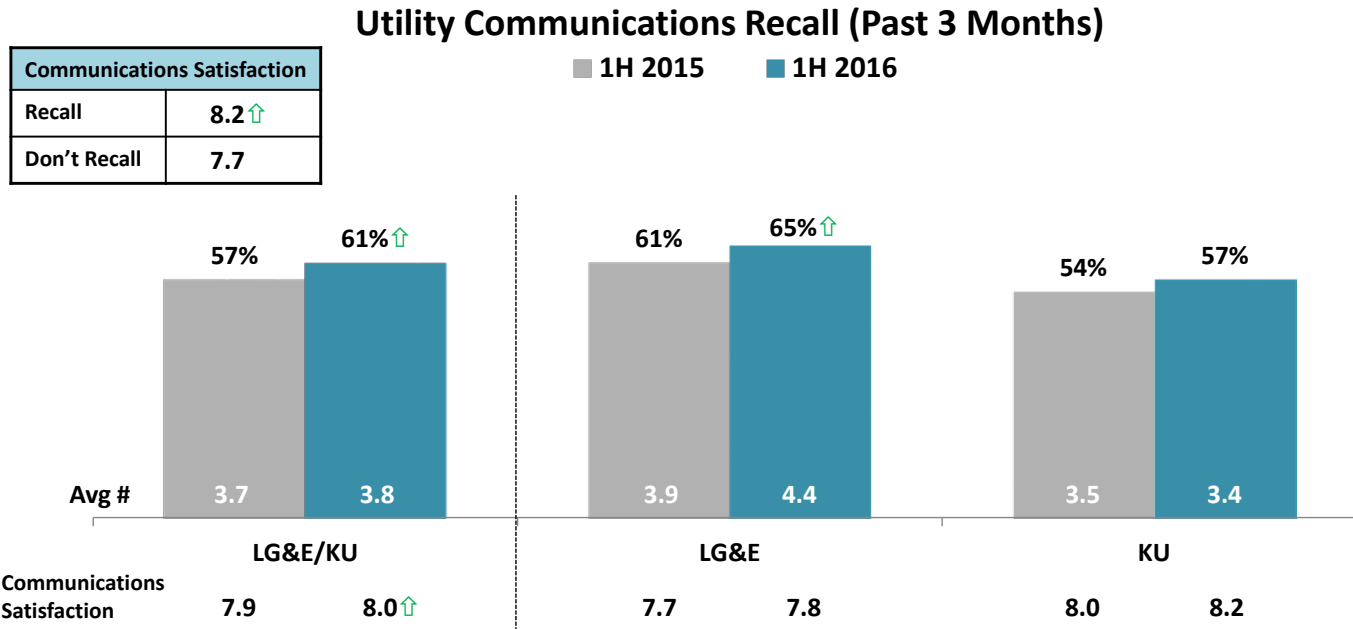


Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level





Customers who recall communications from their utility generally rate Communications Satisfaction higher than those who don't recall. More LG&E/KU customers recalled communications from the utility in 1H16 versus 1H15, which drove higher overall Communications Satisfaction.

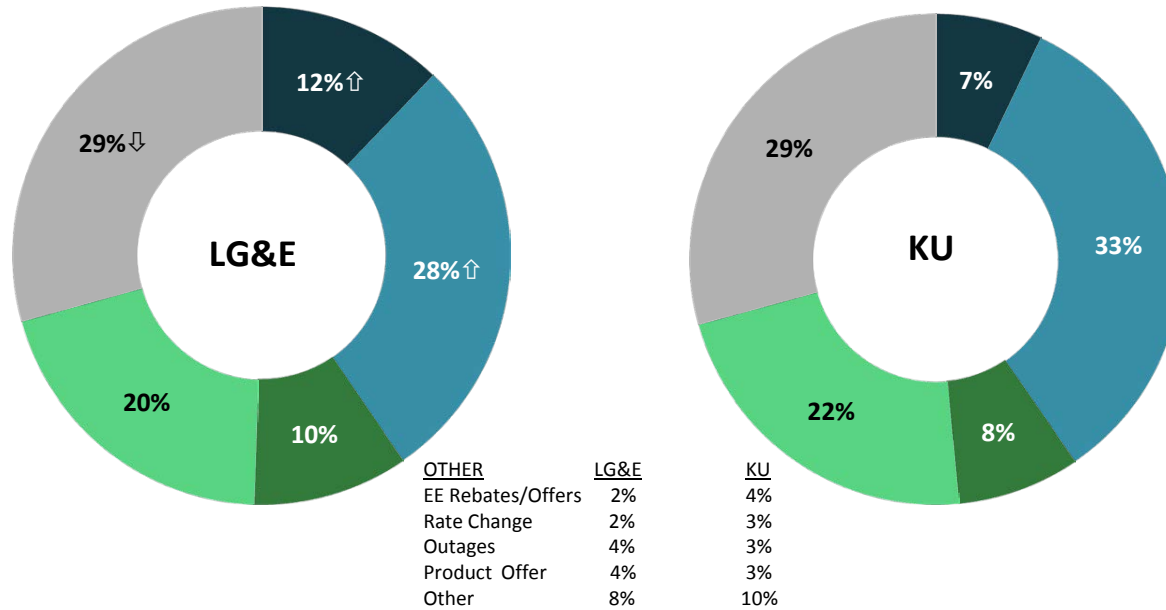


Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level

Recall of the main topic of utility communications increased among LG&E customers, now in line with KU at 71%. Customers primarily remember communications about energy efficiency tips. Recall of safety and energy efficiency communications was much higher for LG&E customers versus the first half of last year.

### Utility Communications - Main Topic Recalled

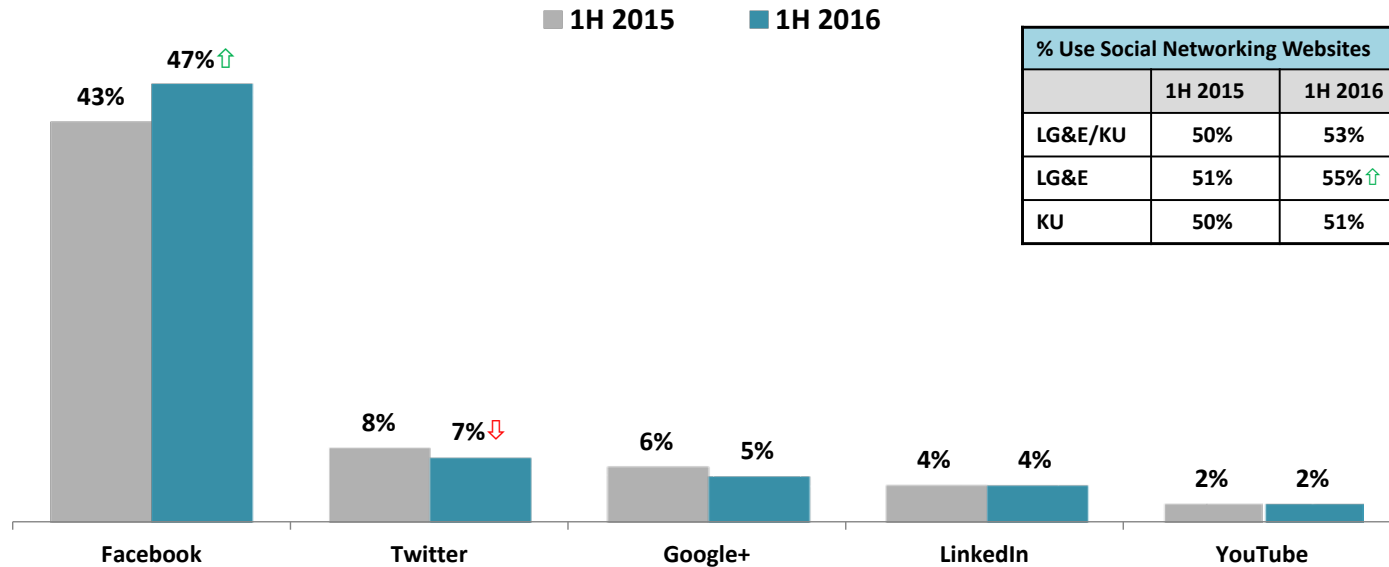
■ Safety ■ EE Tips ■ Company Information\* ■ Other ■ Don't Know



Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level  
\*Includes image, news, corporate citizenship and customer service information  
Time Period = 1H 2016

More customers are using social networking websites this year, especially LG&E customers. Nearly half of the LG&E/KU customer base surveyed uses Facebook.

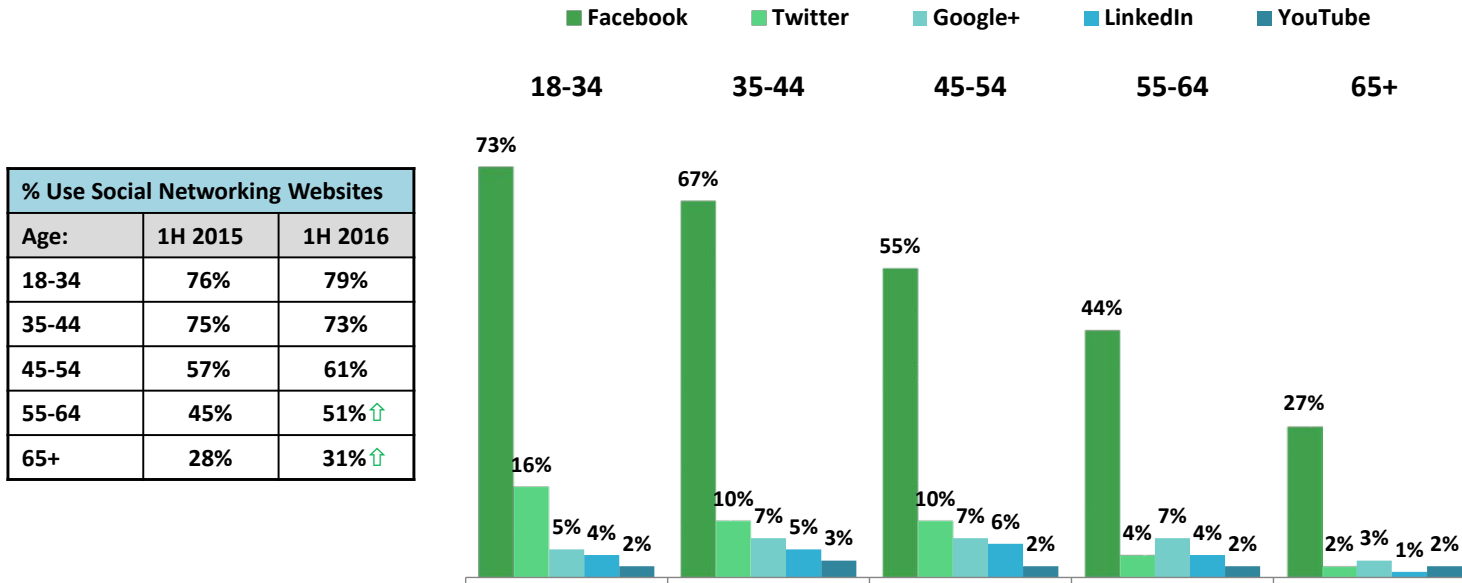
### Social Networking Website Use – LG&E/KU



Note: ↑/↓ indicates significant difference vs 1H 2015 at the 90% confidence level

Not surprisingly, customers age 65+ are least likely to use social networking websites, while the majority of 18 to 34 year olds use them. Facebook offers the greatest reach across all age groups.

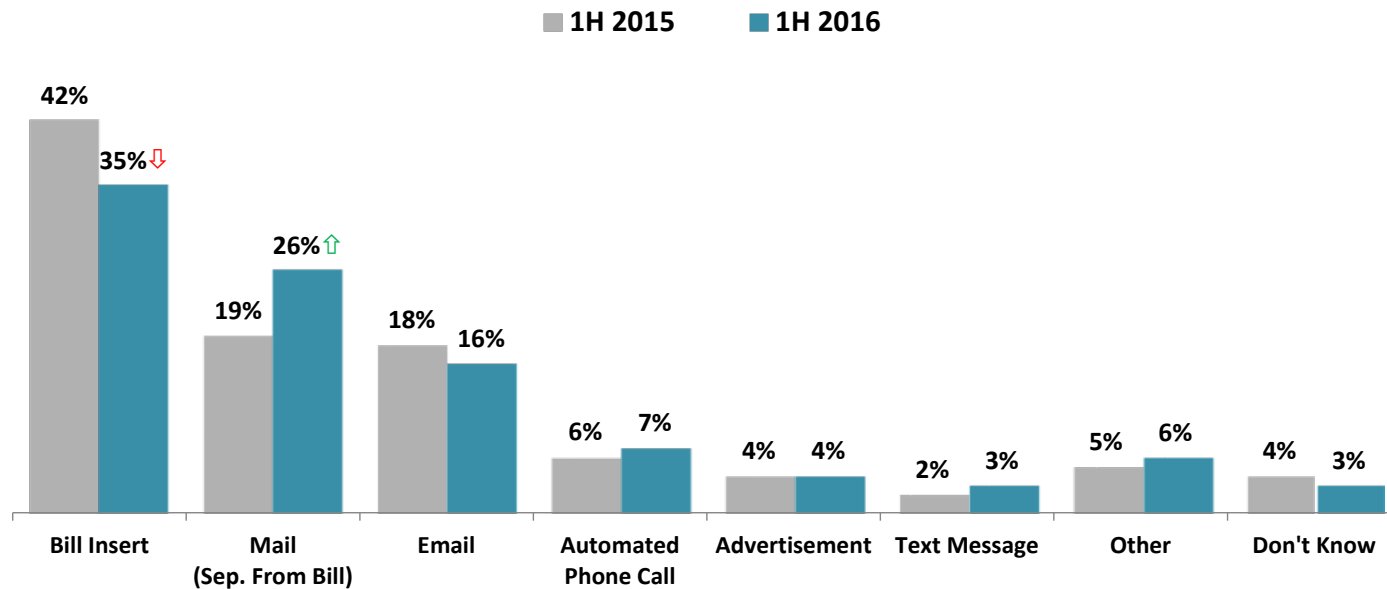
### Social Networking By Age – LG&E/KU



Note: ↑/↓ indicates significant difference vs 1H 2015 at the 90% confidence level  
Time Period = 1H 2016

Preference for bill inserts declined in favor of separate mailings, which saw an increase. Bill inserts still have the highest preference, appealing to just over one-third of customers, but the gap with preference for separate mailings is closing.

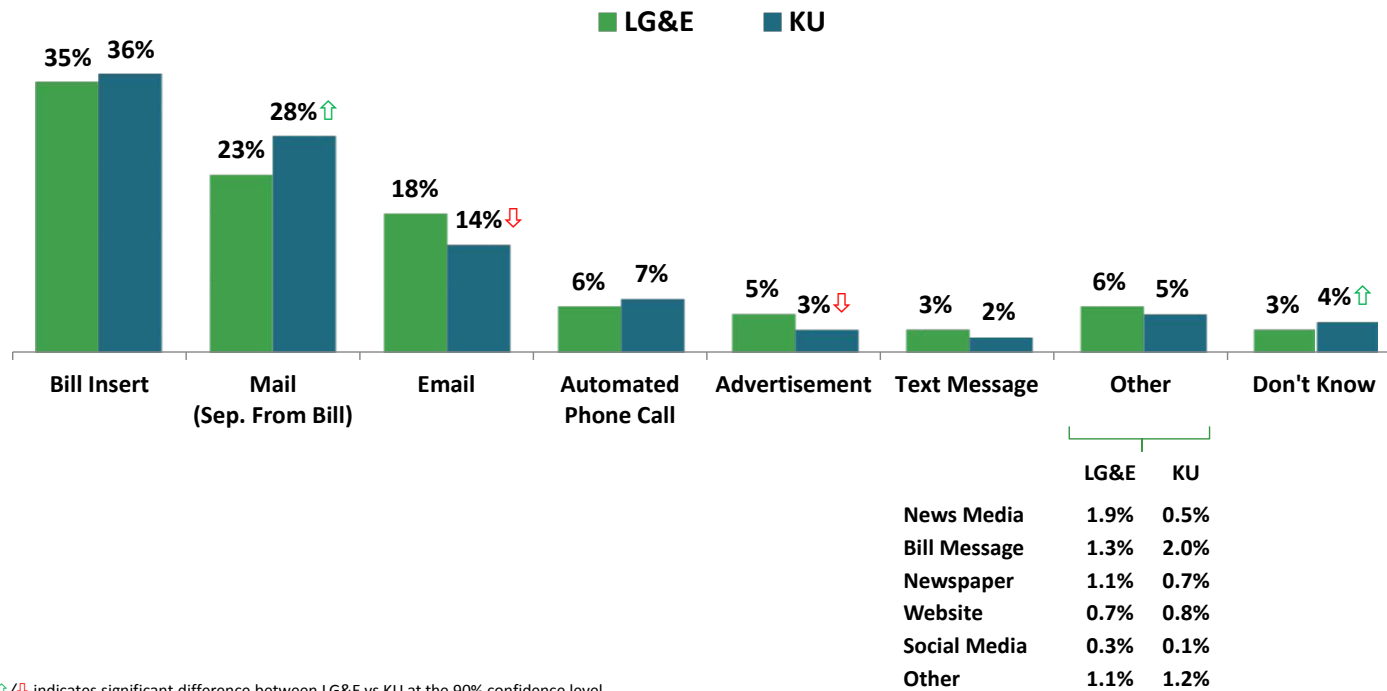
### Preferred Communication Vehicle – Trend (LG&E/KU)



Note: ↑/↓ indicates significant difference vs 1H 2015 at the 90% confidence level

Preference for bill inserts is similar among both LG&E and KU customers. However, KU customers expressed greater interest in separate mailings and LG&E customers are more likely to prefer email communications.

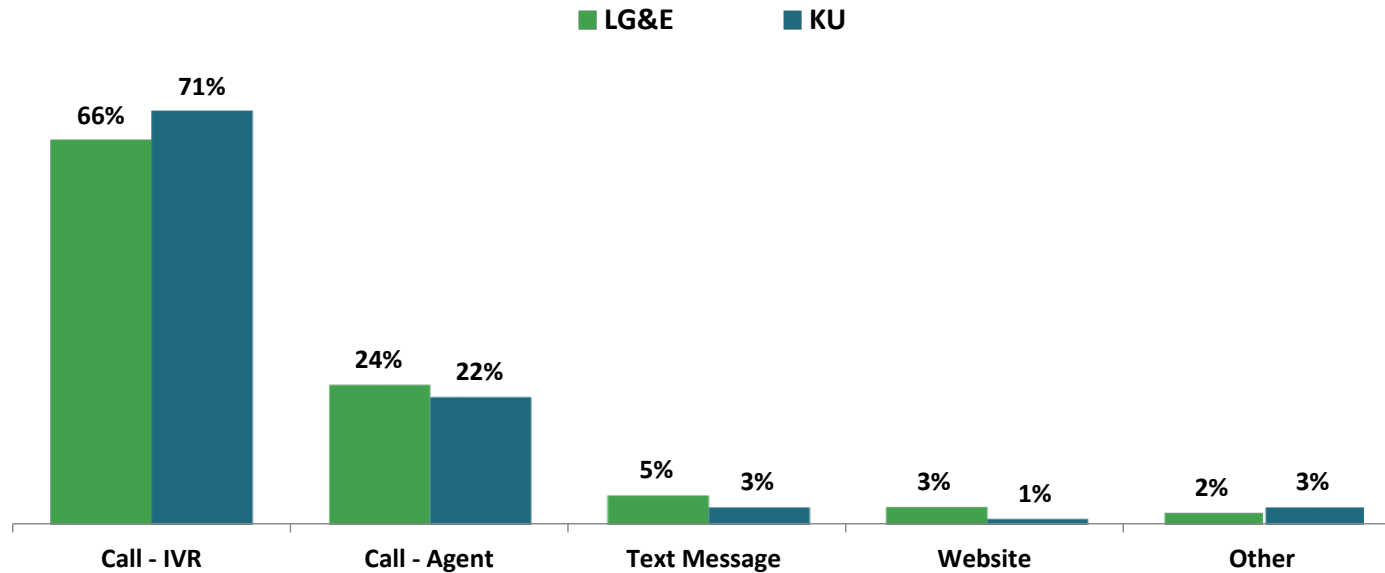
### Preferred Communication Vehicle by Utility



Note: ↑/↓ indicates significant difference between LG&E vs KU at the 90% confidence level  
Time Period = 1H 2016

Most customers reporting an outage use the IVR system, especially KU customers. Some customers are using the new outage text message offering.

### Method Used to Report Outage



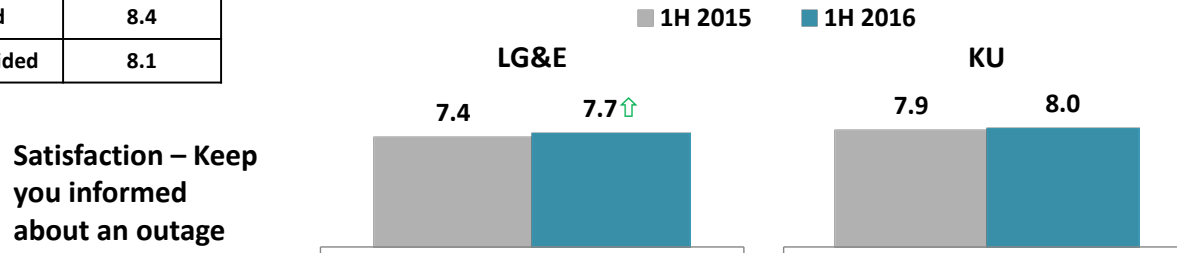
Time Period = 1H 2016



LG&E customers were more satisfied this year with how well the utility keeps them informed during an outage, now more in line with KU. Concurrently, more LG&E customers who reported their outage were provided with an estimated restoration time versus year-ago.

PQR Mean Satisfaction*	
Info Provided	8.4
No Info Provided	8.1

### Outage Communications

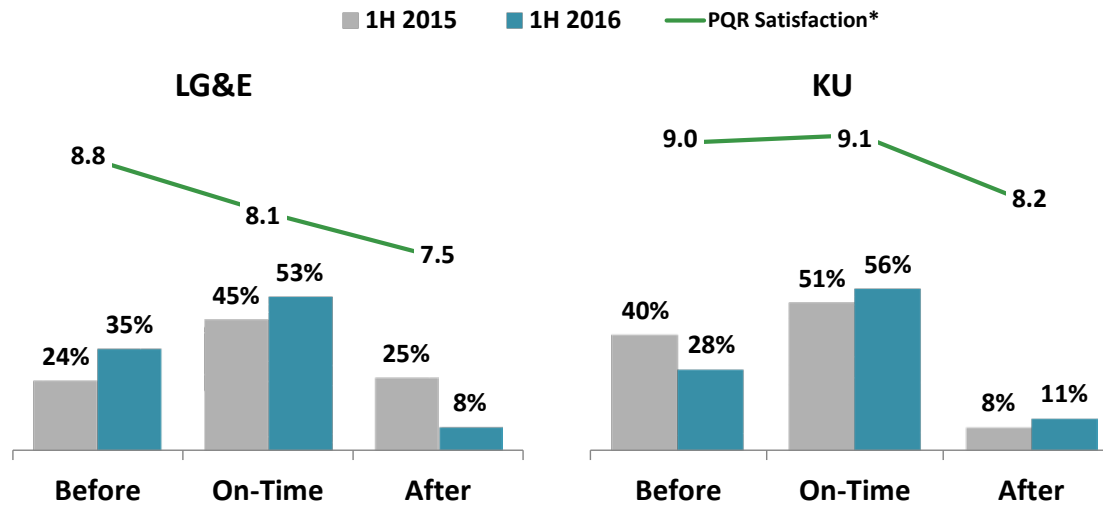


% Interruption	34%	39%↑	30%	30%
% Outage	21%	23%	23%	24%
	↓		↓	
% Reported	36%	34%	29%	38%↑
	↓		↓	
% Provided ERT	33%	38%	42%	41%

\*Q3 2014 through Q2 2016 evaluated in order to evaluate sufficient sample sizes  
 Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level

As might be expected, PQR Satisfaction is lowest when restoration timing does not meet expectations that have been set. On a positive note, through the first half of 2016 more LG&E customers were given timing that met or exceeded the estimate.

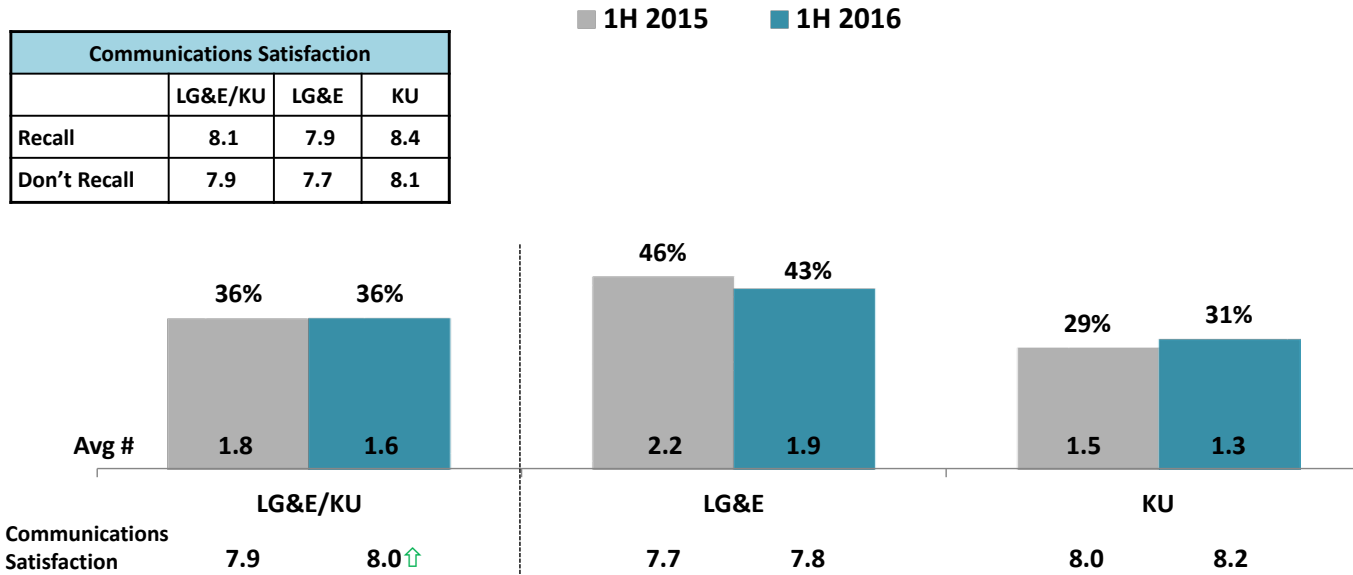
### Restoration Timing versus Estimate – Impact on PQR Satisfaction



\*Time Period = Q3 2014 through Q2 2016, due to low sample size

Recall of communications from the media has a negligible impact on Communications Satisfaction, unlike communications coming from the utility that drive higher satisfaction. Recall of media communications held year-over-year, down slightly among LG&E customers and up slightly for KU's. LG&E customers remain less satisfied with media reports than KU's.

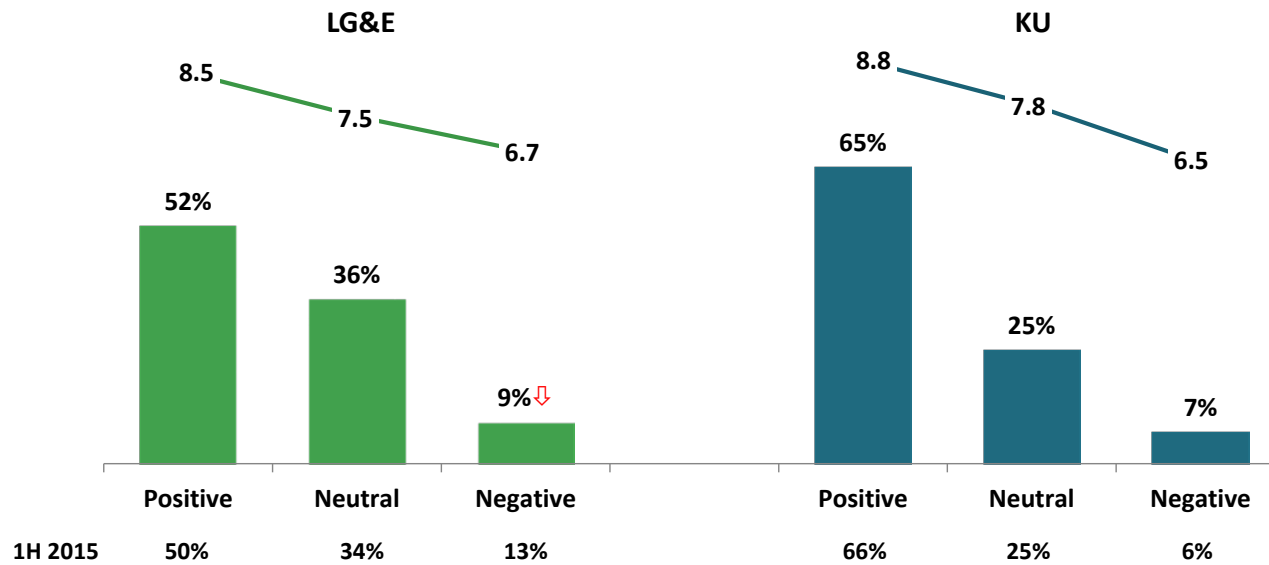
### Media Communications Recall (Past 3 Months)



Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level

The tone of media communications impacts Communications Satisfaction, with neutral and negative news driving lower satisfaction. Fortunately, fewer LG&E customers recalled negative news stories through the first half of the year versus the same time last year.

### Media Tone Impact on Communications Satisfaction

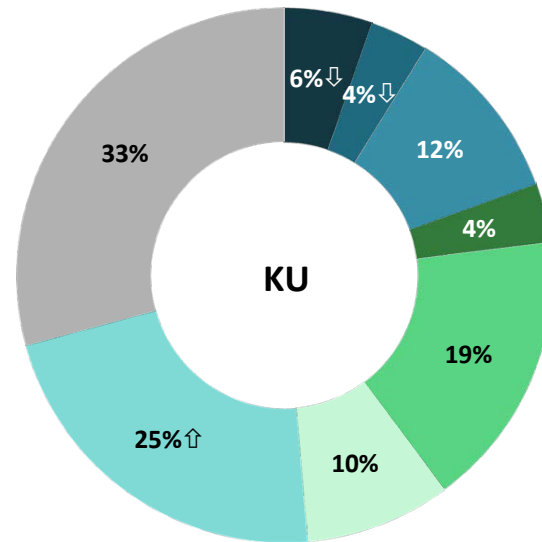
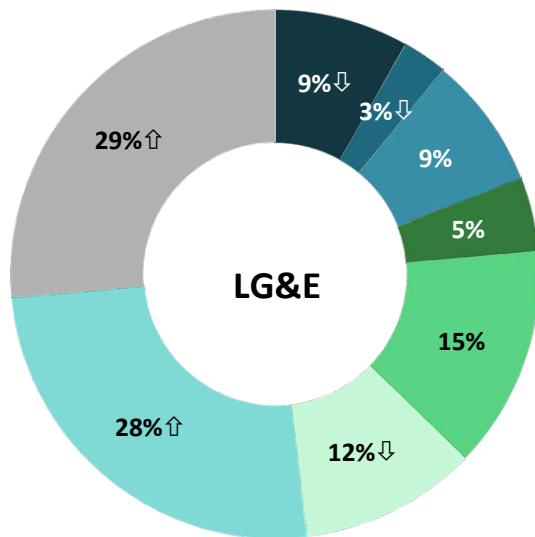


Time Period = 1H 2016  
Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level

Versus year-ago, significantly fewer LG&E customers recalled media stories about rate changes, company news and emergency preparedness. LG&E customers were less aware of what the story was about versus the same time last year, now more in line with KU customers.

### Media Communications – Topic(s) Recalled

- Company News/Event
- Emergency preparedness
- Energy conservation
- Environmental or Pollution Issue
- Power Reliability or Outages
- Rate Change
- Other
- Don't Know

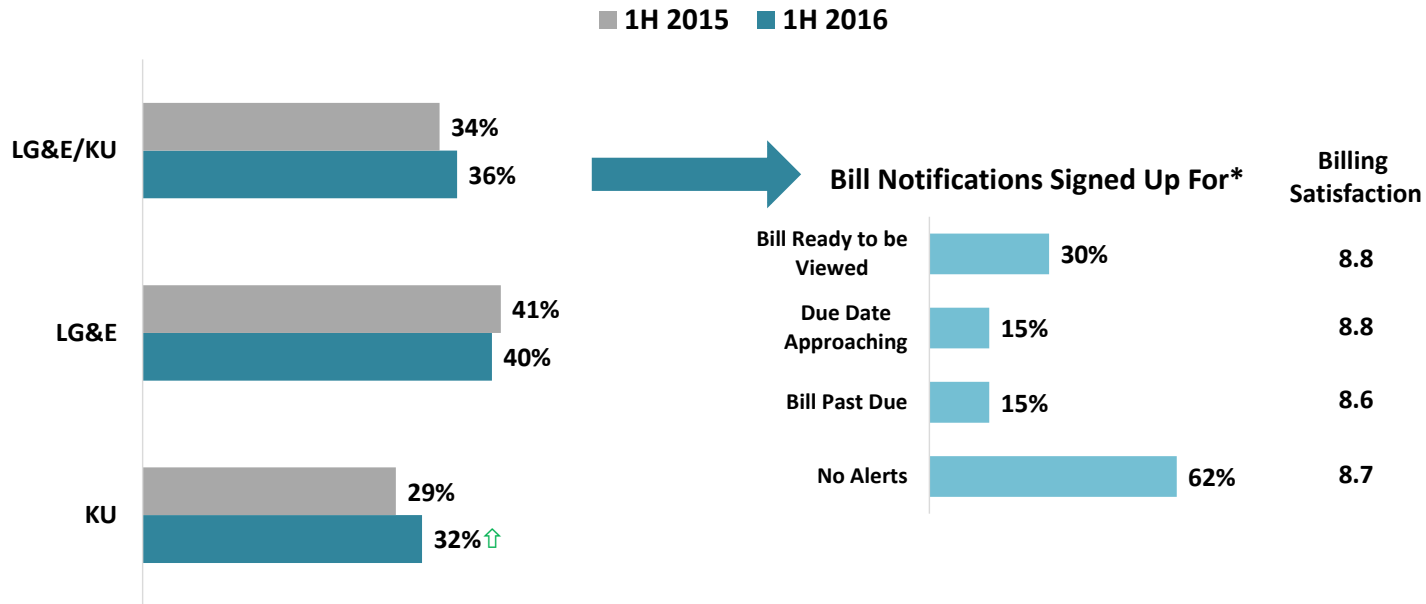


Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level  
Time Period = 1H 2016



More KU customers chose to have an online account set up on the utility website than last year, while LG&E held at about 40% adoption. Among customers surveyed, just over one-third of customers with a My Account have signed up for alerts.

### Have An Online Account (My Account)



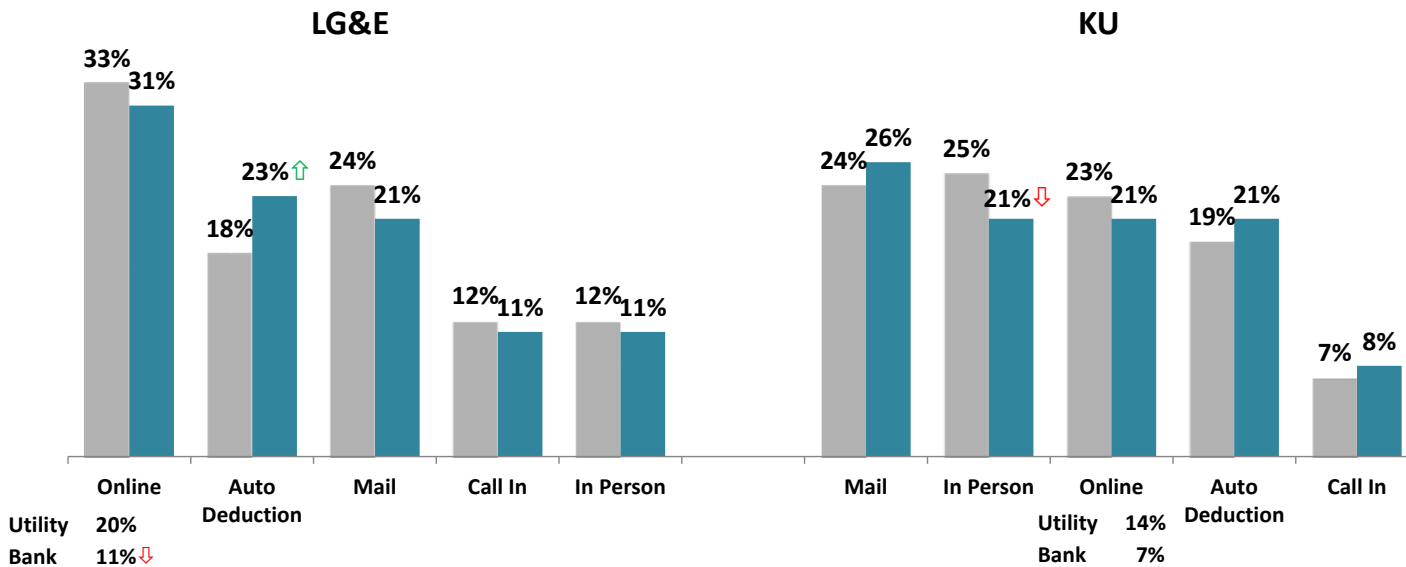
\*Data is for 1H 2016 only since questions were added July 2015; among customers with an online account  
Note: ↑/↓ indicates significant difference vs 1H 2015 at the 90% confidence level



More LG&E customers prefer to pay online than KU's. LG&E customer preference shifted to auto-deductions this year, with mail dropping slightly in importance. Meanwhile, mail is the primary bill payment method among KU customers, and fewer paid in person versus year-ago.

### Bill Payment Method

■ 1H 2015 ■ 1H 2016



Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level

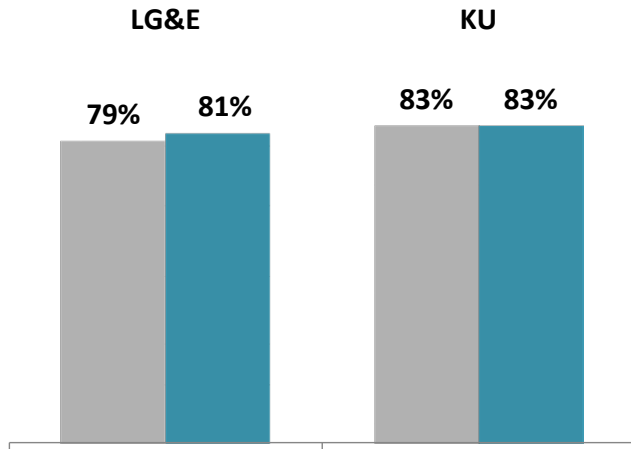
In Person: at utility 20% down significantly to 16%, at payment agency flat at 5%

Budget payment plan awareness held at just over 80% of customers. Customers who choose to participate in the plan have higher Payment Satisfaction.

### Budget Payment Plan and Payment Satisfaction

■ 1H 2015 ■ 1H 2016

#### Awareness



Payment Satisfaction 1H16			
	LG&E/KU	LG&E	KU
Participate	9.0 <span style="color: green;">↑</span>	8.8	9.1
Don't Participate	8.8	8.6	9.0

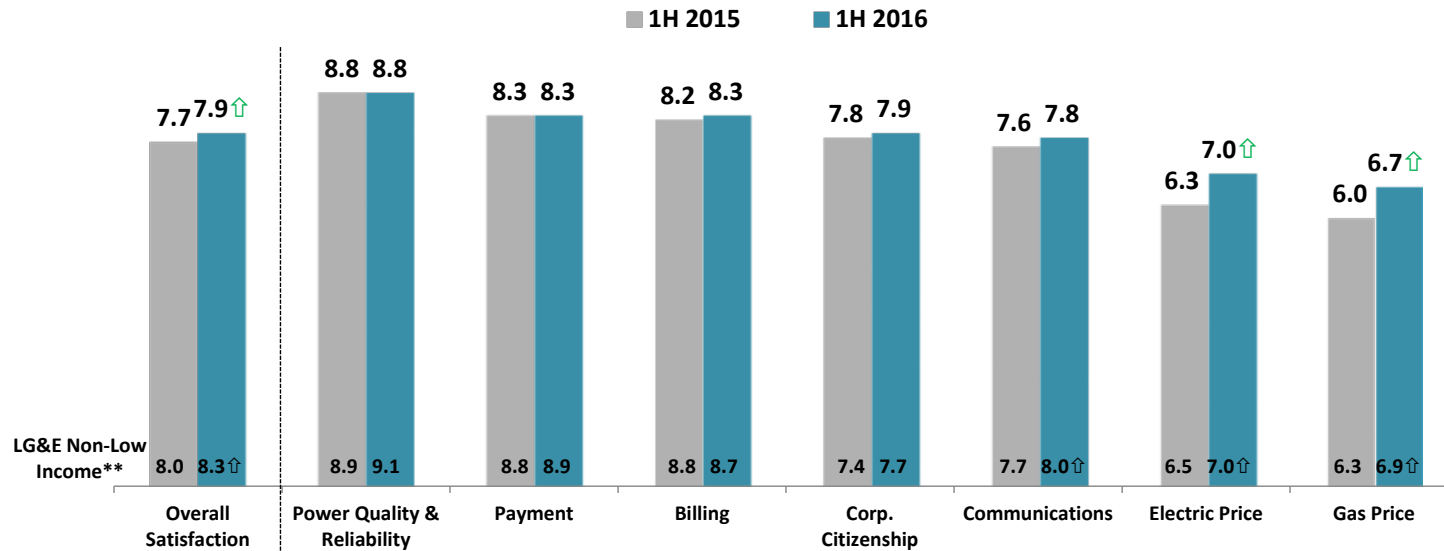
Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level



Satisfaction among LG&E “low income” customers for the first half of the year is ahead of this time last year, tracing to higher satisfaction with Price. Notably, this trend is similar for “non-low income” customers.

	% of LG&E	% of LG&E/KU
LG&E Low Income	37%	16%
LG&E Dissatisfied LI	6%	2%

### Satisfaction – LG&E Low Income\*

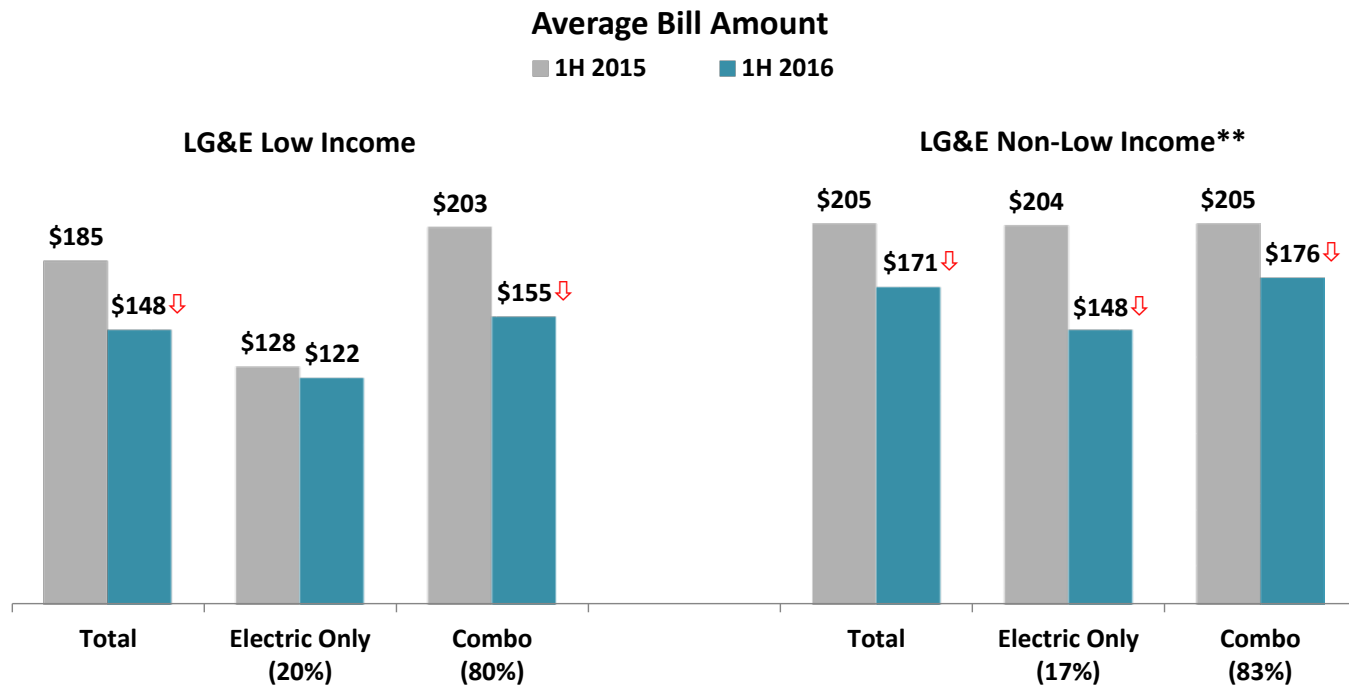


\*Income ≤ \$40K

\*\*Excludes “Prefer Not to Answer”

Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level

Average bill amounts were lower than year-ago among both “low income” and “non-low income” LG&E customers. Although bills did not decline for “low income” Electric only customers, they still paid less than “non-low income”.



\*\*Excludes “Prefer Not to Answer”  
Note: ↑/↓ indicates significant difference vs. 1H 2015 at the 90% confidence level



- **Through the first half of 2016, LG&E/KU Top 2 Box customer satisfaction is ahead of last year due to positive performance for both LG&E and KU.**
  - This is on top of strong year-ago performance in 2015, which was the first time since 2012 that LG&E/KU customer satisfaction improved.
- **Improved price perceptions, particularly among LG&E Combo customers, drove higher overall customer satisfaction.**
  - Milder temperatures in February and March of 2016, combined with lower natural gas prices, netted LG&E Combo customers with savings through the first half of the year over last year's bills at this time.
  - ❖ Recommendation: LG&E Combo satisfaction with Price is now more in line with LG&E Electric Only customers, but this may not be sustainable as temperatures are unpredictable and natural gas prices fluctuate. Set expectations by educating customers on how these uncontrollable factors impact bill amounts.
- **Customer communication preferences shifted as the options available continue to evolve.**
  - Bill inserts are still the most preferred vehicle, but declined, and are now preferred by only about one-third of customers. Conversely, the appeal of separate mailings increased (26%), closing the preference gap.
  - Over half of LG&E/KU customers use social networking sites, with Facebook having the greatest reach and increasing over year-ago. However, it's important to remember that older customers are adopting social media at a slower rate.
  - ❖ Recommendation: Communicate via the customer's preferred channel to increase reach and drive higher Communications Satisfaction.
- **As customers become more technologically savvy, they are changing the way they choose to pay their bill.**
  - Fewer LG&E customers are using the U.S. mail to pay their bill, with a shift to auto-deductions. Almost one-third pay online. Conversely, KU customers still prefer to use U.S. mail., but in-person payments declined.
  - ❖ Recommendation: Explore new ways to reach and communicate with customers, as increasingly they opt to pay online or use auto-deductions.





## Demographics – LG&E and KU

% of Customers Surveyed, 1H 2016

	LG&E (A)	KU (B)		LG&E (A)	KU (B)
<b>Own/Rent</b>			<b>Education</b>		
Own	73%	75%	Some high school	4%	5% <sup>A</sup>
Rent	24%	22%	High school grad or equivalent	20%	28% <sup>A</sup>
Household Size (mean)	2.3	2.4	Some college or technical school	26%	24%
<b>Ethnic Group</b>			College graduate	27% <sup>B</sup>	20%
White or Caucasian	71%	83% <sup>A</sup>	Graduate/post-graduate school	18%	15%
African American	18% <sup>B</sup>	8%	<b>Current Employment Situation</b>		
Household Income			Working full-time	44%	41%
Income <\$40k	37%	45% <sup>A</sup>	Working part-time	6%	5%
Income \$40K or more	46% <sup>B</sup>	40%	Unemployed	6%	9% <sup>A</sup>
Average Bill Amount	\$161 <sup>B</sup>	\$151	Retired	36%	36%

Letters = Significant difference at the 90% confidence level

## Demographics – LG&E vs. Electric and Gas Peers

% of Customers Surveyed, 1H 2016

	LG&E (A)	Electric and Gas Peers (B)		LG&E (A)	Electric and Gas Peers (B)
<b>Own/Rent</b>			<b>Education</b>		
Own	73%	85% <sup>A</sup>	Some high school	4% <sup>B</sup>	2%
Rent	24% <sup>B</sup>	13%	High school grad or equivalent	20%	22%
Household Size (mean)	2.3	3.0 <sup>A</sup>	Some college or technical school	26% <sup>B</sup>	21%
<b>Ethnic Group</b>			College graduate	27%	32% <sup>A</sup>
White or Caucasian	71%	79% <sup>A</sup>	Graduate/post-graduate school	18%	21% <sup>A</sup>
African American	18% <sup>B</sup>	10%	<b>Current Employment Situation</b>		
Household Income			Working full-time	44%	46%
Income <\$40k	37% <sup>B</sup>	29%	Working part-time	6%	8% <sup>A</sup>
Income \$40K or more	46%	54% <sup>A</sup>	Unemployed	6%	5%
Average Bill Amount	\$161	\$180 <sup>A</sup>	Retired	36% <sup>B</sup>	32%

Letters = Significant difference at the 90% confidence level

## Demographics – KU vs. Electric Peers

% of Customers Surveyed, 1H 2016

	KU (A)	Electric Peers (B)		KU (A)	Electric Peers (B)
<b>Own/Rent</b>			<b>Education</b>		
Own	75%	83% <sup>A</sup>	Some high school	5%	4%
Rent	22% <sup>B</sup>	14%	High school grad or equivalent	28% <sup>B</sup>	20%
Household Size (mean)	2.4	2.6 <sup>A</sup>	Some college or technical school	24%	23%
<b>Ethnic Group</b>			College graduate	20%	28% <sup>A</sup>
White or Caucasian	83% <sup>B</sup>	69%	Graduate/post-graduate school	15%	19% <sup>A</sup>
African American	8%	19% <sup>A</sup>	<b>Current Employment Situation</b>		
<b>Household Income</b>			Working full-time	41%	43%
Income <\$40k	45% <sup>B</sup>	33%	Working part-time	5%	6%
Income \$40K or more	40%	48% <sup>A</sup>	Unemployed	9% <sup>B</sup>	7%
Average Bill Amount	\$151	\$161 <sup>A</sup>	Retired	36%	34%

Letters = Significant difference at the 90% confidence level



	Unwtd Base		Overall Satisfaction		Power Quality		Corporate Citizenship		Communication		Billing		Payment		Price of Electricity		Price of Gas	
	1H 2015	1H 2016	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)
<b>Total LG&amp;E/KU</b>	2402	2406	8.3	8.4 <sup>C</sup>	9.1	9.1	7.8	7.9	7.9	8.0 <sup>C</sup>	8.7	8.8	8.8	8.8	6.9	7.1 <sup>C</sup>	6.2	6.7 <sup>C</sup>
<b>Total LG&amp;E</b>	1202	1203	7.9	8.1 <sup>C</sup>	8.9	8.9	7.6	7.8	7.7	7.8	8.5	8.5	8.5	8.6	6.4	6.8 <sup>C</sup>	6.2	6.7 <sup>C</sup>
<b>Auburndale</b>	615	613	7.7	7.9	8.8	8.8	7.7	7.8	7.6	7.8	8.3	8.2	8.4	8.3	6.2	6.7 <sup>C</sup>	6.0	6.5 <sup>C</sup>
<b>East</b>	587	590	8.2	8.3	8.9	9.0	7.5	7.8	7.7	7.8	8.7	8.8 <sup>C</sup>	8.7	9.0 <sup>C</sup>	6.6	7.0 <sup>C</sup>	6.4	7.0 <sup>C</sup>
<b>Total KU</b>	1200	1203	8.6	8.7	9.2	9.2	8.0	8.0	8.0	8.2	8.9	9.0	8.9	9.0	7.3	7.3	-	-
<b>Danville</b>	96	98	8.8	8.9	9.4	9.3	8.6	8.6	8.5	8.5	9.0	9.4	9.0	9.4	7.4	7.8	-	-
<b>Earlington</b>	124	125	8.9	8.8	9.4	9.3	8.4 <sup>D</sup>	7.8	8.3	8.1	9.2	9.0	9.2	9.1	7.5 <sup>D</sup>	6.8	-	-
<b>Elizabethtown</b>	77	78	8.5	8.8	9.2	9.4	7.8	7.9	8.1	7.9	9.0	9.0	8.9	9.2	7.3	7.7	-	-
<b>Lexington</b>	442	442	8.4	8.6 <sup>C</sup>	9.1	9.1	7.5	7.8 <sup>C</sup>	7.7	8.3 <sup>C</sup>	8.8	9.0	8.8	9.0	7.1	7.4 <sup>C</sup>	-	-
<b>London</b>	67	70	8.5	9.1 <sup>C</sup>	9.3	9.4	8.7	8.6	8.3	8.7	8.7	9.0	9.1	8.9	7.5	7.9	-	-
<b>Maysville</b>	87	90	9.0	8.7	9.3	9.3	8.2	8.1	8.6 <sup>D</sup>	7.8	9.0	9.0	8.8	8.9	7.6	7.7	-	-
<b>Norton</b>	67	67	8.3	8.5	9.2	9.0	7.5	7.9	7.5	7.6	8.9	8.8	8.8	8.7	6.4	6.2	-	-
<b>Pineville</b>	64	63	8.4	8.5	9.0	9.1	8.6	7.8	7.9	7.9	8.8	8.5	8.9	8.7	6.6	6.4	-	-
<b>Richmond</b>	98	96	8.7	8.8	9.4	9.4	8.2	8.1	8.1	8.4	8.7	9.2 <sup>C</sup>	8.8	9.1	7.5	7.7	-	-
<b>Shelbyville</b>	78	74	8.9	8.6	9.4	9.2	8.3	8.0	8.3	7.9	9.2 <sup>D</sup>	8.7	9.4 <sup>D</sup>	8.6	8.1 <sup>D</sup>	7.1	-	-

Letters = Significant difference at the 90% confidence level



**Power Quality & Reliability Attributes by Company and Operating Center - Mean**

	Overall Satisfaction		Power Quality & Reliability Satisfaction		Supply Electricity During Extreme Temps		Provide Quality Electric Power		Avoid Interruptions		Promptly Restore Power		Avoid Outages		Keep Informed About Outage	
	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)
Total LG&E/KU	8.3	8.4 <sup>C</sup>	9.1	9.1	9.1	9.2 <sup>C</sup>	8.9	8.9	8.7	8.8	8.5	8.5	8.5 <sup>D</sup>	8.3	7.7	7.8 <sup>C</sup>
Total LG&E	7.9	8.1 <sup>C</sup>	8.9	8.9	8.9	9.0 <sup>C</sup>	8.7	8.7	8.5	8.5	8.2	8.1	8.2	8.0	7.4	7.7 <sup>C</sup>
Auburndale	7.7	7.9	8.8	8.8	8.8	9.0	8.6	8.7	8.4	8.4	8.2	8.0	8.1 <sup>D</sup>	7.8	7.2	7.6 <sup>C</sup>
East	8.2	8.3	8.9	9.0	9.0	9.1	8.7	8.7	8.6	8.7	8.2	8.2	8.3	8.3	7.6	7.7
Total KU	8.6	8.7	9.2	9.2	9.3	9.3	9.0	9.1	8.9	9.0	8.8	8.8	8.7 <sup>D</sup>	8.6	7.9	8.0
Danville	8.8	8.9	9.4	9.3	9.4	9.4	9.2	9.2	9.2	9.1	9.0	9.0	9.1	8.8	8.1	8.5
Earlington	8.9	8.8	9.4	9.3	9.5	9.4	9.2	9.1	9.2	9.0	9.1	9.0	9.1 <sup>D</sup>	8.6	8.5	8.1
Elizabethtown	8.5	8.8	9.2	9.4	9.2	9.3	9.1	9.0	9.0	8.9	8.5	8.7	8.7	8.2	7.2	7.6
Lexington	8.4	8.6 <sup>C</sup>	9.1	9.1	9.1	9.3 <sup>C</sup>	8.9	9.0	8.7	8.9	8.6	8.7	8.5	8.5	7.7	7.9
London	8.5	9.1 <sup>C</sup>	9.3	9.4	9.2	9.4	9.1	9.3	8.8	9.3	8.9	9.1	8.7	8.9	8.3	8.3
Maysville	9.0	8.7	9.3	9.3	9.5	9.3	9.3	9.2	9.1	8.7	9.2	8.9	9.1 <sup>D</sup>	8.6	8.4	8.0
Norton	8.3	8.5	9.2	9.0	9.3	9.1	8.9	8.8	9.0	8.7	8.9 <sup>D</sup>	8.3	8.4	8.1	7.3	6.8
Pineville	8.4	8.5	9.0	9.1	9.1	9.3	8.8	9.2	8.8	8.5	8.5	8.6	8.2	8.3	7.3	7.5
Richmond	8.7	8.8	9.4	9.4	9.4	9.5	9.0	9.2	9.1	9.2	8.9	9.1	9.0	8.8	8.3	8.5
Shelbyville	8.9	8.6	9.4	9.2	9.4	9.4	9.1	9.4	9.1	9.2	8.9	8.9	8.8	8.8	7.9	8.2

Letters = Significant difference at the 90% confidence level





**Power Quality & Reliability Key Metrics by Company and Operating Center**

	Overall Satisfaction (mean)		PQR Satisfaction (mean)		Number of Brief Interruptions* (mean)		Number of Outages* (mean)		Reported Outage (% Yes)	
	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)
<b>Total LG&amp;E/KU</b>	8.3	8.4 <sup>C</sup>	9.1	9.1	2.7	2.5	1.9	1.8	32%	36% <sup>C</sup>
<b>Total LG&amp;E</b>	7.9	8.1 <sup>C</sup>	8.9	8.9	2.8	2.8	2.1	1.9	36%	34%
<b>Auburndale</b>	7.7	7.9	8.8	8.8	2.6	2.9	2.0	2.1	43% <sup>D</sup>	34%
<b>East</b>	8.2	8.3	8.9	9.0	3.1	2.8	2.1	1.8	28%	35%
<b>Total KU</b>	8.6	8.7	9.2	9.2	2.6	2.2	1.7	1.6	29%	38% <sup>C</sup>
<b>Danville</b>	8.8	8.9	9.4	9.3	3.2	2.2	2.1	1.5	23%	40%
<b>Earlington</b>	8.9	8.8	9.4	9.3	2.3	2.1	1.5	1.6	21%	44% <sup>C</sup>
<b>Elizabethtown</b>	8.5	8.8	9.2	9.4	2.0	1.8	1.6	1.5	45%	46%
<b>Lexington</b>	8.4	8.6 <sup>C</sup>	9.1	9.1	2.9	2.1	1.9	1.6	23%	35% <sup>C</sup>
<b>London</b>	8.5	9.1 <sup>C</sup>	9.3	9.4	2.4	3.3	1.7	1.9	46%	31%
<b>Maysville</b>	9.0	8.7	9.3	9.3	2.6	2.0	1.9	1.6	40%	55%
<b>Norton</b>	8.3	8.5	9.2	9.0	2.3	2.4	1.2	1.5 <sup>C</sup>	28%	43%
<b>Pineville</b>	8.4	8.5	9.0	9.1	3.1	2.5	1.7	2.0	44%	35%
<b>Richmond</b>	8.7	8.8	9.4	9.4	1.8	2.0	1.3	1.2	28%	18%
<b>Shelbyville</b>	8.9	8.6	9.4	9.2	2.2	1.8	1.3	1.4	21%	41%

Letters = Significant difference at the 90% confidence level; stat testing is within metric over time, not across Companies/OP Centers  
 \*Based on the past three months and respondents who experienced an outage or interruption



**Corporate Citizenship Attributes by Company and Operating Center - Mean**

	Overall Satisfaction		Corporate Citizenship Satisfaction		Provide Energy Saving Tips		Offer Variety of Energy Efficiency Programs		Preserve and Protect Environment		Develop Energy Supply Plans for Future		Help Low Income Manage Bill		Get Involved in Community	
	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)
<b>Total LG&amp;E/KU</b>	8.3	8.4 <sup>C</sup>	7.8	7.9	8.4	8.5	8.0	8.1	7.9	7.9	7.7	7.8	7.7	7.6	7.5	7.5
<b>Total LG&amp;E</b>	7.9	8.1 <sup>C</sup>	7.6	7.8	8.2	8.3 <sup>C</sup>	7.8	7.9	7.5	7.6	7.4	7.6 <sup>C</sup>	7.6	7.5	7.5	7.6
<b>Auburndale</b>	7.7	7.9	7.7	7.8	8.2	8.3	7.7	7.9	7.6	7.7	7.5	7.7	7.5	7.5	7.4	7.6
<b>East</b>	8.2	8.3	7.5	7.8	8.2	8.3	7.9	7.9	7.3	7.6 <sup>C</sup>	7.3	7.5	7.7	7.6	7.5	7.7
<b>Total KU</b>	8.6	8.7	8.0	8.0	8.6	8.6	8.2	8.2	8.2	8.2	8.0	8.0	7.9	7.7	7.6	7.4
<b>Danville</b>	8.8	8.9	8.6	8.6	8.6	8.9	8.4	8.7	8.3	8.9 <sup>C</sup>	8.1	8.7	8.3	8.5	8.2	8.2
<b>Earlington</b>	8.9	8.8	8.4 <sup>D</sup>	7.8	8.9	8.5	8.7	8.3	8.5	8.3	8.4	8.2	8.1	7.6	7.8 <sup>D</sup>	7.0
<b>Elizabethtown</b>	8.5	8.8	7.8	7.9	8.5	8.8	8.4	8.5	8.5	8.4	7.9	8.0	7.6	7.9	7.7	7.4
<b>Lexington</b>	8.4	8.6 <sup>C</sup>	7.5	7.8 <sup>C</sup>	8.5	8.6	8.0	8.3 <sup>C</sup>	7.9	8.0	7.7	7.8	7.8	7.8	7.4	7.5
<b>London</b>	8.5	9.1 <sup>C</sup>	8.7	8.6	8.5	9.0	8.0	8.9 <sup>C</sup>	8.8	8.6	8.6	8.4	8.1	7.8	8.0	7.8
<b>Maysville</b>	9.0	8.7	8.2	8.1	8.9	8.5	8.6 <sup>D</sup>	8.0	8.5	8.3	8.4	8.2	7.9	7.7	7.8	7.5
<b>Norton</b>	8.3	8.5	7.5	7.9	8.3	8.2	7.4	7.4	7.8	8.2	7.5	7.6	7.3	7.1	6.4	6.5
<b>Pineville</b>	8.4	8.5	8.6	7.8	8.7	8.2	8.0	7.5	8.6	7.9	8.5 <sup>D</sup>	7.1	7.8	6.9	7.9 <sup>D</sup>	6.4
<b>Richmond</b>	8.7	8.8	8.2	8.1	8.7	8.9	8.4	8.1	8.3	8.3	8.0	8.0	7.5	7.8	7.7	7.3
<b>Shelbyville</b>	8.9	8.6	8.3	8.0	9.0 <sup>D</sup>	8.4	8.5	8.1	7.9	8.1	8.1	8.3	8.5	7.9	7.7	7.8

Letters = Significant difference at the 90% confidence level





### Corporate Citizenship Key Metrics by Company and Operating Center

	Overall Satisfaction (mean)		Corporate Citizenship Satisfaction (mean)		Satisfaction with Involvement in Community (mean)		Familiarity with Energy Efficiency Programs (% Very/Somewhat)		Familiarity with Environmental Efforts (% Yes)		Awareness of Donations or Sponsorships (% Yes)	
	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)
<b>Total LG&amp;E/KU</b>	8.3	8.4 <sup>C</sup>	7.8	7.9	7.5	7.5	72%	76% <sup>C</sup>	24%	25%	25%	26%
<b>Total LG&amp;E</b>	7.9	8.1 <sup>C</sup>	7.6	7.8	7.5	7.6	74%	78% <sup>C</sup>	28%	29%	33%	36%
<b>Auburndale</b>	7.7	7.9	7.7	7.8	7.4	7.6	73%	79% <sup>C</sup>	28%	28%	30%	35% <sup>C</sup>
<b>East</b>	8.2	8.3	7.5	7.8	7.5	7.7	75%	78%	29%	31%	36%	38%
<b>Total KU</b>	8.6	8.7	8.0	8.0	7.6	7.4	70%	73% <sup>C</sup>	20%	21%	19%	18%
<b>Danville</b>	8.8	8.9	8.6	8.6	8.2	8.2	80%	75%	32%	26%	21%	17%
<b>Earlington</b>	8.9	8.8	8.4 <sup>D</sup>	7.8	7.8 <sup>D</sup>	7.0	75%	78%	20%	15%	15%	12%
<b>Elizabethtown</b>	8.5	8.8	7.8	7.9	7.7	7.4	69%	79%	18%	18%	26%	20%
<b>Lexington</b>	8.4	8.6 <sup>C</sup>	7.5	7.8 <sup>C</sup>	7.4	7.5	72%	76%	20%	24%	22%	23%
<b>London</b>	8.5	9.1 <sup>C</sup>	8.7	8.6	8.0	7.8	58%	70%	25%	18%	18% <sup>D</sup>	8%
<b>Maysville</b>	9.0	8.7	8.2	8.1	7.8	7.5	72%	72%	23%	25%	14%	12%
<b>Norton</b>	8.3	8.5	7.5	7.9	6.4	6.5	52%	58%	13%	13%	15%	12%
<b>Pineville</b>	8.4	8.5	8.6	7.8	7.9 <sup>D</sup>	6.4	70%	65%	23%	16%	11%	14%
<b>Richmond</b>	8.7	8.8	8.2	8.1	7.7	7.3	70%	71%	14%	20%	15%	13%
<b>Shelbyville</b>	8.9	8.6	8.3	8.0	7.7	7.8	65%	72%	17%	28% <sup>C</sup>	23%	21%

Letters = Significant difference at the 90% confidence level; stat testing is within metric over time, not across Companies/OP Centers





**Communications Attributes/Key Metrics by Company and Operating Center - Mean**

	Overall Satisfaction		Communications Satisfaction		Safety		Reduce Usage/Lower Bill		Account/Service Changes		Messages Get Attention		Cost Control on Energy		Average # Utility Comm. Recalled*	
	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)
<b>Total LG&amp;E/KU</b>	8.3	8.4 <sup>C</sup>	7.9	8.0 <sup>C</sup>	8.1	8.1	7.8	7.9	7.5	7.6 <sup>C</sup>	7.2	7.2	7.1	7.1	3.7	3.8
<b>Total LG&amp;E</b>	7.9	8.1 <sup>C</sup>	7.7	7.8	8.0	8.1	7.6	7.8	7.3	7.5	6.9	7.0	6.8	7.8 <sup>C</sup>	3.9	4.4
<b>Auburndale</b>	7.7	7.9	7.6	7.8	8.0	8.2 <sup>C</sup>	7.5	7.7	7.3	7.5	7.0	7.1	6.7	7.0	3.9	4.5
<b>East</b>	8.2	8.3	7.7	7.8	8.1	8.0	7.7	7.8	7.4	7.5	6.8	7.0	6.8	6.9	3.9	4.3
<b>Total KU</b>	8.6	8.7	8.0	8.2	8.2	8.2	8.0	8.0	7.7	7.8	7.4	7.4	7.3	7.3	3.5	3.4
<b>Danville</b>	8.8	8.9	8.5	8.5	8.5	8.7	8.3	8.3	8.1	8.4	8.0	7.9	7.8	8.1	4.2	2.4
<b>Earlington</b>	8.9	8.8	8.3	8.1	8.5	8.3	8.4	8.0	8.1	7.7	8.1 <sup>D</sup>	7.2	8.0 <sup>D</sup>	7.2	2.8	2.8
<b>Elizabethtown</b>	8.5	8.8	8.1	7.9	8.4	8.3	8.1	8.0	7.9	8.2	7.4	7.2	7.7	7.6	2.9	2.9
<b>Lexington</b>	8.4	8.6 <sup>C</sup>	7.7	8.3 <sup>C</sup>	7.8	8.1	7.7	8.1	7.4	7.9 <sup>C</sup>	7.0	7.4 <sup>C</sup>	6.8	7.2	4.3	4.4
<b>London</b>	8.5	9.1 <sup>C</sup>	8.3	8.7	8.6	8.4	8.1	8.5	8.2	7.9	8.1	7.6	7.8	7.6	3.8	3.0
<b>Maysville</b>	9.0	8.7	8.6 <sup>D</sup>	7.8	8.6 <sup>D</sup>	7.8	8.5 <sup>D</sup>	7.7	8.0	7.5	8.0 <sup>D</sup>	7.2	7.9 <sup>D</sup>	7.0	3.0	2.7
<b>Norton</b>	8.3	8.5	7.5	7.6	8.2	7.7	7.4	7.0	6.7	6.8	6.6	6.7	6.3	6.4	3.2	1.3
<b>Pineville</b>	8.4	8.5	7.9	7.9	8.2	7.7	7.9	7.5	7.7	7.0	7.3	7.0	7.4	6.8	2.9	2.0
<b>Richmond</b>	8.7	8.8	8.1	8.4	8.4	8.2	8.0	8.2	7.6	7.9	7.2	7.7	7.1	7.5	2.4	4.9 <sup>C</sup>
<b>Shelbyville</b>	8.9	8.6	8.3	7.9	8.1	8.6	8.1	8.0	7.8	7.9	7.8	7.2	7.8	7.5	2.4	2.8

Letters = Significant difference at the 90% confidence level; stat testing is within metric over time, not across Companies/OP Centers

\*Based on the past three months





**Main Topic of Most Recent Utility Communication Recalled\* by Company and Operating Center**

	Weighted Frequency Counts (Recall Utility Communication)		Energy Efficiency Tips		Safety Around Electricity		Product or Service Offers		Customer Service		Rate Change		Energy Efficiency Rebates/Financing		Power Outage		Other		Don't Know	
	1H 2015	1H 2016	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)	1H 2015 (C)	1H 2016 (D)
<b>Total LG&amp;E/KU</b>	1371	1456	30%	31%	6%	9% <sup>C</sup>	3%	3%	4%	5%	4% <sup>D</sup>	3%	2%	3%	4%	4%	12%	13%	33% <sup>D</sup>	29%
<b>Total LG&amp;E</b>	640	689	24%	28% <sup>C</sup>	8%	12% <sup>C</sup>	4%	4%	4%	6%	4% <sup>D</sup>	2%	3%	2%	4%	4%	14%	12%	34% <sup>D</sup>	29%
<b>Auburndale</b>	320	342	24%	28%	7%	11% <sup>C</sup>	4%	4%	6%	7%	6%	4%	2%	2%	4%	4%	14% <sup>D</sup>	10%	33%	32%
<b>East</b>	320	347	24%	29%	8%	13% <sup>C</sup>	4%	4%	3%	5%	3% <sup>D</sup>	1%	4% <sup>D</sup>	1%	4%	5%	15%	14%	34% <sup>D</sup>	27%
<b>Total KU</b>	730	767	36%	33%	5%	7%	2%	3%	4%	5%	4%	3%	2%	4% <sup>C</sup>	3%	3%	10%	13%	33%	29%
<b>Danville</b>	64	57	33%	37%	5%	2%	2%	2%	9%	6%	7%	2%	5%	2%	5%	2%	9%	9%	23%	37%
<b>Earlington</b>	72	64	31%	37%	3%	3%	2%	4%	3%	9%	-	2%	-	2%	6%	2%	15%	14%	39%	27%
<b>Elizabethtown</b>	48	50	42%	32%	5%	11%	2%	-	-	-	2%	4%	2%	4%	-	-	8%	14%	37%	32%
<b>Lexington</b>	290	324	35%	34%	6%	8%	2%	4%	5%	4%	6%	3%	2%	4% <sup>C</sup>	3%	4%	13%	11%	29%	28%
<b>London</b>	34	52	50% <sup>D</sup>	19%	7%	6%	-	4%	3%	6%	7%	2%	-	7%	3%	2%	6%	12%	23%	39%
<b>Maysville</b>	59	55	40%	39%	6%	6%	-	2%	2%	4%	4%	2%	2%	2%	6%	8%	3%	11%	38%	24%
<b>Norton</b>	27	29	21%	31%	8%	8%	-	-	4%	3%	-	3%	-	-	-	4%	7%	14%	59% <sup>D</sup>	35%
<b>Pineville</b>	34	35	40%	26%	-	6%	-	-	3%	9%	-	6%	3%	3%	7%	3%	3%	23% <sup>C</sup>	44% <sup>D</sup>	19%
<b>Richmond</b>	56	66	36%	38%	6%	9%	2%	2%	2%	3%	6%	2%	2%	3%	2%	2%	7%	9%	36%	32%
<b>Shelbyville</b>	46	35	37%	32%	2%	9%	5%	3%	7%	6%	2%	-	-	3%	2%	6%	7%	11%	36%	28%

Letters = Significant difference at the 90% confidence level, stat testing is within metric over time, not across OP Centers  
 \*Among customers recalling utility communication(s) in past 3 months



**LOUISVILLE GAS AND ELECTRIC COMPANY****CASE NO. 2016-00371****Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017****Question No. 326****Responding Witness: John P. Malloy**

Q-326. Reference the Malloy testimony at page 19, line 9, regarding the Companies' experience with smart meters. Mr. Malloy testifies that KU installed more than 4,000 Landis + Gyr meters in Wilmore, Kentucky in 1999 as part of a TS1 system.

- a. Provide the model names and numbers of the Landis + Gyr models installed.
- b. Describe the capabilities of the model names and numbers provided.
- c. State whether each model is digital/electronic or analog/mechanical.
- d. Of the meters originally installed in 1999, provide a count of those still in operation by model.

A-326.

- a, b, c, The system in Wilmore is a Landis + Gyr system. Several different meter manufactures meters will work with this system. Below is a listing of the meter manufacturer, model, electronic or mechanical, count, and capability. All of these meters record kWh once a day and communicate the usage over power lines using power line carrier (PLC). They are not capable of measuring or recording demand, time-of-day rates, or receiving information from the head end. They are capable of responding to a request for a read but it takes about 24 hours from the request until the read is returned.

<b>Manufacturer</b>	<b>Model</b>	<b>Electronic/ Mechanical</b>	<b>Count</b>	<b>Capability</b>
Duncan	MS	Mechanical	1	single phase
General Electric	I210	Electronic	81	single phase
General Electric	I70A	Mechanical	1	single phase
General Electric	I70S	Mechanical	2	single phase
General Electric	IM70A	Mechanical	1	single phase
General Electric	IM70S	Mechanical	16	single phase

General Electric	IMW70S	Mechanical	1	single phase
General Electric	KV2C	Electronic	25	three phase
General Electric	KV2CE	Electronic	1	three phase
General Electric	V612S	Mechanical	2	three phase
General Electric	VM63A	Mechanical	1	three phase
General Electric	VM64S	Mechanical	1	three phase
General Electric	VM65A	Mechanical	5	three phase
General Electric	VM65S	Mechanical	6	three phase
General Electric	VM66A	Mechanical	1	three phase
General Electric	VM66S	Mechanical	5	three phase
General Electric	VMW66S	Mechanical	2	three phase
Itron	C1S	Electronic	1035	single phase
Itron	CP1SD	Electronic	24	three phase
Itron	SS4S1D	Electronic	17	three phase
Itron	SS4S2L	Electronic	2	three phase
Itron	SS4S2D	Electronic	1	three phase
Itron	SV4SD	Electronic	7	three phase
Itron	SV5SR	Electronic	1	three phase
Landis + Gyr	ALF	Electronic	283	single phase
Landis + Gyr	AX	Electronic	5	single phase
Landis + Gyr	AXRS4	Electronic	1	three phase
Landis + Gyr	AXS4	Electronic	3	three phase
Sangamo	J5S	Mechanical	2721	single phase
Westinghouse	D5S3M	Mechanical	1	three phase
<b>TOTAL</b>			<b>4253</b>	

d. 2,615 PLC Sangamo Model J5 meters are still in operation.



**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 327**

**Responding Witness: John P. Malloy**

- Q-327. Reference the Malloy testimony at page 19, line 13, regarding the Companies' experience with smart meters. Mr. Malloy testifies that LG&E installed 2000 smart meters as part of a responsive pricing pilot in 2007.
- a. Provide the results of the responsive pricing pilot.
  - b. Provide the results of any other responsive pricing pilots the Companies have conducted in the last 10 years.
  - c. Provide the manufacturer, model names, and model numbers of the smart meters installed for the 2007 responsive pricing pilot described.
  - d. Describe the capabilities of the model names and numbers provided.
  - e. State whether each model is digital/electronic or analog/mechanical.
  - f. Of the meters originally installed in 2007, provide a count of those still in operation by model.
- A-327.
- a. The Company reported results of the responsive pricing pilot in Kentucky Public Service Commission Case No. 2007-00117. LG&E's evaluation of the Responsive Pricing and Smart Meter Pilot Program is available at: [http://psc.ky.gov/PSCSCF/Post%20Case%20Referenced%20Correspondence/2007%20cases/2007-00117/20110701\\_LGEs%20Evaluation%20of%20Responsive%20Pricing%20and%20Smart%20Meter%20Pilot%20Program.pdf](http://psc.ky.gov/PSCSCF/Post%20Case%20Referenced%20Correspondence/2007%20cases/2007-00117/20110701_LGEs%20Evaluation%20of%20Responsive%20Pricing%20and%20Smart%20Meter%20Pilot%20Program.pdf).
  - b. The Companies have not offered other responsive pricing pilots in the last 10 years.
  - c. Single-phase: Landis+Gyr FOCUS Type ALF, Landis+Gyr FOCUS AX.  
Three-phase: Itron Sentinel.

- d. Meter models listed above were equipped with Trilliant two-way communications cards and were capable of both scheduled and on-demand reads as well as interval data recording.
- e. Digital/Electronic
- f. Following the end of the responsive pricing pilot LG&E dismantled the Trilliant two-way communications system infrastructure but continued to maintain existing meters in place and collect meter reads through normal meter reading operations.

Landis+Gyr FOCUS Type ALF = 331

Landis+Gyr FOCUS AX = 45

Itron Sentinel = 147

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 328**

**Responding Witness: John P. Malloy**

- Q-328. Provide the length of time, in years, which Landis + Gyr is willing to warranty the smart meters the Companies would install as part of the proposed AMS deployment.
- A-328. The contract with Landis+Gyr for the Companies' current AMS Customer Offering stipulates a 5 year warranty period. The Company is in discussions with Landis+Gyr on the warranty period for full AMS deployment.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 329**

**Responding Witness: John P. Malloy**

Q-329. Reference the Malloy testimony at page 21, line 1, which states that 4,000 customers have enrolled in the AMS Customer Offering since June, 2015.

- a. Describe the marketing efforts used to promote the AMS customer offering.
- b. Provide a breakdown of the 4,000 enrollees by rate class (RS, RTOD, and RS).
- c. Provide total customer counts in rate classes RS, RTOD, and RS as of December 31, 2016.

A-329.

- a. The Company developed a multi-faceted customer education and communications plan to educate customers and community stakeholders about the program and customer benefits. The communications supported four key stages: education and awareness, program enrollment, meter installation and participants' access into their customized ePortal.

To reach customers eligible for the program and community stakeholders, the Company used a wide array of communications vehicles, which included: customer testimonials that enabled current program participants to explain, from their personal experience, how the program works and customer benefits; collateral pieces for events and company business offices; the Company website; advertising; customer newsletters; email; media relations and social media.

In addition, the Company developed a customer education and communications plan for program participants. These materials were designed to create a smooth transition for customers who enrolled in the program, received their meter and accessed their ePortal. These communications explained how the program works, the installation process, customer benefits, and tools and features available in their customized ePortal. The Company used a wide array of communications vehicles, which included: email; leave-behind door hanger after the meter installation; a

designated section on the Company website; frequently asked questions; video tutorials; and help content in the ePortal.

Samples of these materials can be found in Exhibit JPM-1 Appendix A-4, called the DSM AMS Customer Communications Examples.

- b. Note, Company assumes AG intended question to reference RS, RTOD, and GS.

<b>Rate</b>	<b>LG&amp;E</b>	<b>KU</b>
Residential Electric Service	2,400	1,681
Residential Time-of-Day Energy	6	1
General Service Three Phase	10	29
General Service Single Phase	13	41
<b>Grand Total</b>	<b>2,429</b>	<b>1,752</b>

- c. Note, Company assumes AG intended question to reference RS, RTOD, and GS. Counts below are as of January 7, 2017.

<b>Rate</b>	<b>LG&amp;E</b>	<b>KU</b>
Residential Electric Service	361,690	427,403
Residential Time-of-Day Energy	33	16
General Service Three Phase	16,201	18,911
General Service Single Phase	28,005	63,961
<b>Grand Total</b>	<b>405,929</b>	<b>510,291</b>

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 330**

**Responding Witness: John P. Malloy**

- Q-330. Reference the Malloy testimony beginning at page 24, line 18, which states “. . . all customers will be able to use a web portal to access information about their usage at any time of day or night, download consumption patterns to better understand how they use energy, and explore different products and programs that may align to their needs.”
- a. Provide any research the Companies have conducted on their overall residential customer base that indicates an interest in these capabilities.
  - b. Provide any “willingness to pay” research the Companies have conducted on their overall residential customer base with regard to these capabilities
  - c. If the Companies have conducted no such research, use the proprietary online customer panel of 1500 LG&E and KU customers referenced in Mr. Malloy’s testimony (page 4, line 1) to conduct such research and report the results. In such research, reference a variety of monthly incremental bill impacts (i.e., \$1 per month, \$3 per month, \$5 per month, etc.)
- A-330.
- a. In October 2016, Company conducted an online survey with the proprietary online customer panel of 1500 LG&E and KU customers that measured the interest in additional usage information. See attached.
  - b. See the response to part a.
  - c. Not applicable.



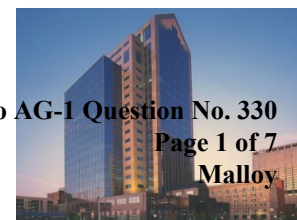
**PPL companies**

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# Energy Usage

*Marketing Performance  
October 13, 2016*

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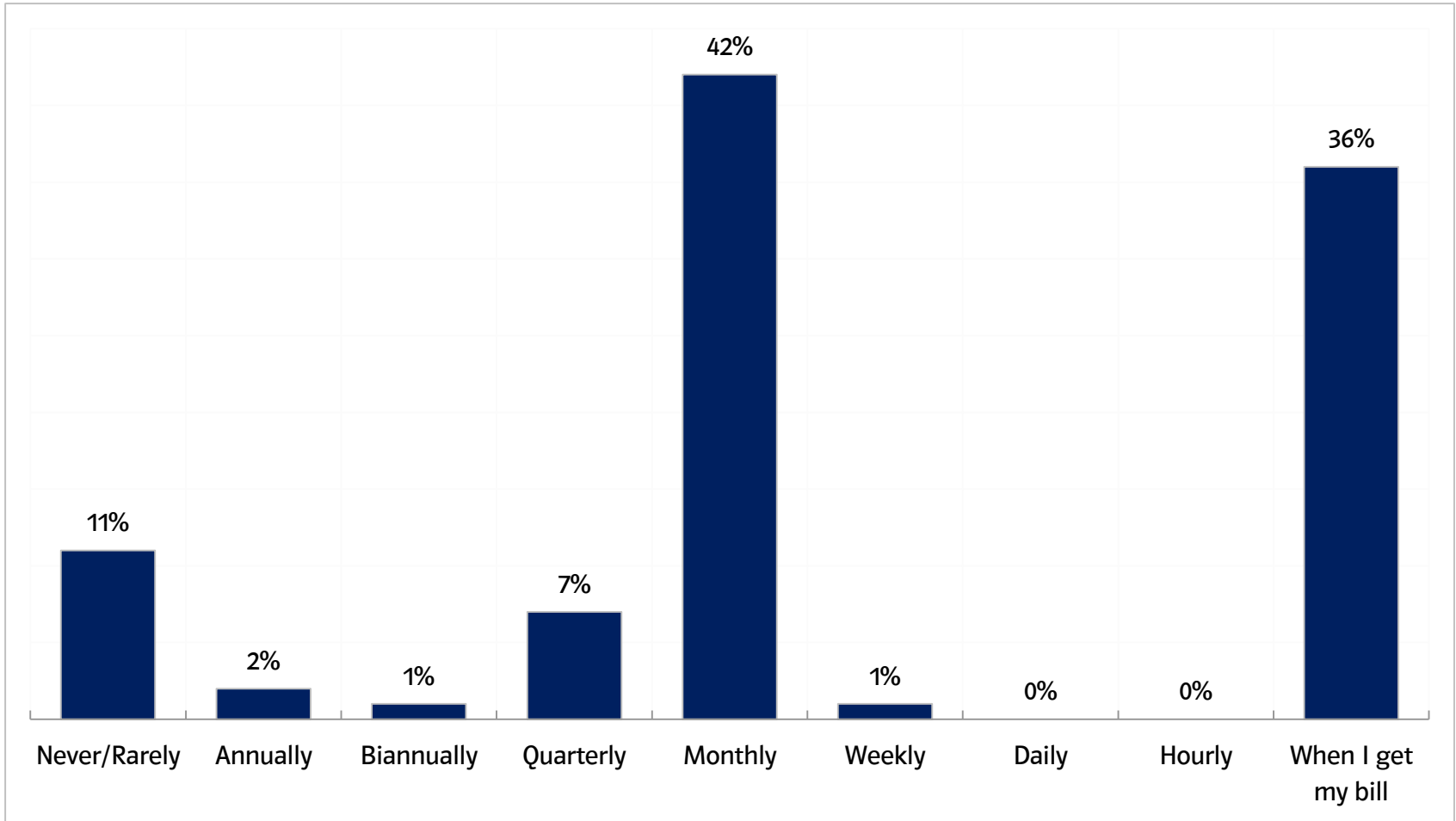


# Survey Methodology

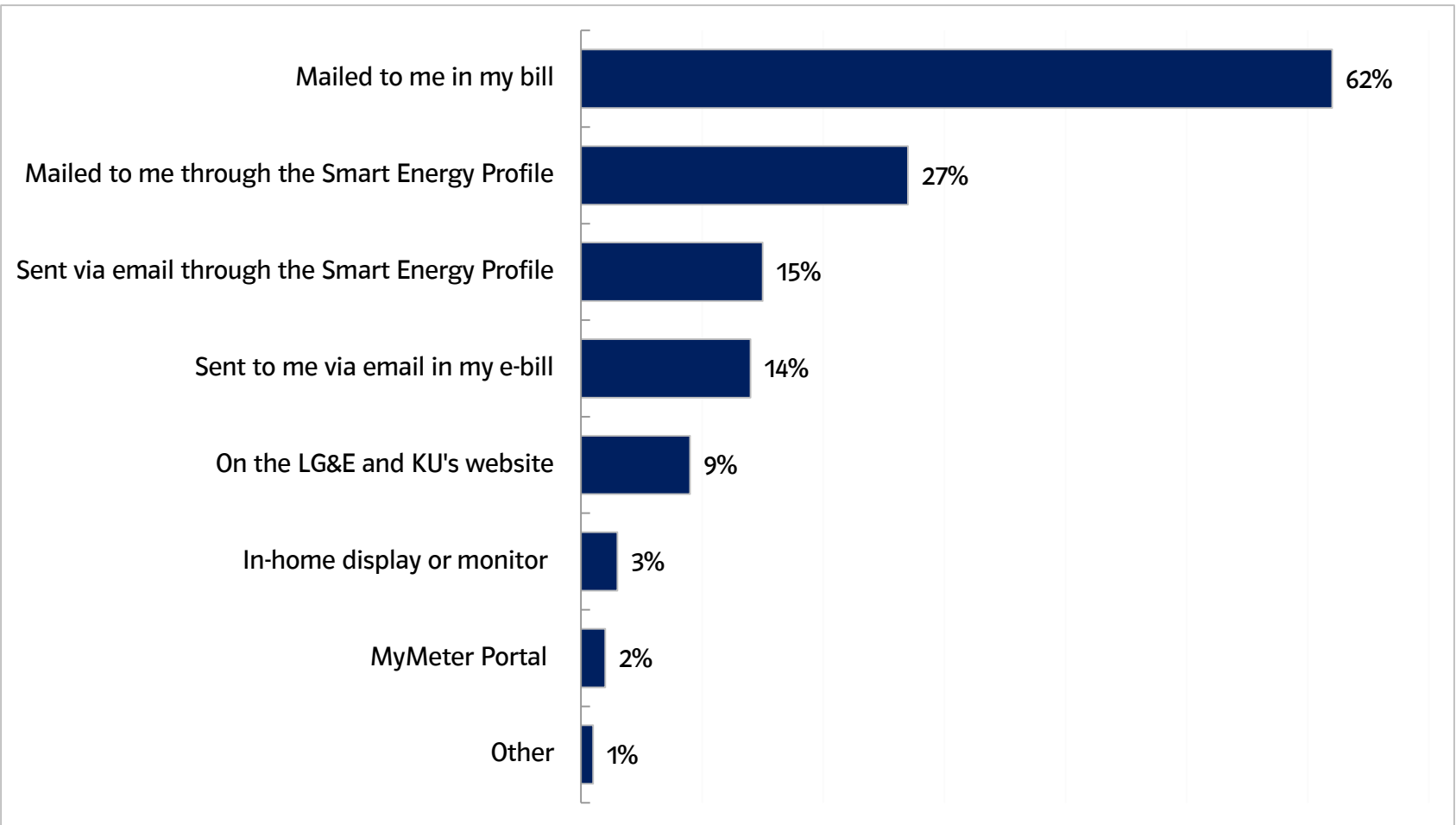
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- LG&E/KU Proprietary Customer Panel
  - *766 LG&E Customers*
  - *778 KU Customers*
- Online Survey
  - *Conducted September 26 thru October 5.*
  - *Approximately 3 minutes*
- 57 % Response Rate
  - *876 completed surveys*

# Review Energy Usage



# How Customers Review Energy Usage



# Interest in Additional Energy Usage Information

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- 52% of customers on the online panel are not interested in reviewing their energy usage in more details than what they currently receive.
- Of the 48% (375 customers) who are interested, only 8% (31 customers) are willing to pay additional fees or pay for additional services in order to have more detailed energy usage.

# Awareness of Product and Services

Product/Service	LG&E/KU	18-34	35-49	50-64	65+
Rebates on ENERGY STAR <sup>®</sup> certified appliances	67%	59%	64%	70%	71%
Refrigerator/freezer recycling	66%	62%	58%	70%	68%
Financial incentives to temporarily cut back energy use during high demand periods	50%	40%	40%	55%	58%
In-home energy analysis	46%	37%	37%	49%	53%
Rebates on high efficiency cooling equipment	39%	28%	34%	41%	46%
Tool that compares my usage to other comparable households	38%	32%	39%	38%	39%
Central AC load control devices	36%	22%	40%	37%	38%

<b>Product/Service</b>	<b>LG&amp;E/KU</b>	<b>18-34</b>	<b>35-49</b>	<b>50-64</b>	<b>65+</b>
Rebates on ENERGY STAR <sup>®</sup> certified windows	33%	34%	35%	30%	34%
Online energy analysis	15%	18%	17%	13%	15%
Remotely adjust my thermostat or turn on/off appliances	11%	8%	11%	11%	14%
Online energy calculator	11%	15%	12%	12%	8%
Time-of-day electric usage price plan	11%	5%	11%	12%	13%
Renewable/green power price plan	10%	7%	10%	11%	11%
Water heater load control devices	8%	5%	11%	7%	9%
Online energy management portal	7%	11%	7%	7%	6%
Wi-Fi load control devices	2%	3%	3%	2%	2%
Other	2%	4%	3%	1%	2%

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 331**

**Responding Witness: John P. Malloy**

- Q-331. Reference the Malloy testimony at page 25, line 2, which states that the proposed AMS deployment will “enable the Companies to deploy time-of-day or more dynamic rate structures that could help customers reduce their bills.”
- a. Provide any research the Companies have conducted on their overall residential customer base that indicates an interest in time-of-day or more dynamic rate structures.
  - b. Provide any so-called “willingness to pay” research the Companies have conducted on their overall residential customer base regarding the option to participate in time-of-day or more dynamic rate structures.
  - c. If the Companies have conducted no such research, use the proprietary online customer panel of 1500 LG&E and KU customers referenced in Mr. Malloy’s testimony (page 4, line 1) to conduct such research and report the results. In such research, reference a variety of monthly incremental bill impacts (i.e., \$1 per month, \$3 per month, \$5 per month, etc.).
- A-331.
- a. 2011-12 Residential Smart Meter Study: Focus of the study was how much money customers would have to save before they would change behaviors. Study featured four rate options: 1) Time of Use, 2) Critical Peak Pricing, 3) Peak Time Rebate, and 4) Inclining Block. See attached.
  - b. We do not have research on “willingness to pay” for the option of participating in any rate structure.
  - c. Not applicable.



**LG&E and KU Services Company  
Advanced Meter Service Participant Survey – Residential  
Email Study #16295**

**INTRO**

We are conducting a survey to gather customer feedback about your experience with the Advanced Meter Service and **[LG&E, Kentucky Utilities]** would like to include your opinions.

*As you answer the survey, please use the **NEXT** button at the bottom of the screen and not your browser to move to the next page. Once you answer a question you will not be able to return to the previous page.*

*If you decide to close the survey before completing it, you can go back into it; however, the survey will be started from the beginning.*

S1. Do you or anyone in your household currently work for PPL, LG&E, Kentucky Utilities, or ODP?

- 1. Yes **[TERMINATE]**
- 2. No
- 98. Don't know **[TERMINATE]**

S2. Are you currently participating in the Advanced Meter Service?

- 1. Yes
- 2. No **[TERMINATE]**
- 98. Don't know **[TERMINATE]**

**[SCREENER TERMINATE]**

Thank you for your time. Unfortunately you do not qualify to continue with this survey.

Q1. This next question pertains to your experience with the Advanced Meter Service.

Overall, how satisfied are you with the Advanced Meter Service?

Not satisfied at all									Completely satisfied	Don't know
1	2	3	4	5	6	7	8	9	10	98 <b>[Don't show '98']</b>

Q1a. Why did you give this rating?

---

No Comment

Q2. These next few questions pertain to the MyMeter dashboard, which allows you to track energy usage over time, maintain an energy-related profile of your home or property, and schedule usage threshold notifications.

How frequently do you access the MyMeter dashboard?

1. Daily
2. Two to three times a week
3. Weekly
4. Two to three times a month
5. Monthly
6. Every couple of months
7. Never

**[IF Q2=7, Never accessed MyMeter dashboard]**

Q2a. Why have you never accessed the MyMeter dashboard?

---

No Comment

**[IF Q2=7, Never accessed MyMeter dashboard, ASK Q2a THEN SKIP TO Q6]**

Q3. How would you rate your overall satisfaction with the MyMeter dashboard?

Not satisfied at all									Completely satisfied	Don't know
1	2	3	4	5	6	7	8	9	10	98 [Don't show '98']

Q4. How satisfied are you with your online experience using the MyMeter dashboard, based on the following attributes?

Not satisfied at all									Completely satisfied	Don't know
1	2	3	4	5	6	7	8	9	10	98 [Don't show '98']

**[RANDOMIZE, DYNAMIC DISPLAY – APPEAR ONE AT A TIME]**

- a. Ease of navigation
- b. System is user-friendly
- c. Ease of accessing the MyMeter dashboard
- d. MyMeter dashboard content meets your expectations
- e. MyMeter dashboard information is clear and easy to understand

**[IF Q4\_001=1-5, Dissatisfied with ease of navigation]**

Q4a. Why did you rate the ease of navigating the MyMeter dashboard a **[INSERT RATING]**?

\_\_\_\_\_

No Comment

**[IF Q4\_002=1-5, Dissatisfied with system is user-friendly]**

Q4b. Why did you rate the user-friendliness of the MyMeter dashboard a **[INSERT RATING]**?

\_\_\_\_\_

No Comment

**[IF Q4\_003=1-5, Dissatisfied with ease of accessing MyMeter dashboard]**

Q4c. Why did you rate the ease of accessing the MyMeter dashboard a **[INSERT RATING]**?

\_\_\_\_\_

No Comment

**[IF Q4\_004=1-5, Dissatisfied with MyMeter dashboard content]**

Q4d. Why did you rate the MyMeter dashboard content a **[INSERT RATING]**?

\_\_\_\_\_

No Comment

**[IF Q4\_005=1-5, Dissatisfied with MyMeter dashboard information is clear and easy to understand]**

Q4e. Why did you rate the clarity of the MyMeter dashboard information a **[INSERT RATING]**?

---

No Comment

Q5. Which of the following features of the MyMeter dashboard have you used? *Please select all that apply.*

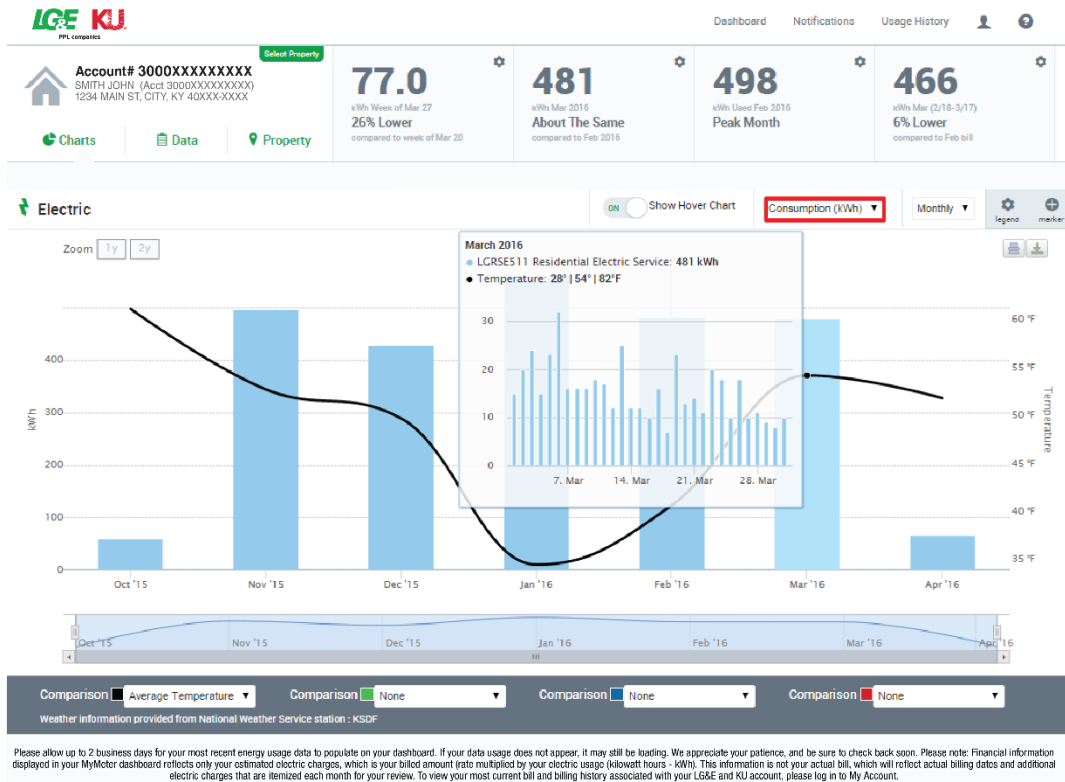
**[RANDOMIZE]**

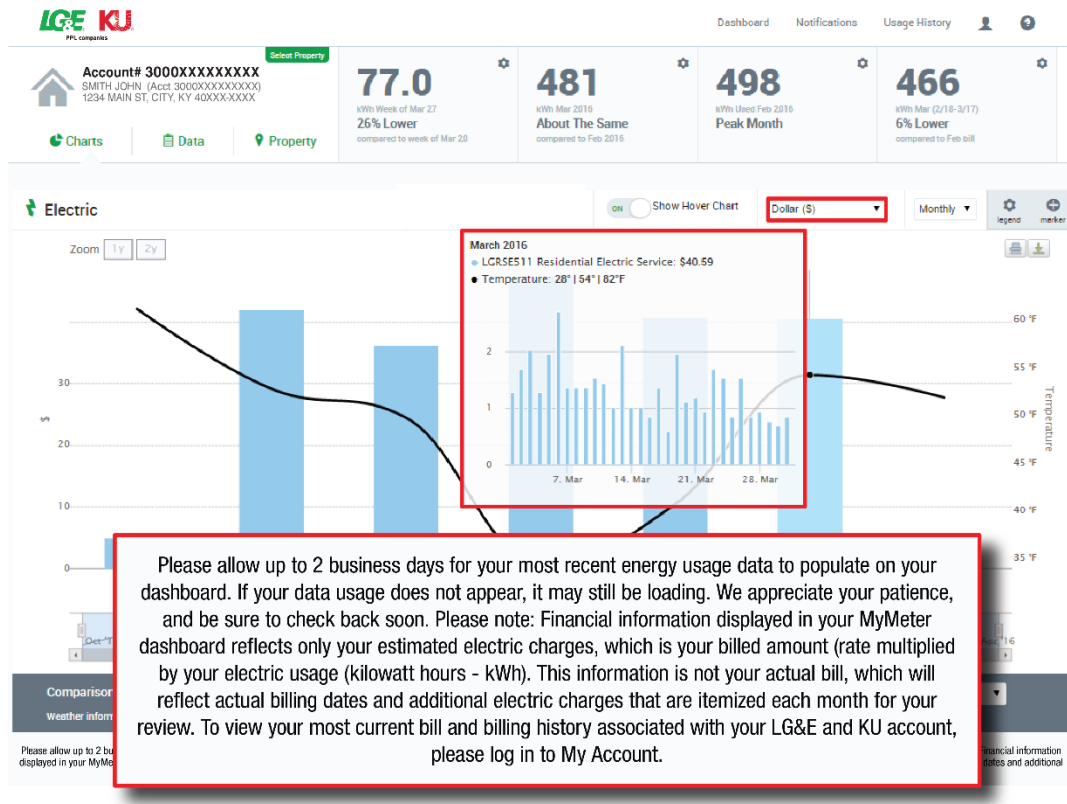
1. Track and compare your energy usage over time
2. Compare your energy use to local weather conditions
3. Compare your energy usage from the previous day or week
4. Use MyMeter's heat map feature to show trends in energy usage each day
5. Add "Energy markers" to your energy usage chart to help recall when you made changes that might impact usage
6. Create your own "Property Profile" to show your home's size, age, or types of appliances to help you better understand your energy usage
7. Schedule MyMeter notifications to send you text or email updates about your energy usage

Q6. **[LG&E, Kentucky Utilities]** is considering adding a new feature to the MyMeter dashboard which will give you the option to review your energy usage in terms of dollars, rather than just consumption (kilowatt hours - kWh).

Financial information displayed in your MyMeter dashboard would only reflect your estimated electric charges, which is your billed amount (rate) multiplied by your electric usage (kWh). This information would not replace your actual bill, which reflects actual billing dates and additional electric charges that are itemized each month for your review.

Below is an image of the MyMeter dashboard as it exists today followed by how this new feature would look. You'll see that the monthly chart view changed from displaying consumption in terms of kWh to dollars. Please also note the language at the bottom of the screen.





How interested are you in the new MyMeter dashboard feature shown?

Click here to view images. **[TEXT AS HYPERLINK TO VIEW IMAGES IN A SEPARATE TAB]**

- 5. Very interested
- 4. Somewhat interested
- 3. Neutral
- 2. Not very interested
- 1. Not interested at all

Q6a. Why did you give this rating?

No Comment

Q7. How clear is it that the dollar amount outlined in the feature refers to usage and not the total bill amount?

Click here to view images. **[TEXT AS HYPERLINK TO VIEW IMAGES IN A SEPARATE TAB]**

5. Very clear
4. Somewhat clear
3. Neither clear nor confusing
2. Somewhat confusing
1. Very confusing

**[IF Q2=7, Never accessed MyMeter dashboard, ASK Q7 THEN SKIP TO DEMO]**

Q8. Which, if any, of the following steps have you taken to save energy as a result of your participation in the Advanced Meter Service? *Please select all that apply.*

**[RANDOMIZE 1-6]**

1. Replaced inefficient light bulbs with LED bulbs
2. Improved your home's insulation
3. Weather-stripped windows and doors
4. Programmed the temperature settings on your existing thermostat
5. Purchased new energy efficient appliances
6. Purchased a new thermostat
7. Other (please specify) \_\_\_\_\_ **[ANCHOR]**
8. None **[EXCLUSIVE] [ANCHOR]**

**[IF Q8=5, Purchased new energy efficient appliances]**

Q9. What type of appliances have you purchased since joining the Advanced Meter Service? *Please select all that apply.*

1. Refrigerator
2. Freezer
3. Dishwasher
4. Stove/Oven/Cooktop
5. Clothes Washer
6. Clothes Dryer
7. Water Heater
8. Other (please specify) \_\_\_\_\_

**[IF Q8=6, Purchased new thermostat]**

Q10. What type of thermostat did you purchase as a result of your participation in the Advanced Meter Service? *Please select all that apply.*

1. Programmable (allows temperature settings to be scheduled on an hourly and daily basis)



2. Wi-Fi enabled (thermostat is connected to a Wi-Fi network which allows for remote monitoring and temperature adjustment via the web)
3. Self-learning (thermostat learns to program itself to match the user’s preferences over time based on the user’s manual temperature adjustments )
4. Other (please specify) \_\_\_\_\_

Q11. How likely are you to recommend the Advanced Meter Service to friends or family?

Not likely at all										Very likely
0	1	2	3	4	5	6	7	8	9	10

**[IF Q11=0-6, Detractors]**

Q11a. Why did you give this rating?

---

No Comment

Q12. As a result of your participation in the Advanced Meter Service which, if any, of the following energy efficiency programs offered by **[LG&E, KU]** have you enrolled in?  
*Please select all that apply.*

**[RANDOMIZE 1-7]**

1. Demand Conservation
2. Fridge and Freezer Recycling
3. Smart Energy Profile
4. Online Home Energy Analysis
5. On-site Home Energy Analysis
6. Home Energy Rebates
7. WeCare Program
8. Other (please specify) \_\_\_\_\_ **[ANCHOR]**
9. Do not participate in any / Don’t Know **[EXCLUSIVE] [ANCHOR]**

We’d like to conclude by asking a few questions for classification purposes.

C1. Please provide an estimate of the total living space in your home:

1. Under 800 square feet
2. 800 to 1,500 square feet

3. 1,501 to 2,500 square feet
4. 2,501 to 3,500 square feet
5. Over 3,500 square feet
98. Don't know
97. Prefer not to answer

C2. In what range does your age fall:

1. Under 18
2. 18 to 34
3. 35 to 44
4. 45 to 54
5. 55 to 64
6. 65 or over
97. Prefer not to answer

C3. What was the last grade or level of schooling that you completed?

1. 1<sup>st</sup> through 8<sup>th</sup> grade
2. Some high school
3. High school graduate or equivalent
4. Some college or technical school
5. College graduate
6. Graduate/post-graduate school
97. Prefer not to answer

C4. Which of the following income categories includes your household income?

1. Under \$10,000
2. \$10,000 to \$20,000
3. Over \$20,000 to \$30,000
4. Over \$30,000 to \$40,000
5. Over \$40,000 to \$50,000
6. Over \$50,000 to \$75,000
7. Over \$75,000 to \$100,000
8. Over \$100,000 to \$150,000
9. Over \$150,000 to \$200,000
10. Over \$200,000
97. Prefer not to answer

- C5. What is your gender?
1. Male
  2. Female
  97. Prefer not to answer

**[STANDARD CLOSING]**

Thank you for your time. Your responses will assist **[LG&E, Kentucky Utilities]** in its efforts to continue to improve the Advanced Meter Service offering.

# Residential Smart Meters Study



Prepared by:

**Bellomy Research, Inc.**

January 17, 2012



## Objectives:

The overall objectives of this study are to understand how much LG&E/KU Residential customers understand about Smart Meters and how willing they would be to participate in a Smart Meter program if offered by the utility. Specifically, the study will evaluate:

- Overall awareness of Smart Meters
- Likelihood to participate in a Smart Meter program
- Appeal of potential rate concepts offered in a Smart Meter program
- Interface tools that would be most important to participation
- Customer attitudes that could impact participation

Results from the study will be used to develop an initial Smart Meter offering, although further research will be necessary to fine-tune the program.

Interviewing for this research was conducted via the Internet utilizing sample provided by LG&E/KU. The survey was approximately 15 minutes in length.

BRI sent email invitations to Residential customers requesting their participation in the study. The email invitation contained a survey link allowing them to directly access the survey online 24/7.

Sample provided by LG&E/KU contained Residential customers with an email address. These customers were further screened to ensure that the person who is the utility decision-maker was interviewed.

The data collection period was from 12/5/11 through 12/16/11.

Statistical testing was conducted at the 95% confidence level and significant differences are noted.

Quotas were set to 500 total; balanced by utility and for three age groups in order to ensure the results were representative of the LG&E/KU population. Given much lower internet penetration among the 65+ group some completes were shifted to younger households, which also aligns better with potential Smart Meter technology usage.

Due to this being an internet study (and only customers providing email addresses were included), it should be noted that this study is reflective of both the LG&E/KU population and internet usage, and does not necessarily represent the entire LG&E/KU customer base (those without internet access).

The study fell short by 4 completes but remained representative. The final number of completes is as follows:

	LG&E	KU	Total
18-44 years	74	98	172
45-64 years	115	154	269
65+ years	27	28	55
<b>Total</b>	<b>216</b>	<b>280</b>	<b>496</b>



In order to evaluate the four rate options, a complete block design was used with respondents evaluating all four options. In this design, order is controlled so that each option is rated in each position (1st, 2nd, 3rd, 4th) by an equal number of respondents.

## Rate Options Evaluated:

- Time of Use
- Critical Peak Pricing
- Peak Time Rebate
- Inclining Block

Customers were asked to rate each of the options on likelihood to participate, ease of understanding, ease of making changes in energy usage, and motivation to lower usage. All ratings were based on a 5pt scale.

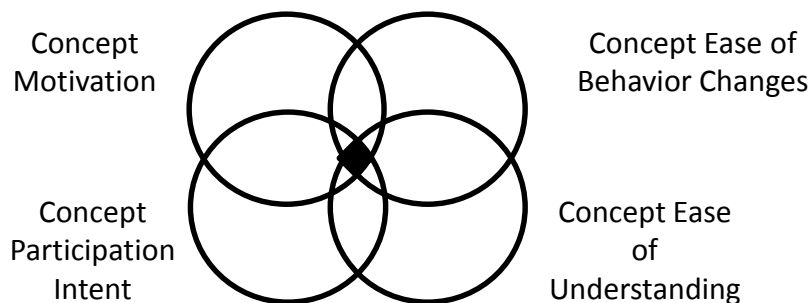
Each rate option included a simplified description, along with a diagram to further aid in describing the concept. (see Appendix)

The four rate options were then compared against each other using Bellomy’s “Take Rate” analytical approach, which is ideal when more than two alternatives are being considered and a relative “winner” is desired.

Take Rate is a modified “trial” rate which estimates the percent of respondents who are most committed to a concept idea, providing a more conservative and realistic estimate of customer intent/potential commitment than overall opinion alone.

Take Rate is calculated using the intersection of three to six key variables. Consumers most interested in a concept are identified because they rate the idea high across multiple key measures, not just one. In this case 4 key metrics were intersected:

Take Rate Definition (Top 2 Boxes)



Smart Meter unaided awareness is low, with only one in four LG&E/KU customers having heard of the technology, although LG&E customer awareness was ahead of KU.

- Even among those who claimed awareness, many couldn't articulate what the benefits or even the disadvantages of Smart Meters are, indicating they have heard the terminology but have little/no understanding of the concept. However, those with a better understanding noted the key benefits as the ability to track electricity usage, conserve energy and save money.

Although awareness is low, once a customer was provided more information about the program over half stated they would likely participate. Participation levels vary by age, with greater participation more likely among younger households.

Customer attitudes also play a key role in participation. Customers with higher energy conservation awareness and who are technology driven are more likely to participate.

- Conversely, customers that don't think reducing energy is important and are willing to pay for comfort are less likely to participate.

Over half of customers are already adjusting their thermostat. And most customers who are not adjusting it now would do so if it would lower their utility bill, particularly younger households where both adults work full-time outside the home.

The key price point motivating customers to change their usage behavior was monthly savings of \$25 off their utility bill, although just under half would be satisfied with savings of at least \$20.

- Customers who are skeptical about the program and not likely to participate respond to higher utility savings to make behavior changes.

Of the four rate options evaluated, Peak Time Rebate was the clear winner with a significantly higher “Take Rate” than the other three options.

- Peak Time Rebate also rated significantly higher than any other option on likelihood to participate, ease of making behavior changes and motivation to lower usage/save money.
- However, “Take Rates” among customers 65+ years old were fairly comparable for Peak Time Rebate and Time of Use. They found Time of Use easiest to understand, but rated Peak Time Rebate most motivating.
- The least favorable rate option was the Inclining Block, rated as the most difficult to understand and also scoring low on ease of making usage changes.

Tracking and alerts are key features customers want as part of a Smart Meter program. The top two preferred features were the ability to track electricity usage on an in-home display or online. The next most important feature was Email alerts when higher rates would start to apply.

- Although younger customers prefer Smartphone features over Email, older customers prefer Email driven by lower Smartphone penetration. Offering options will meet varying customer preferences.

A Smart Meter offering by LG&E/KU that would drive the greatest acceptance would include:

- A Peak Time Rebate rate (if implementation of this rate plan is not feasible then the Time of Use rate could be considered)
- The ability to track usage either on an in-home display and/or online, also offer a Smartphone tracking app which would appeal to younger customers
- Email alerts when higher rates apply, with the option to sign up for text message alerts
- The ability to adjust the thermostat online, with the option to use a Smartphone app
- Monthly utility bill savings of \$25 on average

Building awareness of Smart Meters and educating customers of its benefits will be key in driving participation. Currently, even those claiming to be aware of the Smart Meter terminology do not fully understand its benefits.

- Thus far the utility has played a key role in exposing customers to the Smart Meter terminology, but more education is needed on what it means.
- Barriers such as loss of control, system malfunctions, uncomfortable temperatures and lack of privacy should be addressed openly.
- In general, raise energy conservation awareness across all customers.

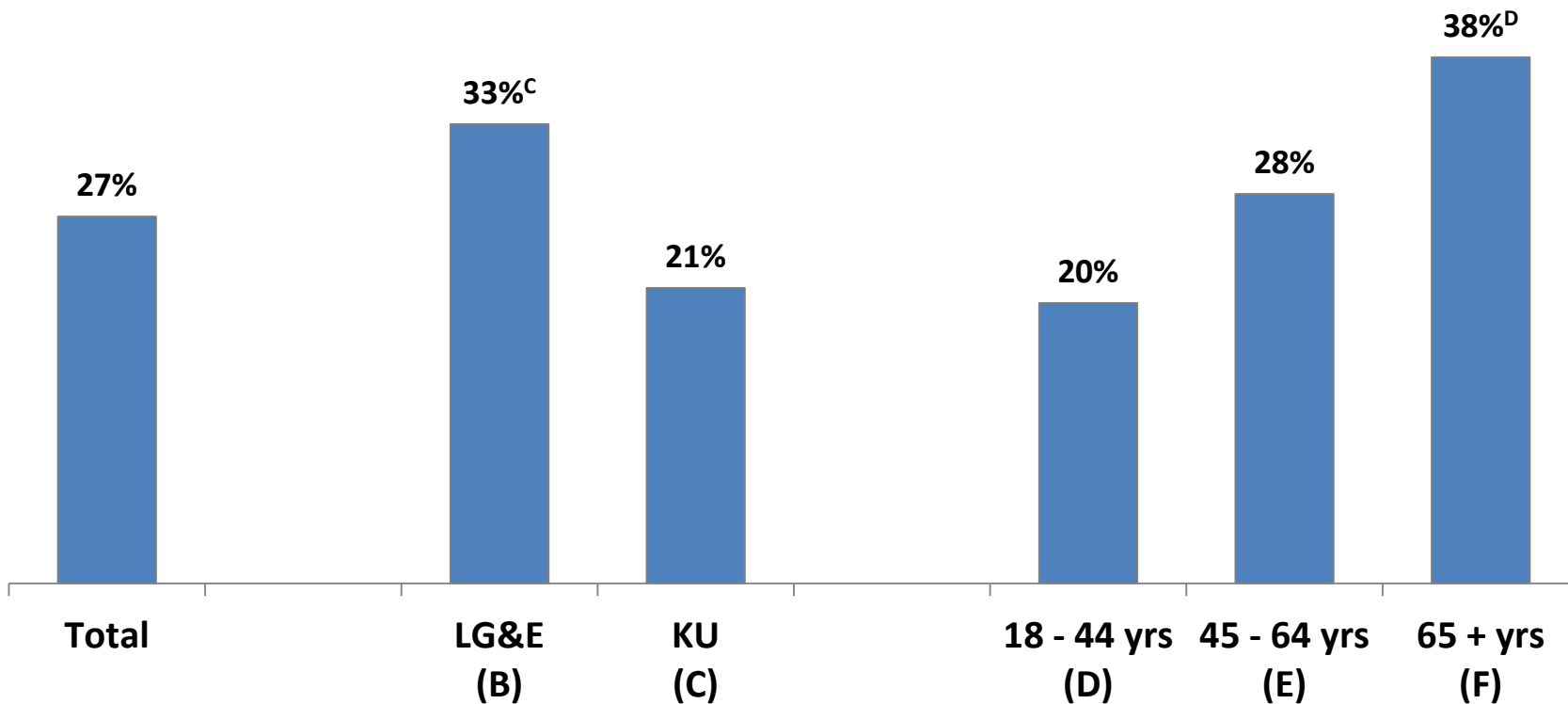
Older, retired customers present more of a challenge in gaining acceptance. They are more likely to be home during the day and are less likely to adjust their thermostat until night.

- Temperature control may not be as appealing to this demographic group, however they can be educated on other ways to shift their energy usage such as when they use their appliances. They are more likely to use appliances during peak hours but might have more flexibility to make changes to this usage pattern.

# Detailed Findings

Just over one-fourth of LG&E/KU customers are aware of Smart Meter technology, with higher awareness among LG&E customers. Awareness also increases with age.

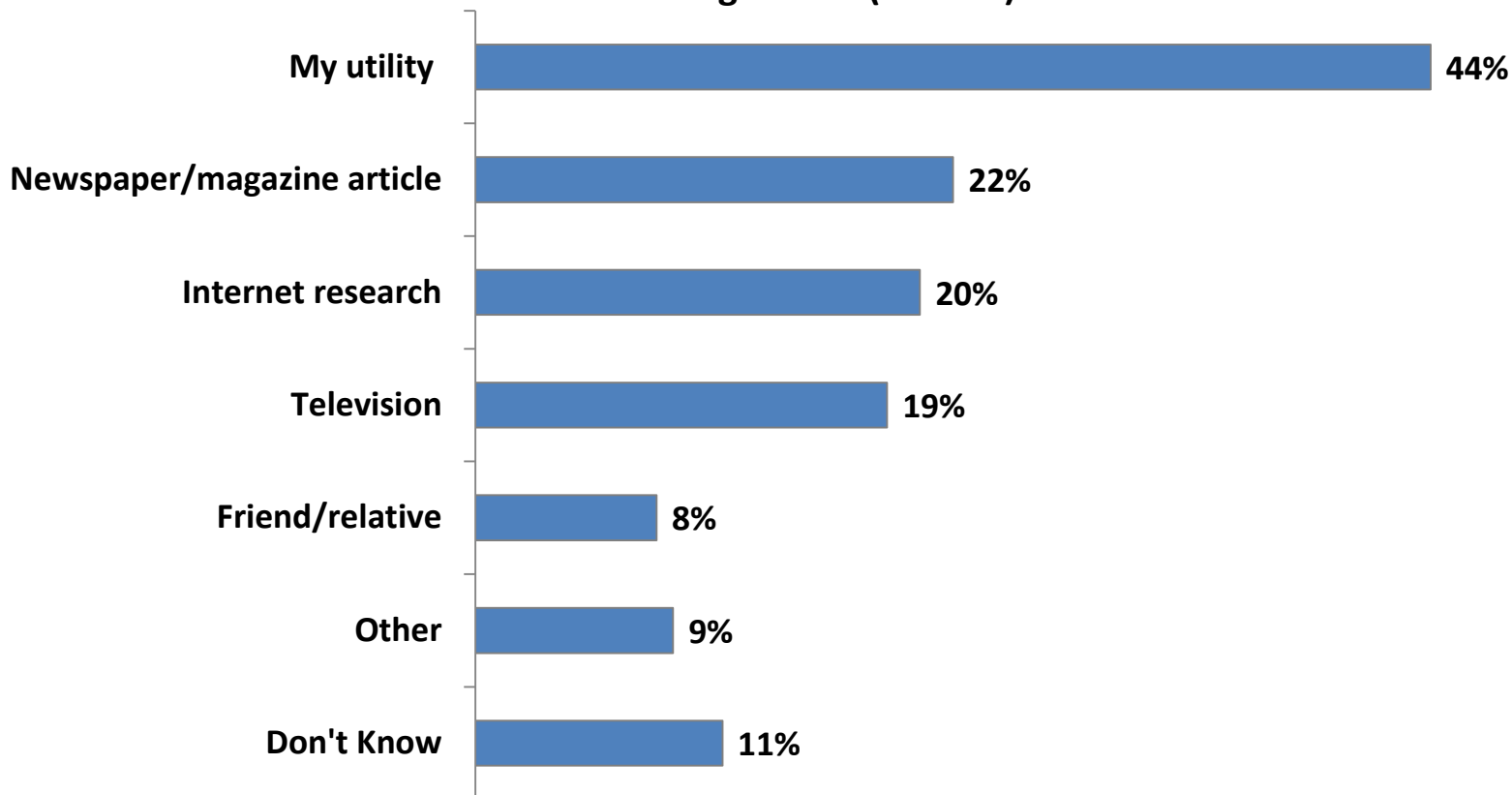
**Smart Meters Awareness - Unaided  
(% Yes)**





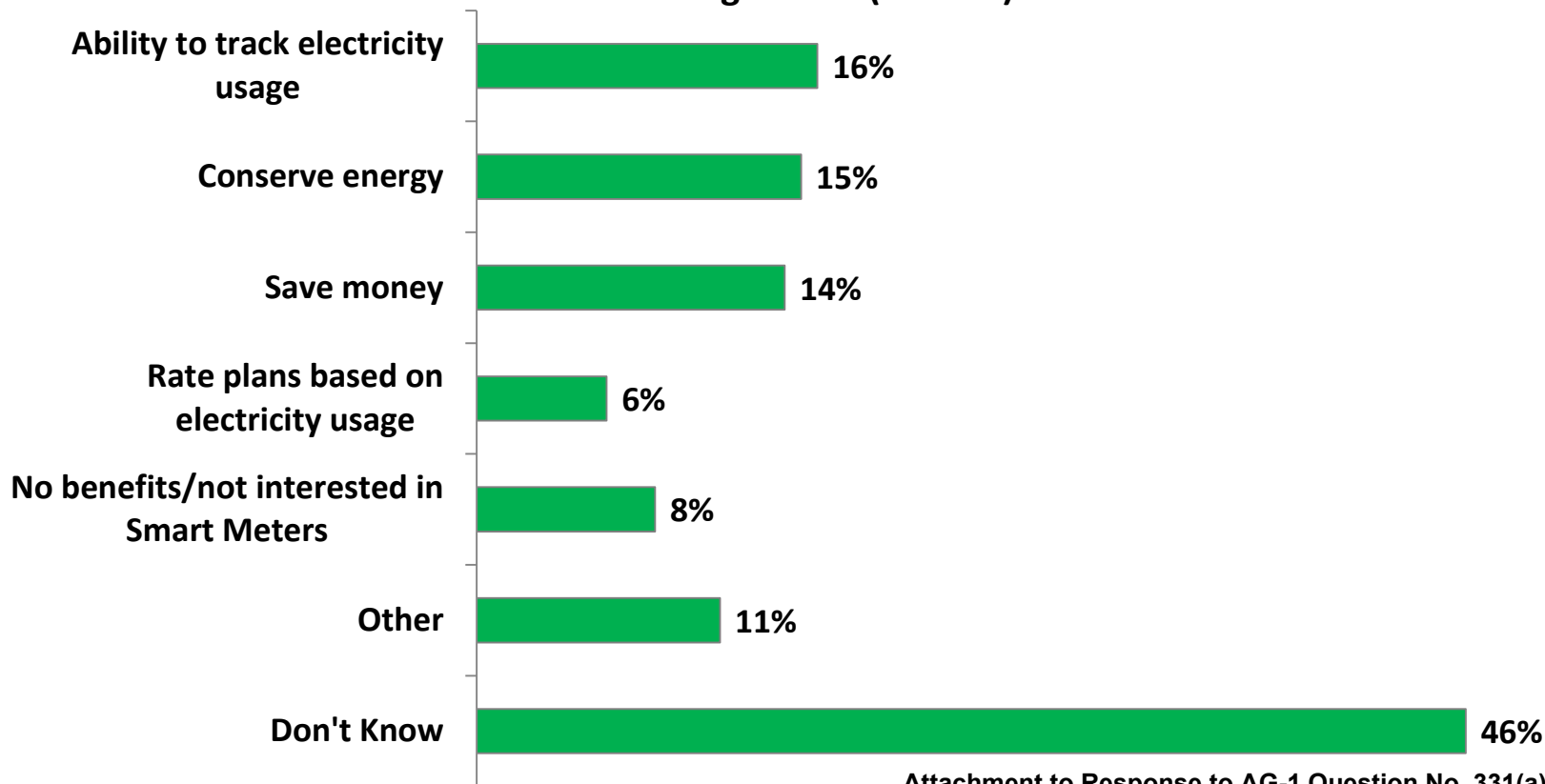
Most customers aware of Smart Meters learned about them through their LG&E or KU utility. Newspapers, magazines, internet and television were also good sources for educating customers.

**How Learned About Smart Meters  
Among Aware (n = 132)**



Nearly half of customers aware of Smart Meters were not able to explain the benefits of the technology. Those who could noted benefits such as the ability to track usage, conserve energy and save money.

**Perceived Benefits/Advantages of Smart Meters  
Among Aware (n = 132)**



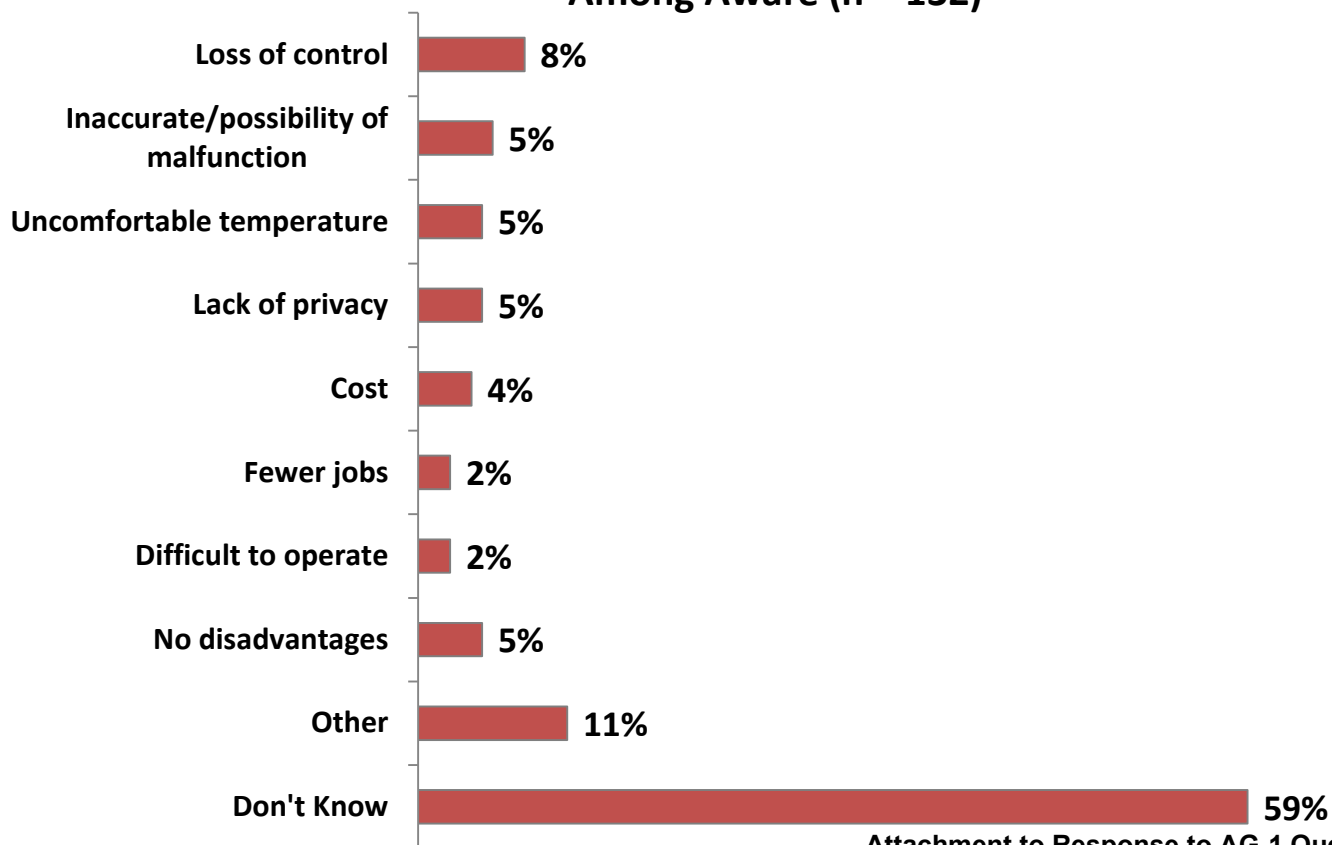
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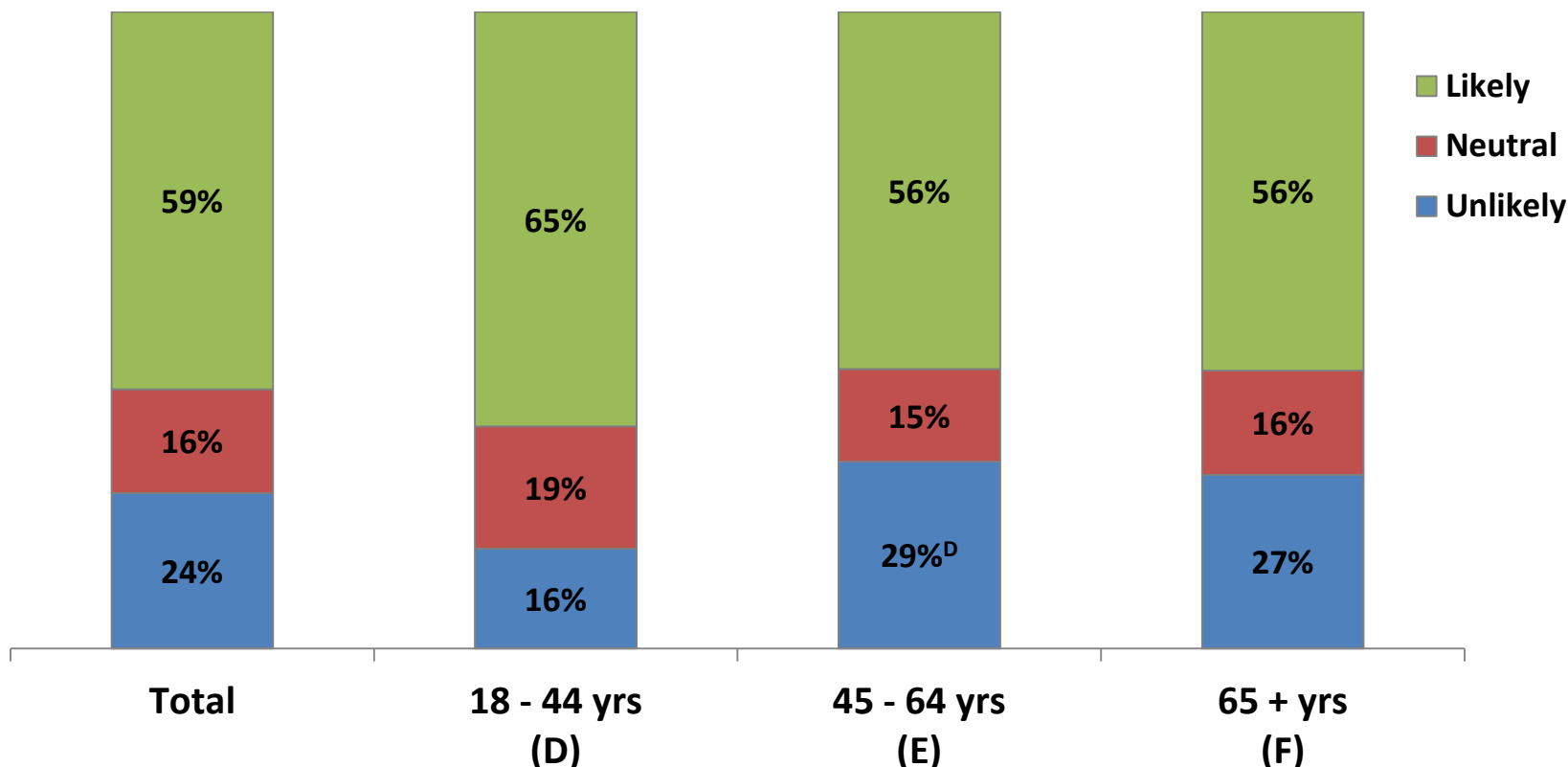
The majority of customers aware of Smart Meters don't know what the disadvantages are. Other customers were concerned with loss of control, system malfunctions, uncomfortable temperatures and lack of privacy.

**Perceived Disadvantages of Smart Meters  
Among Aware (n = 132)**



Following a brief description of Smart Meters, over half of LG&E/KU customers responded that they were likely to participate if the utility offered a program. Likelihood to participate was lower among customers 45+ years, with over one-fourth not likely to participate.

## Smart Meters Likelihood to Participate - Aided



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Q8: Based on what you currently know about Smart Meters, how likely would you be to participate in a Smart Meter program if one was offered by [LG&E, Kentucky Utilities]? (5pt scale)

Take Rate is highest for the Peak Time Rebate rate option and significantly ahead of the other three options. Inclining Block was the least favorable rate option.

## Smart Meters Rate Options

	Time of Use (A)	Critical Peak (B)	Peak Time Rebate (C)	Inclining Block (D)
<b>Likelihood to Participate (T2B)</b>	55.2% <sup>BD</sup>	48.6% <sup>D</sup>	70.4% <sup>ABD</sup>	37.9%
<b>Ease of Understanding (T2B)</b>	76.4% <sup>BD</sup>	72.0% <sup>D</sup>	74.2% <sup>D</sup>	60.5%
<b>Ease of Making Usage Changes (T2B)</b>	52.8% <sup>BD</sup>	48.2% <sup>D</sup>	64.1% <sup>ABD</sup>	36.5%
<b>Motivation to Lower Usage/Save Money (T2B)</b>	59.1% <sup>BD</sup>	54.0% <sup>D</sup>	72.4% <sup>ABD</sup>	43.4%
<b>Take Rate*</b>	42.9% <sup>BD</sup>	37.7% <sup>D</sup>	55.0% <sup>ABD</sup>	25.4%

Q9a: How likely would you be to participate in the [INSERT OPTION] Smart Meter program? (5pt scale)

Q9b: How easy is it to understand the [INSERT OPTION] Smart Meter program? (5pt scale)

Q9c: How easy would it be to make changes to your energy usage with the [INSERT OPTION] Smart Meter program? (5pt scale)

Q9d: How motivated would you be to lower your energy usage and save money with the [INSERT OPTION] Smart Meter program? (5pt scale)

\*Take Rate Definition: Customers rating all four metrics T2B (likelihood to participate, ease of understanding, ease of making changes, motivation)

Peak Time Rebate had the highest Take Rate among both LG&E and KU customers. In general, Take Rates were lower among KU customers.

## Smart Meters Rate Options – LG&E vs KU

Take Rate*	Time of Use (A)	Critical Peak (B)	Peak Time Rebate (C)	Inclining Block (D)
Total LG&E/KU	42.9% <sup>BD</sup>	37.7% <sup>D</sup>	55.0% <sup>ABD</sup>	25.4%
LG&E	48.1% <sup>D</sup>	42.1% <sup>D</sup>	57.9% <sup>ABD</sup>	26.4%
KU	38.9% <sup>D</sup>	34.3% <sup>D</sup>	52.9% <sup>ABD</sup>	24.6%

Take Rate is highest for the Peak Time Rebate rate option among both the 18-44 and 45-64 year old groups. However, for older customers Take Rates were comparable for Peak Time Rebate and Time of Use.

## Smart Meters Rate Options – By Age Group

Take Rate*	Time of Use (A)	Critical Peak (B)	Peak Time Rebate (C)	Inclining Block (D)
<b>Total LG&amp;E/KU</b>	42.9% <sup>BD</sup>	37.7% <sup>D</sup>	55.0% <sup>ABD</sup>	25.4%
<b>Age 18-44</b>	42.3% <sup>D</sup>	36.6% <sup>D</sup>	55.2% <sup>ABD</sup>	25.5%
<b>Age 45-64</b>	41.6% <sup>D</sup>	37.2% <sup>D</sup>	55.0% <sup>ABD</sup>	24.2%
<b>Age 65+</b>	51.0% <sup>D</sup>	43.7%	54.6% <sup>D</sup>	30.7%

\*Take Rate Definition: Customers rating all four metrics T2B (likelihood to participate, ease of understanding, ease of making changes, motivation)



The features most preferred by customers were tracking electricity usage on an in-home display/energy monitor or on-line. Smartphone features were least preferred overall, but were more preferred among younger customers over Email (coincides with Smartphone ownership).

## MaxDiff Preference Score

Smart Meter Features	Total LG&E/KU (n = 495)	Age 18-44 (n = 172)	Age 45-64 (n = 268)	Age 65+ (n = 55)
Track your electricity usage on an in-home display or energy monitor	20.18	18.09	21.37	20.91
Track your electricity usage on-line	16.96	16.35	17.16	17.92
Receive Email alerts about when higher rates would start to apply	13.16	10.35	13.89	18.36
Ability to adjust your thermostat on-line	10.89	9.43	12.06	9.82
Receive Email alerts about your electricity usage	10.79	7.11	12.16	15.63
Ability to adjust your thermostat using a Smartphone app	9.94	12.81	8.71	6.93
Track your electricity usage using a Smartphone app	9.19	14.07	7.02	4.45
Receive text message alerts on your Smartphone about when higher rates would start to apply	8.89	11.78	7.63	5.97

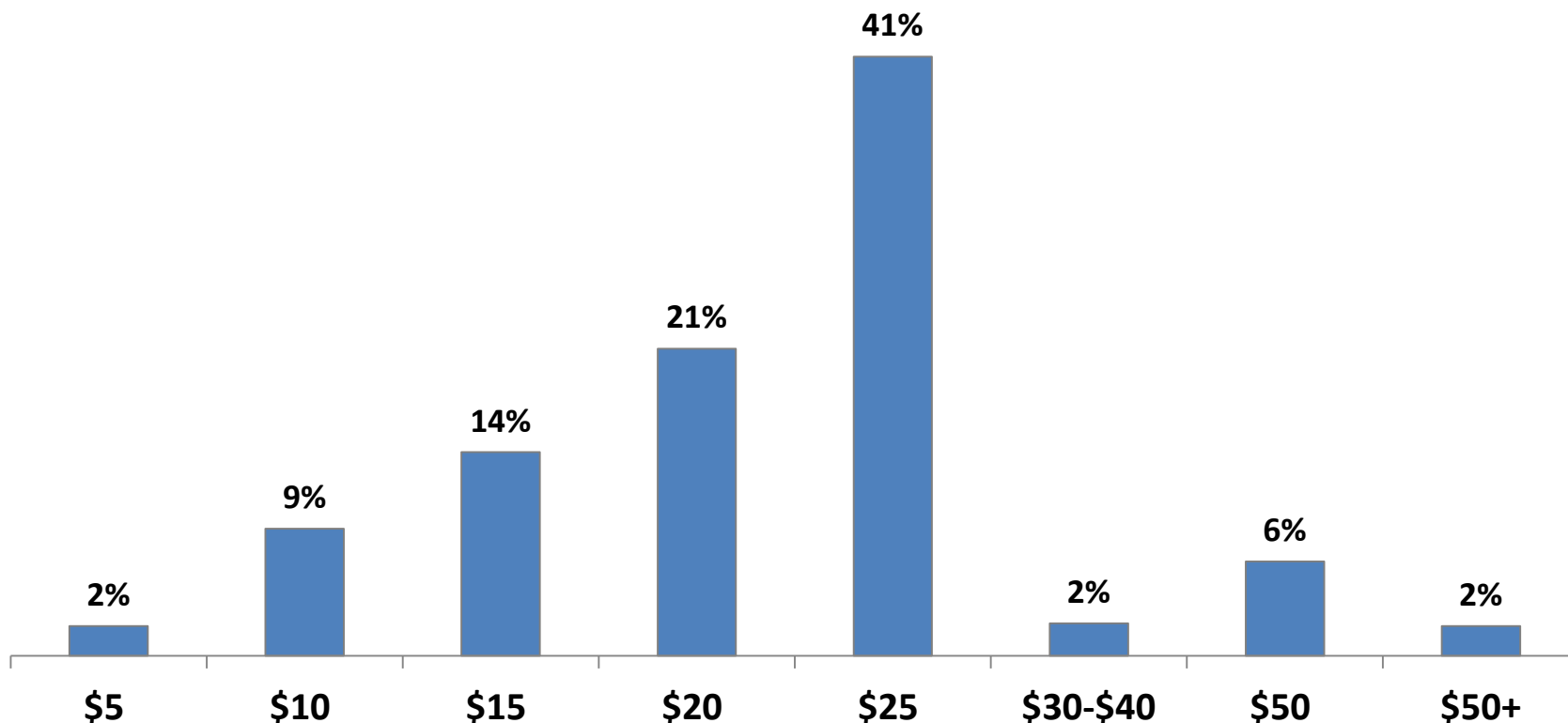
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In order to drive a change in behavior, 41% of customers want to save \$25 a month. However, another 46% would be willing to save \$20 or less a month.

## Monthly Savings Desired to Change Behavior

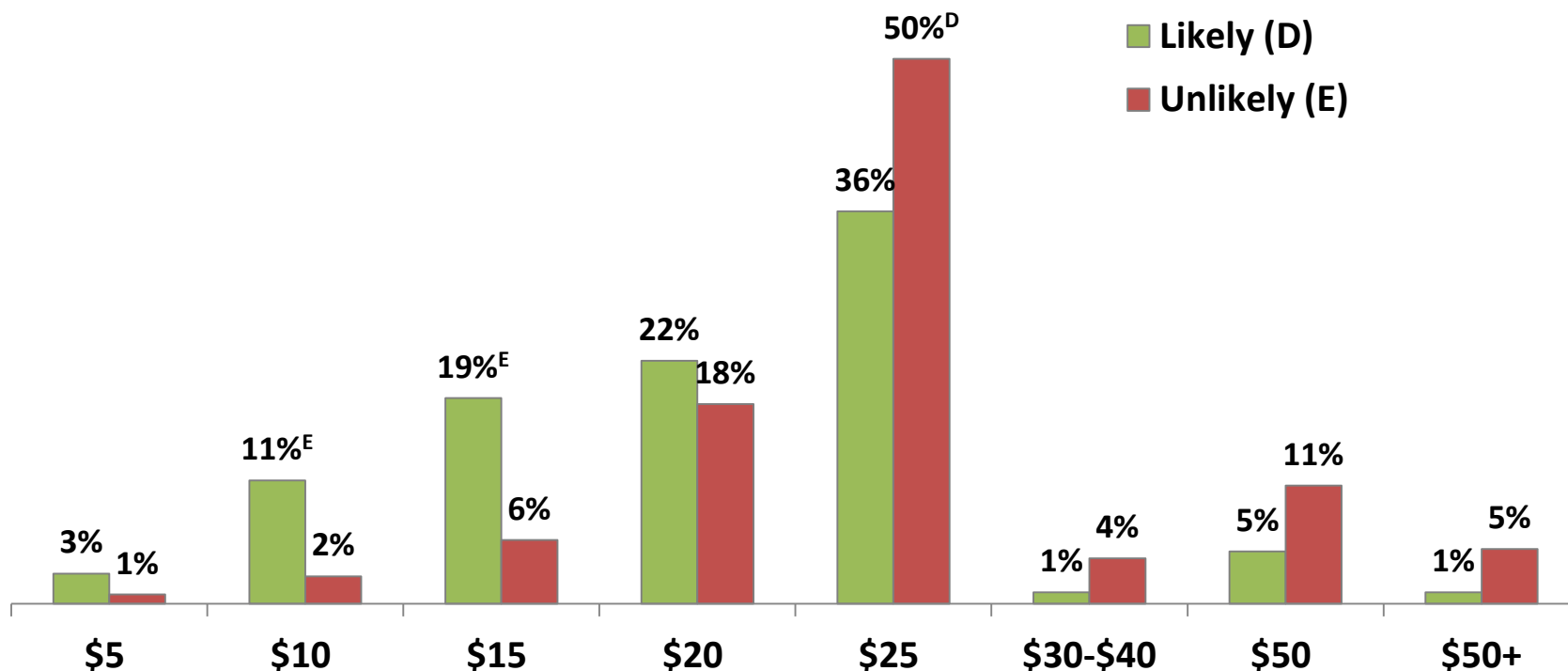


Attachment to Response to AG-1 Question No. 331(a)

Q11: How much would you need to save on your monthly electric bill in order to change your behavior, such as adjusting your thermostat to sometimes less comfortable settings, changing the time of day you use appliances, etc.?

Customers stating they are unlikely to participate in a Smart Meter program require higher savings in order to motivate them to change their behavior than those likely to participate.

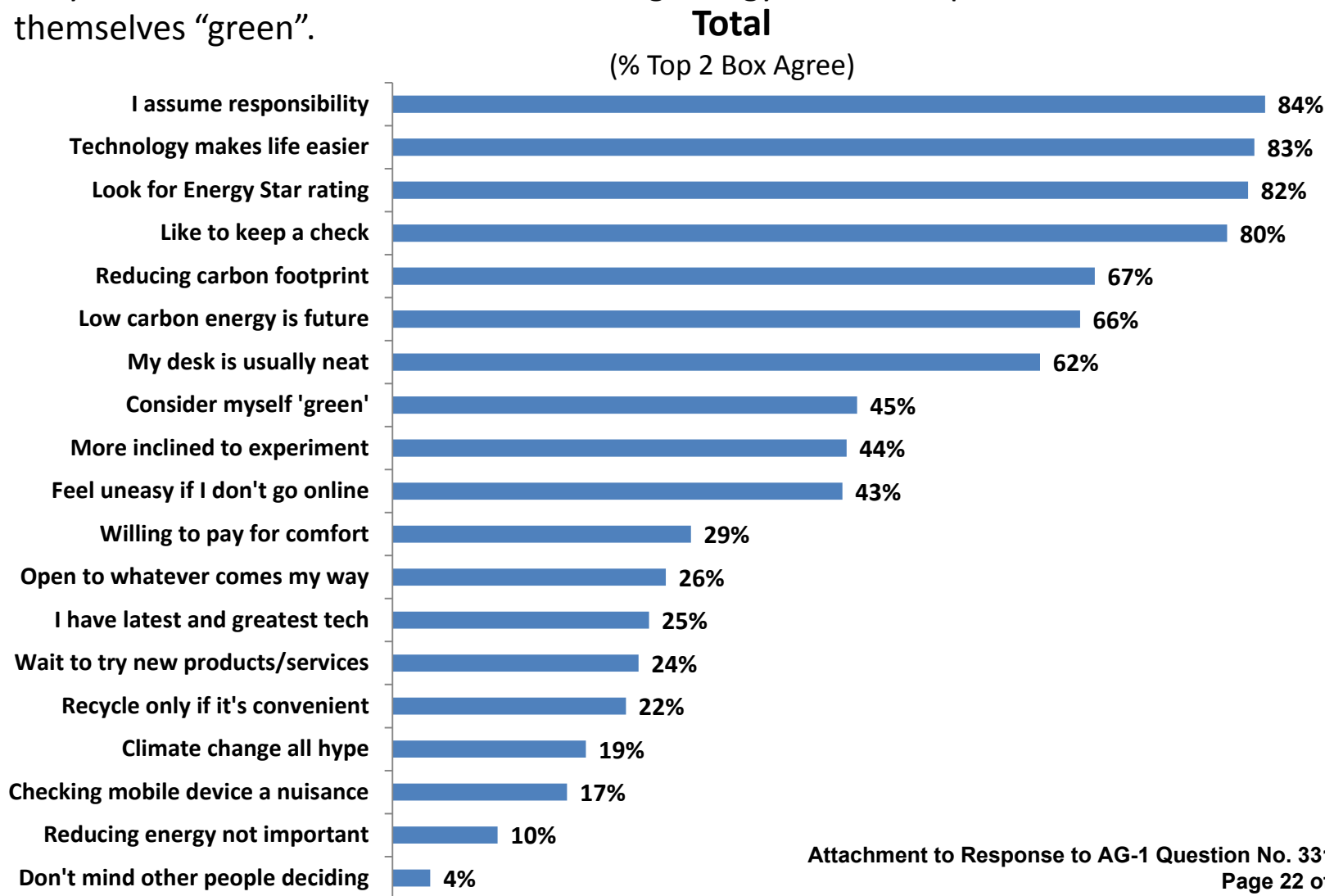
## Monthly Savings Desired to Change Behavior Likely vs Unlikely to Participate\*

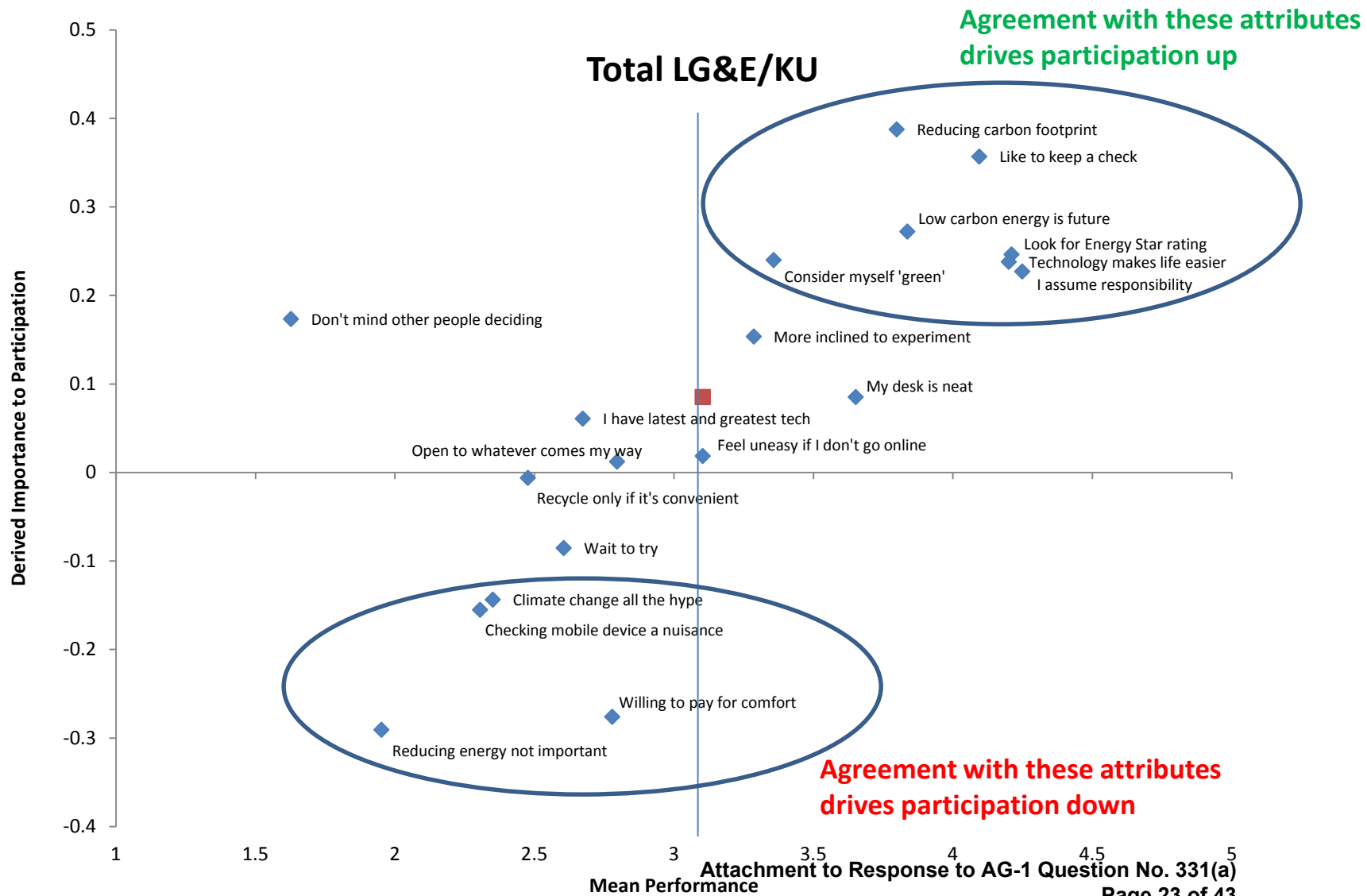


Q11: How much would you need to save on your monthly electric bill in order to change your behavior, such as adjusting your thermostat to save energy, turning off lights, or using energy-efficient settings, changing the time of day you use appliances, etc.?

\*Q8: Based on what you currently know about Smart Meters, how likely would you be to participate in a Smart Meter program if one was offered by [LG&E, K&M, KU, or KU Utilities]? (5pt scale)

Only one in 10 customers felt that reducing energy was not important. Less than half consider themselves “green”.

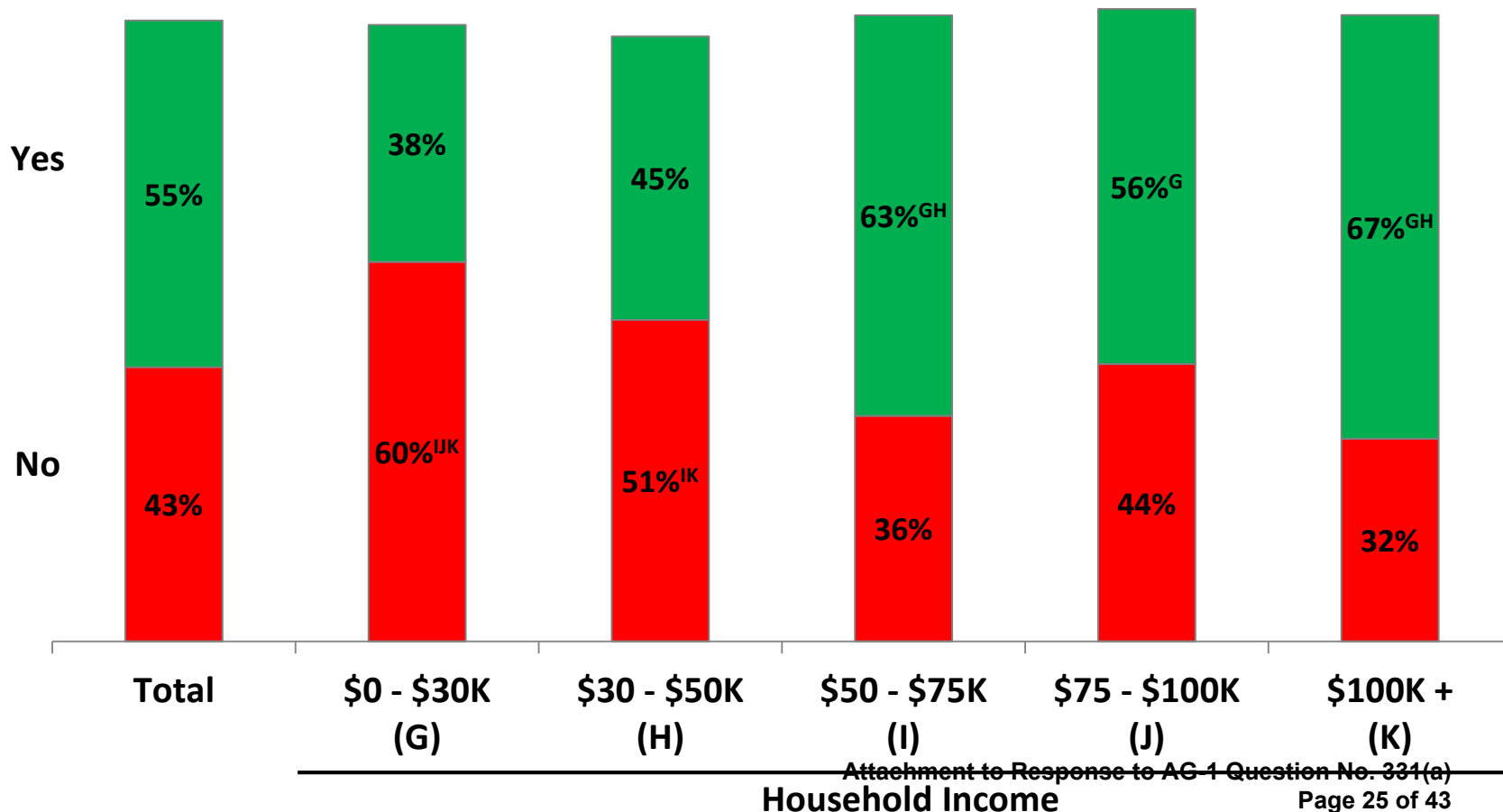




# Thermostat Adjustment

Just over half of all customers have a programmable thermostat in their home. Significantly fewer low income households have a programmable thermostat.

## Programmable Thermostat in Residence



Attachment to Response to AG-1 Question No. 331(a)

Household Income

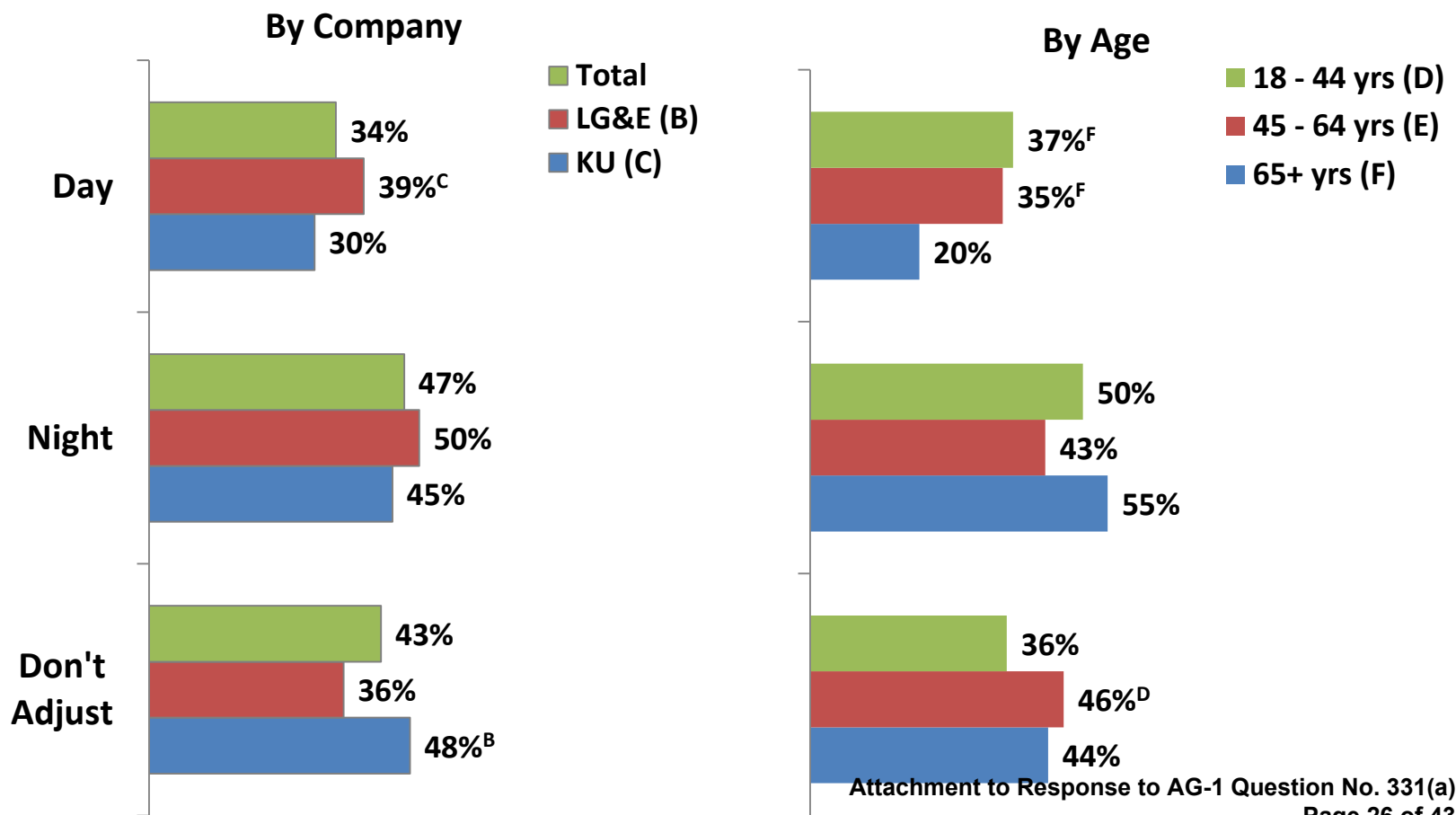
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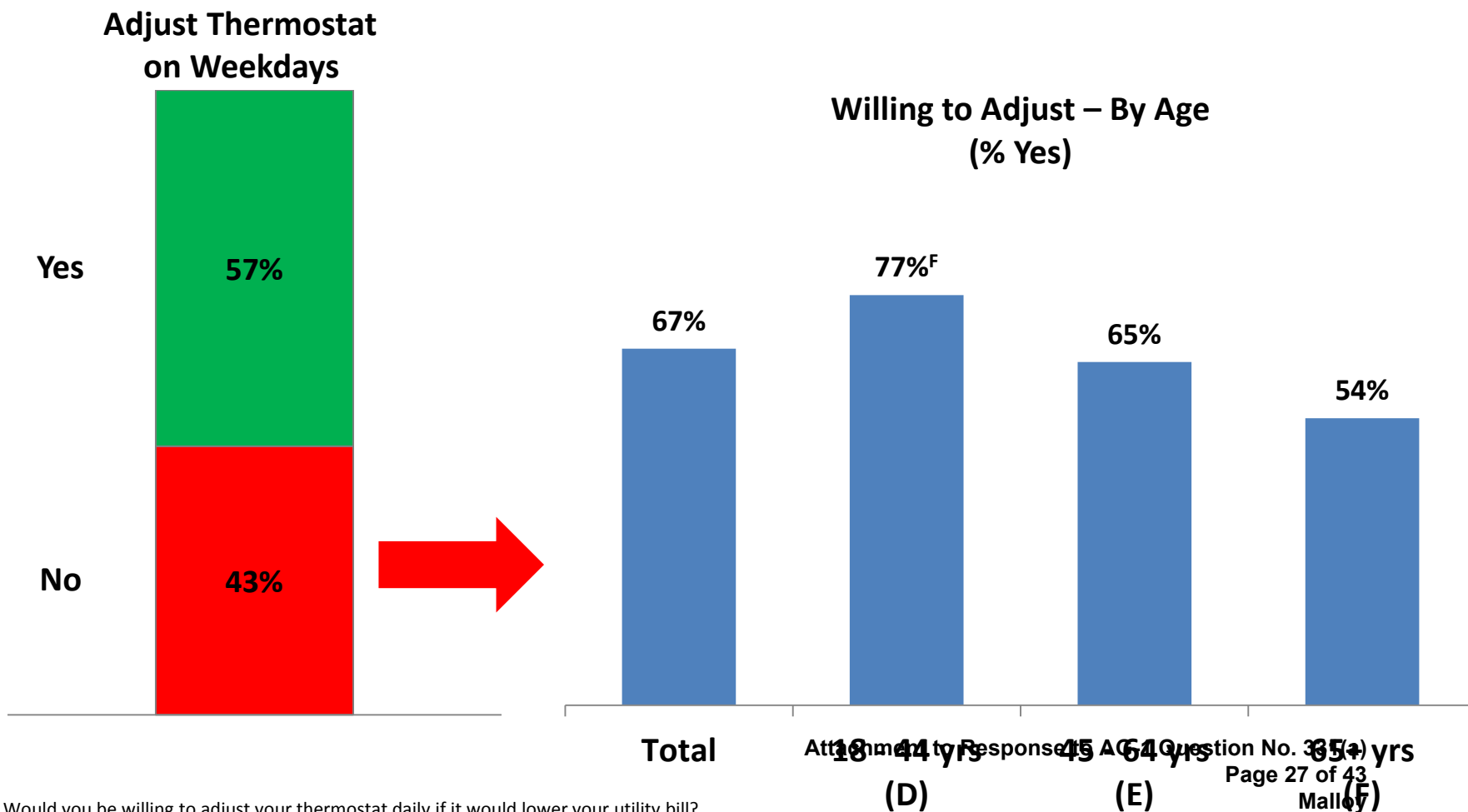
In general, about one-third of customers adjust their thermostat during the day (fewer if 65+ years old) and half adjust at night. Significantly more KU customers don't adjust their thermostat at all.

## When Adjust Thermostat on Weekdays



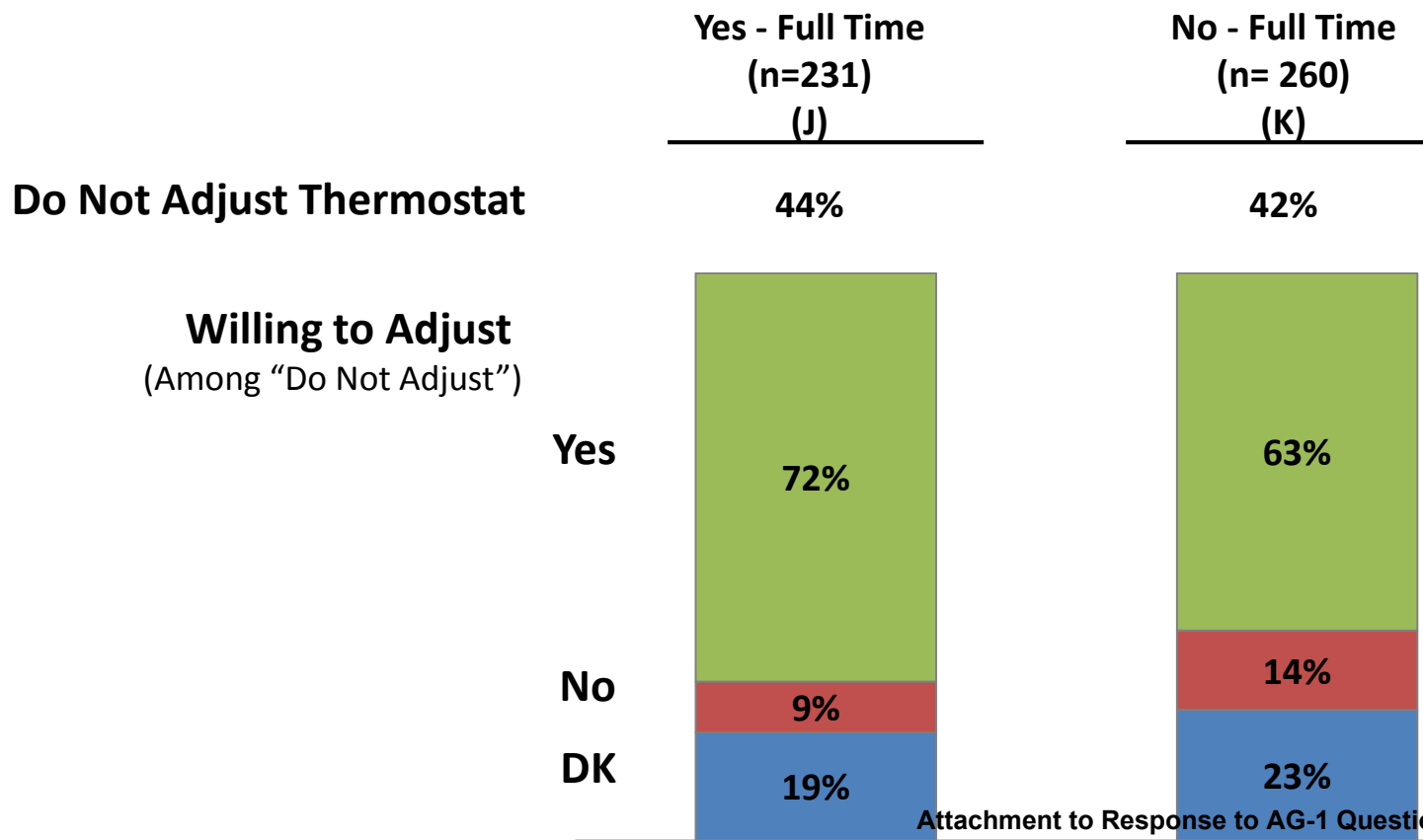
Q2: Thinking about the weekdays (Monday through Friday), when do you or others in your household usually adjust your thermostat (either manually or programmed), if at all? Select all that apply.

Nearly two in five customers currently do not adjust their thermostat, however two-thirds reported they would be willing to adjust if it would lower their utility bill. Willingness to adjust declines as age increases.



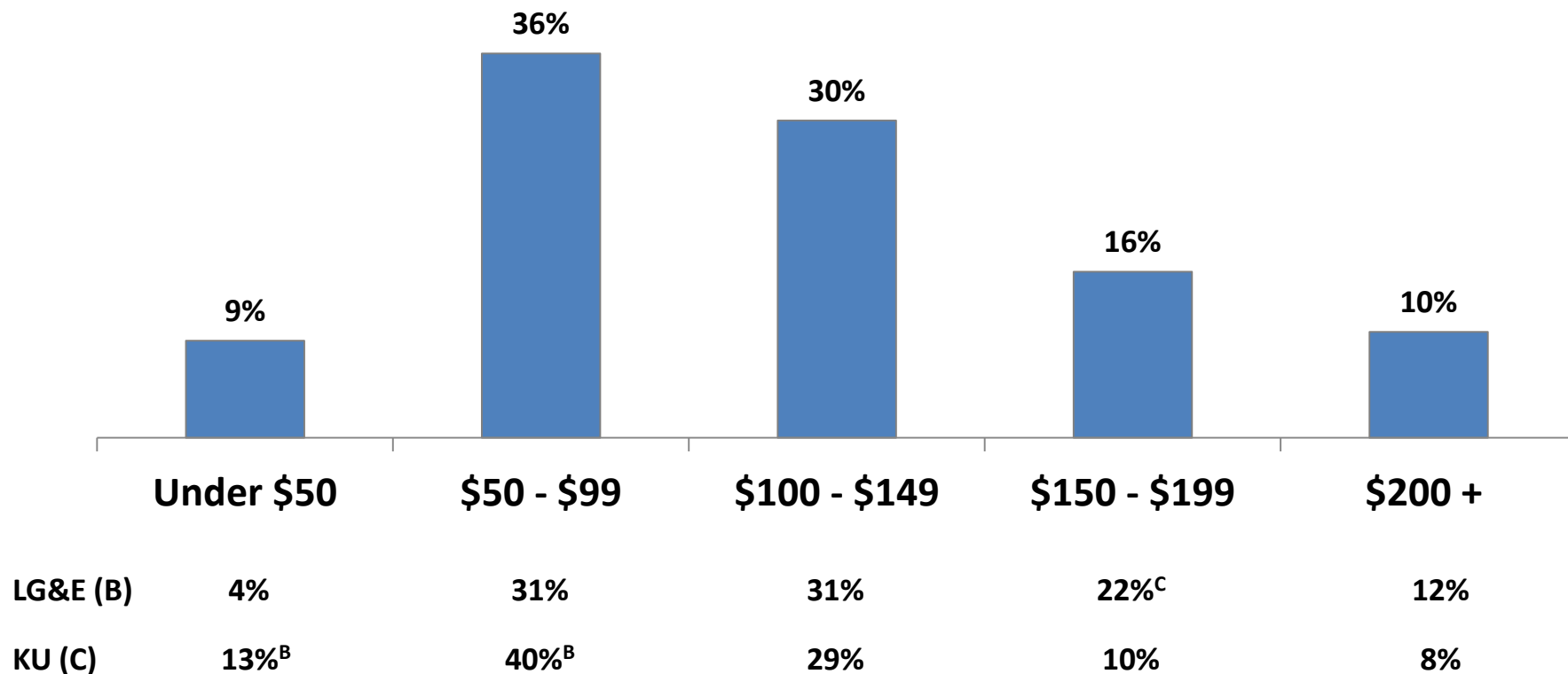
Just under half of households where all adults work full time outside of the home do not adjust their thermostat, comparable to non-full time households. However, full time working households are more willing to adjust if it will save them money on their bill.

## Thermostat Adjustment - All Adults Employed Full Time



Two-thirds of customers reported that their most recent utility bill was between \$50 to \$150. Bills for LG&E customers skewed higher than KU.

**Most Recent Utility Bill  
(% of LG&E/KU Customers)**

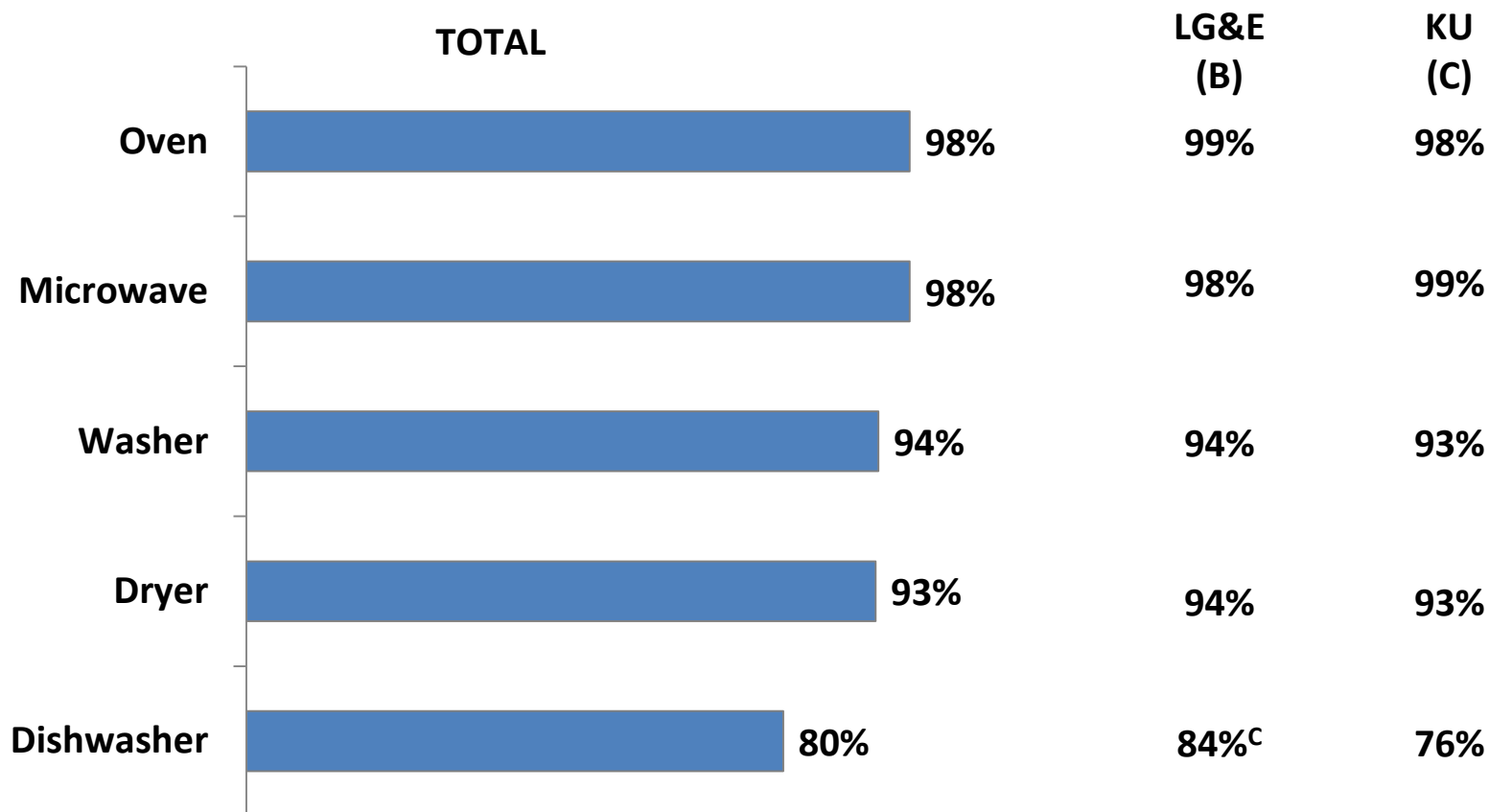


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# Appliance Usage

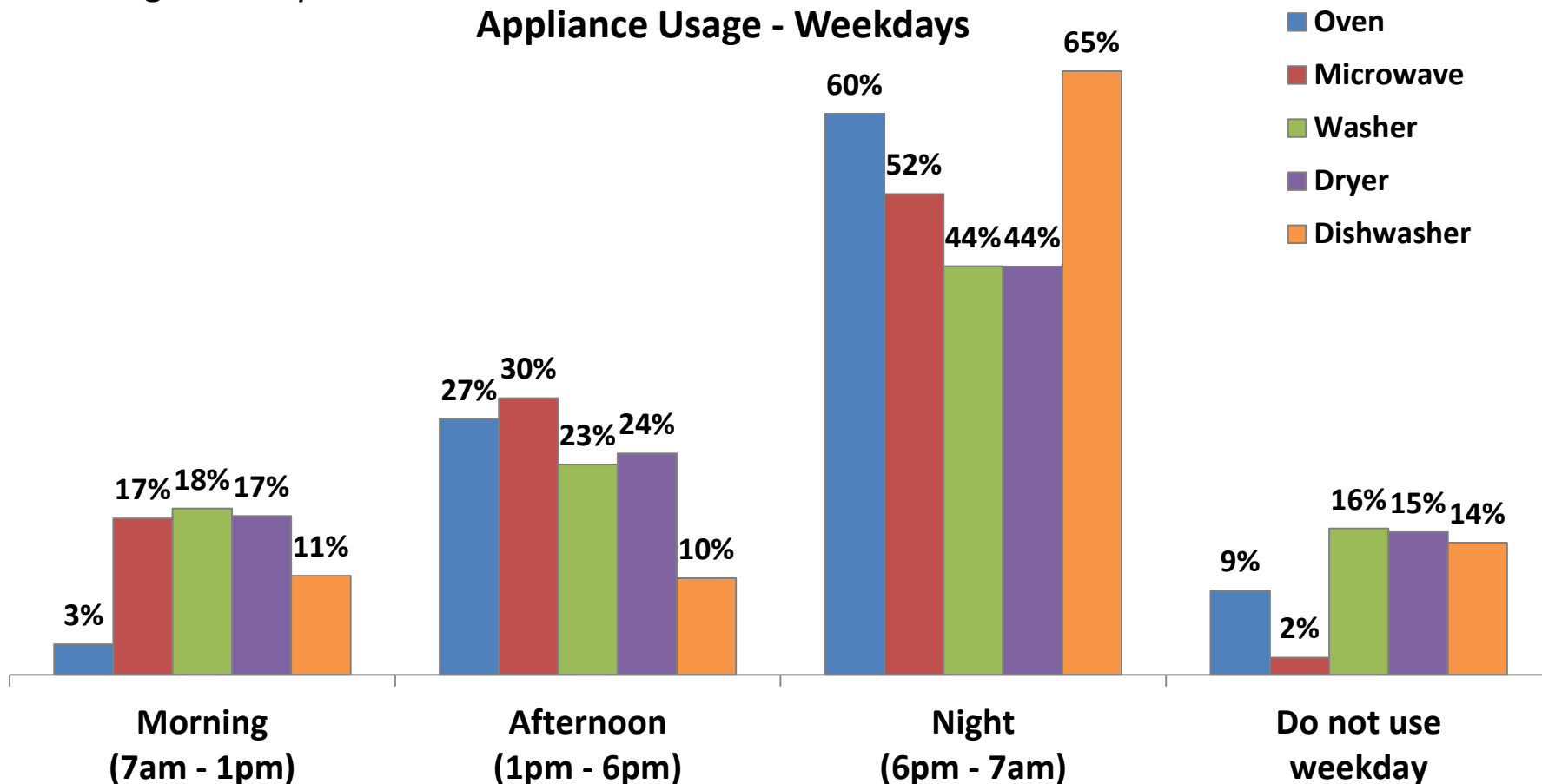
Nearly all customers own an oven and/or microwave, while 4 in five customers owns a dishwasher. Significantly more LG&E customers own a dishwasher than KU.

## Appliance Ownership



During weekdays, all appliances are used most heavily after 6pm, particularly the dishwasher and oven. On average, about 15% of customers don't use their washer, dryer or dishwasher at all during weekdays.

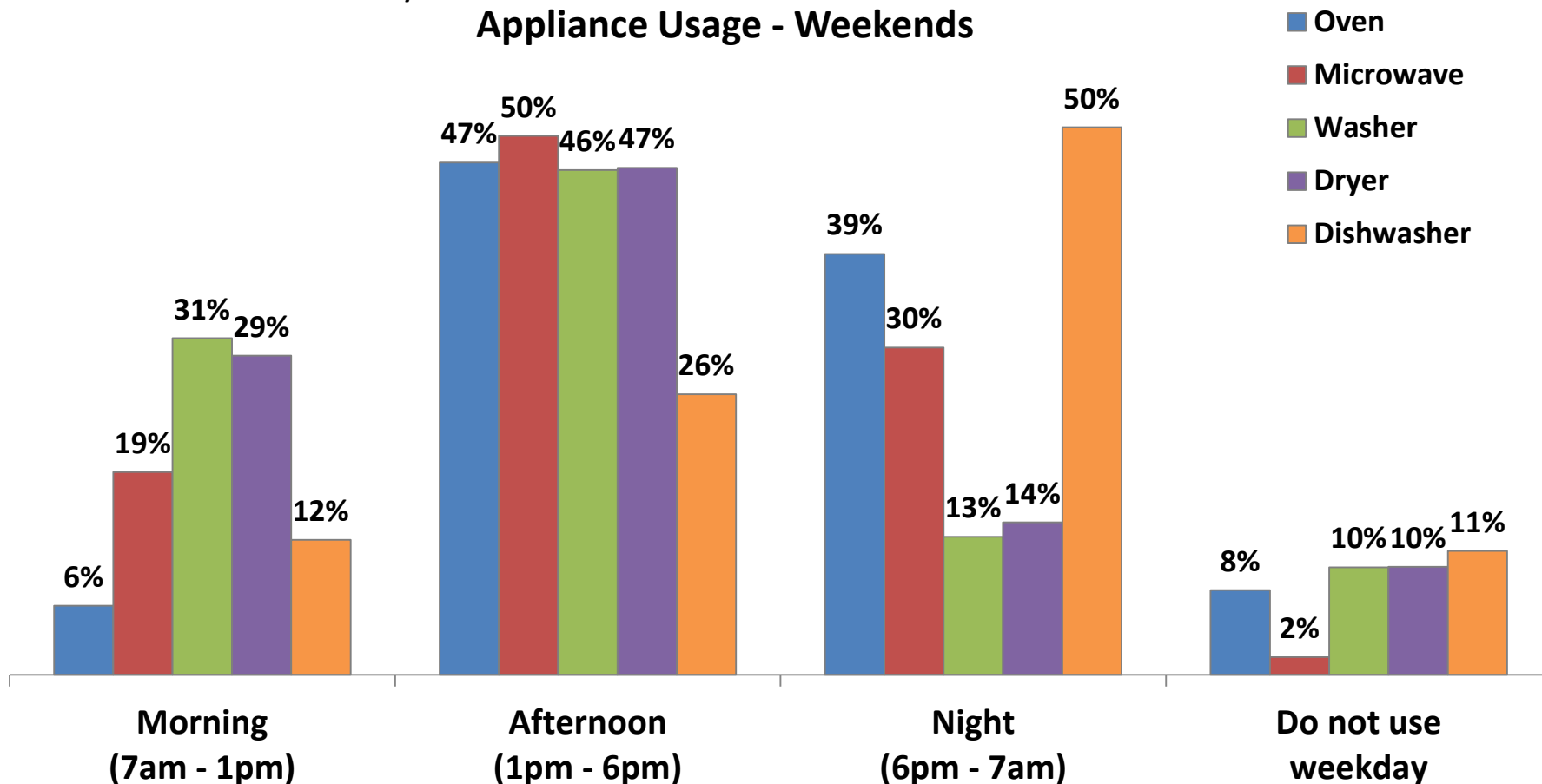
### Appliance Usage - Weekdays





On the weekends, usage spikes in the afternoon for all appliances, except the dishwasher which half of customers still use at night. Washer and dryer usage increases in the morning on the weekend versus weekdays.

### Appliance Usage - Weekends



During the week, appliance usage is heaviest at night for younger households (18-64 years), but tends to shift to the afternoon on weekends.

## Appliance Usage by Age Group

(% of Respondents)

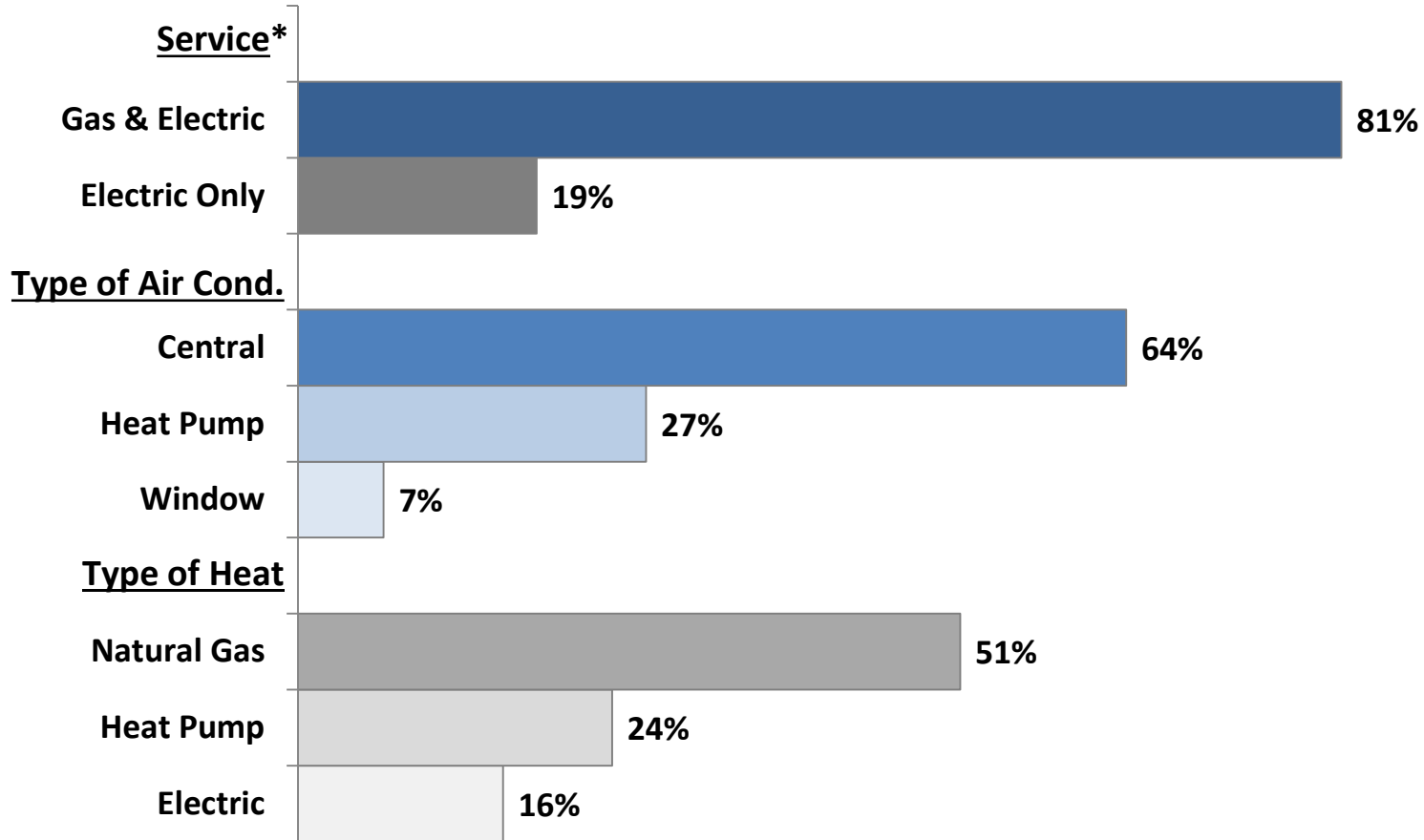
	Washer			Dryer			Oven			Dishwasher			Microwave		
<b>Weekdays</b>	18-44 (D)	45-64 (E)	65+ (F)	18-44 (D)	45-64 (E)	65+ (F)	18-44 (D)	45-64 (E)	65+ (F)	18-44 (D)	45-64 (E)	65+ (F)	18-44 (D)	45-64 (E)	65+ (F)
Morning (7am-1pm)	9	16 <sup>D</sup>	54 <sup>DE</sup>	8	17 <sup>D</sup>	48 <sup>DE</sup>	2	4	4	5	13 <sup>D</sup>	13	10	20 <sup>D</sup>	22
Afternoon (1pm-6pm)	18	25	28	18	25	34 <sup>D</sup>	22	28	42 <sup>D</sup>	11	9	17	28	28	42
Night (6pm-7am)	56 <sup>EF</sup>	42 <sup>F</sup>	14	56 <sup>EF</sup>	42 <sup>F</sup>	14	72 <sup>EF</sup>	57 <sup>F</sup>	38	71	63	57	60 <sup>F</sup>	50 <sup>F</sup>	35
Do Not Use Weekday	18 <sup>F</sup>	16 <sup>F</sup>	4	18 <sup>F</sup>	16 <sup>F</sup>	4	4	11 <sup>D</sup>	16 <sup>D</sup>	14	15	13	2	2	2
<b>Weekends</b>	18-44 (D)	45-64 (E)	65+ (F)	18-44 (D)	45-64 (E)	65+ (F)	18-44 (D)	45-64 (E)	65+ (F)	18-44 (D)	45-64 (E)	65+ (F)	18-44 (D)	45-64 (E)	65+ (F)
Morning (7am-1pm)	27	33	32	26	31	32	5	7	5	12	13	9	9	25 <sup>D</sup>	18
Afternoon (1pm-6pm)	56 <sup>EF</sup>	45 <sup>F</sup>	22	56 <sup>EF</sup>	46 <sup>F</sup>	20	50	47	38	37 <sup>EF</sup>	20	19	60 <sup>EF</sup>	45	44
Night (6pm-7am)	15 <sup>F</sup>	13	6	16	14	8	41	36	45	44	55 <sup>D</sup>	49	30	29	36
Do Not Use Weekend	3	9 <sup>D</sup>	40 <sup>DE</sup>	3	9 <sup>D</sup>	40 <sup>DE</sup>	3	10 <sup>D</sup>	11	8	11	23 <sup>D</sup>	1	2	2

Attachment to Response to AG-1 Question No. 331(a)

# Demographics

# Residence Profile

The majority of LG&E customers surveyed have gas and electric service. About two-thirds of all customers have central air conditioning and half use natural gas.



\* Asked among LG&E customers only

Q13: Are you an LG&E customer for electric service only, or for both gas and electric service?

Q14: What is the primary type of air conditioning used in your residence, if any?

Q15: What is the primary type of heating used in your residence?

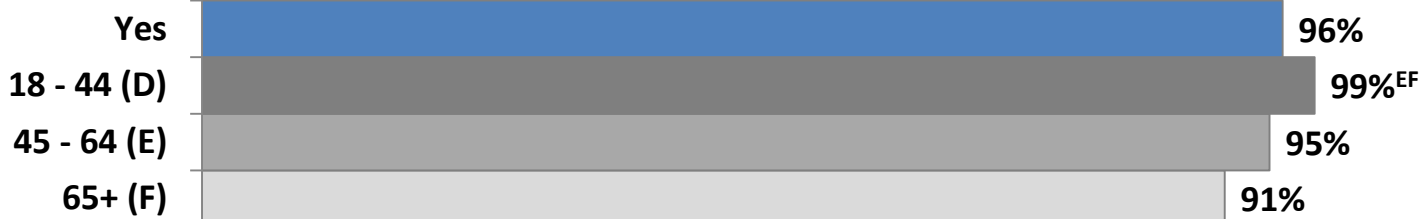
Although most customers own a cell phone, fewer than two-thirds own a Smartphone and ownership is significantly lower among older age groups. High internet access is a function of this being an internet study.

### Access to Internet

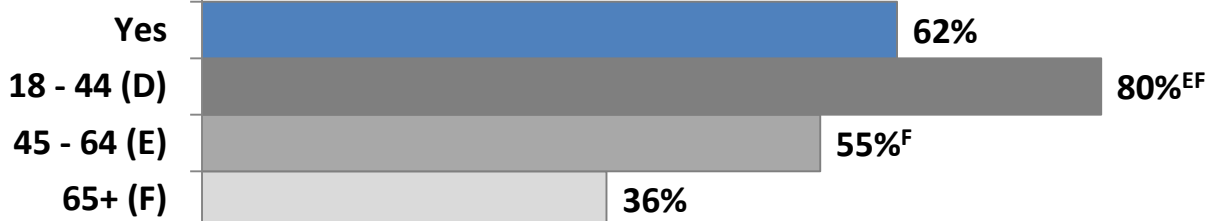
#### at Residence



#### Own Cell Phone



#### Smartphone\*



\* Asked among "Yes" to Q17 - Own a Cell Phone?

Q16: Do you have access to the internet at your residence?

Q17: Do you own a cell phone?

Q18: Is your cell phone a Smartphone? That is, a phone that allows you to download and run applications or apps, and includes other advanced features.

# Demographic Profile

Education		Number of Children Under 18		Income	
1 <sup>st</sup> through 8 <sup>th</sup> grade	0.4%	0	66.7%	Under \$10,000	2.2%
Some high school	0.6%	1	12.5%	\$10,000 - \$20,000	6.7%
High school grad or equivalent	8.1%	2	11.1%	Over \$20,000 - \$30,000	7.3%
Some college or technical school	30.7%	3 or more	7.1%	Over \$30,000 - \$40,000	9.9%
College graduate	32.7%	Prefer not to answer	2.6%	Over \$40,000 - \$50,000	13.5%
Grad/post-grad school	26.6%	<b>Employed Full-Time Outside Home</b>		Over \$50,000 - \$75,000	20.4%
Prefer not to answer	1.0%	Yes	46.6%	Over \$75,000 - \$100,000	14.7%
<b>Number of People in Household</b>		No	52.4%	Over \$100,000 - \$150,000	12.5%
1	23.4%	Prefer not to answer	1.0%	Over \$150,000 - \$200,000	5.4%
2	37.7%	<b>Sex</b>		Over \$200,000	2.8%
3 or 4	28.8%	Male	48.6%	Prefer not to answer	4.6%
5 or more	9.3%	Female	49.2%		
Prefer not to answer	0.8%	Prefer not to answer	2.2%		

### Attachment to Response to AG-1 Question No. 331(a)

D1: What was the last grade or level of schooling that you completed?, D2: In what range does your total household income fall (before taxes)?, D3: Including yourself, how many people live in your household?, D4: How many children under the age of 18 live in your household?, D5: Are all adults in your household employed full-time outside of the residence?, and D6: Are you male or female?

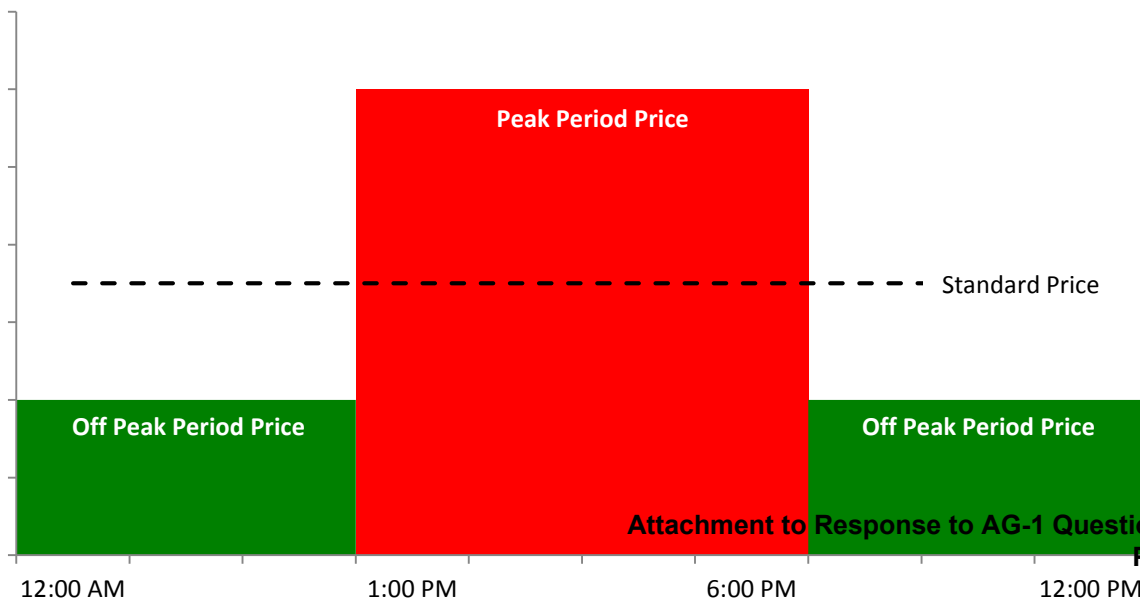
# Appendix



## Time of Use

Under a time-of-use rate, the price a customer pays varies by season and by time of day. Prices are lower during “off-peak” hours, like nighttime, weekend and morning hours. Prices are higher during peak hours of electricity use, when demand is greatest.

Because time-of-use prices differ throughout the day, customers have an opportunity to save money by shifting electricity use to off-peak hours. Steps could include adjusting thermostats during peak hours; installing timers on water heaters, dehumidifiers and other equipment to make sure they are off during peak times; and postponing laundry and other activities until off-peak hours when demand and prices are lower. Customers who are unable or not willing to shift electricity use, would end-up paying more on the Time-of-Use rate.

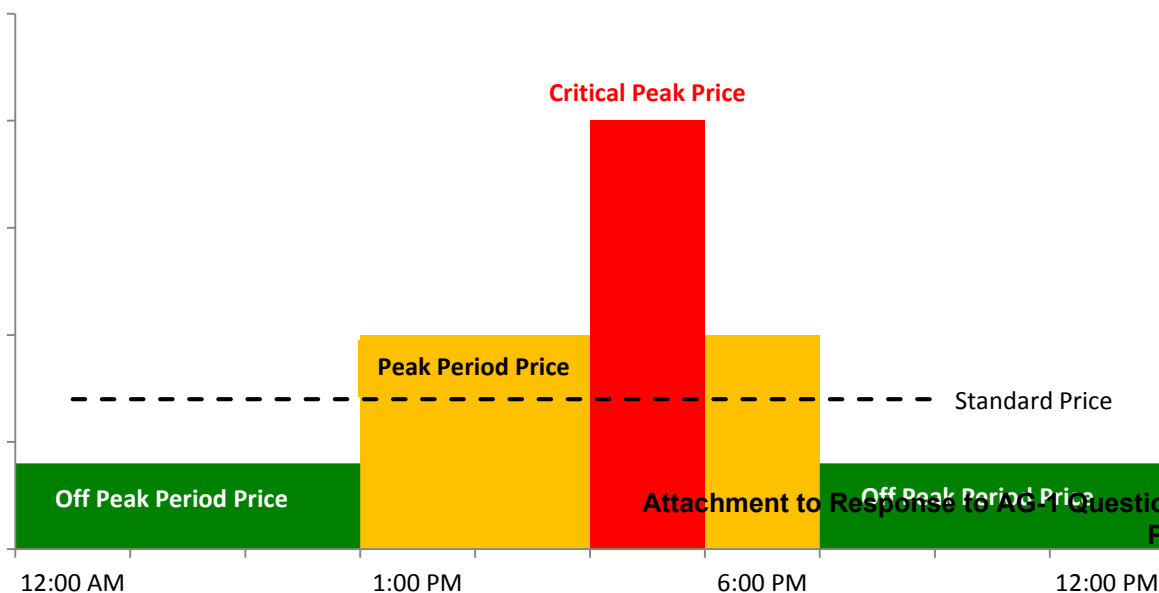


## Critical Peak Pricing

Under a Critical Peak Pricing rate, the price a customer pays varies by season and by time of day. Customers on the Critical Peak Pricing plan benefit if they can adjust their use of electricity to “off-peak” hours, like mornings, nighttime and weekends. Critical Peak Pricing customers also have an additional opportunity to save money if they agree that when the electrical system occasionally experiences a very high demand for electricity, they will respond to the situation by further reducing their use of electricity during that time period.

Critical peak pricing alerts can be sent to a customer’s mobile device, email, telephone, or even through an in-home display.

Customers who are unable or not willing to shift electricity use or respond to a critical peak pricing alert, could end-up paying more on the Critical Peak Pricing rate.

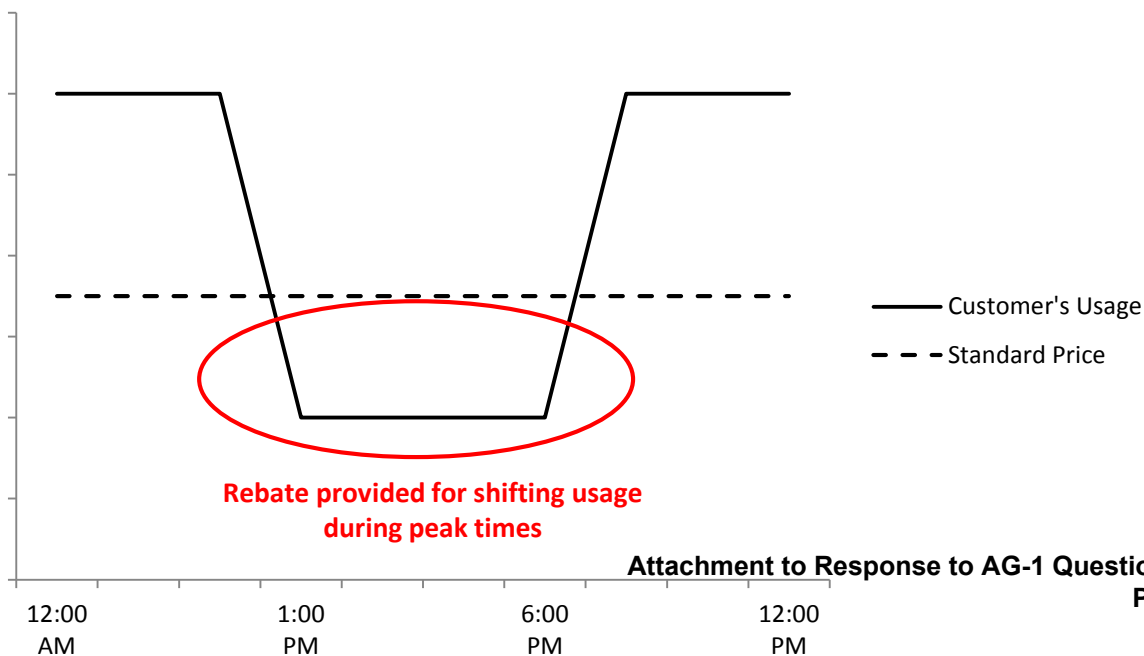


## Peak Time Rebate

The Peak Time Rebate plan is designed for customers who are willing to try to shift electrical usage to off-peak hours, like mornings, nighttime and weekends, but who are not willing to risk paying more for electricity if they fail to shift their usage.

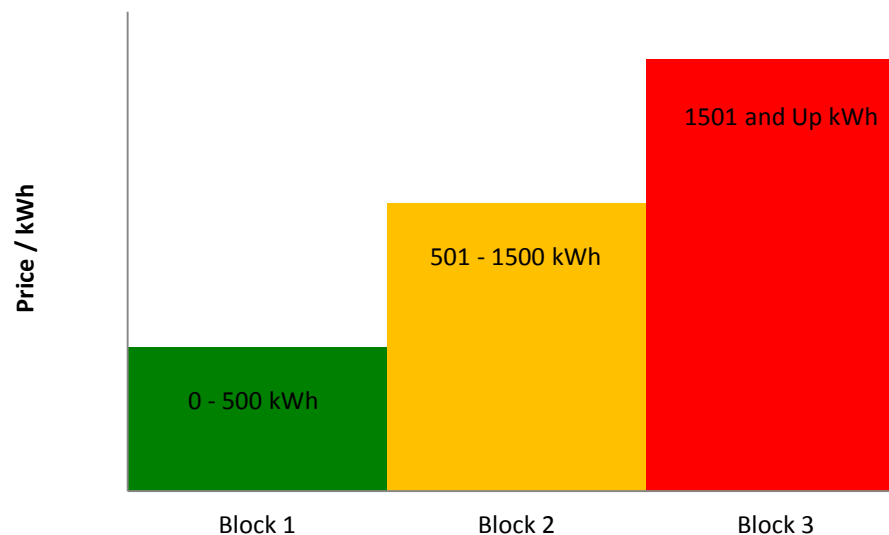
The customer is rewarded for shifting electric usage during peak hours when demand is greatest, but is not penalized for failing to shift electrical usage to off-peak hours.

Consumers' kilowatt hour reduction for the rebate is determined by comparing their usage during the peak period to their baseline usage during certain hours (e.g., 1PM-6PM) for the three to five weekdays prior to the peak period. If their usage during the peak period is less than their baseline usage, they receive a rebate which is based on a price per kilowatt hour saved.



## Inclining Block

The Inclining Block rate is designed for customers who are willing to reduce their overall consumption regardless of the time of day. The monthly pricing structure is designed to provide price intervals of consumption where the amount charged per kilowatt hour for each interval block increases as energy consumption increases. At the beginning of each month, pricing would return to the Block 1 rate.



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**Question No. 332**

**Responding Witness: John P. Malloy**

Q-332. Reference the Malloy testimony at page 25, line 4, which states that the proposed AMS deployment “. . . will improve customer service representatives’ ability to address customers’ questions and concerns regarding individual customer outages, power quality, and energy usage.” Provide summary results from customer-experience transactional surveys from high-bill complaint calls for 2013, 2014, 2015, and 2016. (Customer-experience transactional surveys are described in the Malloy testimony at page 3, line 15.)

A-332.

Residential Agent Answered Telephone Calls  
Customer Experience Study Results

	Overall Satisfaction		First Contact Resolution	
	High Bill Complaint	All Respondents	High Bill Complaint	All Respondents
2013	8.2	9.2	66%	82%
2014	8.4	9.3	72%	84%
2015	8.1	9.4	66%	86%
2016	8.1	9.3	61%	82%
<b>Total</b>	<b>8.2</b>	<b>9.3</b>	<b>67%</b>	<b>84%</b>

Mean Score 1-10 point scale

The primary impact is the ability to resolve the customer’s issue on the first call (referred to as First Contact Resolution). When a meter needs to be re-read to resolve the high bill complaint first contact resolution cannot be achieved. Among customers who stated they called the utilities concerning a high bill complaint from 2013-2016, overall satisfaction decreased 1.9 points when the agent was unable to resolve the issue on the first contact.

	High Bill Complaint	
	Resolved First Contact	Resolved 2+ Contacts
<b>Overall Satisfaction 2013-2016</b>	<b>9.6</b>	<b>7.7</b>

Mean Score 1-10 point scale

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**Question No. 333**

**Responding Witness: John P. Malloy**

- Q-333. Reference the Malloy testimony at page 25, line 7, which states that the proposed AMS deployment will enhance the Companies' ability to ". . . localize and resolve power outages, which will help reduce customer outage times."
- a. Describe how the Companies will use the proposed AMS system to localize and resolve power outages and reduce customer outage times.
  - b. Quantify the improvements in the Companies-wide SAIDI (and, if applicable, SAIFI) the Companies anticipate from the use of the AMS system in this manner. Include all calculations and assumptions used in the development of this estimate in your response.
  - c. Provide any so-called "willingness to pay" research the Companies have conducted on their overall residential customer base regarding improved SAIDI and SAIFI performance.
  - d. If the Companies have conducted no such research, use the proprietary online customer panel of 1500 LG&E and KU customers referenced in Mr. Malloy's testimony (page 4, line 1) to conduct such research and report the results. In such research, reference various SAIDI improvements in minutes per year (i.e. 5 minutes, 10 minutes, etc.) and reference various monthly incremental bill impacts (i.e., \$1 per month, \$3 per month, \$5 per month, etc.)
- A-333.
- a. AMS will help the Company increase reliability by integrating AMS-initiated outage and voltage alerts with Company Outage Management Systems. AMS communication has the ability to alert system operators of a service outage before customers report the outage, allowing faster response and restoration times. This data can also be used to proactively identify distribution issues that can be corrected through corrective maintenance that otherwise would go unnoticed until asset failure.

- b. The Company estimated a reduction of 9.6 minutes spent identifying outage location as a Customer Average Interruption Duration Index (CAIDI) which is the ratio of SAIDI to SAIFI. The Company did not calculate the individual impact on SAIDI or SAIFI. The calculation is shown on page 155 of 169 in Exhibit JPM-1.
- c. Company has not performed “willingness to pay” research on overall residential customer base regarding improved SAIDI and SAIFI performance.
- d. Please see the response to c. above. This request calls for original work the Company has not performed.



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**Question No. 334**

**Responding Witness: John P. Malloy**

- Q-334. Reference the Malloy testimony at page 25, line 8, which states that under the proposed deployment of AMS meters, “. . . customers will be able to participate in numerous programs where information is shared via outbound call, email, or text message, including information about power disruptions, voltage spikes, demand response events, power restorations, and other notifications more specific to a customer's usage.” The OAG is aware of one such type of program, offered by several utilities, which the utilities report is popular with customers. Generally known as high bill alert programs, these programs provide customers who register with weekly outbound calls, emails, or text messages (at the customer's option) which estimate the size of their next monthly bill using current month usage-to-date information from their AMS meter. One of the best examples is Southern California Edison's "Budget Assistant"<sup>3</sup> Duke Energy Kentucky proposed to make such a program, tentatively labeled Predictive Usage Estimator Alerts, available as part of its smart meter CPCN<sup>4</sup> Describe any commitment the Companies are willing to make regarding the implementation of such a program for its customers within 6 months of the completion of the proposed AMS deployment.
- A-334. The Companies are aware of the Southern California Edison's program and are willing to investigate the costs and benefits of providing such a program to customers after full deployment of AMS.

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<sup>3</sup> More information is available at <https://www.sce.com/wps/portal/home/residential/my-account/budget-assistant-and-you>

<sup>4</sup> See Exhibit 9, Weintraub pre-filed testimony, at page 10, line 6 in Kentucky PSC Case No. 2016-00152.

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**Question No. 335**

**Responding Witness: John P. Malloy**

- Q-335. Reference the Malloy testimony at page 26, line 17, which states that the Companies will not offer a smart meter opt-out option. Describe any commitment the Companies would be willing to make regarding a smart meter opt-out option if such an option were to be accompanied by a tariffed incremental rate based on the initial and ongoing cost of individual customers' choices to opt-out of smart meter installation.
- A-335. The Companies have not offered a customer opt-out option because such an option can limit operational efficiencies and affect other meters and the cost of the system. If an opt-out option is required, the Companies' position is those who elect to opt-out should pay the full costs related to their election as more fully described in in Administrative Case No. 2012-00428 Report of the Joint Utilities, pages 17-28, Opt-Out Provisions  
[http://psc.ky.gov/PSCSCF/2012%20cases/2012-00428/20140630\\_Joint%20Parties\\_Report%20Pursuant%20to%20the%20August%2023,%202013%20Informal%20Conference.pdf](http://psc.ky.gov/PSCSCF/2012%20cases/2012-00428/20140630_Joint%20Parties_Report%20Pursuant%20to%20the%20August%2023,%202013%20Informal%20Conference.pdf)

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**Question No. 336**

**Responding Witness: John P. Malloy**

- Q-336. Reference the AMS Business Case provided as part of Exhibit JPM-1, page 19, regarding the implementation of Green Button download my data functionality. Will the Companies commit to implementing Green Button standards for Connect My Data using standard authorization processes defined by the Internet Engineering Task Force?
- A-336. The Company does not commit to implementing Green Button standard for Connect My Data at this time.

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**Question No. 337**

**Responding Witness: John P. Malloy**

- Q-337. Reference the AMS Business Case provided as part of Exhibit JPM-1, pages 22 and 23, regarding the use of AMS to provide data for Volt-VAr Control (VVC). To achieve the 2-3% energy conservation savings cited by the Companies, VVC must be highly automated; operate 24 hours a day, 365 days a year; and utilize remote, automated operation of several types of field devices (load tap changers, voltage regulators, and capacitor banks).
- a. The Companies' testimony on Distribution Automation makes no reference to VVC or remote field device operation, and the AMS Business Case includes no energy conservation benefits from VVC. Clarify the Companies' intentions regarding VVC implementation.
  - b. Confirm or deny that the proposed AMS system and mesh communications network can provide the near real-time data required for automated, continuous VVC operation.
  - c. Given the Companies' CPCN proposals for AMS and Distribution Automation, and the extensive conservation benefits available as cited by the Companies, explain why the Companies have not included automated, continuous VVC in one of its CPCNs.
  - d. If the Companies are not including VVC in either the AMS or Distribution Automation CPCN, explain why the Companies tout AMS data availability for VVC as a benefit.
- A-337.
- a. The Companies will conduct a Volt/VAR Optimization ("VVO") pilot project in 2017 to gather data and evaluate the impacts to energy (kWh) and demand (kW) of a VVO system. The pilot project will be conducted at an LG&E substation on one transformer with two circuits. The pilot project will be conducted through the end of 2017. The results of the pilot project will be used to evaluate expansion of VVO to additional substations.

- b. The proposed AMS system and mesh communications network can provide the data inputs required for a VVO system.
- c. See response to AG Q337a. Company continues to evaluate VVO technologies and may seek to expand VVO at a future date based upon the experience gained through the pilot.
- d. A closed-loop feedback Volt/VAR Optimization system uses real-time voltage and sensor data to support voltage control decisions on devices such as transformer load tap changers, capacitor banks, line voltage regulators and line voltage monitors. The normal voltage reduction is in the range of 3% to 5%. When AMS data are available to the VVO system, it can provide approximately a 1% greater reduction in voltage, thus resulting in greater reductions in energy (kWh) and demand (kW) on the distribution circuit.

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**Question No. 338**

**Responding Witness: John P. Malloy**

- Q-338. Reference the AMS Business Case provided as part of Exhibit JPM-1, page 31. Explain why the Companies chose a 20-year benefit period for their AMS business case.
- A-338. Based on experience and discussions with the planned meter vendor, Landis + Gyr, the Company expects meters and indices deployed during the program to last 20 years on average.

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**Question No. 339**

**Responding Witness: John P. Malloy**

Q-339. Reference the AMS Business Case provided as part of Exhibit JPM-1, page 38, and the table “AMS Cost-Benefit Summary (2016-2039)”. Recalculate the Net Present Value column of this table using all projected Nominal Values in the current business case using a 15-year benefit period rather than a 20-year benefit period.

A-339. See table below.

<b>AMS Cost-Benefit Summary (2016-2034)</b>		
<b>\$M</b>	<b>Nominal Values</b>	<b>Net Present Values</b>
<b>(Costs)</b>		
Total Project Costs (Capital)	(320.4)	(299.0)
Total Project Costs (O&M)	<u>(30.0)</u>	<u>(23.1)</u>
<b>Total Project Costs</b>	<b>\$ (350.4)</b>	<b>\$ (322.1)</b>
Total Recurring Costs (Capital)	(16.0)	(8.3)
Total Recurring Costs (O&M)	<u>(91.5)</u>	<u>(44.3)</u>
<b>Total Recurring Costs</b>	<b>\$ (107.5)</b>	<b>\$ (52.6)</b>
<b>Meter Retirement</b>	<b>\$ (39.7)</b>	<b>\$ (3.8)</b>
<b>Total Lifecycle Costs</b>	<b>\$ (497.6)</b>	<b>\$ (378.5)</b>
<b>Benefits</b>		
Operational Savings	265.5	132.0
Revenue Enhancement	334.1	157.7
ePortal Benefit	<u>113.8</u>	<u>53.8</u>
<b>Total Lifecycle Benefits</b>	<b>\$ 713.4</b>	<b>\$ 343.4</b>
<b>Net Benefits vs (Costs)</b>	<b>\$ 215.8</b>	<b>\$ (35.1)</b>

Discount Rate: 6.62%



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**Question No. 340**

**Responding Witness: Daniel K. Arbough**

- Q-340. Reference the AMS Business Case provided as part of Exhibit JPM-1, page 38. The present value of AMS costs and benefits appear to have been calculated using a discount rate of 6.62%. Explain why the Companies chose this discount rate for its AMS business case.
- A-340. The discount rate used in the net present value calculation of the AMS project is the Weighted Average Cost of Capital (WACC), which is calculated as a function of Company's debt and equity percentages, requested Return on Equity (ROE), debt interest rate, and income tax rate.

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**Question No. 341**

**Responding Witness: John P. Malloy**

- Q-341. Reference the AMS Business Case provided as part of Exhibit JPM-1, page 32. The Companies project a savings of \$166.3 million over 20 years from the ePortal. Provide all calculations and assumptions used to arrive at this projection, including a 20-year breakdown by year.
- A-341. Refer to Exhibit JPM-1, page 157, as well as the attachment to the response to PSC 2-63, for calculations and assumptions related to ePortal savings.

Year	Benefits (\$M)
2017	\$ -
2018	-
2019	4.3
2020	5.5
2021	5.8
2022	6.0
2023	6.2
2024	6.4
2025	6.7
2026	6.9
2027	7.2
2028	7.5
2029	7.8
2030	8.1
2031	8.4
2032	8.7
2033	9.0
2034	9.4
2035	9.7
2036	10.1
2037	10.5
2038	10.9
2039	11.3
	<u>\$ 166.3</u>

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**Question No. 342**

**Responding Witness: John P. Malloy**

- Q-342. Reference the AMS Business Case provided as part of Exhibit JPM-1, page 34. The Companies project a savings of \$4.1 million over 20 years from more rapid outage restoration. Provide all calculations and assumptions used to arrive at this projection, including a 20-year breakdown by year, for each of the following savings categories cited by the Companies:
- a. Crew Time
  - b. Overtime
  - c. Fleet Costs
  - d. Contractor expenditures
- A-342. Refer to Exhibit JPM-1, page 155, as well as the attachment to the response to PSC 2-63, for the detailed assumptions used to calculate this savings. Please note that the average hourly loaded cost for crew refers to company employee crews. Also, note that the \$4.5 million referenced in Exhibit JPM-1, page 155 is the correct savings included in all calculations, not the \$4.1 stated in the narrative.

Year	Reduced Time	Protected Revenue	Reduced Miles	Total Benefit (\$000s)
2017	\$ -	\$ -	\$ -	\$ -
2018	-	-	-	-
2019	113.6	22.9	30.5	167.0
2020	117.1	22.9	31.2	171.1
2021	120.6	22.9	31.9	175.3
2022	124.2	22.9	32.6	179.6
2023	127.9	22.9	33.3	184.1
2024	131.7	22.9	34.0	188.6
2025	135.7	22.9	34.8	193.3
2026	139.8	22.9	35.5	198.2
2027	144.0	22.9	36.3	203.1
2028	148.3	22.9	37.1	208.3
2029	152.7	22.9	37.9	213.5
2030	157.3	22.9	38.8	218.9
2031	162.0	22.9	39.6	224.5
2032	166.9	22.9	40.5	230.2
2033	171.9	22.9	41.4	236.1
2034	177.1	22.9	42.3	242.2
2035	182.4	22.9	43.2	248.5
2036	187.8	22.9	44.2	254.9
2037	193.5	22.9	45.1	261.5
2038	199.3	22.9	46.1	268.3
2039	205.3	22.9	47.1	275.3
	<b>\$ 3,258.9</b>	<b>\$ 480.4</b>	<b>\$ 803.3</b>	<b>\$ 4,542.6</b>

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**Question No. 343**

**Responding Witness: John P. Malloy**

- Q-343. Reference the AMS Business Case provided as part of Exhibit JPM-1, page 34. The Companies project a savings of \$6.9 million over 20 years from reductions in "OK on Arrival" truck rolls. Provide all calculations and assumptions used to arrive at this projection, including a 20-year breakdown by year, for each of the following savings categories cited by the Companies:
- a. Crew Time
  - b. Fleet Costs
- A-343. Refer to Exhibit JPM-1, page 156, as well as the attachment to the response to PSC 2-63, for calculations and assumptions related to "OK on Arrival" truck roll reductions. Please note that calculation includes reduction in crew time, not fleet costs.
- a. See above.
  - b. Fleet costs were not calculated as part of the \$6.9 million savings.

<b>Year</b>	<b>Benefit (\$000s)</b>
2017	\$ -
2018	-
2019	241.5
2020	248.7
2021	256.2
2022	263.9
2023	271.8
2024	280.0
2025	288.4
2026	297.0
2027	305.9
2028	315.1
2029	324.5
2030	334.3
2031	344.3
2032	354.6
2033	365.3
2034	376.2
2035	387.5
2036	399.2
2037	411.1
2038	423.5
2039	436.2
	<b>\$ 6,925.2</b>

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**Question No. 344**

**Responding Witness: John K. Wolfe**

Q-344. Provide the following data on the Companies' 2015 and 2016 distribution O&M spending:

- a. "Crew" headcount (with "crew" defined as those employees likely to support outage restoration and/or outage investigations).
- b. Average, fully-loaded costs per full-time equivalent employee of the type designated in (a.) above.
- c. Distribution O&M overtime
- d. Distribution Fleet Costs
- e. Distribution O&M Contractor expenditures

A-344.

- a. Crew headcount is 129 for 2015 and 129 for 2016.
- b. The average fully-loaded cost per full-time employee as designated in (a.) above is \$129K in 2015 and \$128K in 2016.
- c. The Distribution Operations O&M overtime was \$840K in 2015 and \$862K in 2016.
- d. The Distribution Operations Fleet Costs were \$1.051M in 2015 and \$855K in 2016.
- e. The Distribution Operations O&M Contractor expenditures were \$3.439M in 2015 and \$3.456M in 2016.

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**Question No. 345**

**Responding Witness: John P. Malloy**

- Q-345. Reference the AMS Business Case provided as part of Exhibit JPM-1, page 34. The Companies project a savings of \$203 million over 20 years from reductions in recurring meter reading. Provide all calculations and assumptions used to arrive at this projection, including a 20-year breakdown by year, for each of the following savings categories cited by the Companies:
- a. Employee overtime
  - b. Contractor usage
- A-345. Refer to Exhibit JPM-1, page 152, as well as the attachment to the response to PSC 2-63, for all calculations and assumptions related to meter reading savings.
- a. There are no employee overtime reductions as part of this savings.
  - b. Savings due to reduced contractor usage are included under the headings "Electric Meter Reading" and "Gas Meter Reading".



Year	Key Management	Electric Meter Reading	Gas Meter Reading	Cost of PSC Inspections	Total Benefit (\$M)
2017	\$ -	\$ -	\$ -	\$ -	\$ -
2018	-	-	-	-	-
2019	0.1	5.6	1.7	(1.1)	6.2
2020	0.1	7.4	1.9	(1.3)	8.0
2021	0.1	7.6	1.9	(1.4)	8.2
2022	0.1	7.8	1.9	(1.4)	8.4
2023	0.1	7.9	2.0	(1.4)	8.6
2024	0.1	8.1	2.0	(1.5)	8.7
2025	0.1	8.3	2.1	(1.5)	8.9
2026	0.1	8.5	2.1	(1.6)	9.1
2027	0.1	8.7	2.2	(1.6)	9.3
2028	0.1	8.8	2.2	(1.7)	9.5
2029	0.1	9.0	2.3	(1.7)	9.7
2030	0.1	9.2	2.3	(1.8)	9.9
2031	0.1	9.4	2.4	(1.8)	10.1
2032	0.1	9.7	2.4	(1.9)	10.3
2033	0.1	9.9	2.5	(1.9)	10.5
2034	0.1	10.1	2.5	(2.0)	10.7
2035	0.1	10.3	2.6	(2.1)	10.9
2036	0.1	10.5	2.6	(2.1)	11.2
2037	0.1	10.8	2.7	(2.2)	11.4
2038	0.1	11.0	2.8	(2.3)	11.6
2039	0.1	11.2	2.8	(2.3)	11.9
	<b>\$ 2.1</b>	<b>\$ 189.9</b>	<b>\$ 47.8</b>	<b>\$ (36.8)</b>	<b>\$ 203.1</b>

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 346**

**Responding Witness: John P. Malloy**

- Q-346. Reference the AMS Business Case provided as part of Exhibit JPM-1, page 34. The Companies project a savings of \$92 million over 20 years from reductions in ad hoc field services. Provide all calculations and assumptions used to arrive at this projection, including a 20-year breakdown by year, for each of the following savings categories cited by the Companies:
- a. Employee overtime
  - b. Contractor usage
- A-346. Please refer to Exhibit JPM-1, page 152, as well as the attachment to the response to PSC 2-63, for all calculations and assumptions related to reductions in field services, also referred to as meter services.
- a. Employee overtime reductions are included under the heading "Overtime Labor".
  - b. Contractor usage reductions are included under the heading "Resident Contractor".

Year	Overtime Labor	Purchased Materials	Resident Contractor	Total Savings (\$M)
2017	\$ -	\$ -	\$ -	\$ -
2018	-	-	-	-
2019	0.2	0.0	2.6	2.8
2020	0.3	0.1	3.3	3.6
2021	0.3	0.1	3.3	3.7
2022	0.3	0.1	3.4	3.8
2023	0.3	0.1	3.5	3.8
2024	0.3	0.1	3.6	3.9
2025	0.3	0.1	3.6	4.0
2026	0.3	0.1	3.7	4.1
2027	0.3	0.1	3.8	4.2
2028	0.3	0.1	3.9	4.3
2029	0.3	0.1	4.0	4.4
2030	0.3	0.1	4.1	4.5
2031	0.3	0.1	4.2	4.6
2032	0.4	0.1	4.2	4.7
2033	0.4	0.1	4.3	4.8
2034	0.4	0.1	4.4	4.9
2035	0.4	0.1	4.5	5.0
2036	0.4	0.1	4.6	5.1
2037	0.4	0.1	4.7	5.2
2038	0.4	0.1	4.8	5.3
2039	0.4	0.1	4.9	5.5
	<b>\$ 7.1</b>	<b>\$ 1.5</b>	<b>\$ 83.6</b>	<b>\$ 92.2</b>

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 347**

**Responding Witness: John P. Malloy**

Q-347. Provide the following data on the Companies' 2015 and 2016 metering operations spending, including recurring reads and ad hoc field services:

- a. Employee overtime
- b. Contractor usage

A-347.

- a. Employee overtime costs for LG&E are \$0.400 million in 2015 and \$0.358 million in 2016.
- b. Contractor usage costs for LG&E are \$6.237 million in 2015 and \$6.315 million in 2016.

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**Question No. 348**

**Responding Witness: John P. Malloy**

- Q-348. Reference the AMS Business Case provided as part of Exhibit JPM-1, page 36. The Companies project a savings of \$489 million over 20 years from reductions in non-technical losses. Provide all calculations and assumptions used to arrive at this projection, including a 20-year breakdown by year, for each of the following savings categories cited by the Companies:
- a. Theft
  - b. Metering errors
- A-348. Please refer to Exhibit JPM-1, page 158, as well as the attachment to the response to PSC 2-63, for calculations and assumptions related to the recovery of non-technical losses. Please note that Company does not have data to support a break-out of non-technical losses used in the savings calculation between theft, metering errors, or other losses. Therefore, the calculations, assumptions, and savings are shown in aggregate.

Year	Benefit (\$M)
2017	\$ -
2018	-
2019	12.5
2020	16.1
2021	16.9
2022	17.5
2023	18.2
2024	18.9
2025	19.6
2026	20.4
2027	21.2
2028	22.0
2029	22.8
2030	23.7
2031	24.6
2032	25.5
2033	26.5
2034	27.6
2035	28.6
2036	29.7
2037	30.9
2038	32.0
2039	33.3
	<b>\$ 488.6</b>

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 349**

**Responding Witness: John P. Malloy**

- Q-349. Describe the processes that will be employed to increase revenue recovery from theft through the use of the AMS system and data. Relate the processes described to the calculation method used to arrive at the theft revenue improvement projection provided in response to question 348 a.
- A-349. The Company is developing processes that will be used to increase revenue recovery from theft through the use of the AMS system and data.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

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**Response to Attorney General's Initial Data Requests for Information  
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**Question No. 350**

**Responding Witness: John P. Malloy**

- Q-350. Describe the processes that will be employed to increase revenue recovery from reductions in metering errors through the use of the AMS system and data. Relate the processes described to the calculation method used to arrive at the metering error revenue improvement projection provided in response to question 348 b.
- A-350. The Company is developing processes that will be used to increase revenue recovery from reductions in metering errors through the use of the AMS system and data.



**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
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**Question No. 351**

**Responding Witness: John P. Malloy**

Q-351. Provide the amounts recovered by the Companies in 2015 and 2016 from:

- a. Identified theft
- b. Identified metering errors

A-351.

- a. Identified theft recovered dollars (LGE/KU combined<sup>5</sup>):
  - 2015 - \$297,252
  - 2016 - \$275,429
- b. Identified metering errors recovered dollars:
  - 2015 KU = \$204,209.49
  - 2015 ODP = \$19,205.03
  - 2015 LGE = \$407,165.99
  
  - 2016 KU = \$167,700.00
  - 2016 ODP = \$9,902.18
  - 2016 LGE = \$144,857.72

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<sup>5</sup> Note: Metrics data is for combined, total company. LGE and KU are not reported separately.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

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**Question No. 352**

**Responding Witness: John P. Malloy / Robert M. Conroy**

- Q-352. Reference the AMS Business Case provided as part of Exhibit JPM-1, page 40. The cost detail provided indicates an AMS System Capital Expenditure contingency of \$34.2 million.
- a. Given the Companies' smart meter experience, as well as the smart meter experience of the companies' affiliates, explain why such a large contingency, which is equal to almost 12% of AMS capital budget items, is needed.
  - b. Describe any commitments the Companies are willing to make regarding the return to ratepayers of unused capital expenditure contingency budget.
- A-352.
- a. The contingency is necessary to deal with uncertainties such as the difference between planned contract amounts and actual signed contracts. The contingency will also provide for unknowns during the project such as the number of customer meter base repairs which must be performed. (Note that when the Companies pull a meter and find a problem, then the Companies are planning to pay to correct the meter base issue.)
  - b. The Company does not believe a commitment in this regard is necessary. The Companies have not included in their respective rate bases all of the total expected AMS capital investment, and certainly not the total including the contingency amount. Therefore, there is no amount of the contingency recovery included in the Company's proposed rates. In future rate cases, the full cost of the AMS deployment will be known with greater certainty, with greater assurance that only those amounts actually to be invested will be recovered through base rates. See also the Company's response to PSC 1-13.

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**Question No. 353**

**Responding Witness: John P. Malloy**

- Q-353. Acknowledge that if the Commission approves LG&E's application, the company, once the meter upgrade program has been completed, will be replacing those meters on an earlier and more frequent basis than the replacement rate applicable to the company's current metering infrastructure.
- A-353. The Company agrees that, based on its current expectation of the service lives of AMS electric meters, it expects to replace such meters more frequently than the currently deployed electromechanical meters. The Company further anticipates replacing AMS gas indexes more frequently than the currently deployed gas indexes.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

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**Response to Attorney General's Initial Data Requests for Information  
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**Question No. 354**

**Responding Witness: John P. Malloy**

- Q-354. Discuss the extent (if any) to which the proposed new meters and associated infrastructure will be capable of receiving remote downloads of firmware and/or software upgrades. Provide copies of all manufacturer's specifications in this regard.
- a. How many such upgrades are the proposed new meters and associated infrastructure capable of receiving before this process begins to shorten the lifespans of the equipment?
  - b. How many such upgrades does the company believe it will download on an annual basis?
- A-354. The meters and indices will be capable of receiving over-the-air firmware upgrades. Please see Exhibit JPM-1, pages 103-127 for manufacturer's specifications.
- a. Company is not aware of any number of remote downloads that negatively impacts the lifespan of the proposed electric meters. The gas modules are battery powered and caution must be exercised with download volume to protect life expectancy.
  - b. Based on Company's experience the number of upgrades it will typically download will range from 1-5 depending on a variety of situations. This volume can be managed through coordination with the manufacturer to ensure meters and infrastructure are delivered on a consistent, stable firmware version.

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**Question No. 355**

**Responding Witness: John P. Malloy**

- Q-355. Have any of LG&E-KU's affiliated utilities executed a system-wide conversion to AMI meters? If so, state when the conversions occurred, and provide the style of the case in which any such affiliates obtained approval from their regulatory authorities.
- A-355. None of the LG&E-KU affiliated utilities have executed a system-wide conversion to AMI meters.

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**Response to Attorney General's Initial Data Requests for Information  
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**Question No. 356**

**Responding Witness: John P. Malloy**

- Q-356. Provide copies of (or hyperlinks to) all studies that LG&E-KU, its parent and affiliated entities consulted showing that system-wide deployment of AMI leads to long-term conservation and savings on bills for ratepayers.
- A-356. The Company did not consult any studies showing system-wide deployment of AMI leads to long-term conservation and savings on bills for ratepayers. The conservation referenced in Section 7.1.1.1 of Exhibit JPM-1 is enabled through AMI technologies but is independent of deployment scale, i.e., the absolute quantity of savings should be directly proportional to the scale of a deployment, but the percentage savings from a given deployment should not depend on the scale of the deployment.

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**Response to Attorney General's Initial Data Requests for Information  
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**Question No. 357**

**Responding Witness: John P. Malloy**

- Q-357. Assuming the Commission approves the CPCN pertaining to AMS, provide the revised charges that LG&E will employ for remote electric connects, disconnects, and reconnects?
- a. Describe the procedures LG&E will follow for remote disconnects for non-payment. Does LG&E believe these procedures will comply with Kentucky PSC legal requirements?
  - b. In the event the Commission approves the CPCN pertaining to AMS, will LG&E agree to follow all existing legal requirements pertaining to connection of service, disconnections, and reconnections? If not, why not?
  - c. Will the implementation of remote disconnect features incent the company to rely on disconnection as opposed to efforts to contact the customer to resolve non-payment situations? Explain fully.
  - d. Does LG&E anticipate that utilizing remote disconnect features will increase the volume of disconnections from their current level? Explain fully.
- A-357. When the AMS deployment is complete and fully operational, LG&E anticipates it will be appropriate to propose revised charges of the kinds cited based upon a cost of service study. LG&E has not yet formulated those charges.
- a. LG&E will continue to follow the procedures set out in its electric tariff at Sheet No. 105.1, "Discontinuance of Service," at paragraph H. LG&E believes these procedures comply with all applicable legal requirements, and the Commission has repeatedly approved them as part of LG&E's electric tariff.
  - b. Yes, LG&E will follow all applicable legal requirements concerning connection of service, disconnections, and reconnections.

- c. No. The Company has a clear incentive to maintain service to customers, and seeks to partner with our customers on payment arrangements to allow service to continue without interruption.
  
- d. The volume of disconnections is not expected to increase and thus the Companies did not include any bad debt reduction in their savings projections.



**LOUISVILLE GAS AND ELECTRIC COMPANY**

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**Response to Attorney General's Initial Data Requests for Information  
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**Question No. 358**

**Responding Witness: John P. Malloy**

Q-358. In the event the Commission approves the CPCN pertaining to AMS, would LG&E be willing to track and report the following data separately for both credit-based and prepayment residential customers:

- a. Number of customers with arrears of 30 days or more;
- b. Dollar value of arrears;
- c. Number of disconnection notices sent;
- d. Number of service disconnections for non-payment;
- e. Number of service reconnections after disconnection for non-payment;
- f. Number of new payment agreements entered;
- g. Number of payment agreements successfully completed; and
- h. Number of failed payment agreements

A-358. a-h. The Companies have no plans to offer prepayment services to customers. The Companies question the value of the administrative burden for the Commission and the Companies to report these metrics, particularly given the existing disconnection reporting requirements under 807 KAR 5:006 Section 4(5). But the Companies will certainly comply with any reasonable reporting requirements the Commission creates if it approves the Companies' requested CPCNs for the AMS deployment.

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**Response to Attorney General's Initial Data Requests for Information  
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**Question No. 359**

**Responding Witness: John P. Malloy**

- Q-359. With regard to pre-pay customers, will LG&E charge more for customers who pre-pay at any applicable kiosks and/or through third-parties?
- A-359. The Companies have no plans to offer prepayment services to customers.

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**Response to Attorney General's Initial Data Requests for Information  
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**Question No. 360**

**Responding Witness: John P. Malloy**

- Q-360. Assuming the Commission approves the CPCN pertaining to AMS, explain whether LG&E-KU will be hiring more customer service representatives. If so, explain why, and provide the number of new employees the companies expect to hire.
- a. Explain whether the enhanced customer service which the company believes customers will experience once AMS is fully deployed will lead to net cost savings, and if so, provide quantifications and/or estimates of any and all such net savings.
- A-360. The Companies have no plans to increase the number of customer service representatives as a result of the AMS project.
- a. The Companies have not included any customer service related savings in the AMS business case. It is likely that net savings will occur but only after full deployment and customer education. The earliest these savings would occur, if at all, will be in 2020.

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**Response to Attorney General's Initial Data Requests for Information  
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**Question No. 361**

**Responding Witness: John P. Malloy**

- Q-361. Explain whether LG&E anticipates any aggregate energy savings from the AMS upgrade, and if so, provide estimates.
- A-361. All energy savings anticipated as a result of the AMS upgrade are captured as ePortal benefits detailed on page 157 of AMS Business Case provided as part of Exhibit JPM-1 and in response to Question No. 341.

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**Response to Attorney General's Initial Data Requests for Information  
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**Question No. 362**

**Responding Witness: John P. Malloy**

- Q-362. On an annual basis, state how much more revenue LG&E will capture as a result of the proposed metering upgrade.
- a. Provide copies of any and all studies in this regard.
  - b. Will the anticipated increase in revenue capture lead to a drop in uncollectible expense, and if so, by how much?
  - c. How does LG&E propose to reflect the anticipated increased revenues in its books? Will there be any way to directly trace any such additional revenue capture to the proposed metering upgrade, and if so, explain fully.
- A-362. On a combined basis, the Companies project additional revenues of \$22.9 thousand per year (nominal) beginning in 2019 from the AMS deployment due to additional sales resulting from shorter outages. See the response to Question No. 342 above.
- a. See the response to Question No. 342 above.
  - b. No. If anything, the additional sales resulting from reduced outages might slightly increase the absolute quantity of uncollectible expense (though not the percentage of such expense) solely due to having more sales that could be uncollectible.
  - c. The Company proposes to reflect the sales on its books in the same manner as all other retail sales. There will not be a way to attribute to AMS the additional revenue resulting from reduced outages because there is no way to know precisely how long any given actual outage would have lasted absent AMS.

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**Question No. 363**

**Responding Witness: John P. Malloy**

- Q-363. Confirm that the cost-benefit analysis upon which LG&E relies in support of its CPCN pertaining to AMS contains only estimates of both costs and benefits.
- a. In the event LG&E's estimates of the amounts of costs and benefits should change, will the company file updated estimates into the record of the instant case? If not, why not?
  - b. Is LG&E willing to provide semi-annual updated, experience-based cost-benefit studies until the project is completed? If not, why not?
- A-363. The costs and benefits used to support the AMS Business Case were estimated using the best of Company's available information.
- a. The Company does not plan to file changes between estimates and actual costs or savings as an update to this case as changes between actual and estimated costs and savings would be considered in future rate cases.
  - b. The Company suggests that the administrative burden of filing semi-annual cost-benefit studies is greater than the value of the information provided in those reports given that a substantial amount of the costs for the project are all up-front (2016-2018) and the benefits do not begin to occur until 2019.

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**Question No. 364**

**Responding Witness: John P. Malloy**

Q-364. Will LG&E be willing to restrict the availability of any potential pre-payment plans to vulnerable populations, including but not limited to: (i) elderly; (ii) disabled; and (iii) those with serious illnesses? If not, why not?

A-364. The Companies have no plans to offer prepayment services.

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**Question No. 365**

**Responding Witness: John P. Malloy**

- Q-365. Provide copies of the RFPs the company issued for both the AMS meters and the gas indices modules.
- a. Provide the per unit cost of the AMS meters, and the gas indices modules.
  - b. Are there any gas indices modules being manufactured with a longer service life than the twenty (20) year projected lifespan of the modules the company contemplates using based on the instant filing?
    - i. If the response to subpart (b) above is "yes," identify the manufacturer, model numbers, and explain why LG&E did not select that manufacturer
- A-365. The company has not issued RFPs for meters or gas indices in relation to the AMS full deployment project.
- a. Not applicable.
  - b. The Company is not aware of AMS gas index RF modules that are compatible with Company's proposed infrastructure being manufactured with a longer service life than twenty years.
    - i. Not applicable.



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**Question No. 366**

**Responding Witness: John P. Malloy**

- Q-366. Describe the other types of metering technology and associated infrastructure from other manufacturers that LG&E considered but did not elect to utilize in its proposed deployment under the instant filing.
- A-366. As stated in Section 5.6 of Exhibit JPM-1, Company has evaluated multiple metering technologies and associated infrastructure for a variety of initiatives dating back to 1999.

Most recently during the AMS opt-in program, the Company tested both radio frequency (RF) mesh and cellular technologies. The Company found that the RF mesh technology was the most reliable, cost-effective technology for its service territory, and has chosen to deploy RF mesh meters to all customers where possible. RF mesh technology also provides the Company with the opportunity to leverage network infrastructure and back-office head end systems that were deployed during the opt-in program, lowering some of the costs associated with expansion throughout the service territory.

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**Question No. 367**

**Responding Witness: John P. Malloy**

- Q-367. State to what extent the hardware, firmware, and software associated with the company's proposed AMS meters and associated infrastructure will comply with the National Institute of Standards and Technology (NIST)'s interoperability standards set forth in "NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 3.0."<sup>6</sup>
- A-367. The proposed hardware, firmware, and software is aligned with the NIST Interoperability Standards, Release 3.0 along with other applicable standards listed in Appendix A-3 of Exhibit JPM-1.

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<sup>6</sup> Accessible at <https://www.nist.gov/news-events/news/2014/10/nist-releases-final-version-smart-grid-framework-update-30>

**LOUISVILLE GAS AND ELECTRIC COMPANY**

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**Question No. 368**

**Responding Witness: John P. Malloy**

- Q-368. To what extent will the proposed AMI architecture and infrastructure be interoperable with LG&E-KU's other systems, including but not limited to: IT office systems, metering systems, SCADA and DSM systems, outage management systems, analytic systems, and external partners and services? For purposes of this question, the term "interoperable" means the ability of different information technology systems and software applications to communicate, exchange data, and use the information that has been exchanged.
- A-368. The proposed AMI architecture and infrastructure will complement and enhance the functionality of many of the Company's existing other systems. For an illustrative example please see Appendix A-2 of Exhibit JPM-1, page 102 of 169.

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**Question No. 369**

**Responding Witness: John P. Malloy**

Q-369. State whether the expected lifespan of the AMS meters and gas indices modules the company has already deployed differs from the projected lifespans of the meters and indices modules to be deployed under the CPCN pertaining to AMS. If so, state the difference(s).

A-369. The expected lifespan does not differ.

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**Response to Attorney General's Initial Data Requests for Information  
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**Question No. 370**

**Responding Witness: John P. Malloy**

- Q-370. With regard to the cost-benefit analysis the company performed regarding the proposed AMS deployment, describe all costs associated with the program that the cost-benefit analysis took into consideration.
- a. Describe any and all costs associated with the proposed meter replacement program which the cost-benefit analysis did not take into consideration.
  - b. With regard to any such costs not taken into consideration, explain fully why they were not considered.
- A-370. All costs taken into consideration are described in detail in the AMS Business Case provided as part of Exhibit JPM-1 beginning on page 37.
- a. To the best of the Company's knowledge, its cost-benefit analysis took into account all reasonably foreseeable costs necessary for the proposed AMS deployment.
  - b. Not applicable.

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**Question No. 371**

**Responding Witness: John P. Malloy**

- Q-371. Describe whether LG&E-KU's cost-benefit analysis took into consideration that some of their residential customers do not have home computers and/or lack remote internet access through which they could otherwise view the company's internet-based energy usage portal. If not, why not?
- A-371. In the Company's analysis of potential energy savings by residential customers by use of ePortal, it was recognized that not all residential customers would access the portal and subsequently modify their energy usage, either due to lack of interest or lack of internet access. Therefore, as outlined in response to Question No. 341, Company assumed that 17% of residential electric customers would regularly access the portal and change their behaviors. Additionally, there are many benefits which accrue to customers without needing to access their information, such as outage notification to the Companies for system restoration and individual premise restoration, off-cycle reads for customer service inquires, and customer safety.

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**Question No. 372**

**Responding Witness: John P. Malloy**

- Q-372. Does the companies' cost-benefit analysis take into consideration that any AMI meters deployed as a result of the program will have to be replaced in 20 years?
- a. In the event new AMI metering technology and/or infrastructure is developed, are LG&E-KU willing to commit that they will not seek to deploy such new technology prior to the end of the projected lifespan of the technology that will be deployed in the instant project? If not, why not?
- A-372. As AMS meters have a useful life of 20 years, the cost-benefit analysis only extends to 20 years beyond completion of the deployment. It is assumed that meters will be replaced as needed after that time. An inventory was also included in the cost to account for any meter replacements needed before the end of the assumed useful life.
- a. No. The proposed commitment would require the Company to foreclose any opportunity for customers to benefit from technological advances, the benefits of which might outweigh their costs. Instead, the Companies will continue to evaluate emerging technologies to determine if or when they might benefit our customers, always bearing in mind the costs of obtaining such benefits.

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**Question No. 373**

**Responding Witness: John P. Malloy**

- Q-373. For purposes of this question and its subparts, the term “customer data” refers to any and all data regarding or pertaining to LG&E-KU’s customers and/or their family members or other persons residing in the same residential household or unit, including but not limited to the following: (i) customers’ identity; (ii) personal information, including but not limited to street address, e-mail address, telephone number(s), credit history, checking account(s), credit and/or debit card data; and (iii) electrical and/or gas consumption usage, consumption and usage patterns.
- a. For how long will the company retain customer data?
  - b. Does LG&E believe that customer data belongs to its customers, or to the company? Explain the reasons for LG&E’s beliefs.
  - c. What will the company do with customer data when the retention period which the company selects has expired?
  - d. How will LG&E allow its customers to decide whether to allow LG&E to sell or otherwise disclose customer data? Will it be via affirmative “opt-in,” or by an affirmative “opt-out” which customers will have to select in order to not allow LG&E to disclose their data?
    - i. provide copies of the “opt-in” or “opt-out” choices regarding the disclosure/sale of customer data which LG&E plans to provide to its customers.
  - e. Will the company sell customer data regarding those customers who opt to allow the company to disclose such information to third parties?
  - f. If your response to subpart (e), above is yes:
    - i. state what protections, if any, the company plans to employ to protect confidentiality of customer data;



- ii. state what the company intends to do with the proceeds of the customer information which it sells; and
    - iii. state whether those customers who opt to allow disclosure of their customer data will receive any monetary benefit, and if so, how much and in what form.
  - g. If LG&E does not intend to sell customer data, but will otherwise disclose customer data pertaining to customers who authorize LG&E to do so, state what protections, if any, the company plans to employ to protect confidentiality of data that can identify customers, including but not limited to information such as account numbers, credit card numbers, etc.
- A-373. a-g. The Commission's April 13, 2016 order in Case No. 2012-00428 requires utilities to file with the Commission their internal procedures governing customer privacy. As the Commission noted in its order in that case, Louisville Gas and Electric Company and Kentucky Utilities Company have posted their customer-privacy policy on their website (<https://lge-ku.com/privacy>). That policy is the entirety of the Companies' policies, practices, and procedures concerning customer privacy. It states:

We will make every effort to protect and preserve customer account information and will not share specific information about your account with third parties, without written authorization or unless we are required to do so by a court order, subpoena or other compulsory process, or by operation of law.

Customer account information may be used by us in the following representative ways:

- To verify the existence of a customer's energy service;
- To communicate with a customer and handle customer requests;
- To compile information about how our Web site is reached and used;
- To compile research that does not identify the customer as an individual, group or entity other than age group and gender;
- To contact our customers about other products or services offered by our alliance partners; and
- To collect debts owed by a customer.

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**Question No. 374**

**Responding Witness: John P. Malloy**

- Q-374. In the event the Commission should approve LG&E's CPCN pertaining to AMS, state whether the company would be willing to allow residential customers to opt-out of the program for medical purposes, in the event such customers agree to pay:
- a. any and all costs associated with manual connects/disconnects;
  - b. for manual meter readings; and
  - c. for any and all other metering-related costs included within customers' existing rates, which otherwise would have to be socialized within the remaining residential customer rate base.
- A-374. The term "medical purposes" is too vague for the Companies to make a determination. Certainly, the Companies would be willing to consider those customers currently under the Medical Alert Program. However, the Companies suggest that these customers could benefit greater by having an AMS meter, knowing that it will notify the Company when power is interrupted.

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**Question No. 375**

**Responding Witness: John P. Malloy / Robert M. Conroy**

- Q-375. If LG&E's CPCN pertaining to AMS is approved, and after the completion of the upgrade program, in the event that the company's cost-benefit analysis does not establish that benefits are greater than costs, would LG&E be willing to make a partial rate refund to restore its ratepayers to at least the point at which they suffer no financial detriment? If not, why not?
- a. Does LG&E's cost-benefit analysis include all costs and all benefits? If not, why not?
  - b. Does LG&E's cost-benefit analysis provide a monetary value for all quantifiable benefits? If so, explain how that monetary value was derived.
  - c. As part of LG&E's commitment that its proposed meter upgrade will provide greater quantifiable benefits than the cost of the program, is LG&E willing to provide annual reporting under the docket for the instant case for each of five (5) years following the completion of the program that would update both costs and benefits? If not, why not?
  - d. Provide a per-meter breakdown of costs and quantifiable benefits (in monetary terms) which LG&E believes ratepayers in each class will receive.
- A-375. No. KRS 278.160(2) states, "No utility shall charge, demand, collect, or receive from any person a greater or less compensation for any service rendered or to be rendered than that prescribed in its filed schedules, and no person shall receive any service from any utility for a compensation greater or less than that prescribed in such schedules." Therefore, it would be contrary to statute for LG&E to refund to customers amounts collected under Commission-approved rates for service rendered and billed according to the terms of LG&E's Commission-approved tariff.
- a. The Company included all currently quantifiable costs and benefits in the cost-benefit analysis. There are a number of other benefits that were considered but were not quantified for the purposes of that analysis, some of

which are qualitative (e.g., potentially enabling Green Button initiatives) and some of which the Company cannot quantify today but could result in savings (e.g., enabling new rate structures that could result in customer savings). Please refer to Exhibit JPM-1, page 150, for a list of these benefits.

- b. Yes. Please refer to Exhibit JPM-1 at pages 151-158. See also the Company's response PSC 2-63(g).
- c. The Company has not committed that AMS benefits will exceed costs; rather, based on the best information currently available, the Company has presented an analysis indicating the benefits of AMS should exceed its costs over 20 years. The Company will comply with any reasonable reporting requirement the Commission believes is necessary concerning the AMS deployment if approved.
- d. The Company has not conducted such an analysis.

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**Question No. 376**

**Responding Witness: John P. Malloy**

- Q-376. Since LG&E asserts that the meter upgrade program will lead to enhanced revenue collection and operational savings to the company, does it agree that if the program is approved, it will face less financial risk? If it does not so agree, why not?
- A-376. The Company has not asserted AMS will result in enhanced revenue collection; rather, to the extent AMS reduces non-technical losses, the resulting revenues will come from cost causers rather than other customers. Therefore, AMS will not reduce the Company's financial risk, and the Company has not asserted it will.

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**Question No. 377**

**Responding Witness: John P. Malloy**

- Q-377. Regarding LG&E employees who currently perform meter reading services, describe what will be done with those positions in the event the Commission should approve all or a portion of the company's application in the instant matter.
- A-377. No Company employee positions are expected to be eliminated should the Commission approve the Company's application. Existing meter reading services are largely performed by a contractor workforce which will be reduced as AMS functionality allows.

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**Question No. 378**

**Responding Witness: John P. Malloy**

- Q-378. In the event the Commission should approve LG&E's CPCN pertaining to AMS, state the number of years following the completion of the project until projected total savings will exceed projected total costs.
- A-378. In regards to the AMS project, on a nominal basis, projected total savings will exceed projected total costs in the year 2028.

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**Question No. 379**

**Responding Witness: John P. Malloy / Robert M. Conroy**

- Q-379. State whether LG&E has any net metering customers, and if so, explain whether such customers will continue to be able to net meter if they so choose.
- a. Describe all costs LG&E requires net metering customers to pay under its current net metering tariff.
  - b. Describe all changes to LG&E's net metering tariff that will result in the event the Commission approves the CPCN pertaining to AMS.
  - c. Does LG&E anticipate that AMS meters to be installed under this project will more accurately capture the amounts of electricity that net metering customers sell to the company? If so:
    - i. provide all estimates that LG&E-KU and/or any of the companies' affiliates have performed regarding effects that net metering customers can anticipate once they receive a new AMS meter under the instant program; and
    - ii. state whether the solar credit reporting system will report actual meter reading, or readings from the prior month.
- A-379. The Company has net metering customers and these customers will continue to be able to net meter if they so choose. See the response to Question No. 313.
- a. See Sheet No. 57 of Company's Rate Schedules, available at: <https://lge-ku.com/sites/default/files/lgereselectric.pdf>
  - b. Note that net metering customers do not "sell" energy to the Company. The Company does not anticipate any changes as a result of the event the Commission approved the CPCN pertaining to AMS.
  - c. AMS meters adhere to the same accuracy standards as the non-AMS electronic meters utilized for net metering installations.



- i. As stated above the meters are manufactured to the same accuracy standards, thus, no estimates were performed.
- ii. The Company is not clear what this question is addressing. If it is addressing the solar credits on a customer's bill related to the Solar Share Program, then it will be one month in arrears as currently shown; AMS will have no effect on such credits. If the question is addressing what net metering customers with their own solar generation will see on the MyMeter Portal, they will be able to see their generation in 15 minute intervals, which will generally available the next business day.

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**Question No. 380**

**Responding Witness: Robert M. Conroy**

- Q-380. In the event that the Commission approves the CPCN pertaining to AMS, state whether LG&E believes that the company would be sharing in the risks associated with the deployment of the new technologies identified in the application, and if so, state how it would be so sharing.
- A-380. It is unclear precisely which risks the question is meant to address. Certainly the Company will face the same cost-recovery risk it faces with any other investment in equipment or facilities to serve utility customers.

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**Question No. 381**

**Responding Witness: Robert M. Conroy**

Q-381. In the event that the Commission approves the CPCN pertaining to AMS, if total program costs should exceed total program benefits, would LG&E object to having shareholders being made responsible for that portion of costs that exceed benefits? If so, why?

A-381. Yes. See the response to Question No. 375.

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**Question No. 382**

**Responding Witness: John P. Malloy**

- Q-382. Provide a complete description of the education program LG&E-KU plan to undertake to inform ratepayers of the goals of the program, and its costs and benefits.
- a. Provide copies of any and all bill inserts or scripts of advertisements the companies plan to use in this regard. If such materials are not yet completed, will the companies agree to provide them to the Commission and the Attorney General when they are available? If not, why not?
  - b. State whether the companies' education program will explain: (i) how much the bill of a residential customer will increase as a result of program implementation; and (ii) how the program will eventually pay for itself.
- A-382. The description of the education program is provided in Section 9 of Exhibit JPM-1, beginning on page 49 of 169. Additional, sample communication materials are provided in Appendix A-4, page 128 of 169.
- a. The Companies have not developed bill inserts or scripts of advertisements specifically for full deployment. The Companies plan to use material similar to that shown in Appendix A-4.
  - b. The Companies do not plan on specifying the information asked in this question in customer educational materials.

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**Question No. 383**

**Responding Witness: Robert M. Conroy**

- Q-383. If the Commission should approve the CPCN pertaining to AMS, state whether the companies plan to introduce: (a) mandatory dynamic pricing; and/or (b) demand charges for the residential class.
- A-383 The Company currently has an optional time-of-day rate schedule for residential customers. Full AMS deployment will provide the Company with more granular data and will allow for the development of additional rate options for customers. The Company continues to review options for rate design and has not at this time made a determination what types of rate structure will be offered in the future.

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**Question No. 384**

**Responding Witness: Lonnie E. Bellar**

Q-384. Regarding third quartile SAIDI "Transmission Performance", as discussed beginning on page 23 of the Testimony of Paul W. Thompson, provide the following:

- a. SAIDI industry benchmarking data.
- b. LG&E's SAIDI 5-year historical performance.

A-384. a. See attached. The information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.

- b. LGE Transmission SAIDI in minutes (excluding Major Event Days) History:

Year	SAIDI
2012	4.9
2013	1.1
2014	1.3
2015	1.0
2016	0.6

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**Question No. 385**

**Responding Witness: Lonnie E. Bellar**

- Q-385. Regarding NATF OHMY "Transmission Performance", as discussed beginning on page 23 of the Testimony of Paul W. Thompson, provide the following:
- a. OHMY industry benchmarking data.
  - b. LG&E's OHMY historical performance.
- A-385. a. See attached. The information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.
- b. See Table 2 in section 2.1.5 of PWT-2 appendix.



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**Question No. 386**

**Responding Witness: Lonnie E. Bellar**

Q-386. Regarding SAIDI of individual transmission lines as discussed beginning on page 26 of the Testimony of Paul W. Thompson, provide the following:

- a. Threshold limits of SAIDI used to determine which transmission lines will be targeted for inline circuit breakers and switching equipment.
- b. A detailed explanation of how it was determined whether circuit breakers or other switching equipment would be used.
- c. For LG&E historic SAIDI values for each transmission line.
- d. For LG&E detailed equipment description for each transmission line determined in need of sectionalization.

A-386.

- a. Lines with over 500 MW-miles of exposure were targeted for in line circuit breakers. For situations in which a circuit breaker addition at the desired location required line modifications (which would add significant cost), the Company chose to install an automated motor operated switch instead. Lines with historical cumulative Corporate SAIDI (including major event days) of 0.50 minutes or more from 2012 through April 2016 were targeted for installation of additional line sectionalizing equipment including remotely controlled motor operated switches. Distribution substations served from transmission lines without tap switches were targeted for switch additions and prioritized based on customer-miles exposure.
- b. See response to part a. above.
- c. See attached. The information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.
- d. See attached. The information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.

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**Question No. 387**

**Responding Witness: Lonnie E. Bellar**

Q-387. Regarding transmission system resiliency as discussed beginning on page 26 of the Testimony of Paul W. Thompson, provide the following:

- a. Describe in detail what is meant by enhancing access of spare equipment inventory.
- b. Describe physical security improvements.
- c. Describe how key locations were determined.

A-387.

- a. Spare inventory levels for Transmission equipment will be increased to improve the Companies' ability to respond to and recover from loss or failure of equipment at critical locations.
- b. Physical security improvements are determined based on risk assessments and will include improvements such as the following:
  - a. Perimeter fence replacement and upgrade.
  - b. Enhanced lighting.
  - c. Security cameras
  - d. Intruder detection.
  - e. Wall protection of critical transformers.
- c. Locations for physical security enhancements were selected based on a combination of criticality and risk profile of the substation.

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**Question No. 388**

**Responding Witness: Lonnie E. Bellar**

Q-388. Regarding the 2-year capital investment in transmission reliability and resiliency improvements shown in the table on page 27 of the Testimony of Paul W. Thompson, provide the following:

- a. For LG&E historic annual investments for each category over the past 5 years (2012-2016).

A-388.

<b>LG&amp;E Project/Asset Class (in \$millions)</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Replace Defective Line Equipment (wood poles, cross-arms, insulators)	3.8	4.1	3.3	7.7	5.8
Replace Overhead Lines	0.0	0.0	0.0	0.0	0.0
Improve Line Sectionalizing for Reliability	0.0	0.0	0.0	0.0	0.0
Replace Circuit Breakers	0.6	2.6	0.2	2.3	2.9
Replace Protection and Control Systems	0.1	0.3	0.8	0.9	0.8
Replace Misc Substation Equipment	0.1	0.0	0.0	0.0	0.5
Replace Underground Cable	0.0	0.0	0.0	0.0	0.0
Replace Control Houses	0.0	0.0	0.0	0.0	0.0
Replace Switches	0.0	0.0	0.0	0.0	0.0
<b>Transmission Plan Total</b>	<b>4.6</b>	<b>7.0</b>	<b>4.3</b>	<b>10.9</b>	<b>10.0</b>
<b>Resiliency</b>	<b>0.2</b>	<b>0.2</b>	<b>0.1</b>	<b>0.3</b>	<b>0.0</b>
<b>Total</b>	<b>4.8</b>	<b>7.2</b>	<b>4.4</b>	<b>11.2</b>	<b>10.0</b>

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**Question No. 389**

**Responding Witness: Lonnie E. Bellar**

Q-389. Regarding the 2-year capital expenditures in transmission shown in the table on page 28 of the Testimony of Paul W. Thompson, provide the following:

- a. For LG&E historic annual investments for each category over the past 5 years (2012-2016).

A-389.

<b>LG&amp;E (in \$millions)</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Transmission Plan and Resiliency Improvements	4.8	7.2	4.4	11.2	10.0
All Other	16.7	39.7	39.4	9.7	7.5
<b>Total</b>	<b>21.5</b>	<b>46.9</b>	<b>43.8</b>	<b>20.9</b>	<b>17.5</b>

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**Question No. 390**

**Responding Witness: Lonnie E. Bellar**

- Q-390. Regarding the annual transmission expansion plan discussed on page 32 of the Testimony of Paul W. Thompson, provide the following:
- a. For LG&E the latest and the four previous annual transmission expansion plans.
- A-390. See attached. The information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.

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**Question No. 391**

**Responding Witness: Lonnie E. Bellar**

- Q-391. Regarding the 2016 security assessment for transmission substations as discussed on page 33 of the Testimony of Paul W. Thompson, provide the resulting consultant report.
- A-391. See attached. The information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.

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**Question No. 392**

**Responding Witness: John K. Wolfe**

Q-392. Regarding second quartile SAIDI "Distribution Performance", as discussed beginning on page 35 of the Testimony of Paul W. Thompson, provide the following:

- a. SAIDI industry benchmarking data.
- b. LG&E's SAIDI 5-year historical performance.

A-392.

- a. See attached. The information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.
- b.

Data Year	2011	2012	2013	2014	2015
LGE Distribution SAIDI	94.36	97.11	78.5	73.75	74.45

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**Question No. 393**

**Responding Witness: John K. Wolfe**

Q-393. Regarding second quartile SAIFI “Distribution Performance”, as discussed beginning on page 35 of the Testimony of Paul W. Thompson, provide the following:

- a. SAIFI industry benchmarking data.
- b. LG&E’s SAIFI 5-year historical performance.

A-393.

- a. See attached. The information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.
- b.

Data Year	2011	2012	2013	2014	2015
LGE Distribution SAIFI	1.046	1.153	0.933	0.897	0.927

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**Question No. 394**

**Responding Witness: John K. Wolfe**

Q-394. Regarding the CIFI program, as discussed beginning on page 36 of the Testimony of Paul W. Thompson, provide the following:

- a. LG&E's 5-year annual historical CIFI with details including identified circuits and subsequent actions taken.

A-394. See attached.

Circuit	Actions Taken
AB1202	Updated overcurrent protection, replaced equipment, installed animal protection on line
AB1205	Updated overcurrent protection, replaced equipment, installed animal protection on line
AK1291	Updated overcurrent protection, replaced equipment, installed animal protection on line
AK1295	Updated overcurrent protection, replaced equipment, installed animal protection on line
AK1296	Updated overcurrent protection, replaced equipment, installed animal protection on line
BR1176	Removed secondary, updated overcurrent protection, replaced equipment, installed animal protection on line devices.
BR1179	Removed secondary, updated overcurrent protection, replaced equipment, installed animal protection on line devices.
CF1201	Updated overcurrent protection, replaced equipment, installed animal protection on line
CW1224	Replaced equipment and installed animal protection
CW1228	Replaced equipment and installed animal protection
DA1238	Updated overcurrent protection, replaced equipment, installed animal protection on line
DA1242	Updated overcurrent protection, replaced equipment, installed animal protection on line
DA1243	Updated overcurrent protection, replaced equipment, installed animal protection on line
DX1222	Reconductored, updated overcurrent protection, replaced equipment, installed animal protection on line devices
ET1172	Updated overcurrent protection, replaced equipment, installed animal protection on line
FA1123	Updated overcurrent protection, replaced equipment, installed animal protection on line
FA1123	Updated overcurrent protection, replaced equipment, installed animal protection on line
FA1215	Updated overcurrent protection, replaced equipment, installed animal protection on line
FH1210	Updated overcurrent protection, replaced equipment, installed animal protection on line
FH1213	Updated overcurrent protection, replaced equipment, installed animal protection on line
FM1256	Updated overcurrent protection, replaced equipment, installed animal protection on line
FV1142	Updated overcurrent protection, replaced equipment, installed animal protection on line
HB1142	Updated overcurrent protection, replaced equipment, installed animal protection on line
HC1290	Reconductored, updated overcurrent protection, replaced equipment, installed animal protection on line devices
HC1291	Updated overcurrent protection, replaced equipment, installed animal protection on line
HC1293	Updated overcurrent protection, replaced equipment, installed animal protection on line
HI1102	Updated overcurrent protection, replaced equipment, installed animal protection on line
HK1233	Updated overcurrent protection, replaced equipment, installed animal protection on line
HK1234	Updated overcurrent protection, replaced equipment, installed animal protection on line
HK1235	Updated overcurrent protection, replaced equipment, installed animal protection on line
IN1291	Updated overcurrent protection, replaced equipment, installed animal protection on line
JT1120	Updated overcurrent protection, replaced equipment, installed animal protection on line
JT1123	Updated overcurrent protection, replaced equipment, installed animal protection on line
KE1158	Removed secondary, updated overcurrent protection, replaced equipment, installed animal protection on line devices.
LO1193	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
LS1245	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.



LS1247	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
MC1261	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
MC1262	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
MD1452	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
MK1295	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
MK1299	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
ML1282	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
NA1266	Reconductored, updated overcurrent protection, replaced equipment, installed animal protection on line devices
NA1268	Reconductored, updated overcurrent protection, replaced equipment, installed animal protection on line devices
NA1269	Reconductored, updated overcurrent protection, replaced equipment, installed animal protection on line devices
OX1273	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
PL1270	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
PV1251	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
SP1115	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
SW1190	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
SY1250	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
TA1106	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
TA1130	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
TA1132	Reconductored, updated overcurrent protection, replaced equipment, installed animal protection on line devices
TA1133	Reconductored, updated overcurrent protection, replaced equipment, installed animal protection on line devices
TA1138	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
TA1172	Reconductored, updated overcurrent protection, replaced equipment, installed animal protection on line devices

TE1244	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
TE1245	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
TT3311	Rebuild/reconductor
WT1151	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.
WT1152	Updated overcurrent protection, replaced equipment, installed animal protection on line devices.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 395**

**Responding Witness: John K. Wolfe**

Q-395. Regarding the AIR program, as discussed beginning on page 36 of the Testimony of Paul W. Thompson, provide the following:

- a. LG&E's 5-year annual historical AIR with details including identified assets and subsequent actions taken.

A-395.

- a. Historical spend data on LG&E initiatives currently classified as AIR is only available since the formal inception of the AIR program in 2013. See attachment.

LG&E AIR Project (000's)	2013	2014	2015	2016	AIR Description
LG&E Misc Projects	268	-	2	(1)	Misc distribution projects
LG&E PILC & Vault Projects	3,900	4,450	6,257	6,427	Replacement of network (PILC) cable and associated equipment at the end of their life
LG&E Wire and Cable Projects	724	163	1,698	2,677	Replacement or rejuvenation of underground distribution cables at the end of their life
LG&E Relay Projects	60	125	185	84	Replacement of substation electromechanical relays at the end of their life
LG&E RTU Projects	-	124	161	138	Replacement of substation Remote Terminal Units (RTU) at the end of their life
LG&E LTC Projects	-	322	101	410	Replacement of load tap changers on distribution substation transformers at the end of their life
LG&E Battery Projects	-	84	115	94	Replacement of substation battery systems at the end of their life
LG&E Substation Upgrade/Retirement Projects	-	69	-	-	Replacement of substation structural steel at the end of its life
LG&E Breaker Projects	-	635	461	917	Replacement of distribution substation breakers at the end of their life
LG&E Cap & Pin Projects	-	-	49	160	Replacement of distribution substation cap and pin bus insulators at the end of their life
Grand Total	4,952	5,972	9,029	10,906	-

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 396**

**Responding Witness: John K. Wolfe**

- Q-396. Regarding the Distribution Substation Transformer Contingency program, as discussed beginning on page 37 of the Testimony of Paul W. Thompson, provide the following:
- a. A detailed description of the program, the management process for reviewing the results, and all related reports and recommendations.
  - b. Explain what is meant by "permanent contingency".
    - i. Provide an example analysis where permanent installation of redundant transformer proves to reduce operating costs compared to using a portable or spare transformer.
    - ii. Does such an analysis consider capital costs and redundant maintenance costs?
  - c. All distribution transformers identified by the program, their location, a description of the load they serve, their size and the proposed resolution under the program.
  - d. A detailed list and description of all multiday outages related to substation transformer failure on LG&E's system over the past 5 years and subsequent actions taken to prevent recurrence.
- A-396. a. A description of the program is provided on page 4 of Exhibit PWT-5 with additional detail starting on page 20 of the same document. The scope of the projects are reviewed by management throughout the development of the Business Plan as well as during the individual project investment approval process. Project progress, business data and metrics are provided to management upon request. There are no related reports or recommendations associated with Testimony of Paul W. Thompson.

- b. The term “permanent contingency” refers to the installation of adequate capacity (transformer or circuit) that allows year-round transfer of all customers to an alternate source in the event of a transformer outage.
- i. The primary drivers of the program are to provide year round contingency for all customers for a low probability, but high consequence long duration outage associated with the failure of a substation transformer. However, at substation locations that do not have full transformer or circuit contingency, a portable transformer may be transported and installed to bypass the permanent transformer during unscheduled outages or to perform necessary preventive maintenance or repairs. During this time, the permanent transformer must be de-energized and safely accessible to maintenance personnel and temporary provisions installed to connect the transformer. The cost of installing a portable transformer at an LG&E substation varies by location, but is estimated to be \$50,000. The typical \$50,000 cost is avoided if permanent contingency capacity is in place.
  - ii. Capital costs are considered along with the assumed financial burden to customers going unserved for long durations during high load periods. The estimated financial burden to customers is consistent with the methodology used by the Interruption Cost Estimate Calculator (ICE) available from the U.S. Department of Energy. Redundant maintenance costs or the benefit of reduced losses expected by reduced loading on an existing transformers or improvements in reliability are not considerations in the financial analysis.
- c. See attached.
- d. There have been zero (0) multiday outages related to substation transformer failure on LG&E’s system over the past 5 years. No transformer maintenance work, outages or failures resulted in service interruptions that exceeded 24 hours.

All N1DT Substations	Assigned Operations Center	Estimated Load Type	Top	Summer	Winter	Proposed Resolution
			Nameplate Rating kVA	Peak kVA	Peak kVA	
ATOKA 12KV	DANVILLE	IND./COMM./RES.	4687	3,605	5,849	Address through enhanced spare/portable program
BUENA VISTA 12KV	DANVILLE	IND./COMM./RES.	14000	6,157	16,330	Address through enhanced spare/portable program
CAMPBELLSV 2 12KV	DANVILLE	IND./COMM./RES.	22400	9,072	8,424	Address through substation/circuit improvements
COLUMBIA 12KV	DANVILLE	IND./COMM./RES.	14000	7,684	9,446	Address through enhanced spare/portable program
COLUMBIA SOUTH 12KV	DANVILLE	IND./COMM./RES.	14000	4,969	6,808	Address through enhanced spare/portable program
CRAB ORCHARD 12KV	DANVILLE	IND./COMM./RES.	7000	1,518	4,012	Address through enhanced spare/portable program
DANVILLE 1 12KV	DANVILLE	IND./COMM./RES.	22400	12,690	11,243	Address through substation/circuit improvements
DANVILLE E 12KV	DANVILLE	IND./COMM./RES.	22400	15,174	20,326	Address through substation/circuit improvements
DANVILLE IND 12 2	DANVILLE	IND./COMM./RES.	22400	9,958	9,266	Address through substation/circuit improvements
DANVILLE IND 12KV	DANVILLE	IND./COMM./RES.	22400	13,878	12,636	Address through substation/circuit improvements
DANVILLE N 12KV	DANVILLE	IND./COMM./RES.	14000	8,248	10,725	Address through enhanced spare/portable program
DANVILLE WEST 12KV	DANVILLE	IND./COMM./RES.	22400	5,638	4,460	Address through substation/circuit improvements
GARRARD CT TIE 4KV	DANVILLE	IND./COMM./RES.	1725	546	562	Address through enhanced spare/portable program
GREENSBURG 12KV	DANVILLE	IND./COMM./RES.	14000	5,576	6,624	Address through enhanced spare/portable program
HARRODSBURG 2 4KV	DANVILLE	IND./COMM./RES.	6250	2,991	3,396	Address through enhanced spare/portable program
HARRODSBURG 1 4KV	DANVILLE	IND./COMM./RES.	7000	2,410	3,016	Address through enhanced spare/portable program
HARRODSBURG 2 12KV	DANVILLE	IND./COMM./RES.	14000	8,772	10,575	Address through enhanced spare/portable program
HARRODSBURG 3 12KV	DANVILLE	IND./COMM./RES.	14000	9,078	9,809	Address through enhanced spare/portable program
HARRODSBURG NORTH 12	DANVILLE	IND./COMM./RES.	14000	7,684	8,087	Address through enhanced spare/portable program
KY ST HOSP 12KV	DANVILLE	IND./COMM./RES.	10500	4,787	8,254	Address through enhanced spare/portable program
LANCASTER 1 4KV	DANVILLE	IND./COMM./RES.	14000	6,354	9,166	Address through enhanced spare/portable program
LEBANON 12KV	DANVILLE	IND./COMM./RES.	14000	9,435	9,890	Address through enhanced spare/portable program
LEBANON EAST 12	DANVILLE	IND./COMM./RES.	14000	10,915	10,598	Address through enhanced spare/portable program
LEBANON IND 12KV	DANVILLE	IND./COMM./RES.	10500	3,465	2,834	Address through enhanced spare/portable program
LEBANON SOUTH 12KV	DANVILLE	IND./COMM./RES.	14000	10,679	10,495	Address through enhanced spare/portable program
LEBANON WEST 12	DANVILLE	IND./COMM./RES.	14000	7,943	10,253	Address through enhanced spare/portable program
MACKVILLE 12KV	DANVILLE	IND./COMM./RES.	1932	490	1,182	Address through enhanced spare/portable program
MINOR FARM 12KV	DANVILLE	IND./COMM./RES.	14000	8,819	8,525	Address through enhanced spare/portable program
RUSSELL SPR 12KV	DANVILLE	IND./COMM./RES.	14000	7,091	16,704	Address through enhanced spare/portable program
SALVISA 12KV	DANVILLE	IND./COMM./RES.	7000	2,242	5,448	Address through enhanced spare/portable program
SHAKERTOWN 12KV	DANVILLE	IND./COMM./RES.	5250	2,288	3,623	Address through enhanced spare/portable program
SHELBY CITY	DANVILLE	IND./COMM./RES.	7000	4,512	6,926	Address through enhanced spare/portable program
SPRINGFIELD 12KV	DANVILLE	IND./COMM./RES.	14000	7,897	8,168	Address through enhanced spare/portable program
SPRINGFIELD 12KV 2	DANVILLE	IND./COMM./RES.	10500	7,687	8,087	Address through enhanced spare/portable program
STANFORD 12KV	DANVILLE	IND./COMM./RES.	14000	6,123	11,606	Address through enhanced spare/portable program
STANFORD NORTH 12KV	DANVILLE	IND./COMM./RES.	14000	8,600	9,752	Address through enhanced spare/portable program
UNION UNDERWEAR 12	DANVILLE	IND./COMM./RES.	14000	9,130	14,475	Address through enhanced spare/portable program
UNION UNDERWEAR 2	DANVILLE	IND./COMM./RES.	14000	6,048	5,875	Address through enhanced spare/portable program
VAKSDAHL AVE 12KV	DANVILLE	IND./COMM./RES.	14000	4,383	3,946	Address through enhanced spare/portable program
WEST CLIFF 4KV	DANVILLE	IND./COMM./RES.	1500	344	720	Address through enhanced spare/portable program
AIRLINE RD 12KV	EARLINGTON	IND./COMM./RES.	6441	4,415	4,432	Address through enhanced spare/portable program
ASHBY ELECTRIC	EARLINGTON	IND./COMM./RES.	999	59	0	Address through enhanced spare/portable program
ASHBYBG PUMP 4KV	EARLINGTON	IND./COMM./RES.	3500	861	864	Address through enhanced spare/portable program
BARDWELL CITY 4KV	EARLINGTON	IND./COMM./RES.	5250	2,282	2,020	Address through enhanced spare/portable program
BARLOW 12KV	EARLINGTON	IND./COMM./RES.	10500	5,849	6,242	Address through enhanced spare/portable program
BARNHILL 2.4KV	EARLINGTON	IND./COMM./RES.	334	93	208	Address through enhanced spare/portable program
BEAVER DAM 12KV	EARLINGTON	IND./COMM./RES.	14000	6,895	7,448	Address through enhanced spare/portable program
BEAVER DAM N 12	EARLINGTON	IND./COMM./RES.	14000	4,735	4,147	Address through enhanced spare/portable program
BEECH CREEK 1 4KV	EARLINGTON	IND./COMM./RES.	2416	1,265	2,308	Address through enhanced spare/portable program
BEECHMONT 4KV	EARLINGTON	IND./COMM./RES.	5751	2,986	4,076	Address through enhanced spare/portable program
BEVIER 4KV	EARLINGTON	IND./COMM./RES.	1500	716	1,345	Address through enhanced spare/portable program
BORG-WARNER 12KV	EARLINGTON	IND./COMM./RES.	22400	5,478	5,426	Address through substation/circuit improvements
CALHOUN 4KV	EARLINGTON	IND./COMM./RES.	4687	3,002	3,041	Address through enhanced spare/portable program
CAMP BRECK 12KV	EARLINGTON	IND./COMM./RES.	14000	5,224	7,200	Address through enhanced spare/portable program
CEDAR BLUFF 4KV	EARLINGTON	IND./COMM./RES.	3000	884	1,325	Address through enhanced spare/portable program
CENTERTN S 4KV	EARLINGTON	IND./COMM./RES.	4687	1,114	2,107	Address through enhanced spare/portable program
CERRO-SALEM 4KV	EARLINGTON	IND./COMM./RES.	500	1	0	Address through enhanced spare/portable program
CHRISTIAN 4KV	EARLINGTON	IND./COMM./RES.	1932	616	890	Address through enhanced spare/portable program
CIMARRON 7.5Y	EARLINGTON	IND./COMM./RES.	4830	565	799	Address through enhanced spare/portable program
CLAXTON 4KV	EARLINGTON	IND./COMM./RES.	2300	573	981	Address through enhanced spare/portable program
CLAY 4KV	EARLINGTON	IND./COMM./RES.	6250	3,293	4,524	Address through enhanced spare/portable program
CLINTON 12KV	EARLINGTON	IND./COMM./RES.	10500	4,864	5,265	Address through enhanced spare/portable program
CORYDON 4KV	EARLINGTON	IND./COMM./RES.	3750	2,677	3,721	Address through enhanced spare/portable program
CROFTON 4KV	EARLINGTON	IND./COMM./RES.	4687	2,723	3,371	Address through enhanced spare/portable program
CROSSROADS	EARLINGTON	IND./COMM./RES.	1440	368	595	Address through enhanced spare/portable program
DANIEL BOONE 4KV	EARLINGTON	IND./COMM./RES.	2000	513	820	Address through enhanced spare/portable program
DAWSON 12KV	EARLINGTON	IND./COMM./RES.	6250	4,028	5,553	Address through enhanced spare/portable program
DAWSON IND. 4KV	EARLINGTON	IND./COMM./RES.	14000	3,924	1,740	Address through enhanced spare/portable program
DAWSON SPRNGS 4KV	EARLINGTON	IND./COMM./RES.	6250	2,212	2,346	Address through enhanced spare/portable program

<u>All N1DT Substations</u>	<u>Assigned Operations Center</u>	<u>Estimated Load Type</u>	<u>Top</u>	<u>Summer</u>	<u>Winter</u>	<u>Proposed Resolution</u>
			<u>Nameplate Rating kVA</u>	<u>Peak kVA</u>	<u>Peak kVA</u>	
DIAMOND 7.2KV	EARLINGTON	IND./COMM./RES.	1440	441	599	Address through enhanced spare/portable program
DIXON 12KV	EARLINGTON	IND./COMM./RES.	5250	2,784	2,295	Address through enhanced spare/portable program
DOZIER HTS 12KV	EARLINGTON	IND./COMM./RES.	14000	6,045	7,557	Address through enhanced spare/portable program
DRAKESBORO 4KV	EARLINGTON	IND./COMM./RES.	4687	2,540	3,714	Address through enhanced spare/portable program
DYCUSBURG 7.2KV	EARLINGTON	IND./COMM./RES.	767	257	409	Address through enhanced spare/portable program
EARLINGTON 4KV	EARLINGTON	IND./COMM./RES.	3450	1,824	1,664	Address through enhanced spare/portable program
EARLINGTON 12KV	EARLINGTON	IND./COMM./RES.	14000	5,028	7,056	Address through enhanced spare/portable program
EAST DIAMOND 4KV	EARLINGTON	IND./COMM./RES.	5250	2,994	4,656	Address through enhanced spare/portable program
EBENEZER 7.5KV	EARLINGTON	IND./COMM./RES.	4830	27	38	Address through enhanced spare/portable program
ECHOLS 12KV	EARLINGTON	IND./COMM./RES.	1767	1,077	1,652	Address through enhanced spare/portable program
EDDYVILLE 12KV	EARLINGTON	IND./COMM./RES.	10500	8,358	8,519	Address through enhanced spare/portable program
EDDYVL PRIS 12KV	EARLINGTON	IND./COMM./RES.	10500	4,329	5,119	Address through enhanced spare/portable program
FIES CITY 2.4KV	EARLINGTON	IND./COMM./RES.	373	66	107	Address through enhanced spare/portable program
FORESTDALE 12KV	EARLINGTON	IND./COMM./RES.	14000	6,670	7,252	Address through enhanced spare/portable program
FREDONIA 12KV	EARLINGTON	IND./COMM./RES.	3500	2,529	2,915	Address through enhanced spare/portable program
FREDONIA QY 12KV	EARLINGTON	IND./COMM./RES.	6250	976	1,585	Address through enhanced spare/portable program
FREDONIA QY 12KV 2	EARLINGTON	IND./COMM./RES.	1500	904	591	Address through enhanced spare/portable program
GOODYEAR 2.4KV	EARLINGTON	IND./COMM./RES.	5600	129	187	Address through enhanced spare/portable program
GRAHAM 12KV	EARLINGTON	IND./COMM./RES.	7000	4,277	7,465	Address through enhanced spare/portable program
GREEN R ST 2 12	EARLINGTON	IND./COMM./RES.	14000	0	0	Address through enhanced spare/portable program
GREENVILLE 12KV	EARLINGTON	IND./COMM./RES.	14000	6,745	10,005	Address through enhanced spare/portable program
GREENVILLE NORTH 12	EARLINGTON	IND./COMM./RES.	14000	10,293	13,939	Address through enhanced spare/portable program
GREENVILLE W 4KV	EARLINGTON	IND./COMM./RES.	5250	2,228	1,706	Address through enhanced spare/portable program
HAMILTON 12KV	EARLINGTON	IND./COMM./RES.	333	1	1	Address through enhanced spare/portable program
HANSON 12KV	EARLINGTON	IND./COMM./RES.	14000	9,717	10,161	Address through enhanced spare/portable program
HARDESTY 34.5KV	EARLINGTON	IND./COMM./RES.	12500	3335	10256	Address through enhanced spare/portable program
HARTFORD 4KV	EARLINGTON	IND./COMM./RES.	10500	7,490	6,305	Address through enhanced spare/portable program
ISLAND 4KV	EARLINGTON	IND./COMM./RES.	3000	1,922	3,845	Address through enhanced spare/portable program
JOSEPH 4KV	EARLINGTON	IND./COMM./RES.	10500	19	19	Address through enhanced spare/portable program
KUTTAWA 12KV	EARLINGTON	IND./COMM./RES.	5250	3,063	2,735	Address through enhanced spare/portable program
LIVERMORE 4KV	EARLINGTON	IND./COMM./RES.	4687	3,276	3,871	Address through enhanced spare/portable program
MADISONV GE 12KV	EARLINGTON	IND./COMM./RES.	22400	6,363	4,718	Address through substation/circuit improvements
MANITOU 4KV	EARLINGTON	IND./COMM./RES.	3125	1,625	3,049	Address through enhanced spare/portable program
MANNINGTON 4KV	EARLINGTON	IND./COMM./RES.	1500	829	949	Address through enhanced spare/portable program
MARION 4KV	EARLINGTON	IND./COMM./RES.	5600	4,049	4,241	Address through enhanced spare/portable program
MARION SOUTH 12KV	EARLINGTON	IND./COMM./RES.	14000	8,300	9,274	Address through enhanced spare/portable program
MEXICO 4KV	EARLINGTON	IND./COMM./RES.	1725	768	998	Address through enhanced spare/portable program
MOORMAN 4KV	EARLINGTON	IND./COMM./RES.	533	258	560	Address through enhanced spare/portable program
MORGANFIELD 4KV	EARLINGTON	IND./COMM./RES.	7000	4,038	4,072	Address through enhanced spare/portable program
MORGANFIELD CITY 4KV	EARLINGTON	IND./COMM./RES.	10500	4,566	5,224	Address through enhanced spare/portable program
MORGANFLD I 12KV	EARLINGTON	IND./COMM./RES.	14000	6,019	5,996	Address through enhanced spare/portable program
MORTONS GAP 4KV	EARLINGTON	IND./COMM./RES.	4687	2,657	3,335	Address through enhanced spare/portable program
MUHLENBERG PRISON 12	EARLINGTON	IND./COMM./RES.	14000	6,054	8,525	Address through enhanced spare/portable program
NELSON 12KV	EARLINGTON	IND./COMM./RES.	3125	1,107	2,261	Address through enhanced spare/portable program
NORTONVILLE 12KV	EARLINGTON	IND./COMM./RES.	14000	4,994	6,540	Address through enhanced spare/portable program
OAK HILL 34.5KV	EARLINGTON	IND./COMM./RES.	20000	11794	16569	Address through enhanced spare/portable program
ONTON 12KV	EARLINGTON	IND./COMM./RES.	1932	1,282	2,082	Address through enhanced spare/portable program
OVERLAND NORTH	EARLINGTON	IND./COMM./RES.	5250	2,129	2,577	Address through enhanced spare/portable program
OVERLAND SO. 4KV	EARLINGTON	IND./COMM./RES.	2874	282	409	Address through enhanced spare/portable program
PERDUE 12KV	EARLINGTON	IND./COMM./RES.	7000	1,958	1,987	Address through enhanced spare/portable program
POOLE 4KV	EARLINGTON	IND./COMM./RES.	1725	752	858	Address through enhanced spare/portable program
PRIDE 2.4KV	EARLINGTON	IND./COMM./RES.	354	110	153	Address through enhanced spare/portable program
PROVIDENCE 4KV	EARLINGTON	IND./COMM./RES.	6250	3,882	3,164	Address through enhanced spare/portable program
PROVIDENCE EAST	EARLINGTON	IND./COMM./RES.	5250	2,680	2,521	Address through enhanced spare/portable program
REED MINERAL 12KV	EARLINGTON	IND./COMM./RES.	1500	569	570	Address through enhanced spare/portable program
RIVER VIEW 4KV	EARLINGTON	IND./COMM./RES.	3125	1,716	3,391	Address through enhanced spare/portable program
SALEM 12 KV	EARLINGTON	IND./COMM./RES.	7000	2,765	4,585	Address through enhanced spare/portable program
SALEM 34.5KV	EARLINGTON	IND./COMM./RES.	14000	4586	4942	Address through enhanced spare/portable program
SEBREE 4KV	EARLINGTON	IND./COMM./RES.	5250	3,068	3,619	Address through enhanced spare/portable program
SENTRY 4KV	EARLINGTON	IND./COMM./RES.	1288	252	539	Address through enhanced spare/portable program
SHAVERS CHAP 12KV	EARLINGTON	IND./COMM./RES.	14000	9,804	15,696	Address through enhanced spare/portable program
SIMMONS 4KV	EARLINGTON	IND./COMM./RES.	1932	410	308	Address through enhanced spare/portable program
SIXTH VEIN 12KV	EARLINGTON	IND./COMM./RES.	7000	2,958	4,689	Address through enhanced spare/portable program
SPENCER CHM 12KV	EARLINGTON	IND./COMM./RES.	7000	5,530	5,164	Address through enhanced spare/portable program
SPENCER CHM 2.4KV	EARLINGTON	IND./COMM./RES.	7000	2,102	2,166	Address through enhanced spare/portable program
ST CHARLES 12KV W	EARLINGTON	IND./COMM./RES.	4687	3,289	5,190	Address through enhanced spare/portable program
STRINGTOWN 4KV	EARLINGTON	IND./COMM./RES.	4830	1,084	1,182	Address through enhanced spare/portable program
STURGIS 12KV	EARLINGTON	IND./COMM./RES.	7000	4,429	5,812	Address through enhanced spare/portable program
STURGIS 4KV	EARLINGTON	IND./COMM./RES.	5250	2,915	2,974	Address through enhanced spare/portable program
SUNOCO 12KV	EARLINGTON	IND./COMM./RES.	3500	1,993	2,003	Address through enhanced spare/portable program



<u>All N1DT Substations</u>	<u>Assigned Operations Center</u>	<u>Estimated Load Type</u>	<u>Top</u>	<u>Summer</u>	<u>Winter</u>	<u>Proposed Resolution</u>
			<u>Nameplate Rating kVA</u>	<u>Peak kVA</u>	<u>Peak kVA</u>	
SUNSET 2 2.4KV	EARLINGTON	IND./COMM./RES.	500	1	1	Address through enhanced spare/portable program
TEXAS GAS 4KV	EARLINGTON	IND./COMM./RES.	5600	1,215	2,422	Address through enhanced spare/portable program
THREE RIV RK 4KV	EARLINGTON	IND./COMM./RES.	5751	1	1	Address through enhanced spare/portable program
TUNNEL HILL 12KV	EARLINGTON	IND./COMM./RES.	4687	1,751	2,507	Address through enhanced spare/portable program
UNIONTOWN 4KV	EARLINGTON	IND./COMM./RES.	5250	3,099	4,036	Address through enhanced spare/portable program
WEBCOAL 2 7.5KV	EARLINGTON	IND./COMM./RES.	6441	39	179	Address through enhanced spare/portable program
WEBCOAL 3 7.5KV	EARLINGTON	IND./COMM./RES.	6441	0	0	Address through enhanced spare/portable program
WEBCOAL 7.5KV	EARLINGTON	IND./COMM./RES.	4830	1	1	Address through enhanced spare/portable program
WESTVACO 13.8KV 1	EARLINGTON	IND./COMM./RES.	22400	15,666	16,458	Address through substation/circuit improvements
WESTVACO 13.8KV 2	EARLINGTON	IND./COMM./RES.	22400	15,973	16,269	Address through substation/circuit improvements
WESTVACO 13.8KV 3	EARLINGTON	IND./COMM./RES.	22400	15,856	16,574	Address through substation/circuit improvements
WHITE PLAINS 4KV	EARLINGTON	IND./COMM./RES.	5000	3,264	5,584	Address through enhanced spare/portable program
WICKLIFFE 13.8KV	EARLINGTON	IND./COMM./RES.	14000	6,780	7,628	Address through enhanced spare/portable program
ZION 12KV	EARLINGTON	IND./COMM./RES.	7000	3,914	4,411	Address through enhanced spare/portable program
BARDSTOWN CITY 12KV	ELIZABETHTOWN	IND./COMM./RES.	22400	13,136	12,485	Address through substation/circuit improvements
BARDSTOWN IND 12KV	ELIZABETHTOWN	IND./COMM./RES.	22400	11,642	9,936	Address through substation/circuit improvements
BARDSTOWN IND 2	ELIZABETHTOWN	IND./COMM./RES.	22400	9,122	9,337	Address through substation/circuit improvements
BARTON 4KV	ELIZABETHTOWN	IND./COMM./RES.	7000	6,820	6,641	Address through enhanced spare/portable program
BONNIEVILLE 12KV	ELIZABETHTOWN	IND./COMM./RES.	3500	1,663	2,324	Address through enhanced spare/portable program
BLACK BRANCH ROAD	ELIZABETHTOWN	IND./COMM./RES.	28000	12,874	13,245	Address through substation/circuit improvements
EASTVIEW 12KV	ELIZABETHTOWN	IND./COMM./RES.	10500	4,584	8,623	Address through enhanced spare/portable program
ELIZABETHTOWN IND 12	ELIZABETHTOWN	IND./COMM./RES.	22400	10,454	11,027	Address through substation/circuit improvements
ETOWN 3 4KV	ELIZABETHTOWN	IND./COMM./RES.	10500	141	158	Address through enhanced spare/portable program
ETOWN W 12 KV	ELIZABETHTOWN	IND./COMM./RES.	22400	18,446	16,038	Address through substation/circuit improvements
GATES RUBBER 2.4	ELIZABETHTOWN	IND./COMM./RES.	10500	574	581	Address through enhanced spare/portable program
HODGENVILLE 4KV	ELIZABETHTOWN	IND./COMM./RES.	5250	4,320	4,428	Address through enhanced spare/portable program
HODGENVILLE 12KV	ELIZABETHTOWN	IND./COMM./RES.	14000	7,556	11,521	Address through enhanced spare/portable program
HORSE CAVE IND 12KV	ELIZABETHTOWN	IND./COMM./RES.	22400	13,964	13,403	Address through substation/circuit improvements
HORSE CAVE IND 12 2	ELIZABETHTOWN	IND./COMM./RES.	22400	16,783	16,805	Address through substation/circuit improvements
LEBANON JCT 12KV	ELIZABETHTOWN	IND./COMM./RES.	22400	13,092	14,077	Address through substation/circuit improvements
MID VAL CLRK 2.4	ELIZABETHTOWN	IND./COMM./RES.	7000	2,880	2,702	Address through enhanced spare/portable program
MILLWOOD 12KV	ELIZABETHTOWN	IND./COMM./RES.	7000	2,457	4,104	Address through enhanced spare/portable program
MUNFORDVILLE 12KV	ELIZABETHTOWN	IND./COMM./RES.	10500	7,019	7,969	Address through enhanced spare/portable program
NEW HAVEN 12KV	ELIZABETHTOWN	IND./COMM./RES.	10500	4,000	6,942	Address through enhanced spare/portable program
RADCLIFF SOUTH 12KV	ELIZABETHTOWN	IND./COMM./RES.	10500	4,179	7,920	Address through enhanced spare/portable program
RIO 12KV	ELIZABETHTOWN	IND./COMM./RES.	3125	1,823	2,731	Address through enhanced spare/portable program
SONORA 12KV	ELIZABETHTOWN	IND./COMM./RES.	10500	4,834	8,649	Address through enhanced spare/portable program
VINE GROVE 4KV	ELIZABETHTOWN	IND./COMM./RES.	7000	4,155	5,075	Address through enhanced spare/portable program
WOODLAWN 12KV	ELIZABETHTOWN	IND./COMM./RES.	14000	7,476	10,138	Address through enhanced spare/portable program
ADAMS 12KV	LEXINGTON	IND./COMM./RES.	22400	10,368	13,952	Address through substation/circuit improvements
ALEXANDER 12KV	LEXINGTON	IND./COMM./RES.	22400	15,664	28,728	Address through substation/circuit improvements
AMERICAN AV 4KV	LEXINGTON	IND./COMM./RES.	14000	11,592	13,092	Address through enhanced spare/portable program
ASHLAND PIPE 12KV	LEXINGTON	IND./COMM./RES.	14000	9,283	11,530	Address through enhanced spare/portable program
ASHLAND PIPE 4KV	LEXINGTON	IND./COMM./RES.	6250	1,647	1,625	Address through enhanced spare/portable program
BELT LINE 12KV	LEXINGTON	IND./COMM./RES.	22400	16,632	18,245	Address through substation/circuit improvements
BUCHANAN 4KV	LEXINGTON	IND./COMM./RES.	14000	4,752	6,272	Address through enhanced spare/portable program
CLAYS MILL 12 KV	LEXINGTON	IND./COMM./RES.	37333	26,448	25,392	Address through substation/circuit improvements
DELAPLAIN 12KV	LEXINGTON	IND./COMM./RES.	14000	10,132	10,593	Address through enhanced spare/portable program
DELAPLAIN 12KV 2	LEXINGTON	IND./COMM./RES.	28000	17,130	17,160	Address through substation/circuit improvements
DONERAIL 12KV	LEXINGTON	IND./COMM./RES.	14000	7,238	15,312	Address through enhanced spare/portable program
FMC 12KV	LEXINGTON	IND./COMM./RES.	22400	18,850	24,134	Address through substation/circuit improvements
FRANKFORT 34.5KV	LEXINGTON	IND./COMM./RES.	20000	12,718	23,587	Address through enhanced spare/portable program
GEORGETOWN 4KV	LEXINGTON	IND./COMM./RES.	7000	4,716	4,673	Address through enhanced spare/portable program
GEORGETOWN 12KV	LEXINGTON	IND./COMM./RES.	14000	11,762	12,344	Address through enhanced spare/portable program
HAEFLING 12KV 1	LEXINGTON	IND./COMM./RES.	39200	26,730	24,498	Address through substation/circuit improvements
HALEY 12KV	LEXINGTON	IND./COMM./RES.	14000	6,048	10,128	Address through enhanced spare/portable program
HIGH BRIDGE 4KV	LEXINGTON	IND./COMM./RES.	2300	475	1,072	Address through enhanced spare/portable program
HOOVER 12KV	LEXINGTON	IND./COMM./RES.	22400	15,044	23,015	Address through substation/circuit improvements
HUGHES LANE 12KV	LEXINGTON	IND./COMM./RES.	14000	4,570	12,154	Address through enhanced spare/portable program
IBM NORTH 12KV	LEXINGTON	IND./COMM./RES.	33600	6,385	6,549	Address through substation/circuit improvements
INNOVATION DRIVE 1	LEXINGTON	IND./COMM./RES.	37333	22,000	44,000	Address through substation/circuit improvements
INNOVATION DRIVE 2	LEXINGTON	IND./COMM./RES.	14000	1	1	Address through enhanced spare/portable program
JOYLAND 12KV 2	LEXINGTON	IND./COMM./RES.	22400	13,982	14,069	Address through substation/circuit improvements
KUHLMAN 12KV	LEXINGTON	IND./COMM./RES.	5250	186	480	Address through enhanced spare/portable program
KY RIVER 4KV	LEXINGTON	IND./COMM./RES.	14000	7,020	4,615	Address through enhanced spare/portable program
KY RIVER 12KV	LEXINGTON	IND./COMM./RES.	7000	2,465	3,642	Address through enhanced spare/portable program
KY RIVER 4KV #2	LEXINGTON	IND./COMM./RES.	14000	696	778	Address through enhanced spare/portable program
LAKESHORE 12KV	LEXINGTON	IND./COMM./RES.	37333	27,540	27,706	Address through substation/circuit improvements
LAWRENCEBURG 12KV 2	LEXINGTON	IND./COMM./RES.	22400	16,157	25,834	Address through substation/circuit improvements
LEMONS MILL 12KV	LEXINGTON	IND./COMM./RES.	22400	12,773	20,117	Address through substation/circuit improvements

<u>All N1DT Substations</u>	<u>Assigned Operations Center</u>	<u>Estimated Load Type</u>	<u>Top</u>	<u>Summer</u>	<u>Winter</u>	<u>Proposed Resolution</u>
			<u>Nameplate Rating kVA</u>	<u>Peak kVA</u>	<u>Peak kVA</u>	
LEMONS MILL 12KV 2	LEXINGTON	IND./COMM./RES.	22400	12,624	12,308	Address through substation/circuit improvements
LIBERTY RD 12KV	LEXINGTON	IND./COMM./RES.	37333	33,858	38,484	Address through substation/circuit improvements
MIDWAY 12KV	LEXINGTON	IND./COMM./RES.	14000	7,770	13,692	Address through enhanced spare/portable program
NEWTOWN 12KV	LEXINGTON	IND./COMM./RES.	14000	7,016	18,420	Address through enhanced spare/portable program
OXFORD 12KV	LEXINGTON	IND./COMM./RES.	14000	3,612	6,830	Address through enhanced spare/portable program
OXFORD 12KV 2	LEXINGTON	IND./COMM./RES.	14000	9,792	15,379	Address through enhanced spare/portable program
PARKRS ML 12KV 1	LEXINGTON	IND./COMM./RES.	22400	16476	19,728	Address through substation/circuit improvements
PARKRS ML 12KV 2	LEXINGTON	IND./COMM./RES.	22400	17238	20,520	Address through substation/circuit improvements
PEPPER PIKE 12KV	LEXINGTON	IND./COMM./RES.	14000	4,936	13,634	Address through enhanced spare/portable program
PROCTR/GAMBL 4KV	LEXINGTON	IND./COMM./RES.	14000	9,216	9,168	Address through enhanced spare/portable program
RACE ST 4KV WEST	LEXINGTON	IND./COMM./RES.	10500	6,324	9,138	Address through enhanced spare/portable program
ROGERS GAP 12KV	LEXINGTON	IND./COMM./RES.	22400	6,350	17,712	Address through substation/circuit improvements
SHADRACK 12KV	LEXINGTON	IND./COMM./RES.	10500	4,031	8,208	Address through enhanced spare/portable program
SHANNON RUN 12KV	LEXINGTON	IND./COMM./RES.	14000	4,550	8,185	Address through enhanced spare/portable program
SHUN PIKE 12KV	LEXINGTON	IND./COMM./RES.	14000	6,140	8,899	Address through enhanced spare/portable program
STAMPING GROUND 12KV	LEXINGTON	IND./COMM./RES.	14000	5,236	11,791	Address through enhanced spare/portable program
STONEWALL 12KV	LEXINGTON	IND./COMM./RES.	37333	29,232	30,366	Address through substation/circuit improvements
TRAFTON AVE 12KV	LEXINGTON	IND./COMM./RES.	22400	13,536	13,536	Address through substation/circuit improvements
U K SCOTT 12KV	LEXINGTON	IND./COMM./RES.	37333	18,215	12,062	Address through substation/circuit improvements
VERSAILES W 12KV	LEXINGTON	IND./COMM./RES.	22400	18,343	21,540	Address through substation/circuit improvements
VERSAILES 4KV	LEXINGTON	IND./COMM./RES.	6250	4,806	5,265	Address through enhanced spare/portable program
VERSAILES B 12KV	LEXINGTON	IND./COMM./RES.	22400	15825	19,881	Address through substation/circuit improvements
VILEY ROAD 12KV	LEXINGTON	IND./COMM./RES.	39200	27,288	43,080	Address through substation/circuit improvements
VINE ST 4KV 1	LEXINGTON	IND./COMM./RES.	6250	2,462	3,341	Address through enhanced spare/portable program
WEST HICKMN 12KV	LEXINGTON	IND./COMM./RES.	22400	18,360	19,843	Address through substation/circuit improvements
WIL DWNG 1 12KV	LEXINGTON	IND./COMM./RES.	22400	15,120	24,235	Address through substation/circuit improvements
WIL DWNG 2 12KV	LEXINGTON	IND./COMM./RES.	22400	14,587	26,698	Address through substation/circuit improvements
WILMORE 12KV	LEXINGTON	IND./COMM./RES.	14000	9,683	16,116	Address through enhanced spare/portable program
WILMORE 4KV	LEXINGTON	IND./COMM./RES.	3500	2,963	1,956	Address through enhanced spare/portable program
WOODLAKE 4KV	LEXINGTON	IND./COMM./RES.	3125	522	825	Address through enhanced spare/portable program
AB 12KV TR 1	LOUISVILLE	IND./COMM./RES.	28.0	27.4	11.5	Address through substation/circuit improvements
AB 12KV TR 2	LOUISVILLE	IND./COMM./RES.	28.0	24.2	13.7	Address through substation/circuit improvements
AK 12KV TR 1	LOUISVILLE	IND./COMM./RES.	44.8	28.3	14.5	Address through substation/circuit improvements
BR 12KV TR 3	LOUISVILLE	IND./COMM./RES.	28.0	23.5	16.4	Address through substation/circuit improvements
BR 12KV TR 4	LOUISVILLE	IND./COMM./RES.	28.0	20.1	27.7	Address through substation/circuit improvements
BR 12KV TR 5	LOUISVILLE	IND./COMM./RES.	28.0	26.5	13.4	Address through substation/circuit improvements
CF 12KV TR 1	LOUISVILLE	IND./COMM./RES.	44.8	27.7	26.9	Address through substation/circuit improvements
Clarks Lane TR 1	LOUISVILLE	IND./COMM./RES.	4.7	3.3	N/A	Address through enhanced spare/portable program
Crop TR 2	LOUISVILLE	IND./COMM./RES.	7.0	3.8	N/A	Address through enhanced spare/portable program
CW 12KV TR 1	LOUISVILLE	IND./COMM./RES.	28.0	25.2	17.3	Address through substation/circuit improvements
CW 12KV TR 2	LOUISVILLE	IND./COMM./RES.	28.0	18.8	13.7	Address through substation/circuit improvements
DE 14KV TR 1	LOUISVILLE	IND./COMM./RES.	44.8	34.1	24.4	Address through substation/circuit improvements
DX 12KV TR 1	LOUISVILLE	IND./COMM./RES.	44.8	37.0	21.1	Address through substation/circuit improvements
ET 12KV TR 2	LOUISVILLE	IND./COMM./RES.	28.0	22.2	14.4	Address through substation/circuit improvements
ET 12KV TR 6	LOUISVILLE	IND./COMM./RES.	28.0	25.3	12.8	Address through substation/circuit improvements
FH 12KV TR 2	LOUISVILLE	IND./COMM./RES.	44.8	31.5	16.1	Address through substation/circuit improvements
FL 14KV TR 1	LOUISVILLE	IND./COMM./RES.	44.8	35.0	19.5	Address through substation/circuit improvements
FM 12KV TR 2	LOUISVILLE	IND./COMM./RES.	44.8	17.3	12.7	Address through substation/circuit improvements
Gaulbert TR 1	LOUISVILLE	IND./COMM./RES.	7.0	3.8	N/A	Address through enhanced spare/portable program
Gilligan TR 1	LOUISVILLE	IND./COMM./RES.	6.3	3.9	N/A	Address through enhanced spare/portable program
GR 14KV TR 2	LOUISVILLE	IND./COMM./RES.	35.0	9.4	10.4	Address through substation/circuit improvements
Grand TR 1	LOUISVILLE	IND./COMM./RES.	3.6	3.0	N/A	Address through enhanced spare/portable program
Grand TR2	LOUISVILLE	IND./COMM./RES.	3.6	3.0	N/A	Address through enhanced spare/portable program
HB 12KV TR 1	LOUISVILLE	IND./COMM./RES.	44.8	38.5	28.2	Address through substation/circuit improvements
HB 12KV TR 2	LOUISVILLE	IND./COMM./RES.	44.8	32.5	24.8	Address through substation/circuit improvements
HC 12KV TR 2	LOUISVILLE	IND./COMM./RES.	44.8	40.8	20.5	Address through substation/circuit improvements
Herrman TR 1	LOUISVILLE	IND./COMM./RES.	6.3	4.7	N/A	Address through enhanced spare/portable program
HI 12KV TR 2	LOUISVILLE	IND./COMM./RES.	44.8	45.1	22.1	Address through substation/circuit improvements
HL 12KV TR 1	LOUISVILLE	IND./COMM./RES.	28.0	18.6	17.2	Address through substation/circuit improvements
KC 34KV TR 1	LOUISVILLE	IND./COMM./RES.	30.0	19.1	16.9	Address through substation/circuit improvements
KE 12KV TR 1	LOUISVILLE	IND./COMM./RES.	28.0	23.9	12.0	Address through substation/circuit improvements
KE 12KV TR 2	LOUISVILLE	IND./COMM./RES.	28.0	21.6	13.9	Address through substation/circuit improvements
Lynn TR 2	LOUISVILLE	IND./COMM./RES.	7.0	3.7	N/A	Address through enhanced spare/portable program
MC 12KV TR 9	LOUISVILLE	IND./COMM./RES.	28.0	17.2	11.1	Address through substation/circuit improvements
ML 12KV TR 3	LOUISVILLE	IND./COMM./RES.	44.8	35.8	19.8	Address through substation/circuit improvements
ML 12KV TR 6	LOUISVILLE	IND./COMM./RES.	44.8	37.5	21.2	Address through substation/circuit improvements
OH 12KV TR 1	LOUISVILLE	IND./COMM./RES.	44.8	34.1	23.5	Address through substation/circuit improvements
OK 12KV TR 1	LOUISVILLE	IND./COMM./RES.	44.8	31.8	15.4	Address through substation/circuit improvements
Ormsby TR 1	LOUISVILLE	IND./COMM./RES.	4.7	5.0	N/A	Address through enhanced spare/portable program
PL 12KV TR 1	LOUISVILLE	IND./COMM./RES.	44.8	32.2	19.5	Address through substation/circuit improvements

<u>All N1DT Substations</u>	<u>Assigned Operations Center</u>	<u>Estimated Load Type</u>	<u>Top</u>	<u>Summer</u>	<u>Winter</u>	<u>Proposed Resolution</u>
			<u>Nameplate Rating kVA</u>	<u>Peak kVA</u>	<u>Peak kVA</u>	
PV 12KV TR 1	LOUISVILLE	IND./COMM./RES.	44.8	36.0	22.8	Address through substation/circuit improvements
Shawnee TR 1	LOUISVILLE	IND./COMM./RES.	4.7	4.0	N/A	Address through enhanced spare/portable program
Shawnee TR 2	LOUISVILLE	IND./COMM./RES.	4.7	4.0	N/A	Address through enhanced spare/portable program
SK 12KV TR 1	LOUISVILLE	IND./COMM./RES.	10.5	7.9	9.4	Address through enhanced spare/portable program
SM 12KV TR 4	LOUISVILLE	IND./COMM./RES.	44.8	36.7	20.2	Address through substation/circuit improvements
Southern TR 1	LOUISVILLE	IND./COMM./RES.	7.0	6.1	N/A	Address through enhanced spare/portable program
Southern TR 2	LOUISVILLE	IND./COMM./RES.	7.0	8.0	N/A	Address through enhanced spare/portable program
SP 12KV TR 2	LOUISVILLE	IND./COMM./RES.	28.0	20.2	13.6	Address through substation/circuit improvements
SY 12KV TR 1	LOUISVILLE	IND./COMM./RES.	28.0	25.3	14.3	Address through substation/circuit improvements
SY 12KV TR 2	LOUISVILLE	IND./COMM./RES.	28.0	24.9	13.7	Address through substation/circuit improvements
TA 12KV TR 1	LOUISVILLE	IND./COMM./RES.	28.0	24.0	11.5	Address through substation/circuit improvements
TA 12KV TR 3	LOUISVILLE	IND./COMM./RES.	28.0	26.6	13.6	Address through substation/circuit improvements
TA 12KV TR 4	LOUISVILLE	IND./COMM./RES.	28.0	19.7	10.0	Address through substation/circuit improvements
TE 12KV TR 2	LOUISVILLE	IND./COMM./RES.	44.8	36.5	22.9	Address through substation/circuit improvements
TT 34KV TR 1	LOUISVILLE	IND./COMM./RES.	56.0	29.7	20.1	Address through substation/circuit improvements
Western TR 1	LOUISVILLE	IND./COMM./RES.	7.0	6.2	N/A	Address through enhanced spare/portable program
Western TR 2	LOUISVILLE	IND./COMM./RES.	7.0	5.3	N/A	Address through enhanced spare/portable program
WP 12KV TR 1	LOUISVILLE	IND./COMM./RES.	10.5	3.1	2.5	Address through enhanced spare/portable program
WT 12KV TR 4	LOUISVILLE	IND./COMM./RES.	44.8	39.7	23.0	Address through substation/circuit improvements
WT 12KV TR 5	LOUISVILLE	IND./COMM./RES.	28.0	26.6	17.1	Address through substation/circuit improvements
A O SMITH 12KV	MAYSVILLE	IND./COMM./RES.	14000	12,679	18,954	Address through enhanced spare/portable program
AUGUSTA 12KV	MAYSVILLE	IND./COMM./RES.	14000	8,634	9,320	Address through enhanced spare/portable program
BUTLER 12 KV	MAYSVILLE	IND./COMM./RES.	7000	3,629	4,772	Address through enhanced spare/portable program
CARLISLE 4KV	MAYSVILLE	IND./COMM./RES.	2875	1,305	2,100	Address through enhanced spare/portable program
CARLISLE 12KV	MAYSVILLE	IND./COMM./RES.	10500	6,466	10,961	Address through enhanced spare/portable program
CARNTOWN 12KV	MAYSVILLE	IND./COMM./RES.	22400	13,513	15,414	Address through substation/circuit improvements
CYNTHIANA 4KV	MAYSVILLE	IND./COMM./RES.	6250	3,254	4,209	Address through enhanced spare/portable program
CYNTHIANA 12KV	MAYSVILLE	IND./COMM./RES.	14000	8,150	11,088	Address through enhanced spare/portable program
DETROIT HARV 12KV	MAYSVILLE	IND./COMM./RES.	22400	12,668	14,029	Address through substation/circuit improvements
EWINGTON 12 KV 2	MAYSVILLE	IND./COMM./RES.	22400	15,228	13,835	Address through substation/circuit improvements
FALMOUTH 4KV	MAYSVILLE	IND./COMM./RES.	7000	4,439	3,773	Address through enhanced spare/portable program
FARMERS 12KV	MAYSVILLE	IND./COMM./RES.	10500	2,903	4,100	Address through enhanced spare/portable program
FLEMINGSBURG 12KV	MAYSVILLE	IND./COMM./RES.	7000	5,550	6,961	Address through enhanced spare/portable program
KAWNEER 12KV	MAYSVILLE	IND./COMM./RES.	14000	4,739	5,020	Address through enhanced spare/portable program
KENTON 12KV	MAYSVILLE	IND./COMM./RES.	14000	9,567	13,703	Address through enhanced spare/portable program
KENTON 12KV 2	MAYSVILLE	IND./COMM./RES.	14000	9,516	10,132	Address through enhanced spare/portable program
MAYSVILLE E 4KV	MAYSVILLE	IND./COMM./RES.	10500	4,738	4,568	Address through enhanced spare/portable program
MILLERSBURG 12KV	MAYSVILLE	IND./COMM./RES.	7000	2,172	6,503	Address through enhanced spare/portable program
MOREHEAD 12KV	MAYSVILLE	IND./COMM./RES.	14000	8,392	9,521	Address through enhanced spare/portable program
MOREHEAD W 12KV	MAYSVILLE	IND./COMM./RES.	10500	6,610	10,912	Address through enhanced spare/portable program
MT STERLING 12KV	MAYSVILLE	IND./COMM./RES.	14000	11,750	16,399	Address through enhanced spare/portable program
OWINGSVILLE 12KV	MAYSVILLE	IND./COMM./RES.	14000	6,139	6,463	Address through enhanced spare/portable program
SALT LICK 12KV	MAYSVILLE	IND./COMM./RES.	4320	2,847	5,145	Address through enhanced spare/portable program
SARDIS 12KV	MAYSVILLE	IND./COMM./RES.	3500	1,450	2,615	Address through enhanced spare/portable program
SHARON 12KV	MAYSVILLE	IND./COMM./RES.	14000	7,304	13,715	Address through enhanced spare/portable program
WEDONIA 12KV	MAYSVILLE	IND./COMM./RES.	7000	4,303	8,277	Address through enhanced spare/portable program
ADDINGTON	NORTON	IND./COMM./RES.	5250	429	2,782	Address through enhanced spare/portable program
APPALACHIA 12KV	NORTON	IND./COMM./RES.	10500	2,845	9,383	Address through enhanced spare/portable program
BEAR BRANCH 12 KV	NORTON	IND./COMM./RES.	7000	2,156	2,441	Address through enhanced spare/portable program
BENS BRANCH 12KV	NORTON	IND./COMM./RES.	600	31	45	Address through enhanced spare/portable program
BLACK CREEK 12KV	NORTON	IND./COMM./RES.	733	17	44	Address through enhanced spare/portable program
CLINCH VALY 12KV	NORTON	IND./COMM./RES.	22400	7,632	21,416	Address through substation/circuit improvements
CRITICAL FK 12KV	NORTON	IND./COMM./RES.	5250	380	0	Address through enhanced spare/portable program
DIXIANA 12KV	NORTON	IND./COMM./RES.	4687	1,418	2,238	Address through enhanced spare/portable program
DIXIANA 4KV	NORTON	IND./COMM./RES.	7000	2,387	2,867	Address through enhanced spare/portable program
DORCHESTER 12KV	NORTON	IND./COMM./RES.	14000	5,413	11,807	Address through enhanced spare/portable program
DORCHESTER 23 A	NORTON	IND./COMM./RES.	28000	0	0	Address through substation/circuit improvements
DWINA 12KV	NORTON	IND./COMM./RES.	3500	896	2,123	Address through enhanced spare/portable program
EXETER 4KV	NORTON	IND./COMM./RES.	2300	316	998	Address through enhanced spare/portable program
HAMBLIN	NORTON	IND./COMM./RES.	14000	5,250	15,228	Address through enhanced spare/portable program
HAMER 12KV	NORTON	IND./COMM./RES.	1500	386	834	Address through enhanced spare/portable program
HAMER 4KV	NORTON	IND./COMM./RES.	1500	392	440	Address through enhanced spare/portable program
HERALD 12KV 1	NORTON	IND./COMM./RES.	3500	0	0	Address through enhanced spare/portable program
KEOKEE 4KV	NORTON	IND./COMM./RES.	1500	326	1,027	Address through enhanced spare/portable program
LAUREL GROVE 12KV	NORTON	IND./COMM./RES.	3500	289	915	Address through enhanced spare/portable program
OSAKA EAST 4KV	NORTON	IND./COMM./RES.	4687	544	1,784	Address through enhanced spare/portable program
PENDLETON 2.4KV	NORTON	IND./COMM./RES.	100	28	54	Address through enhanced spare/portable program
PENNINGTN GAP 4KV	NORTON	IND./COMM./RES.	5250	1,081	2,954	Address through enhanced spare/portable program
POCKET 4KV	NORTON	IND./COMM./RES.	1958	271	570	Address through enhanced spare/portable program
POOR VALLEY 12KV	NORTON	IND./COMM./RES.	14000	9,994	17,839	Address through enhanced spare/portable program

<u>All N1DT Substations</u>	<u>Assigned Operations Center</u>	<u>Estimated Load Type</u>	<u>Top</u>	<u>Summer</u>	<u>Winter</u>	<u>Proposed Resolution</u>
			<u>Nameplate Rating kVA</u>	<u>Peak kVA</u>	<u>Peak kVA</u>	
RACEWAY 7.2KV	NORTON	IND./COMM./RES.	500	268	176	Address through enhanced spare/portable program
ROARING FORK 2.4KV	NORTON	IND./COMM./RES.	500	121	440	Address through enhanced spare/portable program
ROSE HILL 12KV	NORTON	IND./COMM./RES.	10500	3,738	9,694	Address through enhanced spare/portable program
SANDY RIDGE 12KV	NORTON	IND./COMM./RES.	7000	1,663	5,829	Address through enhanced spare/portable program
ST CHARLES	NORTON	IND./COMM./RES.	3500	834	2,199	Address through enhanced spare/portable program
TOMS CRK 2 4KV	NORTON	IND./COMM./RES.	10500	5,316	6,363	Address through enhanced spare/portable program
WHITE OAK 12KV	NORTON	IND./COMM./RES.	3500	860	1,787	Address through enhanced spare/portable program
WISE 12KV	NORTON	IND./COMM./RES.	22400	8,104	20,845	Address through substation/circuit improvements
ROARING FORK 2.4KV	NORTON	IND./COMM./RES.	500	121	440	Address through enhanced spare/portable program
ALVA 12 KV	PINEVILLE	IND./COMM./RES.	7000	49	75	Address through enhanced spare/portable program
APPOLO	PINEVILLE	IND./COMM./RES.	3500	146	139	Address through enhanced spare/portable program
BAILEY CR 12KV	PINEVILLE	IND./COMM./RES.	3500	1,498	2,290	Address through enhanced spare/portable program
BENHAM CITY 4KV	PINEVILLE	IND./COMM./RES.	3219	909	3,233	Address through enhanced spare/portable program
BLACK MT 7.2D	PINEVILLE	IND./COMM./RES.	666	79	213	Address through enhanced spare/portable program
BRUSH CRK 2.4KV	PINEVILLE	IND./COMM./RES.	1000	174	513	Address through enhanced spare/portable program
BURNSIDE 12KV	PINEVILLE	IND./COMM./RES.	14000	6,929	8,964	Address through enhanced spare/portable program
CALLOWAY 12KV	PINEVILLE	IND./COMM./RES.	10500	4,694	10,316	Address through enhanced spare/portable program
CARON 12KV	PINEVILLE	IND./COMM./RES.	22400	13,349	18,014	Address through substation/circuit improvements
CATRONS CR 12KV	PINEVILLE	IND./COMM./RES.	10500	1,365	3,512	Address through enhanced spare/portable program
CAWOOD 12KV	PINEVILLE	IND./COMM./RES.	14000	2,791	7,063	Address through enhanced spare/portable program
CHUNKLICK BR 2.4KV	PINEVILLE	IND./COMM./RES.	167	3	3	Address through enhanced spare/portable program
CLOVERLICK 4KV	PINEVILLE	IND./COMM./RES.	7000	1,954	5,914	Address through enhanced spare/portable program
CORBIN EAST 12 2	PINEVILLE	IND./COMM./RES.	22400	7,517	10,938	Address through substation/circuit improvements
CORBIN USS 12KV	PINEVILLE	IND./COMM./RES.	10500	5,276	5,593	Address through enhanced spare/portable program
CUMBERLAND 4KV	PINEVILLE	IND./COMM./RES.	7000	3,251	6,641	Address through enhanced spare/portable program
DAYHOIT 12KV	PINEVILLE	IND./COMM./RES.	10500	3,197	9,763	Address through enhanced spare/portable program
DAYS BRANCH 12 KV	PINEVILLE	IND./COMM./RES.	14000	10,480	10,610	Address through enhanced spare/portable program
DENHAM ST 12KV	PINEVILLE	IND./COMM./RES.	14000	9,418	9,222	Address through enhanced spare/portable program
EAST BRNSTDT 12	PINEVILLE	IND./COMM./RES.	14000	8,819	12,326	Address through enhanced spare/portable program
EVARTS 12KV	PINEVILLE	IND./COMM./RES.	10500	3,502	8,957	Address through enhanced spare/portable program
FARISTON 12KV	PINEVILLE	IND./COMM./RES.	7000	3,413	6,768	Address through enhanced spare/portable program
FORESTER CR 12KV	PINEVILLE	IND./COMM./RES.	7000	2,133	2,114	Address through enhanced spare/portable program
GARRARD 12KV	PINEVILLE	IND./COMM./RES.	3500	436	582	Address through enhanced spare/portable program
GREASY CREEK 12KV	PINEVILLE	IND./COMM./RES.	3500	1,048	2,779	Address through enhanced spare/portable program
HARLAN 12KV	PINEVILLE	IND./COMM./RES.	14000	4,964	12,588	Address through enhanced spare/portable program
HARLAN 4KV	PINEVILLE	IND./COMM./RES.	7000	1,339	3,258	Address through enhanced spare/portable program
HARROGATE 12KV	PINEVILLE	IND./COMM./RES.	7000	1,636	3,398	Address through enhanced spare/portable program
HOLMES MILL 12KV	PINEVILLE	IND./COMM./RES.	1932	568	1,450	Address through enhanced spare/portable program
HOPEWELL 12KV	PINEVILLE	IND./COMM./RES.	14000	7,690	15,005	Address through enhanced spare/portable program
HOPEWELL 12KV 2	PINEVILLE	IND./COMM./RES.	14000	7,661	10,771	Address through enhanced spare/portable program
JACKS CREEK 4KV	PINEVILLE	IND./COMM./RES.	5250	379	405	Address through enhanced spare/portable program
KENTENIA	PINEVILLE	IND./COMM./RES.	10500	3,980	10,166	Address through enhanced spare/portable program
LIBERTY 12KV	PINEVILLE	IND./COMM./RES.	14000	9,045	14,388	Address through enhanced spare/portable program
LIGGETT 12 KV	PINEVILLE	IND./COMM./RES.	10500	1	1	Address through enhanced spare/portable program
LONDON 12KV	PINEVILLE	IND./COMM./RES.	22400	11,318	16,183	Address through substation/circuit improvements
LONDON 2 12KV	PINEVILLE	IND./COMM./RES.	22400	15,327	20,886	Address through substation/circuit improvements
LYNCH 7.2KV	PINEVILLE	IND./COMM./RES.	5914	1,137	4,180	Address through enhanced spare/portable program
MANCHESTER SOUTH	PINEVILLE	IND./COMM./RES.	14000	5,370	7,547	Address through enhanced spare/portable program
MCKEE ROAD 12KV	PINEVILLE	IND./COMM./RES.	14000	10,460	15,771	Address through enhanced spare/portable program
MELDRUM 12KV	PINEVILLE	IND./COMM./RES.	14000	4,208	8,473	Address through enhanced spare/portable program
MIDDLESBORO 1 12KV	PINEVILLE	IND./COMM./RES.	14000	6,882	8,061	Address through enhanced spare/portable program
MIDDLESBORO 1 12KV 2	PINEVILLE	IND./COMM./RES.	14000	11,071	12,447	Address through enhanced spare/portable program
MIDDLESBORO 1 4KV	PINEVILLE	IND./COMM./RES.	7000	4,896	8,450	Address through enhanced spare/portable program
MIDDLESBORO 2 12	PINEVILLE	IND./COMM./RES.	14000	6,722	7,131	Address through enhanced spare/portable program
MIDDLESBORO 2 12 #2	PINEVILLE	IND./COMM./RES.	14000	5,962	13,674	Address through enhanced spare/portable program
MIDDLESBORO 2 4	PINEVILLE	IND./COMM./RES.	7000	4,660	7,474	Address through enhanced spare/portable program
MILL CREEK 12KV	PINEVILLE	IND./COMM./RES.	10500	2,364	4,769	Address through enhanced spare/portable program
PINEVILLE 12KV	PINEVILLE	IND./COMM./RES.	14000	4,156	9,724	Address through enhanced spare/portable program
PINEVILLE 12KV 2	PINEVILLE	IND./COMM./RES.	14000	6,008	10,719	Address through enhanced spare/portable program
PUCKETT CR 12KV	PINEVILLE	IND./COMM./RES.	4687	1,692	3,210	Address through enhanced spare/portable program
REVELO 12KV	PINEVILLE	IND./COMM./RES.	7000	2,184	4,117	Address through enhanced spare/portable program
ROBBINS 12KV	PINEVILLE	IND./COMM./RES.	10500	3,707	5,448	Address through enhanced spare/portable program
SCIENCE HILL 12KV	PINEVILLE	IND./COMM./RES.	7000	2,393	6,097	Address through enhanced spare/portable program
SHAWNEE GAS 1 4KV	PINEVILLE	IND./COMM./RES.	4687	1,872	1,771	Address through enhanced spare/portable program
SHAWNEE GAS 3 12	PINEVILLE	IND./COMM./RES.	10500	4,277	8,744	Address through enhanced spare/portable program
SOMERSET 1 4KV	PINEVILLE	IND./COMM./RES.	6250	3,404	3,187	Address through enhanced spare/portable program
SOMERSET 2 4KV	PINEVILLE	IND./COMM./RES.	14000	3,852	4,417	Address through enhanced spare/portable program
SOMERSET 3 12KV	PINEVILLE	IND./COMM./RES.	14000	10,791	12,515	Address through enhanced spare/portable program
SOMERSET S 12KV	PINEVILLE	IND./COMM./RES.	14000	9,043	9,683	Address through enhanced spare/portable program
STINKING CR 12KV	PINEVILLE	IND./COMM./RES.	7000	3,793	6,713	Address through enhanced spare/portable program

<u>All N1DT Substations</u>	<u>Assigned Operations Center</u>	<u>Estimated Load Type</u>	<u>Top</u>	<u>Summer</u>	<u>Winter</u>	<u>Proposed Resolution</u>
			<u>Nameplate Rating kVA</u>	<u>Peak kVA</u>	<u>Peak kVA</u>	
TOTZ 12KV	PINEVILLE	IND./COMM./RES.	1725	1,014	1,381	Address through enhanced spare/portable program
TURTLE CREEK 4KV	PINEVILLE	IND./COMM./RES.	6250	253	586	Address through enhanced spare/portable program
VALLEY 12KV	PINEVILLE	IND./COMM./RES.	7000	1	1	Address through enhanced spare/portable program
VERDA 12KV	PINEVILLE	IND./COMM./RES.	14000	2,821	6,225	Address through enhanced spare/portable program
WAITSBORO 12 KV	PINEVILLE	IND./COMM./RES.	14000	9,210	15,299	Address through enhanced spare/portable program
WAYNESBURG	PINEVILLE	IND./COMM./RES.	7000	2,870	4,634	Address through enhanced spare/portable program
WHITLEY CITY 12KV	PINEVILLE	IND./COMM./RES.	10500	4,306	9,239	Address through enhanced spare/portable program
WILLIAMSBG S 12	PINEVILLE	IND./COMM./RES.	10500	5,832	5,378	Address through enhanced spare/portable program
WILLIAMSBG SOUTH	PINEVILLE	IND./COMM./RES.	14000	9,239	11,681	Address through enhanced spare/portable program
WILLIAMSBURG 4KV	PINEVILLE	IND./COMM./RES.	7000	3,697	3,546	Address through enhanced spare/portable program
BEATTYVILLE 4KV	RICHMOND	IND./COMM./RES.	7000	3,205	3,468	Address through enhanced spare/portable program
BOONE AVE 12KV	RICHMOND	IND./COMM./RES.	22400	14,982	24,011	Address through substation/circuit improvements
BOONESBORO PARK 12KV	RICHMOND	IND./COMM./RES.	10500	3,771	3,616	Address through enhanced spare/portable program
BRODHEAD 12KV	RICHMOND	IND./COMM./RES.	5250	2,320	5,370	Address through enhanced spare/portable program
DARK HOLLOW 12 KV	RICHMOND	IND./COMM./RES.	14000	4,101	5,933	Address through enhanced spare/portable program
ESTILL STONE 12KV	RICHMOND	IND./COMM./RES.	999	449	51	Address through enhanced spare/portable program
IRVINE 12KV	RICHMOND	IND./COMM./RES.	14000	7,367	8,842	Address through enhanced spare/portable program
MT VERNON 12KV	RICHMOND	IND./COMM./RES.	14000	9,029	16,926	Address through enhanced spare/portable program
PAINT LICK 12KV	RICHMOND	IND./COMM./RES.	3500	1,218	3,007	Address through enhanced spare/portable program
PINE HILL 12KV	RICHMOND	IND./COMM./RES.	5250	1,181	2,781	Address through enhanced spare/portable program
RED HOUSE 12KV	RICHMOND	IND./COMM./RES.	14000	7,050	16,785	Address through enhanced spare/portable program
RICHMOND 12KV	RICHMOND	IND./COMM./RES.	22400	13,932	25,402	Address through substation/circuit improvements
RICHMOND 12KV 2	RICHMOND	IND./COMM./RES.	22400	12,820	16,805	Address through substation/circuit improvements
RICHMOND 3 (EKU) 1	RICHMOND	IND./COMM./RES.	22400	19124	22,594	Address through substation/circuit improvements
RICHMOND 4 4KV	RICHMOND	IND./COMM./RES.	10500	7,969	7,759	Address through enhanced spare/portable program
ROCKWELL 12KV 2	RICHMOND	IND./COMM./RES.	22400	18,349	23,576	Address through substation/circuit improvements
SYLVANIA 12KV	RICHMOND	IND./COMM./RES.	22400	11,261	17,672	Address through substation/circuit improvements
SYLVANIA 4KV	RICHMOND	IND./COMM./RES.	3500	1,729	1,584	Address through enhanced spare/portable program
WACO 12KV	RICHMOND	IND./COMM./RES.	10500	5,167	9,913	Address through enhanced spare/portable program
WINCHSTR WW 12KV	RICHMOND	IND./COMM./RES.	14000	7,160	12,580	Address through enhanced spare/portable program
YELLOW RCK N 7.2	RICHMOND	IND./COMM./RES.	333	208	307	Address through enhanced spare/portable program
BEDFORD 12KV	SHELBYVILLE	IND./COMM./RES.	5250	2,964	4,466	Address through enhanced spare/portable program
BROMLEY 12KV	SHELBYVILLE	IND./COMM./RES.	6250	2,857	6,088	Address through enhanced spare/portable program
CAMPBELLSBG 12KV	SHELBYVILLE	IND./COMM./RES.	5250	3,115	5,858	Address through enhanced spare/portable program
CARROLLTON 4KV	SHELBYVILLE	IND./COMM./RES.	5250	4,022	4,049	Address through enhanced spare/portable program
CARROLLTON 12KV	SHELBYVILLE	IND./COMM./RES.	14000	10,846	12,344	Address through enhanced spare/portable program
DOW CORNING 12KV	SHELBYVILLE	IND./COMM./RES.	14000	3,853	3,888	Address through enhanced spare/portable program
EMINENCE 12KV	SHELBYVILLE	IND./COMM./RES.	14000	5,247	8,168	Address through enhanced spare/portable program
EMINENCE 12KV 2	SHELBYVILLE	IND./COMM./RES.	14000	7,350	12,228	Address through enhanced spare/portable program
FAIRFIELD 12KV	SHELBYVILLE	IND./COMM./RES.	14000	4,804	9,752	Address through enhanced spare/portable program
HUNTERS BTM 12KV	SHELBYVILLE	IND./COMM./RES.	4320	2,625	3,296	Address through enhanced spare/portable program
LA GRANGE E 12KV	SHELBYVILLE	IND./COMM./RES.	22400	14,774	18,868	Address through substation/circuit improvements
LAWRENCE 12KV	SHELBYVILLE	IND./COMM./RES.	1725	387	890	Address through enhanced spare/portable program
LOCKPORT 12KV	SHELBYVILLE	IND./COMM./RES.	10500	3,430	2,652	Address through enhanced spare/portable program
MARKLAND DAM 4KV	SHELBYVILLE	IND./COMM./RES.	574	195	327	Address through enhanced spare/portable program
METAL/THERM 12KV	SHELBYVILLE	IND./COMM./RES.	14000	5,541	6,215	Address through enhanced spare/portable program
OWENTON 4KV	SHELBYVILLE	IND./COMM./RES.	3500	1,571	3,797	Address through enhanced spare/portable program
OWENTON 4KV 2	SHELBYVILLE	IND./COMM./RES.	5250	1,993	4,137	Address through enhanced spare/portable program
SHELBYVILLE EAST 12	SHELBYVILLE	IND./COMM./RES.	22400	18,403	21,503	Address through substation/circuit improvements
SHELBYVILLE S 12	SHELBYVILLE	IND./COMM./RES.	14000	8,774	8,779	Address through enhanced spare/portable program
SHELBYVILLE S 12 2	SHELBYVILLE	IND./COMM./RES.	22400	17,798	17,798	Address through substation/circuit improvements
SIMPSONVILLE 12	SHELBYVILLE	IND./COMM./RES.	10500	6,718	6,605	Address through enhanced spare/portable program
SIMPSONVILLE 12 2	SHELBYVILLE	IND./COMM./RES.	14000	8,152	8,752	Address through enhanced spare/portable program
TAYLORSVILL 12KV	SHELBYVILLE	IND./COMM./RES.	14000	7,603	12,828	Address through enhanced spare/portable program
WARSAW 4KV	SHELBYVILLE	IND./COMM./RES.	5250	3,331	5,292	Address through enhanced spare/portable program
WARSAW EAST 12 KV	SHELBYVILLE	IND./COMM./RES.	14000	2,212	2,609	Address through enhanced spare/portable program

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 397**

**Responding Witness: John K. Wolfe**

Q-397. Regarding Distribution Energy Resources (DER), as discussed beginning on page 40 of the Testimony of Paul W. Thompson, provide the following:

- a. A detailed explanation of how the 1,400 SCADA capable reclosers under the DA program support and enable DER.
- b. A detailed explanation of how the SCADA DMS software under the DA program supports and enables DER.
- c. Is it assumed that DER will be customer owned resources?
- d. Is it assumed that all customers will bear the costs of DA enhancements needed to employ DER?
  - i. How are these costs allocated?
- e. Provide all internal reports regarding projections of DER penetration in the combined territory of LG&E and KU.

A-397.

- a. The primary purpose for installing 1,400 SCADA capable reclosers as part of the DA program is to improve customer reliability. However SCADA capable reclosers also allow for remote monitoring of loads and voltages along a distribution circuit and eventually could enable circuit reconfiguration to more effectively manage the impacts of large amounts of DER. Large DER sites could also be remotely connected or isolated from the distribution system through SCADA communications to these reclosers.
- b. The DMS will consider DER sources when performing the real time load flows of the distribution system. This information will provide the system operator with information needed to switch circuits with installed DER and to estimate the loads when restoring customer circuits which have installed DER.

The DMS will also be able to identify any adverse impacts on loads or voltages caused by DER.

- c. The DER could be either utility or customer owned.
- d. Where DA enhancements are required for the interconnection of DER, the Net Meter Service tariff and Interconnection Guidelines both require that any distribution system improvements necessary to accommodate DER will be the responsibility of DER customer.
- e. See attached.

## Assessment of the Current and Potential Impacts of DER on the LG&E/KU Distribution System

Mike Leake

Mike Dickens

Date: July 31, 2016

### **Background**

The purpose of this whitepaper is to discuss at a high level the amount and type of Distributed Generation (DG)/Distributed Energy Resources (DER) currently found on the LG&E/KU system, its present impact on the distribution system and technical concerns and challenge of increased penetration. Also discussed are potential impacts and challenges of some type of “game changing” development that would lead to significantly increasing the amount and type of DER interconnected to the distribution system. This could be driven by a step change in DER technology and/or economics or a significant change in mandates, incentives or other regulatory changes related to renewable generation similar to what is developing in New York under the Renewing the Energy Vision (REV) initiative. Many of the NY REV initiatives involve traditional energy policy initiatives like Energy Efficiency, customer engagement and Demand Side Management and conventional and non-conventional DER integration. But under REV, utilities are also being asked to shift from a position of merely (and often reluctantly) “accommodating” the interconnection of DER to driving deployment. Under REV, utilities are being required to explore the value of DER beyond their typical valuation of energy supplied at avoided cost or the benefits of the deferring generation, transmission or distribution capital improvements.

The types of DER generation presently found on the LG&E/KU system include active technologies like renewable generation from Photovoltaic (PV), wind turbines and hydroelectric. Non-renewable generation found on the system includes coal or gas combustion fired generation with the potential for future Combined Heat and Power, micro-turbines and fuel cells. While not currently seen at the customer level at LG&E/KU, other utilities are starting to see DER based on the use of new or developing technologies like energy storage systems (primarily batteries, but also including limited applications of other technologies such as flywheel, pumped hydro, super capacitors, reverse fuel cells, superconducting coils, etc.). Of these technologies, PV has the most potential to impact the distribution system due to its dispersed character, its variability of generation, accessibility (across all customer classes, locations and sizes), suitability (KY has limited wind potential but fair solar potential), maturation and simplicity of the technology and its favorable treatment under federal (and limited state) tax credits and Net Metering.

Currently almost all DER on the LG&E/KU distribution system falls into either the Net Metering (NM) or Qualified Facility (QF) category. Several customer also cogenerate a portion of their load with a mix of generation that could include renewable, coal, combined heat/power and in the case of Ft. Knox gas fired, base load generation. Cogenerating facilities are sized to offset a portion of the customer’s load and are not designed or sized to be net exporters. The net impact of these facilities on LG&E and KU are lower revenue while still requiring grid capacity to serve the full load requirements of the customer as well as potential interconnection and power quality issues. The issue of being required to build and



maintain capacity for lost generation in the absence of revenue will potentially be addressed in the next rate case through a Standby Capacity rider.

#### **Current Status – Renewable Generation**

At the present time the economics of renewable generation in our service territory has limited the deployment of significant amounts of interconnected DER. Kentucky and Virginia lack any form of economic incentives above Federal and state tax credits for renewables and Kentucky has conservative limits (maximum of 30kW for all customer classes) for eligibility under Net Metering (NM). The state has also restricted eligibility under NM to only customer owned installations on the property while other states have allowed options for things like leased PV and aggregation of meters under NM. As a result, Kentucky ranks around (depending on the source) 45 out of 50 states in the number of NM systems installed (VA is 42). Virginia has limits of 20kW for residential and up to 1MW for non-residential while allowing leased facilities and some aggregation for qualified agricultural NM customers.

Of this portfolio LG&E/KU has only been exposed to mostly small, dispersed customer owned PV installations and a few small wind and one hydroelectric NM applications. There are currently 374 NM customers with an average size of less than 6kW and the number has grown slowly. There are four Small Qualified Facilities (SQF, above the 30kW NM limit) in the range of 50kW-85kW. There is one Large Qualified Facility (LQF) at the Wendell H. Ford National Guard base (880kW of PV).

The Mother Ann Lee Hydroelectric Station (formally Lock 7) in Highbridge, KY is the only true interconnection to distribution designed to export energy interconnected to a distribution level circuit. This 2MW station wheels power through to Salt River RECC through a KU 34kV line. While there are currently no biomass production facilities on the system, there have been a number of potential projects considered that would have interconnected to the LG&E/KU distribution system.

Outside of ensuring these facilities meet the interconnection requirements, these installation have resulted in no distribution system problems and few customer problems, generally only low level self-generated over voltages during times production exceeds load or due to poor system design. These problems have been contained by working with customers and their equipment suppliers and have been managed by changes to system settings, service facilities and/or operation. No significant issues are expected on the distribution system in the near term given the current economic and regulatory environment and lack of significant state level incentives or mandates. While costs, particularly with PV continue to decline, this is not in itself expected to significanting increase the penetration of PV to the point where it will negatively impact the distribution system. The most likely drivers that would lead to an increase in DER would be an increase in NM limits and/or changes in NM tariffs to allow leased or aggregated systems or increased financial incentives.

#### **Current Status – Non-Renewable Generation**

Application of non-renewable generation include the limited use for peak shaving or cogeneration (American Synthetic, Ft. Knox, etc.), Combined CHP applications (future VA Hospital) and potentially some high reliability applications for critical loads where the customer basically fulfills baseload generation needs and the utility serves as a standby source (potentially Delta Gas). These type systems

are not designed or sized with the intention of exporting power. In fact some are blocked for export as part of the interconnection requirements. Other than meeting interconnection requirements they have limited impact when interconnected on the distribution system if properly designed and operated because they are generally small in nature compared to customer load with relatively stable generating levels.

### **Potential Problems with DER**

While LG&E and KU experience to date with DER has been good, large scale DER or a large aggregation of a large number of smaller scale DER on the distribution circuit can result in operational challenges. The level of penetration so far at LG&E and KU has only resulted in minor reverse power flow mainly on secondary and services which has resulted in minimal problems. With significantly higher DER, reverse load flows will start to be seen during light load times on single phase transformers, taps and large DER will have the potential to even reverse flow on an entire circuit during light load times. PV, the most likely source of increasing DER in the service territory in the near term, along with wind are particularly problematic due to the availability and variability of generation.

Much has been learned through studies performed on the Business and Community Solar field planned near Simpsonville, KY. While planning studies are ongoing, the site proposal has shown to be challenging and emblematic of types of technical challenges LG&E and KU could face should there be a significant increase in DER penetration in less than optimum locations on distribution circuits, particularly PV in undesirable locations on the system. In general, potential problems associated with DER include:

- Potential to cause unintended post-fault energized islands
- Potential overload or misoperation of distribution system components
- Potential impacts on system protection
- Potential impacts on system operating voltage
- Potential impacts on power quality

Almost all distribution systems have been designed to operate with power flow in one direction and radially with large capacity infrastructure on the station end and small capacity near the ends of circuits. Circuit design and enhancements have traditionally been based on a single driver, the maximum expected load on the circuit or transformer and some distribution equipment is designed for operation in only one direction. Distribution systems are a mix of single phase and three phase loads with unbalanced currents and voltages. Placing generators on a distribution circuit can cause the direction of power flow to change and flow in different directions depending on the number and output of the generators. They can also escalate loading and system imbalances in phase and neutral currents and voltages.

Large scale DER or high penetrations of smaller distributed generators will force the distribution system to be designed to operate properly with and without the generation and everywhere in between, with current potentially flowing in both directions and circuits will have to handle natural, and sometimes rapid fluctuations in output, especially with regard to wind and PV. With significant penetration, this

will require much more voltage regulation, more intelligent bidirectional equipment controls and more careful study. Protection, coordination schemes and loading assessment will also be more complicated and require more study. For example, a large generator that results in reverse load flows means that during a fault, fault protection must now ensure isolation from both the station and the DER ends. Fault currents flowing in both directions can confuse smart systems designed to automatically restore service through reconfiguration. And these smart systems can be misled by the amount of load being transferred following a fault when generation suddenly goes off line. The application of Volt/VAR functionality becomes, if employed becomes much more complex.

The models and software used to assess the distribution system will need to model in detail voltages, kW/KVAR flow and system loading as DER generation changes. Models will have to have the ability to analyze conditions under multiple, time of day and seasonal varying conditions. More accurate models with correct representations of DERs, Load Tap Changers (LTC's), voltage regulators, reclosers and capacitors will be needed as will the ability to track the location, size and type of DER. Some of the technical challenges of increased DER on an aging distribution system that was not designed for them are outlined below.

#### Unintentional Islanding

Typical distribution faults cause protective devices to operate to de-energizing and isolate the utility source. Fault protection can be single or three phase, with or without reclosing functionality.

Whenever DER capacity in a given protection zone exceeds the load, islanding is possible.

Unintentionally islanding can present a risk to utility workers performing restoration and cause service problems for customers. Reclosing devices must be coordinated or have protection so that they do not reclose on an islanded area creating an out-of-phase fault condition that could damage utility or (more likely) customer generating equipment.

Generation types include induction and synchronous generators and inverter based generation. Unintentional islanding is prevented through interconnection standards and the requirements of national standards such as UL 1741 (inverters) and IEEE 1547. Under UL 1741 inverter-based PV generation incorporates active anti-islanding features that trip the generating unit when a separation from the power delivery system's main source is detected. UL 1741 requires the source to de-energize in 2 seconds or less with typically time being .2 seconds. This can normally be accommodated with delayed reclosing and enabling synchronization protection. Induction generation sometimes used in wind, hydro, etc. requires a grid connection and the loss of a source will not allow induction generation to island. Synchronous generators are capable of islanding and anti-islanding prevention is ensured through more complex relaying that can sense changes in frequency, voltage or reactive load flows. The level of concern is where a DER, or aggregated DER is more than the minimum load of a segment that can be isolated. Where there is an increased concern of islanded, more sophisticated protection, such as transfer trip schemes are employed.

#### Loading

With large DER or the aggregation of a large amount of smaller DER, load flows will reverse on a circuit and actual circuit loads are masked. At the extremes, reverse load flow with large DER could exceed the

rating of line conductor and line device such as cutouts/switches, regulators, step up/down transformer, etc. Large DERs require a review of all loading conditions from full on, to full off generation levels and with various states of circuit load, isolation and reconfiguration options. With extreme penetration of DER, the amount of generation will have to be factored into load forecasts for circuits and substations affecting generation, transmission as well as distribution forecasts. At the circuit level, loading conditions can be difficult to assess. A large DER may present no loading issues when placed in the middle of a circuit with downstream load under normal conditions. However, the operation of a downstream protective device could dramatically increase upstream flow toward the station which will have to be adequately sized, designed and properly coordinated for this contingency.

Typically lines and equipment will be of adequate size for expected DER loads or other limiting criteria, such as voltage limits, fault current, flicker, etc. will be exceeded at least under normal operating conditions. Loading issues would be identified during the study phase in conjunction with large DERs and any necessary system improvements can be made before allowing interconnection. Since customer connected DERs require the customer to pay for any necessary improvements to allow interconnection, this offers a financial incentive to locate them in locations that will have less impact on the distribution system. More desirable areas include areas very near substations and heavily loaded lines or at a minimum close enough to stations where line conductors (and other equipment) tend to be larger capacity.

#### Protection

The protection on all feeders with any significant amount of DER must be reviewed and carefully coordinated. Reverse load flows of large DER can exceed protective device protective limits and protective equipment will have to accommodate bidirectional load flows and highly variable levels of generation. Fault current on lines with DER will increase relative to the size and type of DER installed and must be analyzed to ensure that they do not exceed the fault duty of line and protective equipment. Of DERs, PV the most common has the least impact on fault current typically resulting in fault duties on the order of 1.2 times the amount of connected capacity. So a 1MW PV field can be expected to add less than 60A to a 12kV circuit, insignificant when compared to the normally 10,000A fault duty of distribution equipment. Faults on circuits can operate more than the intended nearest upstream protective device. For example a fault between a station and downstream recloser that would normally only operate a station breaker may also operate a downstream recloser or fuse if a DER downstream of the recloser contributes significant fault current. This could make restoration activities more complicated and delay service restoration. A large DER on one circuit close to the station, may operate its circuit protection for a fault on another circuit resulting in two circuit outages and more people out of service.

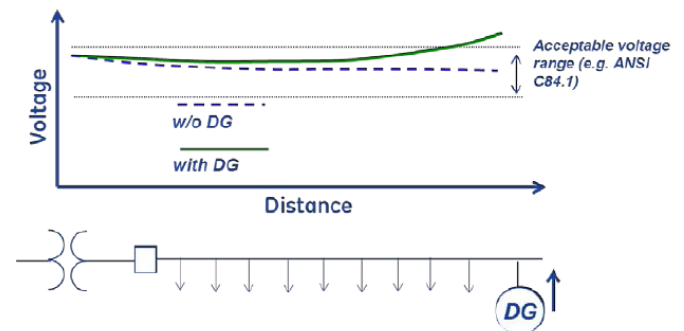
Reclosing schemes (both breakers and reclosers) must be reviewed to prevent loss of synchronism, under/over voltage protection and damage to DERs. Energization of the feeder and unintentional islanding must be prevented if the substation source trips. This is imperative due to the risk to personnel and equipment. The DER must have protection for lost phase conditions to prevent highly unbalanced operating conditions.

### Voltage

One of the most critical criteria when interconnecting large amount of DER is its impact on the voltage profile along a circuit, voltage balancing and in the case of rapidly variable generation like wind and PV, voltage flicker. Traditional radial distribution feeders are designed with the assumption that the substation was the only power source on the feeder. Voltage regulation with LTCs/regulators at the station, capacitors and line voltage regulators are currently designed and operated under these radial assumptions.

A large amount of DER can reverse current flow on a circuit. In normal radial systems voltage is highest at a point of regulation (substation or line regulators), lowest at the end of the circuit and can be boosted along the circuit by capacitors which switch on only when needed. Voltage declines as you move away from the point of regulation and the larger the load, the more voltage will decline and designs are normally based on worst case, heavy load conditions. Distribution circuits are designed to not over voltage at the point of regulation and not under voltage at the end of the circuit which is easier when power flows in only one direction. At LG&E and KU, substation regulation (and line regulators) are typically set to maintain 123V (on a 120V base) with a bandwidth of +/- 1V at the station and maintain above 114V at a customer's point of connection.

With reversed load flow, voltages can rise at the point of interconnection. This can have either a positive or negative impact on the circuit. On one side, it may improve the voltage profile during high load times if the generation is coincident with high load periods. However, it can result in high voltage during light load times if the generation is not properly placed or operated. Variable generation can cause voltage swings making voltage regulation more challenging and rapid fluctuations in output can result in flicker which can cause customer irritation and complaints and also cause power quality problems for more sensitive customers. PV and wind generation can be highly variable with generation increasing or decreasing as much as 50% over as little as a minute, too fast for regulating equipment to respond. Flicker is also a function of frequency. The more frequent the fluctuation (i.e. scattered clouds for PV, gusty winds for wind turbines) the less amount of fluctuation can be tolerated. For PV, this means a partly cloudy day has more potential for concern than a sunny or overcast day.



Because most distribution LG&E/KU circuits are a mix of single and three phase loads, loads along three phase portions of a circuit are rarely exactly the same which causes voltage imbalance between phases and induces neutral current. This can normally be managed to reasonable levels by balancing loads between phases to the extent possible. However a large amount of DER placed on a circuit, or a large unbalanced distribution of generation on a circuit that already has large phase imbalances can make its voltage imbalance even worse affecting three phase loads while increasing neutral current (increased losses). For example, a DER connected on a circuit with only 1-phase load on one phase beyond it could

increase voltage more on the other two phases creating larger phase-phase and phase-neutral voltage imbalances.

The most common factors that influence voltage with large DER penetration include:

- Size of the aggregated generation in comparison to circuit load.
- Distance from the station. The further away, the more potential for voltage rise.
- Conductor size. The smaller the wire, the more potential for voltage rise. Smaller wire is typically found nearer the end of circuits.
- Amount and type of regulation on a circuit, i.e. 1-phase or 3-phase, number size of capacitors, etc.
- Equipment not designed for bi-direction operation. Equipment like line regulators and switched capacitors can miss-operate with reversed load flow making problems even worse.
- Line sections with pre-existing load imbalances.
- Rapid variability or loss of generation. This results in flicker due to voltage swings too fast for regulating equipment to respond.

With more frequent fluctuations in voltage, there is an increased operation on the LTCs, capacitors, and voltage regulators which can shorten their life and increase maintenance requirements. Photovoltaic (PV) generation can create unwanted voltage rise and voltage flicker. This is more pronounced when a large amount of PV is located on long, lightly loaded distribution feeders. Regulation settings become more complex in the presence of bidirectional power flows.

In general, voltage problems escalate on poorly regulated and weaker systems which have higher impedance due to the potential for voltage rise and flicker. These can be managed within reasonable limits by system improvements like more regulation (generally line regulators), bi-directional capable equipment, larger conductor, dedicated circuits, battery storage and other means. They can also be managed by changing the power factor of a DER to minimize voltage rise issues. This is now a common feature of larger PV DERs and newly developed smart inverter can be used for dynamic control of voltage and power factor. A general rule of thumb is DERs that are no more than 15% of the load on its segment will not cause any problems or require little if any study. Utilities normally limit full on-full off voltage rise to 2%-3% or less to reduce flicker concerns at any point, and less at the substation. Beyond that, more study is required and there is an increasing likelihood system improvements will be required or hosting DER will not be possible.

#### Power Quality

The primary power quality concern, outside of voltage and flicker limitations is the potential impact of harmonics on the distribution system. A secondary concern is their ability to induce temporary/transient over voltages (TOV) during abnormal system conditions like outages and faults. TOV are common with any abnormal system condition but when DERs are larger than the circuit load, they can increase TOV.

The most common type of DER likely to be experienced on the LG&E/KU system is PV which are inverter based. Inverters are non-linear load and by their nature are harmonic generators. Harmonics are

multiples of the 60 cycle power frequency and while inverters have dramatically improved through improved filtering, they are still a source of concern. Of particular concern are the triplen harmonics which are odd multiples of the 3rd harmonic (3rd, 9th, 15th, 21st etc.) commonly produced by inverters because they add in the neutral. Very high harmonic levels cause voltage distortion, increase heating in transformers and motors, overload lines and equipment, increase currents in neutrals and grounds (including unacceptable natural to earth voltages), interference with communications systems (RF and wireline), increased losses and have the potential to impact nearby sensitive loads. The primary source of harmonics today are inverter based adjustable speed drive motors. The impact of harmonics caused by a DER is difficult to proactively assess. While some variables like system impedance are quantifiable there are many variables that are dynamic and can't fully be accounted for such as variability of generation and load, impact of switched capacitor banks, etc.

As a result, DERs are required to meet the harmonic requirements of IEEE 1547 and 519 at a minimum. Individual utilities may impose more stringent limits. PPL for example limits DERs to 3% total harmonic distortion with no more than 1.7% being in a single harmonic. Typically utility interconnection requirements, including LG&E/KU require the DER providers to mitigate any issues with power quality caused by their generation.

#### LG&E/KU Preparedness for Growing DER

Peer utilities talked to tend to fall into one of two categories. They either have significant DER including larger scale DER due to incentives, mandates and favorable regulation for renewable generation and the necessary experience, resources and tools to deal with them, or they don't have much experience at all, like LG&E/KU. LG&E/KU/ODP currently has less than 3.5MVA in total connected NM generation dispersed around the system. As such LG&E/ KU has had limited experience dealing with anything above the small scale, mostly PV level. Although LG&E has a complete set of interconnection standards to deal with interconnecting DER, they have had seen limited use with the exception of hot transfer, standby generation or cogeneration facilities. Although both utilities have been approached about the potential to interconnect multi-MW scale biomass or PV generation in the past, none of the projects have advanced to reality and only preliminary level studies level have been completed. Smaller scale conventional DER such as PV generally meeting the interconnection requirements out of the box by conformity to national standards including UL 1741, IEEE 519 and IEEE 1547 and have resulted in little review and the density of dispersed NM (374 sites across the entire system) has not cause any known circuit level problems. Currently, LG&E/KU only tracks the location of NM by address, not by TLM and restrictions under NM on the amount of NM by segment load (15%), transformer or secondary size, etc. are not currently reviewed before approval to connect is granted. The potential for reviewing and coordinating larger DER is greater because customers will likely require far more coordination with the utility affording the chance to do more detailed review.

The majority of DER installed on the distribution system are small PV with the only large solar installation, the 880kW at the Wendell H. Ford National Guard base never being a net generator, essential serving as cogeneration. Ft. Knox, which has the largest generating capacity is protected against reverse power flow into the system by relay protection schemes. DER installations working as



cogeneration poses none of the problems of systems that, intentionally or not provide a net export of energy, including NM. They simply look to the LG&E/KU system as a reduction in customer load.

Problems involving PV installations to date have been few and have been dealt with on a case by case basis and have involved individual NM customers. Most of the problems have involved poor system design or minor upgrades to service facilities or a change in inverter settings. More recently the Distribution Planning group has gained substantial knowledge doing detailed reviews for the first potential application of large DER designed for net export, the Community Solar Project (CSP).

Distribution Planning's current planning software, Synergi has the capability to completely model and assess the impacts of DER, but until the CSP they have had limited reason to utilize it. Synergi has a full feature module to automatically evaluate the impact of DER across a spectrum of seasonal loads and variable generation to facilitate identifying and quantifying circuit level problems including overloading, voltage and flicker and protection related issues. To utilize this capability will require much more detailed modeling than is currently done, including detailed information on DER location and operating parameters and utility owned line capacitor, regulator and recloser settings. While little has been done to assess individual small PV or other DER, Distribution Planning has implemented steps to improve preparedness. Working with Asset Information and IT, System Planning is moving to track the location and operating parameters of DER in GIS and to be able automatically importing this information into Synergi as part of the model building process. This effort has been hampered by the lockdown for CCS for changes and will be a largely manual effort until that ends. This will help with the identification of potential problems, like clustering behind a transformer or overloading equipment and reverse power flows.

In summary, currently Distribution Planning has the tools, but lacks extensive experience or processes needed to manage more wide spread penetration and/or large scale DER. Distribution Planning would be significantly underprepared for a significant change in the status quo caused by a significant change in the regulatory environment or the economics of DER. To address a rapid escalation of DER similar to the REV in New York, resources in the planning group would have to be augmented to prepare and maintain models and complete more detailed reviews. Without internal resources, outside consultants experienced in DER integration would have to be used. Even a higher percentage of PV at the residential level could become problematic and require more review than is currently done. Multiple homes with large PV arrays that are net generators during the day when no one is home and output is maximized could produce high voltage inside homes or overload distribution transformers or secondary. Aggregating large amount of PV on taps could lead to reverse load flow on taps, voltage regulation and power quality issues. Aggregation of a mix penetration behind taps will lead to phase and voltage imbalances along 3-phase lines requiring additional regulation as well as loading issues.

Threats to the status quo would seem to fall into one of three general areas:

Liberalization of NM rules, regulations or incentives. Many states have more generous NM requirements and incentives that promote deeper penetration and/or larger size NM, including leased NM, rebates, etc. and they are commonly found in states with higher energy costs or stronger



environmental goals. With accelerated penetration of PV, an increased level of scrutiny would be required, primarily review of systems above a certain size or penetration on the system. Current efforts under way to track NM sites in Synergi could then be utilized but this would still be an incremental effort from what is done today. A process would likely have to be implemented to look at any PV site above a selected KVA size.

Significant change in regulatory environment. This could include enhanced incentives to deploy NM through more liberal rules, direct rebates, an RPS standard or retail or wholesale buyback of energy. If sufficient these could drive the deployment of larger systems beyond an increased penetration of small scale PV. This category could be the most problematic in that the DER would be deployed at the customer's discretion and require more utility review and assessment. While interconnection rules would put the burden of system enhancements to host the DER, there could be a significant increase in the resources required to manage the process.

A REV "like" requirement. The impact of a REV like mandate could initiate a step change in DER on a very broad scale. Under REV, utilities would appear to be driving more of the processes rather than the customer. Although non-conventional valuations would be put on DER deployment, including the value of deferred investment, relief of capacity constraints and reliability the utility would drive the location, size and nature of the DER. This would ensure DERs were of the nature, location and size where they have the most need or benefit to the utility or at a minimum, cause the least operational concerns. Being utility driven, the utility would be able to guide and increased deployment.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 398**

**Responding Witness: John K. Wolfe**

Q-398. Regarding DA real time data from reclosers to provide intelligence to support switching, as discussed beginning on page 41 of the Testimony of Paul W. Thompson, provide the following:

- a. An explanation of why AMS information would not also supply data to operate system.
- b. How proposed AMS system will be integrated with SCADA DMS software.
- c. Describe how company organization will support incorporating data from SCADA DMS and AMS
  - i. Describe data flow of AMS into company organization and who is responsible for AMS implementation and data.
  - ii. Describe data from of SCADA DMS into company organization and who is responsible for SCADA DMS implementation and data.

A-398.

- a. Data from AMS will be used by the DMS to assist in Powerflow analysis. Powerflow analysis is a prerequisite to performing Fault Location Isolation and Service Restoration (FLISR). If AMS data is not available, the Powerflow analysis is performed using load profiles.
- b. The Distribution SCADA (DSCADA) System and DMS are 2 distinct software systems. AMS will not be integrated with DSCADA. However, both DSCADA and AMS will be integrated with DMS. As mentioned in response to "Q-373 a", Data from AMS will be used by the DMS to assist in Powerflow analysis.
- c. DSCADA/DMS and AMS are being developed. The Company plans to utilize the data from DSCADA/DMS within distribution operations and from AMS with customer services to improve operations and customer experience through data analytics.

- i. The data flow of AMS into the company is being developed. John P. Malloy is responsible for AMS implementation.
- ii. The data flow of DSCADA/DMS into the company is being developed. John Wolfe is responsible for DSCADA/DMS implementation.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**CASE NO. 2016-00371**

**Response to Attorney General's Initial Data Requests for Information  
Dated January 11, 2017**

**Question No. 399**

**Responding Witness: John K. Wolfe**

Q-399. Regarding AIS decision-support model, as discussed beginning on page 41 of the Testimony of Paul W. Thompson, provide the following:

- a. All reports detailing the results of the comparison of the Companies existing portfolio of distribution and resiliency programs.
- b. All reports and written conclusions.
- c. Will DA replace CIFI?
  - i. Will the Company no longer identify worst performing circuits?

A-399.

- a. The reference to the discussion on page 41 of the Testimony of Paul W. Thompson is specific to the use of AIS to evaluate the benefits of DA with respect to other reliability and resiliency programs. DA was first incorporated into AIS along with other system improvement projects in the 2016 Business Plan (developed 1 Qtr. 2015). See attached.

The original DA program scope, timing, investment and valuation against other reliability and resiliency programs have evolved since that time but analysis continues to show DA is the most cost effective program to obtain the desired improvements in reliability.

- b. AIS is used as a tool to help compare and prioritize various types of capital investment projects and the output of AIS is one input into the development of the Business Plan each year. Other than the output of the AIS tool, provided as part of the response to "a" above, there are no other reports on or about the AIS results
- c. DA will not replace CIFI
  - i. The Company will continue to identify the worst performing circuits.

Year	Scheduled Year	Funding	Year of Proj	Rank	Discretionary	Project Number	Project Name	Current Year Capital	Total Cost	Capital Funded Dollars	Funded Dollars Total	Ratio	Hierarchical	Other Descriptors	Financial	CEMI	CI	CMI	Complaints	Load	Total Project Score	Category	Code	Company	RAC	Strategic		
2016	2016	Funded	1	0	Non-	LGEKU2015	LEO - Downtown Network Vault Structural Repairs - RAP	283	283	283	283	0	Louis	Mainta	0	0	0	0	0	0	0	0	Maintain	Aging Infrastructure	LGE	1 - Required	Non-Strategy	
2016	2016	Funded	1	0	Non-	LGEKU2015	DSP Manslick Circuit Work - 2nd Year	832	832	832	832	11380	Louis	Enhan	0	0	432342	162150	0	0	0	594492	Enhance	System Enhancements	LGE	2 - Not required but high risk in 0-3 years	Non-Strategy	
2016	2016	Funded	1	0	Non-	LGEKU2015	DSP Manslick Substation Expansion	672	672	672	672	11380	Subst	Enhan	0	0	0	0	0	16529038	16529038	Enhance	System Enhancements	LGE	2 - Not required but high risk in 0-3 years	Non-Strategy		
2016	2016	Funded	1	0	Non-	LGEKU2015	DSP Substation Property Watterson-Fairmont Area	800	800	800	800	11875	Subst	Enhan	0	0	30074	123881	0	0	9345925	9499880	Enhance	System Enhancements	LGE	3B - Not required Economic Benefit	Non-Strategy	
2016	2016	Funded	1	0	Non-	LGEKU2015	Manhole Cover Replacement Program LGE - 2016	217	217	217	217	0	Subst	Enhan	0	0	0	0	0	0	0	0	0	Enhance	System Enhancements	LGE	3A - Not required Prudent Utility Practice	Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	Pole Inspection and Treatment KU - 2016	6741	6741	6741	6741	36	Relia	Mainta	0	449119	251958	604116	0	0	0	1305194	Maintain	Pole Inspection	KU	3A - Not required Prudent Utility Practice	Strategy	
2016	2016	Funded	1	0	Non-	LGEKU2015	Pole Inspection and Treatment LGE - 2016	4494	4494	4494	4494	36	Relia	Mainta	0	318703	106659	430329	0	0	0	0	855691	Maintain	Pole Inspection	LGE	3A - Not required Prudent Utility Practice	Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	RECONDUCTOR CIRCUIT 2104	700	700	700	700	1433289	Danvil	Enhan	0	0	0	664	2570	3299272	#####	1003302506	Enhance	Reliability Overhead	KU	1 - Required	Non-Strategy	
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP PINE MISC DIST CAPITAL SUB PROJ	156	156	156	156	1179	Subst	Mainta	0	0	40010	144037	0	0	0	0	184048	Maintain	Substation Maintenance	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP PINE MISC NESC COMPLIANCE	67	67	67	67	0	Subst	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Substation Maintenance	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP PINE REPLACE SUBSTATION BATTERIES	30	30	30	30	48272	Subst	Mainta	0	0	724105	731778	0	0	0	0	1455883	Maintain	Aging Infrastructure	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP PINE SUBSTN BUILDINGS & GNDS	42	42	42	42	0	Subst	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Substation Maintenance	KU	3D - Not required Improvements to Existing Assets	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP EARL MISC DIST CAPITAL SUB PROJ	210	210	210	210	0	Subst	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Substation Maintenance	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP EARL MISC NESC COMPLIANCE	146	146	146	146	0	Subst	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Substation Maintenance	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP EARL REPLACE SUBSTATION BATTERIES	32	32	32	32	12137	Subst	Mainta	0	0	138713	249684	0	0	0	0	388397	Maintain	Aging Infrastructure	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	PILC UG Network Cable Replacement Program STR	6180	6180	6180	6180	0	Relia	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Aging Infrastructure	LGE	2 - Not required but high risk in 0-3 years	Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP LEX REPL REGULATORS	82	82	82	82	0	Subst	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Substation Maintenance	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP LEX REPL BREAKERS	130	130	130	130	0	Subst	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Substation Maintenance	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP LEX REPL BUSHINGS	102	102	102	102	13230	Subst	Mainta	0	0	87630	1261872	0	0	0	0	1349502	Maintain	Substation Maintenance	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP PINE FAILED BRKR/RECL PROJ	105	105	105	105	0	Subst	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Substation Maintenance	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP EARL FAILED BRKR/RECL PROJ	78	78	78	78	0	Subst	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Substation Maintenance	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP LEX MISC NESC COMPLIANCE	51	51	51	51	0	Subst	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Substation Maintenance	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP LEX MISC DIST CAPITAL SUB PROJ	170	170	170	170	0	Subst	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Substation Maintenance	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP LEX REPLACE SUBSTATION BATTERIES	31	31	31	31	33871	Subst	Mainta	0	0	181034	868962	0	0	0	0	1049995	Maintain	Aging Infrastructure	KU	2 - Not required but high risk in 0-3 years	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP LEX SUBSTATION BUILDINGS & GNDS	35	35	35	35	0	Subst	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Substation Maintenance	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	Manhole Cover Replacement Program KU - 2016	53	53	53	53	0	Lexin	Enhan	0	0	0	0	0	0	0	0	0	Enhance	System Enhancements	KU	3A - Not required Prudent Utility Practice	Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	DSP Shelbyville East Substation 2nd Year	768	768	768	768	24819	Subst	Enhan	0	0	0	0	0	0	0	24396601	24396601	Enhance	System Enhancements	KU	3G - Not required Land Bldgs and Structures	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	DSP Shelbyville East Distribution 2nd Year	215	215	215	215	24819	Shelb	Enhan	0	0	0	0	0	0	0	0	0	Enhance	System Enhancements	KU	3G - Not required Land Bldgs and Structures	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM KU SCADA EXPANSION	200	210	200	210	363	Subst	Enhan	290000	0	3043475	3652170	0	0	0	0	6985645	Enhance	System Enhancements	KU	3A - Not required Prudent Utility Practice	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	DSP Lexington Area Major Project Substation	1866	1866	1866	1866	0	Subst	Enhan	0	0	0	0	0	0	0	0	0	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	DSP Lexington Area Major Project Distribution	434	434	434	434	0	Lexin	Enhan	0	0	0	0	0	0	0	0	0	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP LGE OIL CONTAINMENT UPGRADES	102	102	102	102	59	Subst	Mainta	6000	0	0	0	0	0	0	0	6000	Maintain	Substation Maintenance	LGE	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP KU OIL CONTAINMENT UPGRADES	256	256	256	256	59	Subst	Mainta	15000	0	0	0	0	0	0	0	15000	Maintain	Substation Maintenance	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP LGE MISC NESC COMPLIANCE	51	51	51	51	0	Subst	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Substation Maintenance	LGE	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP LGE MISC DIST CAPITAL SUB PROJ	113	113	113	113	838	Subst	Mainta	0	0	27802	66725	0	0	0	0	94527	Maintain	Substation Maintenance	LGE	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP LGE SUBSTN BUILDINGS & GNDS	113	113	113	113	0	Subst	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Substation Maintenance	LGE	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	Monitor KU Substation Transformer Loads at Non-	500	500	500	500	50	Subst	Enhan	25000	0	0	0	0	0	0	0	25000	Enhance	System Enhancements	KU	3A - Not required Prudent Utility Practice	Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	Lebanon East Substation - 2nd Year	600	600	600	600	9143	Subst	Enhan	0	0	0	0	0	0	0	6349881	6349881	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	Lebanon East Distribution - 2nd Year	110	110	110	110	9143	Danvil	Enhan	0	0	0	0	0	0	0	6349881	6349881	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	Transmission Transfer Underbuilt Shelbyville East Cir	480	480	480	480	0	Shelb	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Other	KU	3D - Not required Improvements to Existing Assets	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	Distribution Capacitors KU	131	131	131	131	0	Lexin	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Capacitors Reclosers and Regulators	KU	3B - Not required Economic Benefit	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	Distribution Capacitors LGE	147	147	147	147	0	Louis	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Capacitors Reclosers and Regulators	LGE	3B - Not required Economic Benefit	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP DAN MISC DIST CAPITAL SUB PROJ	85	85	85	85	0	Subst	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Substation Maintenance	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP DAN MISC NESC COMPLIANCE	26	26	26	26	0	Subst	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Substation Maintenance	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP DAN REPLACE SUBSTATION BATTERIES	16	16	16	16	31667	Subst	Mainta	0	0	87036	419637	0	0	0	0	506673	Maintain	Aging Infrastructure	KU	2 - Not required but high risk in 0-3 years	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP DAN SUBSTN BUILDINGS & GNDS	17	17	17	17	0	Subst	Mainta	0	0	0	0	0	0	0	0	0	Maintain	Substation Maintenance	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	0	Non-	LGEKU2015	SCM RAP LGE REPLACE SUBSTATION BATTERIES	96	96	96	96	7582	Subst	Mainta	4730	66422	113038	542584	0	0	0	0	726774	Maintain				



Year	Sched Year	Funding	Year of Proj	Rank	Discretionary	Project Number	Project Name	Current Year Capital	Total Cost	Capital Funded Dollars	Funded Dollars Total	Ratio	Hierarchical	Other Descriptors	Financial	CEMI	CI	CMI	Complaints	Load	Total Project Score	Category	Code	Company	RAC	Strategic	
2016	2016	Funded	1	30	Discretio	LGEKU2016	Distribu Automation - KU	1270	1270	1270	1270	906	Relia	Enhan	0	334215	592293	224434	0	0	1150941	Enhance	Reliability Overhead	KU	3A - Not required Prudent Utility Practice	Non-Strategy	
2016	2016	Funded	1	31	Discretio	LGEKU2015	CIFI (worst) Circuits - Level 3 KU - 20 Circuits - 2016	5000	5000	5000	5000	737	Relia	Enhan	0	811141	1554723	1321309	0	0	3687173	Enhance	Reliability Overhead	KU	3A - Not required Prudent Utility Practice	Non-Strategy	
2016	2016	Funded	1	32	Discretio	LGEKU2015	CIFI (worst) Circuits - Level 2 KU - 12 Circuits - 2016	4500	4500	4500	4500	632	Relia	Enhan	0	490287	1307977	1047718	0	0	2845982	Enhance	Reliability Overhead	KU	3A - Not required Prudent Utility Practice	Non-Strategy	
2016	2016	Funded	1	33	Discretio	LGEKU2015	CIFI (worst) Circuits - Level 1 LGE - 6 Circuit - 2016 RAP	1500	1500	1500	1500	582	Relia	Enhan	0	44408	526618	302336	0	0	873362	Enhance	Reliability Overhead	LGE	3A - Not required Prudent Utility Practice	Non-Strategy	
2016	2016	Funded	1	34	Discretio	LGEKU2016	Distribu Automation - LGE	5510	5510	5510	5510	506	Relia	Enhan	0	469960	1606703	712621	0	0	2789284	Enhance	Reliability Overhead	LGE	3A - Not required Prudent Utility Practice	Non-Strategy	
2016	2016	Funded	1	35	Discretio	LGEKU2016	Camargo-A.O. Smith Re-conductor	152	152	152	152	455	Mays	Enhan	0	0	33603	35568	0	0	69170	Enhance	System Enhancements	KU	1 - Required	Strategy	
2016	2016	Funded	1	36	Discretio	LGEKU2015	SCM RAP STR KU REPL LTC/REG CONTROLS	100	100	100	100	442	Subst	Mainta	2100	0	28453	13658	0	0	44211	Maintain	Aging Infrastructure	KU	2 - Not required but high risk in 0-3 years	Strategy	
2016	2016	Funded	1	37	Discretio	LGEKU2015	DSP Radcliff South Circuit 2470 Re-conductor Project	60	60	60	60	433	Elizab	Enhan	0	0	14083	12106	0	0	26189	Enhance	System Enhancements	KU	3A - Not required Prudent Utility Practice	Non-Strategy	
2016	2016	Funded	1	38	Discretio	LGEKU2016	SCM RAP LGE STR REPL LEGACY OIL BRKRS	118	118	118	118	424	Subst	Mainta	10250	0	11704	28090	0	0	50044	Maintain	Aging Infrastructure	LGE	2 - Not required but high risk in 0-3 years	Strategy	
2016	2016	Funded	1	39	Discretio	LGEKU2015	URD Cable Repl/Rejuv Program STR RAP KU - 2016	316	316	316	316	420	Relia	Mainta	57900	0	33266	461589	0	0	132755	Maintain	Aging Infrastructure	KU	3A - Not required Prudent Utility Practice	Strategy	
2016	2016	Funded	1	40	Discretio	LGEKU2015	URD Cable Repl/Rejuv Program STR RAP LG&E - 2016	1300	1300	1300	1300	377	Relia	Mainta	238400	0	112016	140016	0	0	490432	Maintain	Aging Infrastructure	LGE	3A - Not required Prudent Utility Practice	Strategy	
2016	2016	Funded	1	41	Discretio	LGEKU2016	SCM LGE STR FPE LTC REPLACE REINHAUSEN	340	340	340	340	367	Subst	Enhan	10000	0	52107	62529	0	0	124636	Enhance	System Enhancements	LGE	2 - Not required but high risk in 0-3 years	Strategy	
2016	2016	Funded	1	42	Discretio	LGEKU2015	CIFI (worst) Circuits - Level 2 LGE - 9 Circuits - 2016	2250	2250	2250	2250	360	Relia	Enhan	0	66612	483058	260609	0	0	810279	Enhance	Reliability Overhead	LGE	3A - Not required Prudent Utility Practice	Non-Strategy	
2016	2016	Funded	1	43	Discretio	LGEKU2016	SCM RAP LGE STR REPL LEGACY RTUS	148	148	148	148	341	Subst	Mainta	6150	0	27661	16596	0	0	50407	Maintain	Aging Infrastructure	LGE	2 - Not required but high risk in 0-3 years	Strategy	
2016	2016	Funded	1	44	Discretio	LGEKU2016	Wedonia Re-conductor	168	168	168	168	329	Mays	Enhan	0	0	15842	39511	0	0	55353	Enhance	Reliability Overhead	KU	3B - Not required Economic Benefit	Non-Strategy	
2016	2016	Funded	1	45	Discretio	LGEKU2016	DSP Fariston 12KV Circuit Addition Project	120	120	120	120	315	Subst	Enhan	0	0	22078	15701	0	0	37779	Enhance	System Enhancements	KU	3A - Not required Prudent Utility Practice	Non-Strategy	
2016	2016	Funded	1	46	Discretio	LGEKU2015	SCM RAP LEX STR LEGACY RTU REPL	154	154	154	154	302	Subst	Mainta	2050	0	18122	26377	0	0	46549	Maintain	Aging Infrastructure	KU	3A - Not required Prudent Utility Practice	Strategy	
2016	2016	Funded	1	47	Discretio	LGEKU2016	LEO URD-Burkshire Terrace	267	271	267	271	278	Louis	Enhan	7000	0	10909	57382	0	0	75291	Enhance	Reliability Underground	LGE	2 - Not required but high risk in 0-3 years	Strategy	
2016	2016	Funded	1	48	Discretio	LGEKU2015	CIFI (worst) Circuits - Level 3 LGE - 18 Circuits - 2016	4500	4500	4500	4500	278	Relia	Enhan	0	134309	699009	415676	0	0	1248994	Enhance	Reliability Overhead	LGE	3A - Not required Prudent Utility Practice	Non-Strategy	
2016	2016	Funded	1	49	Discretio	LGEKU2015	DSP Richmond North Substation Project	2300	2300	2300	2300	232	Subst	Enhan	0	47115	47469	462136	0	0	556720	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy	
2016	2016	Funded	1	49	Discretio	LGEKU2015	DSP Richmond North Substation Project Distribution	0	0	0	0	232	Rich	Enhan	0	47115	31646	462136	0	0	540897	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy	
2016	2016	Funded	1	50	Discretio	LGEKU2015	Kenton to Wedonia tie circuit	255	255	255	255	200	Mays	Enhan	0	0	50548	505	0	0	51053	Enhance	System Enhancements	KU	3B - Not required Economic Benefit	Non-Strategy	
2016	2016	Funded	1	51	Discretio	LGEKU2015	Circuit 0254 relocation (Muddy Gap - Manchester)	450	450	450	450	196	Lond	Enhan	0	0	18867	69532	0	0	88399	Enhance	Reliability Overhead	KU	3A - Not required Prudent Utility Practice	Non-Strategy	
2016	2016	Funded	1	52	Discretio	LGEKU2015	UG Substation Exit Cable Replacement STR RAP LG&E	1025	1025	1025	1025	196	Relia	Mainta	1980	2594	33810	162270	0	0	200654	Maintain	Aging Infrastructure	LGE	3A - Not required Prudent Utility Practice	Strategy	
2016	2016	Funded	1	53	Discretio	LGEKU2015	SCM RAP LGE SMAC PROJECT	185	185	185	185	184	Subst	Enhan	34000	0	0	0	0	0	0	34000	Enhance	System Enhancements	LGE	3A - Not required Prudent Utility Practice	Non-Strategy
2016	2016	Funded	1	54	Discretio	LGEKU2015	REMOVE ROUNDHILL LINE	162	162	162	162	162	Danvil	Mainta	26300	0	0	0	0	0	0	26300	Maintain	Repair/Replace Defective Poles	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	55	Discretio	LGEKU2016	DSP Wilson Downing 2 Substation Upgrade	1300	1300	1300	1300	122	Subst	Enhan	0	0	65953	73988	0	0	139941	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy	
2016	2016	Funded	1	55	Discretio	LGEKU2016	DSP Wilson Downing 2 Substation Upgrade Distribution	0	0	0	0	122	Lexin	Enhan	0	0	65831	73851	0	0	139682	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy	
2016	2016	Funded	1	56	Discretio	LGEKU2015	DSP Frankfort 34-69kV substation relocation	900	900	900	900	115	Subst	Enhan	0	0	43977	80038	0	0	124015	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy	
2016	2016	Funded	1	56	Discretio	LGEKU2015	DSP Frankfort 34-69kV substation relocation distribution	0	0	0	0	115	Lexin	Enhan	0	0	43977	80038	0	0	124015	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy	
2016	2016	Funded	1	57	Discretio	LGEKU2015	Small Wire OH Replacement Rear Easement - KU -	500	500	500	500	101	Relia	Mainta	5000	769	11227	33698	0	0	50694	Maintain	Aging Infrastructure	KU	3A - Not required Prudent Utility Practice	Strategy	
2016	2016	Funded	1	58	Discretio	LGEKU2015	Small Wire OH Replacement Rear Easement - LGE -	500	500	500	500	100	Relia	Mainta	5000	288	11205	33622	0	0	50115	Maintain	Aging Infrastructure	LGE	3A - Not required Prudent Utility Practice	Strategy	
2016	2016	Funded	1	59	Discretio	LGEKU2016	DSP Sunoco OKT1732	50	50	50	50	100	Earlin	Enhan	0	0	3216	1760	0	0	4976	Enhance	System Enhancements	KU	3D - Not required Improvements to Existing Assets	Non-Strategy	
2016	2016	Funded	1	60	Discretio	LGEKU2015	RECONDUCTOR CIRCUIT 2215 IN LEBANON	124	124	124	124	97	Danvil	Enhan	21013	0	0	1172	0	0	22185	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy	
2016	2016	Funded	1	61	Discretio	LGEKU2015	DSP Russell Corner Circuit Work (2016-2017)	501	501	501	501	96	Louis	Enhan	0	47278	252282	308344	0	0	607905	Enhance	System Enhancements	LGE	2 - Not required but high risk in 0-3 years	Non-Strategy	
2016	2016	Funded	1	61	Discretio	LGEKU2015	DSP Russell Corner Substation Project (2016-2017)	3455	3455	3455	3455	96	Subst	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	2016	Funded	1	62	Discretio	LGEKU2015	RIC REMOVE ROUNDHILL TO GARRARD CO LINE	58	58	58	58	96	Rich	Mainta	5515	0	0	0	0	0	0	5515	Maintain	Repair/Replace Defective Equipment-OH	KU	1 - Required	Non-Strategy
2016	2016	Funded	1	63	Discretio	LGEKU2015	SCM LGE STR REPL 34KV BREAKERS	170	170	170	170	92	Subst	Mainta	2100	0	4156	9450	0	0	15706	Maintain	Aging Infrastructure	LGE	2 - Not required but high risk in 0-3 years	Strategy	
2016	2016	Funded	1	64	Discretio	LGEKU2016	SCM LGE STR REPL 34KV BREAKERS	170	170	170	170	92	Subst	Mainta	2100	0	4156	9450	0	0	15706	Maintain	Aging Infrastructure	LGE	2 - Not required but high risk in 0-3 years	Strategy	
2016	2016	Funded	1	65	Discretio	LGEKU2015	SCM RAP LGE REPL 15KV DH BRKRS	179	179	179	179	90	Subst	Mainta	20500	0	3407	6132	0	0	30038	Maintain	Aging Infrastructure	LGE	2 - Not required but high risk in 0-3 years	Non-Strategy	
2016	2016	Funded	1	66	Discretio	LGEKU2015	DSP Mt. Vernon Substation Project	700	700	700	700	86	Subst	Enhan	0	0	12939	51406	0	0	64345	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy	
2016	2016	Funded	1	66	Discretio	LGEKU2016	DSP Mt. Vernon Substation Distribution	0	0	0	0	86	Rich	Enhan	0	0	12939	51406	0	0	64345	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy	
2016	2016	Funded	1	67	Discretio	LGEKU2016	McKee Rd. - Science Hill	850	850	850	850	83	Lond	Enhan	0	0	32052	38783	0	0	70835	Enhance	Reliability Overhead	KU	3A - Not required Prudent Utility Practice	Non-Strategy	
2016	2016	Funded	1	68	Discretio	LGEKU2016	SCM RAP PIN STR REPL 22KV and 34KV BREAKERS	320	320	320	320	64	Subst	Mainta	4000	0	4849	11638	0	0	20487	Maintain	Aging Infrastructure	KU	2 - Not required but high risk in 0-3 years	Strategy	
2016	2016	Funded	1	69	Discretio	LGEKU2016	DSP Middlesboro 1 4KV 124-5 Substation Conversion	741	741	741	741	58	Subst	Enhan	0	0	13007	31997	0	0	45003	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy	
2016	2016	Funded	1	69	Discretio	LGEKU2016	DSP Middlesboro 2 4KV 780-1 Substation Conversion	878	878	878	878	58	Subst	Enhan	0	0	6351	19018	0	0	25368	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy	

Year	Scheduled Year	Funding	Year of Proj	Rank	Discretionary	Project Number	Project Name	Current Year Capital	Total Cost	Capital Funded Dollars	Funded Dollars	Ratio	Hierarchical	Other Descriptors	Financial	CEMI	CI	CMI	Complaints	Load	Total Project Score	Category	Code	Company	RAC	Strategic		
2017	2016	Funded	2	0	Discretio	LGEKU2015	DSP Frankfort 34-69kV substation relocation	1200	1200	1200	1200	58	Subst	Enhan	0	0	43977	80038	0	0	124015	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy		
2017	2016	Funded	2	0	Discretio	LGEKU2015	DSP Frankfort 34-69kV substation relocation distribution	50	50	50	50	58	Lexin	Enhan	0	0	43977	80038	0	0	124015	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy		
2017	2016	Funded	2	0	Discretio	LGEKU2015	DSP Russell Corner Circuit Work (2016-2017)	501	501	501	501	96	Louis	Enhan	0	0	47278	252282	308344	0	0	607905	Enhance	System Enhancements	LGE	2 - Not required but high risk in 0-3 years	Non-Strategy	
2017	2016	Funded	2	0	Discretio	LGEKU2015	DSP Russell Corner Substation Project (2016-2017)	1873	1873	1873	1873	96	Subst	Enhan	0	0	0	0	0	0	0	0	607905	Enhance	System Enhancements	LGE	2 - Not required but high risk in 0-3 years	Non-Strategy
2017	2016	Funded	1	0	Non-	LGEKU2015	DSP Substation Property Mud Lane-Smyrna	800	800	800	800	12158	Subst	Enhan	0	0	19609	97063	0	9610108	9726780	Enhance	System Enhancements	LGE	3B - Not required Economic Benefit	Non-Strategy		
2017	2016	Funded	2	0	Discretio	LGEKU2015	DSP Paynes Mill Road Substation- Distribution & Exit	359	359	359	359	37	Lexin	Enhan	0	0	49759	54255	77697	0	0	181710	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy	
2017	2016	Funded	2	0	Discretio	LGEKU2015	DSP Paynes Mill Road Substation Project-Versailles	2000	2000	2000	2000	37	Subst	Enhan	0	0	0	0	0	0	0	0	181710	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy
2017	2016	Funded	2	0	Non-	LGEKU2015	Pole Inspection and Treatment KU - 2016	6944	6944	6944	6944	36	Relia	Mainta	0	0	449119	251958	604116	0	0	1305194	Maintain	Pole Inspection	KU	3A - Not required Prudent Utility Practice	Strategy	
2017	2016	Funded	2	0	Non-	LGEKU2015	Pole Inspection and Treatment LG&E - 2016	4629	4629	4629	4629	36	Relia	Mainta	0	0	318703	106659	430329	0	0	855691	Maintain	Pole Inspection	LGE	3A - Not required Prudent Utility Practice	Strategy	
2017	2016	Funded	2	0	Discretio	LGEKU2015	RECONDUCTOR CIRCUIT 154 STANFORD TO	126	126	126	126	7	Danvil	Enhan	0	0	1391	965	0	0	0	0	2356	Enhance	Reliability Overhead	KU	2 - Not required but high risk in 0-3 years	Non-Strategy
2017	2016	Funded	2	0	Discretio	LGEKU2015	RECONDUCTOR CIRCUIT 2215 IN LEBANON	105	105	105	105	97	Danvil	Enhan	21013	0	0	0	1172	0	0	0	22185	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy
2017	2016	Funded	2	0	Non-	LGEKU2015	PILC UG Network Cable Replacement Program STR	6366	6366	6366	6366	0	Relia	Mainta	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	2016	Funded	2	0	Non-	LGEKU2015	SCM KU SCADA EXPANSION	3900	4076	3900	4076	363	Subst	Enhan	290000	0	3043475	3652170	0	0	0	0	6985645	Enhance	System Enhancements	KU	3A - Not required Prudent Utility Practice	Non-Strategy
2017	2016	Funded	2	0	Discretio	LGEKU2015	DSP Viley 2 Substation	1000	1000	1000	1000	4	Subst	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	2016	Funded	2	0	Discretio	LGEKU2015	DSP Viley 2 Distribution	400	400	400	400	4	Lexin	Enhan	0	0	7701	7136	0	0	0	0	14837	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy
2017	2016	Funded	2	0	Discretio	LGEKU2015	SCM RAP LGE REPL 15KV DH BRKRS	154	154	154	154	90	Subst	Mainta	20500	0	0	3407	6132	0	0	0	30038	Maintain	Aging Infrastructure	LGE	2 - Not required but high risk in 0-3 years	Non-Strategy
2017	2016	Funded	2	0	Discretio	LGEKU2015	DSP Richmond North Substation Project	1500	1500	1500	1500	118	Subst	Enhan	0	0	47115	47469	462136	0	0	556720	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy	
2017	2016	Funded	2	0	Discretio	LGEKU2015	DSP Richmond North Substation Project Distribution	930	930	930	930	118	Rich	Enhan	0	0	47115	31646	462136	0	0	540897	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy	
2017	2016	Funded	2	0	Discretio	LGEKU2015	DSP Mt. Vernon Substation Project	700	700	700	700	43	Subst	Enhan	0	0	12939	51406	0	0	0	0	64345	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy
2017	2016	Funded	2	0	Discretio	LGEKU2016	DSP Mt. Vernon Substation Distribution	100	100	100	100	43	Rich	Enhan	0	0	12939	51406	0	0	0	0	64345	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy
2017	2016	Funded	2	0	Non-	LGEKU2015	Lebanon East Substation - 2nd Year	679	679	679	679	4572	Subst	Enhan	0	0	0	0	0	0	6349881	6349881	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy	
2017	2016	Funded	2	0	Non-	LGEKU2016	Lebanon East Distribution - 2nd Year	0	0	0	0	4572	Danvil	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	
2017	2016	Funded	2	0	Non-	LGEKU2015	Distribution Capacitors KU	131	131	131	131	0	Lexin	Mainta	0	0	0	0	0	0	0	0	0	0	0	0	0	
2017	2016	Funded	2	0	Non-	LGEKU2015	Distribution Capacitors LG&E	147	147	147	147	0	Louis	Mainta	0	0	0	0	0	0	0	0	0	0	0	0	0	
2017	2017	Funded	1	0	Non-	LGEKU2016	Downtown Network Vent Type Protector Replacement	500	500	500	500	0	Relia	Mainta	0	0	0	0	0	0	0	0	0	0	0	0	0	
2017	2016	Funded	2	0	Discretio	LGEKU2015	DSP Middlesboro 14KV 124-5 Substation Conversion	181	181	181	181	18	Subst	Enhan	0	0	13007	31997	0	0	0	0	45003	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy
2017	2016	Funded	2	0	Discretio	LGEKU2016	DSP Middlesboro 2 4KV 780-1 Substation Conversion	434	434	434	434	18	Subst	Enhan	0	0	6351	19018	0	0	0	0	25368	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy
2017	2016	Funded	2	0	Discretio	LGEKU2016	DSP Middlesboro 14KV 124-5 Distribution Conversion	82	82	82	82	18	Pinevi	Enhan	0	0	13007	31997	0	0	0	0	45003	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy
2017	2016	Funded	2	0	Discretio	LGEKU2016	DSP Middlesboro 2 4KV 780-1 Distribution Conversion	120	120	120	120	18	Pinevi	Enhan	0	0	6351	19018	0	0	0	0	25368	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy
2017	2016	Funded	2	0	Discretio	LGEKU2016	DSP Stonewall 2 Substation	1050	1050	1050	1050	12	Subst	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	
2017	2016	Funded	2	0	Discretio	LGEKU2016	DSP Stonewall 2 Distribution	400	400	400	400	12	Lexin	Enhan	0	0	23635	18333	0	0	0	0	41969	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy
2017	2016	Funded	2	0	Discretio	LGEKU2016	DSP Wilson Downing 2 Substation Upgrade	700	700	700	700	61	Subst	Enhan	0	0	65953	73988	0	0	0	0	139941	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy
2017	2016	Funded	2	0	Discretio	LGEKU2016	DSP Wilson Downing 2 Substation Upgrade Distribution	300	300	300	300	61	Lexin	Enhan	0	0	65831	73851	0	0	0	0	139682	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy
2017	2016	Funded	2	0	Discretio	LGEKU2016	DSP London North Substation Project	1500	1500	1500	1500	25	Subst	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	
2017	2016	Funded	2	0	Discretio	LGEKU2016	DSP London North Distribution Lines Project	550	550	550	550	25	Lond	Enhan	0	0	9366	47617	42855	0	0	0	99837	Enhance	System Enhancements	KU	3A - Not required Prudent Utility Practice	Non-Strategy
2017	2016	Funded	2	0	Discretio	LGEKU2016	WKY 34.5 (Sectionalize and Automate)	955	957	955	957	1028	Distri	Enhan	0	0	232837	432280	318222	0	0	983338	Enhance	Reliability Overhead	KU	3A - Not required Prudent Utility Practice	Non-Strategy	
2017	2016	Funded	2	0	Non-	LGEKU2016	N1DT STR London North Distribution Lines Project	550	550	550	550	25	Lond	Enhan	0	0	9366	47617	42855	0	0	99837	Enhance	System Enhancements	KU	3A - Not required Prudent Utility Practice	Strategy	
2017	2016	Funded	2	0	Non-	LGEKU2016	N1DT STR London North Substation Project	2190	2190	2190	2190	25	Subst	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	
2017	2017	Funded	1	0	Non-	LGEKU2016	N1DT STR Stonewall 2 Substation	1600	1600	1600	1600	12	Subst	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	
2017	2017	Funded	1	0	Non-	LGEKU2016	N1DT STR Stonewall 2 Distribution	400	400	400	400	12	Lexin	Enhan	0	0	23635	18333	0	0	0	0	41969	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Strategy
2017	2017	Funded	1	0	Non-	LGEKU2016	N1DT STR Viley 2 Substation	1450	1450	1450	1450	4	Subst	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	
2017	2017	Funded	1	0	Non-	LGEKU2016	N1DT STR Viley 2 Distribution	400	400	400	400	4	Lexin	Enhan	0	0	7701	7136	0	0	0	0	14837	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Strategy
2017	2017	Funded	1	0	Non-	LGEKU2016	N1DT STR Plainview Substation Project	2600	2600	2600	2600	24550	Subst	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	
2017	2017	Funded	1	0	Non-	LGEKU2016	N1DT STR Plainview Circuit Work	810	810	810	810	24550	Louis	Enhan	0	0	218422	19264	0	166703662	166941348	Enhance	System Enhancements	LGE	2 - Not required but high risk in 0-3 years	Strategy		
2017	2017	Funded	1	1	Discretio	LGEKU2015	RIC Reconnector Ckt 2312	67	67	67	67	6341582	Rich	Enhan	0	0	9679	21627	0	424854669	424885974	Enhance	System Enhancements	KU	3B - Not required Economic Benefit	Non-Strategy		
2017	2017	Funded	1	2	Discretio	LGEKU2015	DSP Simpsonville 1 Substation	600	600	600	600	20541	Subst	Enhan	0	0	0	0	0	13351655	13351655	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy		
2017	2017	Funded	1	2																								



Year	Sched Year	Funding	Year of Proj	Rank	Discretionary	Project Number	Project Name	Current Year Capital	Total Cost	Capital Funded Dollars	Funded Dollars Total	Ratio	Hierarchical	Other Descriptors	Financial	CEMI	CI	CMI	Complaints	Load	Total Project Score	Category	Code	Company	RAC	Strategic		
2018	2018	Funded	1	1	Discretio	LGKEU2015	RIC Rebuild Pine Hill to Livingston Line	380	380	380	380	140	Rich	Mainta	0	0	17669	35692	0	0	53362	Maintain	Aging Infrastructure	KU	3B - Not required Economic Benefit	Non-Strategy		
2018	2018	Funded	1	2	Discretio	LGKEU2016	DSP Pennington Gap Substation	2000	2000	2000	2000	69	Subst	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	2018	Funded	1	2	Discretio	LGKEU2016	DSP Pennington Gap Distribution	500	500	500	500	69	Norto	Enhan	0	218236	45909	46026	0	0	0	310171	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy	
2018	2018	Funded	1	3	Discretio	LGKEU2016	DSP Georgetown North Substation	2000	2000	2000	2000	2	Subst	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	2018	Funded	1	3	Discretio	LGKEU2016	DSP Georgetown North Distribution	500	500	500	500	2	Lexin	Enhan	0	0	6033	3427	0	0	0	9460	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy	
2018	2018	Funded	1	4	Discretio	LGKEU2015	DSP Hume Road Sub phase 2 distribution	0	0	0	0	0	Lexin	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	
2018	2018	Funded	1	4	Discretio	LGKEU2015	DSP Hume Road Substation Phase 2	1500	1500	1500	1500	0	Subst	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	2018	Funded	1	5	Discretio	LGKEU2015	DSP Salt Lick Substation Project	1400	1400	1400	1400	0	Subst	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	2018	Funded	2	0	Discretio	LGKEU2015	DSP Hume Road Sub phase 2 distribution	1581	1581	1581	1581	0	Lexin	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	2018	Funded	2	0	Discretio	LGKEU2015	DSP Salt Lick Substation Phase 2	800	800	800	800	0	Subst	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	2016	Funded	4	0	Non-	LGKEU2015	Pole Inspection and Treatment KU - 2016	7367	7367	7367	7367	36	Relia	Mainta	0	449119	251958	604116	0	0	0	1305194	Maintain	Pole Inspection	KU	3A - Not required Prudent Utility Practice	Strategy	
2019	2016	Funded	4	0	Non-	LGKEU2015	Pole Inspection and Treatment LG&E - 2016	4911	4911	4911	4911	36	Relia	Mainta	0	318703	106659	430329	0	0	0	855691	Maintain	Pole Inspection	LGE	3A - Not required Prudent Utility Practice	Strategy	
2019	2016	Funded	4	0	Non-	LGKEU2015	PILC UG Network Cable Replacement Program STR	6753	6753	6753	6753	0	Relia	Mainta	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	2016	Funded	4	0	Non-	LGKEU2015	SCM KU SCADA EXPANSION	4200	4714	4200	4714	363	Subst	Enhan	290000	0	3043475	3652170	0	0	0	6985645	Enhance	System Enhancements	KU	3A - Not required Prudent Utility Practice	Non-Strategy	
2019	2018	Funded	2	0	Discretio	LGKEU2015	DSP Salt Lick Substation Project	500	500	500	500	0	Subst	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	2016	Funded	4	0	Non-	LGKEU2015	Distribution Capacitors KU	131	131	131	131	0	Lexin	Mainta	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	2016	Funded	4	0	Non-	LGKEU2015	Distribution Capacitors LG&E	147	147	147	147	0	Louis	Mainta	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	2018	Funded	2	0	Discretio	LGKEU2016	DSP Georgetown North Substation	1500	1500	1500	1500	2	Subst	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	2018	Funded	2	0	Discretio	LGKEU2016	DSP Georgetown North Distribution	500	500	500	500	2	Lexin	Enhan	0	0	6033	3427	0	0	0	9460	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy	
2019	2018	Funded	2	0	Discretio	LGKEU2016	DSP Pennington Gap Substation	1500	1500	1500	1500	69	Subst	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	2018	Funded	2	0	Discretio	LGKEU2016	DSP Pennington Gap Distribution	500	500	500	500	69	Norto	Enhan	0	218236	45909	46026	0	0	0	310171	Enhance	System Enhancements	KU	2 - Not required but high risk in 0-3 years	Non-Strategy	
2019	2016	Funded	4	0	Discretio	LGKEU2016	WKY 34.5 (Sectionalize and Automate)	955	957	955	957	1028	Distri	Enhan	0	232837	432280	318222	0	0	0	983338	Enhance	Reliability Overhead	KU	3A - Not required Prudent Utility Practice	Non-Strategy	
2019	2018	Funded	2	0	Non-	LGKEU2016	N1DT STR Mud Lane/Smyrna Area Substation Project	1600	1600	1600	1600	23513	Subst	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	2018	Funded	2	0	Non-	LGKEU2016	N1DT STR Mud Lane/Smyrna Area Circuit Work (2018-	1000	1000	1000	1000	23513	Louis	Enhan	0	0	218422	19264	0	166703662	166941348	Enhance	System Enhancements	LGE	2 - Not required but high risk in 0-3 years	Strategy		
2019	2018	Funded	2	0	Non-	LGKEU2016	N1DT STR Russell Corner Substation Project	1873	1873	1873	1873	96	Subst	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	2018	Funded	2	0	Non-	LGKEU2016	N1DT STR Russell Corner Circuit Work	501	501	501	501	96	Louis	Enhan	0	47278	252282	308344	0	0	0	607905	Enhance	System Enhancements	LGE	2 - Not required but high risk in 0-3 years	Strategy	
2019	2018	Funded	2	0	Non-	LGKEU2016	N1DT STR Dixie Substation Project	2250	2250	2250	2250	31498	Subst	Enhan	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	2018	Funded	2	0	Non-	LGKEU2016	N1DT STR Dixie Circuit Work	1000	1000	1000	1000	31498	Louis	Enhan	0	0	218422	19264	0	166703662	166941348	Enhance	System Enhancements	LGE	3A - Not required Prudent Utility Practice	Strategy		
2019	2018	Funded	2	0	Non-	LGKEU2016	N1DT STR Lime Kiln Circuit Work	875	875	875	875	772	Louis	Enhan	0	177374	39456	20951	0	0	0	237780	Enhance	System Enhancements	LGE	3A - Not required Prudent Utility Practice	Strategy	
2019	2018	Funded	2	0	Non-	LGKEU2016	N1DT STR Lime Kiln Substation Work	1150	1150	1150	1150	772	Subst	Enhan	0	0	0	0	0	4512857	0	4512857	Enhance	System Enhancements	LGE	3A - Not required Prudent Utility Practice	Strategy	
2019	2019	Funded	1	1	Discretio	LGKEU2015	DSP Lime Kiln Substation Circuit Work (Future 2019)	875	875	875	875	813	Louis	Enhan	0	177374	39456	20951	0	0	0	237780	Enhance	System Enhancements	LGE	3A - Not required Prudent Utility Practice	Non-Strategy	
2019	2019	Funded	1	1	Discretio	LGKEU2015	DSP Lime Kiln Substation Work (future 2019)	2946	2946	2946	2946	813	Subst	Enhan	0	0	0	0	0	0	4512857	4512857	Enhance	System Enhancements	LGE	3A - Not required Prudent Utility Practice	Non-Strategy	
2020	2019	Funded	2	0	Discretio	LGKEU2015	DSP Lime Kiln Substation Circuit Work (Future 2019)	875	875	875	875	772	Louis	Enhan	0	177374	39456	20951	0	0	0	237780	Enhance	System Enhancements	LGE	3A - Not required Prudent Utility Practice	Non-Strategy	
2020	2019	Funded	2	0	Discretio	LGKEU2015	DSP Lime Kiln Substation Work (future 2019)	1150	1150	1150	1150	772	Subst	Enhan	0	0	0	0	0	4512857	4512857	Enhance	System Enhancements	LGE	3A - Not required Prudent Utility Practice	Non-Strategy		
2020	2016	Funded	5	0	Non-	LGKEU2015	Pole Inspection and Treatment KU - 2016	7588	7588	7588	7588	36	Relia	Mainta	0	449119	251958	604116	0	0	0	1305194	Maintain	Pole Inspection	KU	3A - Not required Prudent Utility Practice	Strategy	
2020	2016	Funded	5	0	Non-	LGKEU2015	Pole Inspection and Treatment LG&E - 2016	5058	5058	5058	5058	36	Relia	Mainta	0	318703	106659	430329	0	0	0	855691	Maintain	Pole Inspection	LGE	3A - Not required Prudent Utility Practice	Strategy	
2020	2016	Funded	5	0	Non-	LGKEU2015	PILC UG Network Cable Replacement Program STR	6957	6957	6957	6957	0	Relia	Mainta	0	0	0	0	0	0	0	0	0	0	0	0	0	
2020	2016	Funded	5	0	Non-	LGKEU2015	SCM KU SCADA EXPANSION	4700	5370	4700	5370	363	Subst	Enhan	290000	0	3043475	3652170	0	0	0	6985645	Enhance	System Enhancements	KU	3A - Not required Prudent Utility Practice	Non-Strategy	
2020	2016	Funded	5	0	Non-	LGKEU2015	Distribution Capacitors KU	131	131	131	131	0	Lexin	Mainta	0	0	0	0	0	0	0	0	0	0	0	0	0	
2020	2016	Funded	5	0	Non-	LGKEU2015	Distribution Capacitors LG&E	147	147	147	147	0	Louis	Mainta	0	0	0	0	0	0	0	0	0	0	0	0	0	
2020	2016	Funded	5	0	Discretio	LGKEU2016	WKY 34.5 (Sectionalize and Automate)	955	957	955	957	1028	Distri	Enhan	0	232837	432280	318222	0	0	0	983338	Enhance	Reliability Overhead	KU	3A - Not required Prudent Utility Practice	Non-Strategy	



Year	Sched Year	Funding	Rank	Discretion	Project Name	Current Year Capital	Funded Dollars Total	Ratio	Other Descriptors	Financial	CEMI	CI	CMI	Com	Load	Total Project Score
2017	2017	Funde	1	0	DSP Lawrenceburg Substation Property Project	400	400	0	S Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2017	2017	Funde	1	0	Pole Inspection and Treatment KU STR - 2017	6944	6944	35	R Maintain  Pole Inspection  KU  3A - Not required Prudent Utility Practice  Strategy	0	449119	251958	604116	0	0	1305194
2017	2017	Funde	1	0	Pole Inspection and Treatment LG&E STR - 2017	4629	4629	35	R Maintain  Pole Inspection  LGE  3A - Not required Prudent Utility Practice	0	318703	106659	430329	0	0	855691
2017	2017	Funde	1	0	SCM RAP EARL MISC DIST CAPITAL SUB PROJ	214	214	0	S Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP EARL MISC NESC COMPLIANCE	149	149	0	S Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP EARL REPLACEMENT SUBSTATION BATTERIES	33	33	29710	S Maintain  Aging Infrastructure  KU  1 - Required  Non-Strategy	0	0	350155	630279	0	0	980434
2017	2017	Funde	1	0	SCM RAP LGE REPLN BLDINGS & GNDS	43	43	0	S Maintain  Aging Infrastructure  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	PILC UG Network Cable Replacement Program STR LG&E -	6366	6366	0	R Maintain  Aging Infrastructure  LGE  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP LEX REPL REGULATORS	84	84	0	S Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP LEX REPL BREAKERS	134	134	0	S Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP LEX REPL BUSHINGS	105	105	13138	S Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	30000	0	87630	1261872	0	0	1379502
2017	2017	Funde	1	0	SCM RAP LEX MISC NESC COMPLIANCE	53	53	0	S Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP LEX REPLACEMENT SUBSTATION BATTERIES	32	32	32812	S Maintain  Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years  Non-	0	0	181034	869662	0	0	1049995
2017	2017	Funde	1	0	SCM RAP LEX SUBSTN BLDINGS & GNDS	36	36	0	S Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP LEX STR LEGACY RTU REPL	158	158	128	S Maintain  Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	9883	9489	0	0	19372
2017	2017	Funde	1	0	SCM RAP LGE STR CAP AND PIN INSULATOR UPGRADE	157	157	144	S Maintain  Aging Infrastructure  LGE  2 - Not required but high risk in 0-3 years	0	0	2701	19448	0	0	22149
2017	2017	Funde	1	0	SCM RAP LEX MISC NESC COMPLIANCE	53	53	0	S Maintain  Substation Maintenance  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP LGE MISC DIST CAPITAL SUB PROJ	116	116	815	S Maintain  Substation Maintenance  LGE  1 - Required  Non-Strategy	0	0	27802	66725	0	0	94527
2017	2017	Funde	1	0	SCM RAP LGE SUBSTN BLDINGS & GNDS	116	116	0	S Maintain  Substation Maintenance  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM KU SCADA METER EXPANSION	499	499	0	S Enhance  System Enhancements  KU  3A - Not required Prudent Utility Practice	0	0	0	0	0	0	0
2017	2017	Funde	1	0	Distribution Capacitors KU	131	131	0	L Enhance  System Enhancements  KU  3B - Not required Economic Benefit  Non-	0	0	0	0	0	0	0
2017	2017	Funde	1	0	Distribution Capacitors LG&E	147	147	0	L Enhance  System Enhancements  LGE  3B - Not required Economic Benefit  Non-	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP STR KU REPL LTC/REG CONTROLS	103	103	409	S Maintain  Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	28453	13658	0	0	42111
2017	2017	Funde	1	0	SCM RAP DAN MISC NESC COMPLIANCE	29	29	0	S Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP DAN REPLACE SUBSTATION BATTERIES	16	16	31667	S Maintain  Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years  Non-	0	0	87036	419637	0	0	506673
2017	2017	Funde	1	0	SCM RAP DAN SUBSTN BLDINGS & GNDS	19	19	0	S Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM KU REPLACE TRANSFORMER FANS	52	52	0	S Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP DAN FAILED BRKR/RECL PROJ	82	82	0	S Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	Substation Exit Cable Replacement STR RAP LG&E - 2017	1051	1051	218	R Maintain  Aging Infrastructure  LGE  3A - Not required Prudent Utility Practice	0	0	38525	184894	0	0	223420
2017	2017	Funde	1	0	URD Cable Rep/Rejuv Program STR RAP KU - 2017	324	324	461	R Maintain  Aging Infrastructure  KU  3A - Not required Prudent Utility Practice	62140	0	38794	48519	0	0	149454
2017	2017	Funde	1	0	URD Cable Rep/Rejuv Program STR RAP LG&E - 2017	1077	1077	420	R Maintain  Aging Infrastructure  LGE  3A - Not required Prudent Utility Practice	206550	0	109295	136643	0	0	452488
2017	2017	Funde	1	0	LEO Downtown Network Vault Structural Repairs - RAP 2017	1200	1200	0	L Maintain  Aging Infrastructure  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP PINE SUBSTN BLDINGS & GNDS	44	44	0	S Maintain  Substation Maintenance  KU  3D - Not required Improvements to	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP PINE REPLACE SUBSTATION BATTERIES	30	30	77608	S Maintain  Aging Infrastructure  KU  1 - Required  Non-Strategy	0	0	1030349	1297828	0	0	2328177
2017	2017	Funde	1	0	SCM RAP PINE MISC NESC COMPLIANCE	70	70	0	S Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP PINE MISC DIST CAPITAL SUB PROJ	160	160	1150	S Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	40010	144037	0	0	184048
2017	2017	Funde	1	0	SCM RAP PINE FAILED BRKR/RECL PROJ	109	109	0	S Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP EARL FAILED BRKR/RECL PROJ	80	80	0	S Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	Transmission Line Clearance RAP LGE 2017	46	46	0	L Maintain  Other  LGE  3D - Not required Improvements to Existing Assets  Non-	0	0	0	0	0	0	0
2017	2017	Funde	1	0	Transmission Line Clearance RAP KU 2017	262	262	0	L Maintain  Other  KU  3D - Not required Improvements to Existing Assets  Non-	0	0	0	0	0	0	0
2017	2017	Funde	1	0	LEO DTN Downtown Network Vent Type Protector Replacement	500	500	0	L Maintain  Aging Infrastructure  LGE  1 - Required  Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	DSP Lonesome Pine Substation Property	600	600	0	S Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2017	2017	Funde	1	0	DSP Wise Substation Property	230	230	0	S Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP LGE REPLACE SUBSTATION BATTERIES	98	98	6690	S Maintain  Aging Infrastructure  LGE  1 - Required  Strategy	0	0	113038	542584	0	0	655622
2017	2017	Funde	1	0	DSP West Hickman transformer addition year 2	1375	1375	28	S Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	19439	11985	0	0	31423
2017	2017	Funde	1	0	DSP West Hickman transformer addition distribution	106	106	28	L Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2017	2017	Funde	1	0	NDT STR West Hickman transformer addition year 2 - NDT	775	775	28	S Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	19439	11985	0	0	31423
2017	2017	Funde	1	0	SCM LGE MODIFY CANE RUN PLANT 14KV SUBSTATION	400	400	61	S Enhance  System Enhancements  LGE  2 - Not required but high risk in 0-3 years	0	0	11163	13395	0	0	24558
2017	2017	Funde	1	0	SCM RAP LGE REPL 15KV DH BRKRS	183	183	46	S Maintain  Aging Infrastructure  LGE  2 - Not required but high risk in 0-3 years	0	0	2626	4728	0	0	7354
2017	2017	Funde	1	0	SCM RAP LGE SMAC PROJECT	220	220	227	S Enhance  System Enhancements  LGE  3A - Not required Prudent Utility Practice	50000	0	0	0	0	0	50000
2017	2017	Funde	1	0	SCM RAP KU 34KV SUBSTATION MISC	81	81	323	S Maintain  Substation Maintenance  KU  2 - Not required but high risk in 0-3 years	0	0	3188	22950	0	0	26138
2017	2017	Funde	1	0	REL KU CIFI RAP - 2017	2620	2620	1052	R Enhance  Reliability Overhead  KU  3A - Not required Prudent Utility Practice	0	114548	1164146	1477137	0	0	2755832
2017	2017	Funde	1	0	REL LGE CIFI RAP - 2017	2695	2695	488	R Enhance  Reliability Overhead  LGE  3A - Not required Prudent Utility Practice	0	144686	637684	533131	0	0	1315500
2017	2017	Funde	1	0	LEO Manhole Structural Repairs - RAP 2017	213	213	0	L Maintain  Aging Infrastructure  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	REL CEMI KU RAP - 2017	825	825	6719	R Enhance  Reliability Overhead  KU  3A - Not required Prudent Utility Practice	0	3284737	1127119	1131288	0	0	5543144
2017	2017	Funde	1	0	REL CEMI LGE RAP - 2017	425	425	2997	R Enhance  Reliability Overhead  LGE  3A - Not required Prudent Utility Practice	0	521598	439456	312704	0	0	1273759
2017	2017	Funde	1	0	REL System Hardening KU RAP - 2017	1861	1861	820	R Enhance  Reliability Overhead  KU  3A - Not required Prudent Utility Practice	0	340108	349890	835537	0	0	1525535
2017	2017	Funde	1	0	REL System Hardening LGE RAP - 2017	2445	2445	516	R Enhance  Reliability Overhead  LGE  3A - Not required Prudent Utility Practice	0	13065	477951	771277	0	0	1262292
2017	2017	Funde	1	0	Distribution Automation - LGE	4063	4063	361	R Enhance  Reliability Overhead  LGE  3A - Not required Prudent Utility Practice	0	940420	8175146	3884646	0	0	13000211
2017	2017	Funde	1	0	Distribution Automation - KU	1742	1742	602	R Enhance  Reliability Overhead  KU  3A - Not required Prudent Utility Practice	0	3662327	7782875	3695364	0	0	15140566
2017	2017	Funde	1	0	SCM RAP LGE REPLACE TRANSFORMER FANS	205	205	0	S Maintain  Substation Maintenance  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP LGE OIL CONTAINMENT UPGRADES	105	105	0	S Maintain  Substation Maintenance  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP LEX MISC DIST CAPITAL SUB PROJ	175	175	0	S Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP KU OIL CONTAINMENT UPGRADES	258	258	0	S Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	SCM RAP DAN MISC DIST CAPITAL SUB PROJ	87	87	0	S Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2017	2017	Funde	1	0	PORTABLE/SPARES FOR NDT	636	636	0	S Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2017	2017	Funde	1	0	NDT Projects Funding by Year	5289	5289	0	S Enhance  System Enhancements  LGE  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2017	2017	Funde	1	1	DSP Black Branch Road Circuit 2477-Elizabethown Circuit 2462	353	353	112924	E Enhance  System Enhancements  KU  3D - Not required Improvements to	0	0	0	0	0	39862179	39862179
2017	2017	Funde	1	2	DSP Mooman 2.4KV to 7.2KV Conversion Project	118	118	14099	S Enhance  System Enhancements  KU  3A - Not required Prudent Utility Practice	0	0	0	0	0	1659477	1659477
2017	2017	Funde	1	3	DSP Mt. Vernon Substation Project	1100	1100	13085	S Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	34022262	34022262
2017	2017	Funde	1	3	DSP Mt. Vernon Substation Project Distribution	0										

Year	Sched Year	Funding	Rank	Disc	Project Name	Current Year Capital	Funded Dollars Total	Ratio	Hier	Other Descriptors	Financial	CEMI	CI	CMI	Com	Load	Total Project Score		
2017	2017	Funde	1	16	Disc	SCM RAP LGE STR REPLC ABB VHK MECH	50	50	2233	S	Maintain	[Aging Infrastructure  LGE  2 - Not required but high risk in 0-3 years	0	0	69788	41873	0	0	11661
2017	2017	Funde	1	17	Disc	DSP Paris Circuit 805 circuit addition	225	225	2113	M	Enhance	[System Enhancements  KU  3A - Not required Prudent Utility Practice	0	582052	29408	75125	0	0	686585
2017	2017	Funde	1	17	Disc	DSP Paris 819-2 substation breaker addition	100	100	2113	S	Enhance	[System Enhancements  KU  3A - Not required Prudent Utility Practice	0	0	0	0	0	0	0
2017	2017	Funde	1	18	Disc	SCM RAP KU LTC OIL FILTRATION ADDITIONS	87	87	2090	S	Maintain	[Substation Maintenance  KU  2 - Not required but high risk in 0-3 years	2500	0	60910	118418	0	0	181827
2017	2017	Funde	1	19	Disc	DSP Russell Corner Circuit Work (2017-2018)	700	700	2047	L	Enhance	[System Enhancements  LGE  2 - Not required but high risk in 0-3 years	0	0	87447	97771	0	0	185218
2017	2017	Funde	1	19	Disc	DSP Russell Corner Substation Project (2017-2018)	3830	3830	2047	S	Enhance	[System Enhancements  LGE  2 - Not required but high risk in 0-3 years	0	0	0	0	13634708	13634708	0
2017	2017	Funde	1	20	Disc	SCM RAP LEX STR REPL LEGACY BRKRS	123	123	1472	S	Maintain	[Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	51226	129860	0	0	181085
2017	2017	Funde	1	21	Disc	SCM RAP PINE STR REPL LEGACY BRKRS	121	121	1444	S	Maintain	[Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	51398	123355	0	0	174753
2017	2017	Funde	1	22	Disc	SCM RAP EARL STR WILDLIFE PROTECTION	54	54	1423	S	Maintain	[Substation Maintenance  KU  2 - Not required but high risk in 0-3 years	0	0	22600	54239	0	0	76839
2017	2017	Funde	1	23	Disc	SCM RAP DAN STR REPL LEGACY BRKRS	123	123	1421	S	Maintain	[Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	51398	123355	0	0	174753
2017	2017	Funde	1	24	Disc	SCM RAP STR LGE WILDLIFE PROTECTION	79	79	1284	S	Maintain	[Substation Maintenance  LGE  2 - Not required but high risk in 0-3 years	0	0	29830	71591	0	0	101420
2017	2017	Funde	1	25	Disc	LEO Padmount Switchgear Repair/Replacement Program RAP	189	189	1258	L	Maintain	[Repair/Replace Defective Equipment-UG  LGE  3A - Not required	0	18622	78296	140932	0	0	237850
2017	2017	Funde	1	26	Disc	SCM RAP LGE STR REPL LEGACY RTUS	152	152	1256	S	Maintain	[Aging Infrastructure  LGE  2 - Not required but high risk in 0-3 years	0	0	119318	71591	0	0	190909
2017	2017	Funde	1	27	Disc	SCM RAP EARL STR REPL LEGACY BRKRS	307	307	1135	S	Maintain	[Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	102452	245885	0	0	348337
2017	2017	Funde	1	28	Disc	SCM RAP PINE STR REPL 22KV and 34KV BREAKERS	160	160	1089	S	Maintain	[Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	51226	123025	0	0	174251
2017	2017	Funde	1	29	Disc	SCM RAP LGE STR REPL LEGACY OIL BRKRS	121	121	743	S	Maintain	[Aging Infrastructure  LGE  2 - Not required but high risk in 0-3 years	0	0	26446	63471	0	0	89917
2017	2017	Not	1	30	Disc	SCM PINE ST CHARLES SUB REG/PIER REPL	195	0	246	S	Maintain	[Substation Maintenance  KU  2 - Not required but high risk in 0-3 years	4000	0	12952	31084	0	0	48035
2017	2017	Not	1	31	Disc	DAN REMOVE ROUNDHILL LINE	162	0	162	D	Maintain	[Repair/Replace Defective Equipment-OH  KU  1 - Required  Non-	26300	0	0	0	0	0	26300
2017	2017	Not	1	32	Disc	RIC REMOVE ROUNDHILL TO GARRARD CO LINE	58	0	96	R	Maintain	[Repair/Replace Defective Equipment-OH  KU  1 - Required  Non-	5515	0	0	0	0	0	5515
2017	2017	Not	1	33	Disc	SCM PINE POCKET SUBSTATION 34KV UPGRADE	400	0	40	S	Maintain	[Substation Maintenance  KU  3A - Not required Prudent Utility Practice	0	0	4753	11408	0	0	16162
2017	2017	Not	1	34	Disc	DSP IBM 1 Ckt 0057 Distribution	630	0	25	L	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	19487	9219	0	0	28706
2017	2017	Not	1	34	Disc	DSP IBM 1 Ckt 0057 Substation Disconnects	30	0	25	S	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2017	2017	Not	1	35	Disc	DSP Innovation Dr 2 Distribution Exit	325	0	10	L	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	1793	1452	0	0	3245
2017	2017	Not	1	36	Disc	SCM PINE TOMS CK NORTH REPL LEGACY EQUIP	75	0	6	S	Maintain	[Substation Maintenance  KU  2 - Not required but high risk in 0-3 years	0	0	182	264	0	0	446
2017	2017	Not	1	37	Disc	DSP American Ave Ckt 0008 Switchgear	100	0	3	L	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	163	116	0	0	279
2017	2017	Not	1	38	Disc	DSP Kenton to Wedomia Tie Circuit	260	0	0	M	Enhance	[System Enhancements  KU  3A - Not required Prudent Utility Practice	0	0	0	0	0	0	0
2017	2017	Not	1	39	Disc	DSP Oxford 1 Ckt 0471 Distribution	570	0	0	L	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2017	2017	Not	1	40	Disc	DSP Radcliff South Circuit 2470 Re-conductor Project	140	0	0	EI	Enhance	[System Enhancements  KU  3A - Not required Prudent Utility Practice	0	0	0	0	0	0	0
2018	2017	Funde	2	0	Disc	DSP Hume Road Sub phase 2 distribution	1576	1576	3044	L	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2018	2017	Funde	2	0	Disc	DSP Hume Road Substation Phase 2	2300	2300	3044	S	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	17885483	17885483	0
2018	2017	Funde	2	0	Disc	DSP Russell Corner Circuit Work (2017-2018)	400	400	2020	L	Enhance	[System Enhancements  LGE  2 - Not required but high risk in 0-3 years	0	0	87447	97771	0	0	185218
2018	2017	Funde	2	0	Disc	DSP Russell Corner Substation Project (2017-2018)	1820	1820	2020	S	Enhance	[System Enhancements  LGE  2 - Not required but high risk in 0-3 years	0	0	0	0	13634708	13634708	0
2018	2017	Funde	2	0	Disc	DSP Paynes Mill Road Substation-Distribution & Exit Feeders	359	359	3547	L	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2018	2017	Funde	2	0	Disc	DSP Paynes Mill Road Substation Project-Versailles	2900	2900	3547	S	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	19006595	19006595	0
2018	2017	Funde	2	0	Non	Pole Inspection and Treatment KU STR - 2017	7152	7152	35	R	Maintain	[Pole Inspection  KU  3A - Not required Prudent Utility Practice  Strategy	0	449119	251958	604116	0	0	1305194
2018	2017	Funde	2	0	Non	Pole Inspection and Treatment LGE&E STR - 2017	4768	4768	35	R	Maintain	[Pole Inspection  LGE  3A - Not required Prudent Utility Practice	0	318703	106659	430329	0	0	855691
2018	2017	Funde	2	0	Non	PILL UG Network Cable Replacement Program STR LGE&E	6556	6556	0	R	Maintain	[Aging Infrastructure  LGE  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2018	2017	Funde	2	0	Disc	DSP Viley 2 Substation	2000	2000	3926	S	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	21242016	21242016	0
2018	2017	Funde	2	0	Disc	DSP Viley 2 Distribution	600	600	3926	L	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	21453	16279	0	0	37732
2018	2017	Funde	2	0	Disc	DSP Richmond North Substation Project	1673	1673	3454	S	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	16631955	16631955	0
2018	2017	Funde	2	0	Disc	DSP Richmond North Substation Project Distribution	942	942	3454	R	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2018	2017	Funde	2	0	Disc	DSP Mt. Vernon Substation Project	1100	1100	13085	S	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	34022262	34022262	0
2018	2017	Funde	2	0	Disc	DSP Mt. Vernon Substation Project Distribution	400	400	13085	R	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2018	2017	Funde	2	0	Non	Distribution Capacitors KU	131	131	0	L	Enhance	[System Enhancements  KU  3B - Not required Economic Benefit  Non-	0	0	0	0	0	0	0
2018	2017	Funde	2	0	Non	Distribution Capacitors LGE	147	147	0	L	Enhance	[System Enhancements  LGE  3B - Not required Economic Benefit  Non-	0	0	0	0	0	0	0
2018	2017	Funde	2	0	Non	Distribution Automation - LGE	8442	8442	361	R	Enhance	[Reliability Overhead  LGE  3A - Not required Prudent Utility Practice	0	940420	8175146	3884646	0	0	13000211
2018	2017	Funde	2	0	Non	Distribution Automation - KU	5628	5628	602	R	Enhance	[Reliability Overhead  KU  3A - Not required Prudent Utility Practice	0	3662327	7782875	3695364	0	0	15140566
2018	2018	Funde	1	0	Non	URD Cable Repl/Rejuv Program STR RAP LGE&E - 2017 - 2018	1104	1104	415	R	Maintain	[Aging Infrastructure  LGE  3A - Not required Prudent Utility Practice	211710	0	109295	136643	0	0	457648
2018	2018	Funde	1	0	Non	URD Cable Repl/Rejuv Program STR RAP KU - 2017 - 2018	332	332	455	R	Maintain	[Aging Infrastructure  KU  3A - Not required Prudent Utility Practice	63690	0	38794	48519	0	0	151004
2018	2018	Funde	1	0	Non	Transmission Line Clearance RAP LGE 2017 - 2018	47	47	0	L	Maintain	[Other  LGE  3D - Not required Improvements to Existing Assets  Non-	0	0	0	0	0	0	0
2018	2018	Funde	1	0	Non	Transmission Line Clearance RAP KU 2017 - 2018	269	269	0	L	Maintain	[Other  KU  3D - Not required Improvements to Existing Assets  Non-	0	0	0	0	0	0	0
2018	2018	Funde	1	0	Non	Substation Exit Cable Replacement STR RAP LGE&E - 2017 -	1077	1077	207	R	Maintain	[Aging Infrastructure  LGE  3A - Not required Prudent Utility Practice	0	0	38525	184894	0	0	223420
2018	2018	Funde	1	0	Non	SCM RAP STR KU REPL LTC/REG CONTROLS - 2018	106	106	399	S	Maintain	[Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	28453	13658	0	0	42111
2018	2018	Funde	1	0	Non	SCM RAP PINE SUBSTN BUILDINGS & GNDS - 2018	45	45	0	S	Maintain	[Substation Maintenance  KU  3D - Not required Improvements to	0	0	0	0	0	0	0
2018	2018	Funde	1	0	Non	SCM RAP PINE REPLACE SUBSTATION BATTERIES - 2018	31	31	75713	S	Maintain	[Aging Infrastructure  KU  1 - Required  Non-Strategy	0	0	1030349	1297828	0	0	2328177
2018	2018	Funde	1	0	Non	SCM RAP PINE MISC NESC COMPLIANCE - 2018	72	72	0	S	Maintain	[Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2018	2018	Funde	1	0	Non	SCM RAP PINE MISC DIST CAPITAL SUB PROJ - 2018	164	164	1122	S	Maintain	[Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	40010	144037	0	0	184048
2018	2018	Funde	1	0	Non	SCM RAP PINE FAILED BRKR/RECL PROJ - 2018	112	112	0	S	Maintain	[Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2018	2018	Funde	1	0	Non	SCM RAP LGE SUBSTN BUILDINGS & GNDS - 2018	119	119	0	S	Maintain	[Substation Maintenance  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2018	2018	Funde	1	0	Non	SCM RAP LGE STR CAP AND PIN INSULATOR UPGRADE -	161	161	138	S	Maintain	[Aging Infrastructure  LGE  2 - Not required but high risk in 0-3 years	0	0	2701	19448	0	0	22149
2018	2018	Funde	1	0	Non	SCM RAP LGE SMAC PROJECT - 2018	228	228	228	S	Enhance	[System Enhancements  LGE  3A - Not required Prudent Utility Practice	51250	0	0	0	0	0	51250
2018	2018	Funde	1	0	Non	LEO Downtown Network Vault Structural Repairs - RAP 2017 -	1230	1230	0	L	Maintain	[Aging Infrastructure  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2018	2018	Funde	1	0	Non	LEO Manhole Structural Repairs - RAP 2017 - 2018	218	218	0	L	Maintain	[Aging Infrastructure  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2018	2018	Funde	1	0	Non	SCM RAP LGE REPLACE TRANSFORMER FANS - 2018	210	210	0	S	Maintain	[Substation Maintenance  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2018	2018	Funde	1	0	Non	LEO DTN Downtown Network Vent Type Protector Replacement	513	513	0	L	Maintain	[Aging Infrastructure  LGE  1 - Required  Strategy	0	0	0	0	0	0	0
2018	2018	Funde	1	0	Non	REL System Hardening LGE RAP - 2018	2750	2750	16	R	Enhance	[Reliability Overhead  LGE  3A - Not required Prudent Utility Practice	0	192	11205	33625	0	0	45022
2018	2018	Funde	1	0	Non	SCM RAP LGE REPLACE SUBSTATION BATTERIES - 2018	100	100	6527	S	Maintain	[Aging Infrastructure  LGE  1 - Required  Strategy	0	0	113038	542584	0	0	655622
2018	2018	Funde	1	0	Non	REL System Hardening KU RAP - 2018	2020	2020	28	R	Enhance	[Reliability Overhead  KU  3A - Not required Prudent Utility Practice	0	769	11227	33696	0	0	45693
2018	2018	Funde	1	0	Non	SCM RAP LGE OIL CONTAINMENT UPGRADES - 2018	108	108	0	S	Maintain	[Substation Maintenance  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2018	2018	Funde	1	0	Non	SCM RAP LGE MISC NESC COMPLIANCE													



Year	Sched Year	Funding	Rank	Discretion	Project Name	Current Year Capital	Funded Dollars Total	Ratio	Other Descriptors	Financial	CEMI	CI	CMI	Com	Load	Total Project Score					
2018	2018	Funde	1	0	Non	SCM RAP DAN SUBSTN BUILDINGS & GNDS - 2018	19	19	0	S	Maintain	[Substation Maintenance	[KU 1 - Required	[Non-Strategy		0					
2018	2018	Funde	1	0	Non	SCM RAP EARL REPLACE SUBSTATION BATTERIES - 2018	34	28985	0	S	Maintain	[Aging Infrastructure	[KU 1 - Required	[Non-Strategy		980434					
2018	2018	Funde	1	0	Non	SCM RAP DAN REPLACE SUBSTATION BATTERIES - 2018	16	16	30895	S	Maintain	[Aging Infrastructure	[KU 2 - Not required	but high risk in 0-3 years	[Non-	506673					
2018	2018	Funde	1	0	Non	SCM RAP EARL MISC NESC COMPLIANCE - 2018	153	153	0	S	Maintain	[Substation Maintenance	[KU 1 - Required	[Non-Strategy		0					
2018	2018	Funde	1	0	Non	SCM RAP DAN MISC NESC COMPLIANCE - 2018	30	30	0	S	Maintain	[Substation Maintenance	[KU 1 - Required	[Non-Strategy		0					
2018	2018	Funde	1	0	Non	SCM RAP EARL MISC DIST CAPITAL SUB PROJ - 2018	219	219	0	S	Maintain	[Substation Maintenance	[KU 1 - Required	[Non-Strategy		0					
2018	2018	Funde	1	0	Non	SCM RAP DAN FAILED BRKR/RECL PROJ - 2018	84	84	0	S	Maintain	[Substation Maintenance	[KU 1 - Required	[Non-Strategy		0					
2018	2018	Funde	1	0	Non	SCM RAP DAN MISC DIST CAPITAL SUB PROJ - 2018	89	89	0	S	Maintain	[Substation Maintenance	[KU 1 - Required	[Non-Strategy		0					
2018	2018	Funde	1	0	Non	SCM RAP EARL FAILED BRKR/RECL PROJ - 2018	82	82	0	S	Maintain	[Substation Maintenance	[KU 1 - Required	[Non-Strategy		0					
2018	2017	Funde	2	0	Non	N1DT Projects Funded by YEAR	7506	7506	0	S	Enhance	[System Enhancements	[LGE 2 - Not required	but high risk in 0-3 years		0					
2018	2018	Funde	1	1	Disc	DSP Simpsonville 1 Substation	750	750	15042	S	Enhance	[System Enhancements	[KU 2 - Not required	but high risk in 0-3 years		24067863					
2018	2018	Funde	1	1	Disc	DSP Simpsonville 1 Distribution	0	0	15042	S	Enhance	[System Enhancements	[KU 2 - Not required	but high risk in 0-3 years		0					
2018	2018	Funde	1	2	Disc	DSP Middleboro 1 4KV 124-5 Substation Conversion	700	700	13172	S	Enhance	[System Enhancements	[KU 2 - Not required	but high risk in 0-3 years		14489245					
2018	2018	Funde	1	2	Disc	DSP Middleboro 1 4KV 124-5 Distribution Conversion	0	0	13172	Pi	Enhance	[System Enhancements	[KU 2 - Not required	but high risk in 0-3 years		0					
2018	2018	Funde	1	3	Disc	SCM RAP DAN STR WILDLIFE PROTECTION - 2018	23	23	7341	S	Maintain	[Substation Maintenance	[KU 2 - Not required	but high risk in 0-3 years		165540					
2018	2018	Funde	1	4	Disc	DSP Buena Vista Upgrade	750	750	7118	S	Enhance	[System Enhancements	[KU 2 - Not required	but high risk in 0-3 years		10676701					
2018	2018	Funde	1	5	Disc	SCM RAP LGE LTC OIL FILTRATION ADDITIONS - 2018	58	58	5557	S	Maintain	[Substation Maintenance	[LGE 2 - Not required	but high risk in 0-3 years	2358	0	324653				
2018	2018	Funde	1	6	Disc	SCM RAP LEX STR WILDLIFE PROTECTION - 2018	35	35	4750	S	Maintain	[Substation Maintenance	[KU 2 - Not required	but high risk in 0-3 years		0	165540				
2018	2018	Funde	1	7	Disc	SCM RAP KU STR LIGHTNING PROT - 2018	54	54	3210	S	Maintain	[Substation Maintenance	[KU 2 - Not required	but high risk in 0-3 years		0	174373				
2018	2018	Funde	1	8	Disc	SCM RAP PINE STR WILDLIFE PROTECTION - 2018	54	54	3089	S	Maintain	[Substation Maintenance	[KU 2 - Not required	but high risk in 0-3 years		0	167801				
2018	2018	Funde	1	9	Disc	SCM RAP LGE STR LEGACY RELAY REPL - 2018	84	84	2949	S	Maintain	[Aging Infrastructure	[LGE 2 - Not required	but high risk in 0-3 years		0	247845				
2018	2018	Funde	1	10	Disc	SCM RAP KU STR LEGACY RELAY REPL - 2018	66	66	2807	S	Maintain	[Aging Infrastructure	[KU 2 - Not required	but high risk in 0-3 years		0	184155				
2018	2018	Funde	1	11	Disc	SCM RAP LGE STR REPL LEGACY AIR MAG BRKRS - 2018	341	341	2639	S	Maintain	[Aging Infrastructure	[LGE 2 - Not required	but high risk in 0-3 years	4100	0	900871				
2018	2018	Not	1	12	Disc	DSP Gene Substation (2018-2019)	2570	0	2287	S	Enhance	[System Enhancements	[LGE 2 - Not required	but high risk in 0-3 years	0	9499	117111	77868	0	204748	
2018	2018	Not	1	12	Disc	DSP Gene Substation Circuit Work (2018-2019)	380	0	2287	L	Enhance	[System Enhancements	[LGE 2 - Not required	but high risk in 0-3 years	0	0	0	0	12014493	12014493	
2018	2018	Funde	1	13	Disc	SCM RAP LGE STR REPLC ABB VHK MECH - 2018	51	51	2179	S	Maintain	[Aging Infrastructure	[LGE 2 - Not required	but high risk in 0-3 years		0	69788	41873	0	111661	
2018	2018	Funde	1	14	Disc	SCM RAP KU LTC OIL FILTRATION ADDITIONS - 2018	89	89	2040	S	Maintain	[Substation Maintenance	[KU 2 - Not required	but high risk in 0-3 years	2563	0	60910	118418	0	181890	
2018	2018	Funde	1	15	Disc	SCM RAP LEX STR REPL LEGACY BRKRS - 2018	126	126	1436	S	Maintain	[Aging Infrastructure	[KU 2 - Not required	but high risk in 0-3 years		0	51226	129860	0	181085	
2018	2018	Funde	1	16	Disc	SCM RAP PINE STR REPL LEGACY BRKRS - 2018	124	124	1409	S	Maintain	[Aging Infrastructure	[KU 2 - Not required	but high risk in 0-3 years		0	51398	123355	0	174753	
2018	2018	Funde	1	17	Disc	SCM RAP EARL STR WILDLIFE PROTECTION - 2018	55	55	1388	S	Maintain	[Substation Maintenance	[KU 2 - Not required	but high risk in 0-3 years		0	22600	54239	0	76839	
2018	2018	Funde	1	18	Disc	SCM RAP DAN STR REPL LEGACY BRKRS - 2018	126	126	1386	S	Maintain	[Aging Infrastructure	[KU 2 - Not required	but high risk in 0-3 years		0	51398	123355	0	174753	
2018	2018	Funde	1	19	Disc	SCM RAP STR LGE WILDLIFE PROTECTION - 2018	81	81	1252	S	Maintain	[Substation Maintenance	[LGE 2 - Not required	but high risk in 0-3 years		0	29830	71591	0	101420	
2018	2018	Funde	1	20	Disc	LEO Padmount Switchgear Repair/Replacement Program RAP	194	194	1228	L	Maintain	[Repair/Replace Defective Equipment-UG	[LGE 3A - Not required		18622	78296	140932	0	237850		
2018	2018	Funde	1	21	Disc	SCM RAP LGE STR REPL LEGACY RTUS - 2018	156	156	1225	S	Maintain	[Aging Infrastructure	[LGE 2 - Not required	but high risk in 0-3 years		0	119318	71591	0	190909	
2018	2018	Funde	1	22	Disc	SCM RAP EARL STR REPL LEGACY BRKRS - 2018	315	315	1107	S	Maintain	[Aging Infrastructure	[KU 2 - Not required	but high risk in 0-3 years		0	102452	245885	0	348337	
2018	2018	Funde	1	23	Disc	SCM RAP LGE STR REPL LEGACY OIL BRKRS - 2018	124	124	725	S	Maintain	[Aging Infrastructure	[LGE 2 - Not required	but high risk in 0-3 years		0	26446	63471	0	89917	
2018	2018	Funde	1	24	Disc	SCM RAP PINE STR REPL 22KV & 34KV BREAKERS - 2018	337	337	517	S	Maintain	[Aging Infrastructure	[KU 2 - Not required	but high risk in 0-3 years		0	51226	123025	0	174251	
2018	2017	Not	1	25	Disc	SCM PINE ST CHARLES SUB REG/PIER REPL	200	0	246	S	Maintain	[Substation Maintenance	[KU 2 - Not required	but high risk in 0-3 years	4000	0	12952	31084	0	47035	
2018	2017	Not	1	26	Disc	DAN REMOVE ROUNDHILL LINE	166	0	162	D	Maintain	[Repair/Replace Defective Equipment-OH	[KU 1 - Required	[Non-	26300	0	0	0	0	26300	
2018	2018	Not	1	27	Disc	SCM KU STR PORTABLE TRANSFORMER	2200	0	154	S	Maintain	[Substation Maintenance	[KU 2 - Not required	but high risk in 0-3 years		0	385137	0	0	385137	
2018	2017	Not	1	28	Disc	RIC REMOVE ROUNDHILL TO GARRARD CO LINE	59	0	96	R	Maintain	[Repair/Replace Defective Equipment-OH	[KU 1 - Required	[Non-	5515	0	0	0	0	5515	
2018	2017	Not	1	29	Disc	DSP IBM 1 Ckt 0057 Distribution	630	0	25	L	Enhance	[System Enhancements	[KU 2 - Not required	but high risk in 0-3 years		0	19487	9219	0	28706	
2018	2017	Not	1	29	Disc	DSP IBM 1 Ckt 0057 Substation Disconnects	30	0	25	S	Enhance	[System Enhancements	[KU 2 - Not required	but high risk in 0-3 years		0	0	0	0	0	
2018	2017	Not	1	30	Disc	SCM PINE POCKET SUBSTATION 34KV UPGRADE	410	0	40	S	Maintain	[Substation Maintenance	[KU 3A - Not required	Prudent Utility Practice		0	4753	11408	0	16162	
2018	2018	Not	1	31	Disc	DSP American Ave Ckt 0008 Distribution Step Downs	180	0	11	L	Enhance	[System Enhancements	[KU 2 - Not required	but high risk in 0-3 years		0	0	2053	0	2053	
2018	2017	Not	1	32	Disc	DSP Innovation Dr 2 Distribution Exit	333	0	10	L	Enhance	[System Enhancements	[KU 2 - Not required	but high risk in 0-3 years		0	1793	1452	0	3245	
2018	2017	Not	1	33	Disc	SCM PINE TOM'S CK NORTH REPL LEGACY EQUIP	77	0	6	S	Maintain	[Substation Maintenance	[KU 2 - Not required	but high risk in 0-3 years		0	182	264	0	446	
2018	2017	Not	1	34	Disc	DSP American Ave Ckt 0008 Switchgear	103	0	3	L	Enhance	[System Enhancements	[KU 2 - Not required	but high risk in 0-3 years		0	163	116	0	279	
2018	2017	Not	1	35	Disc	DSP Radcliff South Circuit 2470 Re-conductor Project	144	0	0	EI	Enhance	[System Enhancements	[KU 3A - Not required	Prudent Utility Practice		0	0	0	0	0	
2018	2017	Not	1	36	Disc	DSP Kenton to Wedonia Tie Circuit	267	0	0	M	Enhance	[System Enhancements	[KU 3A - Not required	Prudent Utility Practice		0	0	0	0	0	
2018	2017	Not	1	37	Disc	DSP Oxford 1 Ckt 0471 Distribution	584	0	0	L	Enhance	[System Enhancements	[KU 2 - Not required	but high risk in 0-3 years		0	0	0	0	0	
2018	2018	Not	1	38	Disc	DSP Fariston 12KV Circuit Addition Project	120	0	0	S	Enhance	[System Enhancements	[KU 3A - Not required	Prudent Utility Practice		0	0	0	0	0	
2019	2018	Funde	2	0	Disc	DSP Simpsonville 1 Substation	750	750	15042	S	Enhance	[System Enhancements	[KU 2 - Not required	but high risk in 0-3 years		0	0	0	24067863	24067863	
2019	2018	Funde	2	0	Disc	DSP Simpsonville 1 Distribution	100	100	15042	S	Enhance	[System Enhancements	[KU 2 - Not required	but high risk in 0-3 years		0	0	0	0	0	
2019	2017	Funde	3	0	Non	Pole Inspection and Treatment KU STR - 2017	7367	7367	35	R	Maintain	[Pole Inspection	[KU 3A - Not required	Prudent Utility Practice	[Strategy	0	449119	251958	604116	0	1305194
2019	2017	Funde	3	0	Non	Pole Inspection and Treatment LGE&E STR - 2017	4911	4911	35	R	Maintain	[Pole Inspection	[LGE 3A - Not required	Prudent Utility Practice		0	318703	106659	430329	0	855691
2019	2017	Funde	3	0	Non	PILC UG Network Cable Replacement Program STR LGE&E -	6753	6753	0	R	Maintain	[Aging Infrastructure	[LGE 2 - Not required	but high risk in 0-3 years		0	0	0	0	0	
2019	2019	Funde	1	0	Non	SHE Transmission Transfer Underbuilt Shelbyville East Cir 2522	160	160	0	S	Maintain	[Other	[KU 3D - Not required	Improvements to Existing Assets	[Non-	0	0	0	0	0	0
2019	2017	Funde	3	0	Non	Distribution Capacitors KU	137	137	0	L	Enhance	[System Enhancements	[KU 3B - Not required	Economic Benefit	[Non-	0	0	0	0	0	0
2019	2017	Funde	3	0	Non	Distribution Capacitors LGE&E	150	150	0	L	Enhance	[System Enhancements	[LGE 3B - Not required	Economic Benefit	[Non-	0	0	0	0	0	0
2019	2018	Funde	2	0	Disc	DSP Buena Vista Upgrade	750	750	7118	S	Enhance	[System Enhancements	[KU 2 - Not required	but high risk in 0-3 years		0	10676701	10676701	0	10676701	
2019	2017	Funde	3	0	Non	Distribution Automation - LGE	8250	8250	361	R	Enhance	[Reliability Overhead	[LGE 3A - Not required	Prudent Utility Practice		0	940420	8175146	3884646	0	13000211
2019	2017	Funde	3	0	Non	Distribution Automation - KU	5500	5500	602	R	Enhance	[Reliability Overhead	[KU 3A - Not required	Prudent Utility Practice		0	3662327	7782875	3695364	0	15140566
2019	2019	Funde	1	0	Non	URD Cable Repl/Rejuv Program STR RAP LGE&E - 2017 - 2019	1132	1132	409	R	Maintain	[Aging Infrastructure	[LGE 3A - Not required	Prudent Utility Practice	217010	0	109295	136643	0	462948	
2019	2019	Funde	1	0	Non	URD Cable Repl/Rejuv Program STR RAP KU - 2017 - 2019	340	340	448	R	Maintain	[Aging Infrastructure	[KU 3A - Not required	Prudent Utility Practice	65290	0	38794	48519	0	152604	
2019	2019	Funde	1	0	Non	Transmission Line Clearance RAP LGE 2017 - 2019	48	48	0	L	Maintain	[Other	[LGE 3D - Not required	Improvements to Existing Assets	[Non-	0	0	0	0	0	0
2019	2019	Funde	1	0	Non	Transmission Line Clearance RAP KU 2017 - 2019	275	275	0	L	Maintain	[Other	[KU 3D - Not required	Improvements to Existing Assets	[Non-	0	0	0	0	0	0
2019	2019	Funde	1	0	Non	Substation Exit Cable Replacement STR RAP LGE&E - 2017 -	1104	1104	202	R	Maintain	[Aging Infrastructure	[LGE 3A - Not required	Prudent Utility Practice		0	38525	184894	0	223420	
2019	2019	Funde	1	0	Non	SCM RAP STR KU REPL LTC/REG CONTROLS - 2019	108	108	389	S	Maintain	[Aging Infrastructure	[KU 2 - Not required	but high risk in 0-3 years		0	28453	13658	0	42111	
2019	2019	Funde	1	0	Non	SCM RAP PINE SUBSTN BUILDINGS & GNDS - 2019	46	46	0	S	Maintain	[Substation Maintenance	[KU 3D - Not required	Improvements to		0	0	0	0	0	0
2019	2019	Funde	1	0	Non	SCM RAP PINE REPLACE SUBSTATION BATTERIES - 2019	32	32	73866	S	Maintain	[Aging Infrastructure	[KU 1 - Required	[Non-Strategy		0	1030349	1297828	0	2328177	
2019	2019	Funde	1	0	Non	SCM RAP PINE MISC NESC COMPLIANCE - 2019	74	74	0	S	Maintain	[Substation Maintenance	[KU 1								

Year	Sched Year	Funding	Rank	Discretion	Project Name	Current Year Capital	Funded Dollars Total	Ratio	Other Descriptors	Financial	CEMI	CI	CMI	Com	Load	Total Project Score				
2019	2019	Funde	1	0	Non	SCM RAP LGE MISC DIST CAPITAL SUB PROJ - 2019	122	122	776	S	Maintain	[Substation Maintenance  LGE  1 - Required  Non-Strategy	0	0	27802	66725	0	0	94527	
2019	2019	Funde	1	0	Non	REL CEMI LGE RAP - 2019	447	447	2853	R	Enhance	[Reliability Overhead  LGE  3A - Not required Prudent Utility Practice	0	521598	439456	312704	0	0	1273759	
2019	2019	Funde	1	0	Non	REL CEMI KU RAP - 2019	867	867	6395	R	Enhance	[Reliability Overhead  KU  3A - Not required Prudent Utility Practice	0	3284737	1127119	1131288	0	0	5543144	
2019	2019	Funde	1	0	Non	SCM RAP LEX SUBSTATION BUILDINGS & GNDS - 2019	38	38	0	S	Maintain	[Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0	
2019	2019	Funde	1	0	Non	REL KU CIFI RAP - 2019	2042	2042	400	R	Enhance	[Reliability Overhead  KU  3A - Not required Prudent Utility Practice	0	0	311428	504865	0	0	816292	
2019	2019	Funde	1	0	Non	SCM RAP LEX STR LEGACY RTU REPL - 2019	166	166	117	S	Maintain	[Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	9883	9489	0	0	19372	
2019	2019	Funde	1	0	Non	SCM RAP LEX REPLACE SUBSTATION BATTERIES - 2019	33	33	31818	S	Maintain	[Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years  Non-	0	0	181034	868962	0	0	1049995	
2019	2019	Funde	1	0	Non	SCM RAP LEX REPL REGULATORS - 2019	88	88	0	S	Maintain	[Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0	
2019	2019	Funde	1	0	Non	SCM RAP LEX REPL BUSHINGS - 2019	110	110	12519	S	Maintain	[Substation Maintenance  KU  1 - Required  Non-Strategy	31519	0	87630	1261872	0	0	1381021	
2019	2019	Funde	1	0	Non	SCM RAP LEX REPL BREAKERS - 2019	141	141	0	S	Maintain	[Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0	
2019	2019	Funde	1	0	Non	SCM RAP LEX MISC NESC COMPLIANCE - 2019	56	56	0	S	Maintain	[Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0	
2019	2019	Funde	1	0	Non	REL LGE CIFI RAP - 2019	1750	1750	170	R	Enhance	[Reliability Overhead  LGE  3A - Not required Prudent Utility Practice	0	0	159178	138873	0	0	298051	
2019	2019	Funde	1	0	Non	SCM RAP LEX MISC DIST CAPITAL SUB PROJ - 2019	184	184	0	S	Maintain	[Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0	
2019	2019	Funde	1	0	Non	SCM RAP KU OIL CONTAINMENT UPGRADES - 2019	271	271	0	S	Maintain	[Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0	
2019	2019	Funde	1	0	Non	SCM RAP KU 34KV SUBSTATION MISC - 2019	85	85	307	S	Maintain	[Substation Maintenance  KU  2 - Not required but high risk in 0-3 years	0	0	3188	22950	0	0	26138	
2019	2019	Funde	1	0	Non	SCM RAP EARL SUBSTN BUILDINGS & GNDS - 2019	45	45	0	S	Maintain	[Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0	
2019	2019	Funde	1	0	Non	SCM RAP DAN SUBSTN BUILDINGS & GNDS - 2019	20	20	0	S	Maintain	[Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0	
2019	2019	Funde	1	0	Non	SCM RAP EARL REPLACE SUBSTATION BATTERIES - 2019	35	35	28279	S	Maintain	[Aging Infrastructure  KU  1 - Required  Non-Strategy	0	0	350155	630279	0	0	980434	
2019	2019	Funde	1	0	Non	SCM RAP DAN REPLACE SUBSTATION BATTERIES - 2019	17	17	30141	S	Maintain	[Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years  Non-	0	0	87036	419637	0	0	506673	
2019	2019	Funde	1	0	Non	SCM RAP EARL MISC NESC COMPLIANCE - 2019	157	157	0	S	Maintain	[Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0	
2019	2019	Funde	1	0	Non	SCM RAP DAN MISC NESC COMPLIANCE - 2019	30	30	0	S	Maintain	[Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0	
2019	2019	Funde	1	0	Non	SCM RAP EARL MISC DIST CAPITAL SUB PROJ - 2019	225	225	0	S	Maintain	[Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0	
2019	2019	Funde	1	0	Non	SCM RAP DAN FAILED BRKR/RECL PROJ - 2019	86	86	0	S	Maintain	[Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0	
2019	2019	Funde	1	0	Non	SCM RAP DAN MISC DIST CAPITAL SUB PROJ - 2019	91	91	0	S	Maintain	[Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0	
2019	2019	Funde	1	0	Non	SCM RAP EARL FAILED BRKR/RECL PROJ - 2019	84	84	0	S	Maintain	[Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0	
2019	2017	Funde	3	0	Non	NIDT Projects Funding by YEAR	10000	10000	0	S	Enhance	[System Enhancements  LGE  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	10000	
2019	2018	Funde	2	0	Disc	DSP Middleboro 1 4KV 124-5 Substation Conversion	300	300	13172	S	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	14489245	14489245	300	
2019	2018	Funde	2	0	Disc	DSP Middleboro 1 4KV 124-5 Distribution Conversion	100	100	13172	P	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	100	
2019	2019	Funde	1	1	Disc	DSP St Paul 1 Ckt 0688 Breaker	81	81	206489	S	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	16622365	16622365	81	
2019	2019	Funde	1	2	Disc	DSP Delaplain 1 Ckt 0401 Distribution	120	120	184232	L	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	22107857	22107857	120	
2019	2019	Funde	1	3	Disc	DSP Lawrenceburg-Anderson County Substation Project	2000	2000	12269	S	Enhance	[System Enhancements  KU  3A - Not required Prudent Utility Practice	0	0	0	0	47971286	47971286	2000	
2019	2019	Funde	1	3	Disc	DSP Lawrenceburg-Anderson County Distribution Project	0	0	12269	L	Enhance	[System Enhancements  KU  3A - Not required Prudent Utility Practice	0	0	0	0	0	0	0	
2019	2019	Funde	1	4	Disc	DSP Mt. Sterling Substation Project	1226	1226	8047	S	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	17703158	17703158	1226	
2019	2019	Funde	1	4	Disc	DSP Mt. Sterling Substation Distribution	200	200	8047	M	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	200	
2019	2019	Funde	1	5	Disc	SCM RAP DAN STR WILDLIFE PROTECTION - 2019	23	23	7162	S	Maintain	[Substation Maintenance  KU  2 - Not required but high risk in 0-3 years	0	0	48688	116852	0	0	165540	
2019	2019	Funde	1	6	Disc	DSP Pepper Pike 138-12kV substation	2300	2300	5705	S	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	14439	50072	77094	0	26101077	26242682	2300
2019	2019	Funde	1	6	Disc	DSP Pepper Pike 138-12kV substation distribution	0	0	5705	L	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0	
2019	2019	Funde	1	7	Disc	SCM RAP LGE LTC OIL FILTRATION ADDITIONS - 2019	60	60	5422	S	Maintain	[Substation Maintenance  LGE  2 - Not required but high risk in 0-3 years	2416	0	42019	280277	0	0	324712	
2019	2019	Funde	1	8	Disc	SCM RAP LEX STR WILDLIFE PROTECTION - 2019	36	36	4634	S	Maintain	[Substation Maintenance  KU  2 - Not required but high risk in 0-3 years	0	0	48688	116852	0	0	165540	
2019	2019	Funde	1	9	Disc	DSP Wilson Downing 2 Substation Upgrade	1430	1430	4189	S	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	10655593	10655593	1430	
2019	2019	Funde	1	9	Disc	DSP Wilson Downing 2 Substation Upgrade Distribution	0	0	4189	L	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0	
2019	2018	Funde	1	10	Disc	DSP Gene Substation (2018-2019)	2570	2570	2249	S	Enhance	[System Enhancements  LGE  2 - Not required but high risk in 0-3 years	0	9499	117111	77868	0	0	204478	
2019	2018	Funde	1	10	Disc	DSP Gene Substation Circuit Work (2018-2019)	380	380	2249	L	Enhance	[System Enhancements  LGE  2 - Not required but high risk in 0-3 years	0	0	0	0	12014493	12014493	380	
2019	2019	Funde	1	11	Disc	SCM RAP KU STR LIGHTNING PROT - 2019	56	56	3132	S	Maintain	[Substation Maintenance  KU  2 - Not required but high risk in 0-3 years	0	0	51286	123087	0	0	174373	
2019	2019	Funde	1	12	Disc	SCM RAP PINE STR WILDLIFE PROTECTION - 2019	56	56	3014	S	Maintain	[Substation Maintenance  KU  2 - Not required but high risk in 0-3 years	0	0	49353	118448	0	0	167801	
2019	2019	Funde	1	13	Disc	DSP Oxford 2 Substation	960	960	2885	S	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	9100066	9100066	960	
2019	2019	Funde	1	13	Disc	DSP Oxford 2 Distribution	800	800	2885	L	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	9305	6142	0	0	15447	
2019	2019	Funde	1	14	Disc	SCM RAP LGE STR LEGACY RELAY REPL - 2019	86	86	2877	S	Maintain	[Aging Infrastructure  LGE  2 - Not required but high risk in 0-3 years	0	0	72872	174973	0	0	247845	
2019	2019	Funde	1	15	Disc	SCM RAP KU STR LEGACY RELAY REPL - 2019	67	67	2739	S	Maintain	[Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	54136	130019	0	0	184155	
2019	2019	Funde	1	16	Disc	SCM RAP LGE STR REPL LEGACY AIR MAG BRKRS - 2019	350	350	2575	S	Maintain	[Aging Infrastructure  LGE  2 - Not required but high risk in 0-3 years	4203	0	263741	633030	0	0	900974	
2019	2019	Funde	1	17	Disc	SCM RAP LGE STR REPL ABB VHK MECH - 2019	53	53	2126	S	Maintain	[Aging Infrastructure  LGE  2 - Not required but high risk in 0-3 years	0	0	69788	41873	0	0	111661	
2019	2019	Funde	1	18	Disc	SCM RAP KU LTC OIL FILTRATION ADDITIONS - 2019	91	91	1991	S	Maintain	[Substation Maintenance  KU  2 - Not required but high risk in 0-3 years	2627	0	60910	118418	0	0	181954	
2019	2019	Funde	1	19	Disc	DSP Georgetown 12kV 2 Substation	2450	2450	1913	S	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	9397447	9397447	2450	
2019	2019	Funde	1	19	Disc	DSP Georgetown 12kV 2 Distribution	500	500	1913	L	Enhance	[System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	31728	39476	0	0	71204	
2019	2019	Funde	1	20	Disc	SCM RAP LEX STR REPL LEGACY BRKRS - 2019	129	129	1401	S	Maintain	[Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	51226	129860	0	0	181085	
2019	2019	Funde	1	21	Disc	SCM RAP PINE STR REPL LEGACY BRKRS - 2019	127	127	1375	S	Maintain	[Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	51398	123355	0	0	174753	
2019	2019	Funde	1	22	Disc	SCM RAP EARL STR WILDLIFE PROTECTION - 2019	57	57	1354	S	Maintain	[Substation Maintenance  KU  2 - Not required but high risk in 0-3 years	0	0	22600	54239	0	0	76839	
2019	2019	Funde	1	23	Disc	SCM RAP DAN STR REPL LEGACY BRKRS - 2019	129	129	1352	S	Maintain	[Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	51398	123355	0	0	174753	
2019	2019	Funde	1	24	Disc	SCM RAP STR LGE WILDLIFE PROTECTION - 2019	83	83	1222	S	Maintain	[Substation Maintenance  LGE  2 - Not required but high risk in 0-3 years	0	0	29830	71591	0	0	101420	
2019	2019	Funde	1	25	Disc	LEO Padmount Switchgear Repair/Replacement Program RAP	199	199	1198	L	Maintain	[Repair/Replace Defective Equipment-UG  LGE  3A - Not required	0	18622	78296	140932	0	0	237650	
2019	2019	Funde	1	26	Disc	SCM RAP LGE STR REPL LEGACY RTUS - 2019	160	160	1195	S	Maintain	[Aging Infrastructure  LGE  2 - Not required but high risk in 0-3 years	0</							



Year	Scheduled Year	Funding	Rank	Discretion	Project Name	Current Year Capital	Funded Dollars Total	Ratio	Other Descriptors	Financial	CEMI	CI	CMI	Com	Load	Total Project Score	
2020	2018	Funde	2	0	Disc	DSP Gene Substation Circuit Work (2018-2019)	381	381	2249	L	Enhance  System Enhancements  LGE  2 - Not required but high risk in 0-3 years	0	0	0	0	12014493	12014493
2020	2019	Funde	2	0	Non	SHE Transmission Transfer Underbuilt Shelbyville East Cir 2522	320	320	0	S	Maintain  Other  KU  3D - Not required Improvements to Existing Assets  Non-	0	0	0	0	0	0
2020	2017	Funde	4	0	Non	Distribution Capacitors KU	137	137	0	L	Enhance  System Enhancements  KU  3B - Not required Economic Benefit  Non-	0	0	0	0	0	0
2020	2017	Funde	4	0	Non	Distribution Capacitors LG&E	150	150	0	L	Enhance  System Enhancements  LGE  3B - Not required Economic Benefit  Non-	0	0	0	0	0	0
2020	2019	Funde	2	0	Disc	DSP Georgetown 12kV 2 Substation	1800	1800	1898	S	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	9397447	9397447
2020	2019	Funde	2	0	Disc	DSP Georgetown 12kV 2 Distribution	200	200	1898	L	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	31728	39476	0	71204
2020	2019	Funde	2	0	Disc	DSP Pennington Gap Substation	1900	1900	885	S	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	4381364	4381364
2020	2019	Funde	2	0	Disc	DSP Pennington Gap Distribution	600	600	885	N	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	42219	42732	0	84951
2020	2019	Funde	2	0	Disc	DSP Wilson Downing 2 Substation Upgrade	714	714	4189	S	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	10655593	10655593
2020	2019	Funde	2	0	Disc	DSP Wilson Downing 2 Substation Upgrade Distribution	400	400	4189	L	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0
2020	2019	Funde	2	0	Disc	DSP Lawrenceburg-Anderson County Substation Project	1500	1500	12269	S	Enhance  System Enhancements  KU  3A - Not required Prudent Utility Practice	0	0	0	0	47971286	47971286
2020	2019	Funde	2	0	Disc	DSP Lawrenceburg-Anderson County Distribution Project	410	410	12269	L	Enhance  System Enhancements  KU  3A - Not required Prudent Utility Practice	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	DSP Hoover 2 Substation Property	240	240	0	S	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0
2020	2019	Funde	2	0	Disc	DSP Oxford 2 Substation	600	600	2880	S	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	9100066	9100066
2020	2019	Funde	2	0	Disc	DSP Oxford 2 Distribution	800	800	2880	L	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	9305	6142	0	15447
2020	2017	Funde	2	0	Disc	DSP IBM 1 Ckt 0057 Distribution	525	525	25	L	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	19487	9219	0	28706
2020	2017	Funde	2	0	Disc	DSP IBM 1 Ckt 0057 Substation Disconnects	0	0	25	S	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0
2020	2019	Funde	2	0	Disc	DSP Mt. Sterling Substation Project	574	574	8047	S	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	17703158	17703158
2020	2019	Funde	2	0	Disc	DSP Mt. Sterling Substation Distribution	200	200	8047	M	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0
2020	2017	Funde	4	0	Non	Distribution Automation - LGE	6875	6875	361	R	Enhance  Reliability Overhead  LGE  3A - Not required Prudent Utility Practice	0	940420	8175146	3884646	0	13000211
2020	2017	Funde	4	0	Non	Distribution Automation - KU	6875	6875	602	R	Enhance  Reliability Overhead  KU  3A - Not required Prudent Utility Practice	0	3662327	7782875	3695364	0	15140566
2020	2018	Funde	2	0	Disc	SCM KU STR PORTABLE TRANSFORMER	308	308	154	S	Maintain  Substation Maintenance  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	385137	385137
2020	2020	Funde	1	0	Non	URD Cable Repl/Rejuv Program STR RAP LG&E - 2017 - 2020	1160	1160	404	R	Maintain  Aging Infrastructure  LGE  3A - Not required Prudent Utility Practice	222430	0	109295	136643	0	468368
2020	2020	Funde	1	0	Non	URD Cable Repl/Rejuv Program STR RAP KU - 2017 - 2020	349	349	442	R	Maintain  Aging Infrastructure  KU  3A - Not required Prudent Utility Practice	66920	0	38794	48519	0	154234
2020	2020	Funde	1	0	Non	Transmission Line Clearance RAP LGE 2017 - 2020	50	50	0	L	Maintain  Other  LGE  3D - Not required Improvements to Existing Assets  Non-	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	Transmission Line Clearance RAP KU 2017 - 2020	282	282	0	L	Maintain  Other  KU  3D - Not required Improvements to Existing Assets  Non-	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	Substation Exit Cable Replacement STR RAP LG&E - 2017 -	1132	1132	197	R	Maintain  Aging Infrastructure  LGE  3A - Not required Prudent Utility Practice	0	0	38525	184894	0	223420
2020	2020	Funde	1	0	Non	SCM RAP STR KU REPL LTC/REG CONTROLS - 2020	111	111	380	S	Maintain  Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	28453	13658	0	42111
2020	2020	Funde	1	0	Non	SCM RAP PINE SUBSTN BUILDINGS & GNDS - 2020	47	47	0	S	Maintain  Substation Maintenance  KU  3D - Not required Improvements to	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	SCM RAP PINE REPLACE SUBSTATION BATTERIES - 2020	32	32	72065	S	Maintain  Aging Infrastructure  KU  1 - Required  Non-Strategy	0	0	1030349	1297828	0	2328177
2020	2020	Funde	1	0	Non	SCM RAP PINE MISC NESCC COMPLIANCE - 2020	75	75	0	S	Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	SCM RAP PINE MISC DIST CAPITAL SUB PROJ - 2020	172	172	1068	S	Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	40010	144037	0	184048
2020	2020	Funde	1	0	Non	SCM RAP PINE FAILED BRKR/RECL PROJ - 2020	117	117	0	S	Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	SCM RAP LGE SUBSTN BUILDINGS & GNDS - 2020	125	125	0	S	Maintain  Substation Maintenance  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	SCM RAP LGE STR CAP AND PIN INSULATOR UPGRADE -	169	169	131	S	Maintain  Aging Infrastructure  LGE  2 - Not required but high risk in 0-3 years	0	0	2701	19448	0	22149
2020	2020	Funde	1	0	Non	SCM RAP LGE SMAC PROJECT - 2020	237	237	227	S	Enhance  System Enhancements  LGE  3A - Not required Prudent Utility Practice	53845	0	0	0	0	53845
2020	2020	Funde	1	0	Non	LEO Downtown Network Vault Structural Repairs - RAP 2017 -	1292	1292	0	L	Maintain  Aging Infrastructure  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	LEO Manhole Structural Repairs - RAP 2017 - 2020	229	229	0	L	Maintain  Aging Infrastructure  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	SCM RAP LGE REPLACE TRANSFORMER FANS - 2020	221	221	0	S	Maintain  Substation Maintenance  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	LEO DTN Downtown Network Vent Type Protector Replacement	538	538	0	L	Maintain  Aging Infrastructure  LGE  1 - Required  Strategy	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	REL System Hardening LGE RAP - 2020	3750	3750	12	R	Enhance  Reliability Overhead  LGE  3A - Not required Prudent Utility Practice	0	192	11205	33625	0	45022
2020	2020	Funde	1	0	Non	SCM RAP LGE REPLACE SUBSTATION BATTERIES - 2020	106	106	6212	S	Maintain  Aging Infrastructure  LGE  1 - Required  Strategy	0	0	113038	542584	0	655622
2020	2020	Funde	1	0	Non	REL System Hardening KU RAP - 2020	3677	3677	12	R	Enhance  Reliability Overhead  KU  3A - Not required Prudent Utility Practice	0	769	11227	33696	0	45693
2020	2020	Funde	1	0	Non	SCM RAP LGE OIL CONTAINMENT UPGRADES - 2020	113	113	0	S	Maintain  Substation Maintenance  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	SCM RAP LGE MISC NESCC COMPLIANCE - 2020	57	57	0	S	Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	SCM RAP LGE MISC DIST CAPITAL SUB PROJ - 2020	125	125	757	S	Maintain  Substation Maintenance  LGE  1 - Required  Non-Strategy	0	0	27802	66725	0	94527
2020	2020	Funde	1	0	Non	REL CEMI LGE RAP - 2020	458	458	2783	R	Enhance  Reliability Overhead  LGE  3A - Not required Prudent Utility Practice	0	521598	439456	312704	0	1273529
2020	2020	Funde	1	0	Non	REL CEMI KU RAP - 2020	888	888	6239	R	Enhance  Reliability Overhead  KU  3A - Not required Prudent Utility Practice	0	3284737	1127119	1131288	0	5543144
2020	2020	Funde	1	0	Non	SCM RAP LEX SUBSTATION BUILDINGS & GNDS - 2020	39	39	0	S	Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	REL KU CIFI RAP - 2020	1500	1500	544	R	Enhance  Reliability Overhead  KU  3A - Not required Prudent Utility Practice	0	0	311428	504865	0	816292
2020	2020	Funde	1	0	Non	SCM RAP LEX STR LEGACY RTU REPL - 2020	170	170	114	S	Maintain  Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	9883	9489	0	19372
2020	2020	Funde	1	0	Non	SCM RAP LEX REPLACE SUBSTATION BATTERIES - 2020	33	33	31818	S	Maintain  Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years  Non-	0	0	181034	869862	0	1049995
2020	2020	Funde	1	0	Non	SCM RAP LEX REPL REGULATORS - 2020	90	90	0	S	Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	SCM RAP LEX REPL BUSHINGS - 2020	113	113	12220	S	Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	32307	0	87630	1261872	0	1381809
2020	2020	Funde	1	0	Non	SCM RAP LEX REPL BREAKERS - 2020	144	144	0	S	Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	SCM RAP LEX MISC NESCC COMPLIANCE - 2020	57	57	0	S	Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	REL LGE CIFI RAP - 2020	1250	1250	238	R	Enhance  Reliability Overhead  LGE  3A - Not required Prudent Utility Practice	0	0	159178	138873	0	298051
2020	2020	Funde	1	0	Non	SCM RAP LEX MISC DIST CAPITAL SUB PROJ - 2020	188	188	0	S	Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	SCM RAP KU OIL CONTAINMENT UPGRADES - 2020	278	278	0	S	Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	SCM RAP KU 34KV SUBSTATION MISC - 2020	87	87	300	S	Maintain  Substation Maintenance  KU  2 - Not required but high risk in 0-3 years	0	0	3188	22950	0	26138
2020	2020	Funde	1	0	Non	SCM RAP EARL SUBSTN BUILDINGS & GNDS - 2020	46	46	0	S	Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	SCM RAP DAN SUBSTN BUILDINGS & GNDS - 2020	20	20	0	S	Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	SCM RAP EARL REPLACE SUBSTATION BATTERIES - 2020	36	36	27589	S	Maintain  Aging Infrastructure  KU  1 - Required  Non-Strategy	0	0	350155	630279	0	980434
2020	2020	Funde	1	0	Non	SCM RAP DAN REPLACE SUBSTATION BATTERIES - 2020	17	17	29406	S	Maintain  Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years  Non-	0	0	87036	419637	0	506673
2020	2020	Funde	1	0	Non	SCM RAP EARL MISC NESCC COMPLIANCE - 2020	160	160	0	S	Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	SCM RAP DAN MISC NESCC COMPLIANCE - 2020	31	31	0	S	Maintain  Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0
2020	2020	Funde	1	0	Non	SCM RAP EARL MISC DIST CAPITAL SUB PROJ - 2020											

Year	Sched Year	Funding	Rank	Disc	Project Name	Current Year Capital	Funded Dollars Total	Ratio	Hier	Other Descriptors	Financial	CEMI	CI	CMI	Com	Load	Total Project Score	
2020	2020	Funde	1	21	Disc	SCM RAP STR LGE WILDLIFE PROTECTION - 2020	85	85	1192	S	Maintain [Substation Maintenance  LGE  2 - Not required but high risk in 0-3 years	0	0	29830	71591	0	0	101420
2020	2020	Funde	1	22	Disc	LEO Padmount Switchgear Repair/Replacement Program RAP	204	204	1169	M	Maintain [Repair/Replace Defective Equipment-UG  LGE  3A - Not required	0	18622	78296	140932	0	0	237850
2020	2020	Funde	1	23	Disc	SCM RAP LGE STR REPL LEGACY RTUS - 2020	164	164	1166	S	Maintain [Aging Infrastructure  LGE  2 - Not required but high risk in 0-3 years	0	0	119318	71501	0	0	190909
2020	2020	Funde	1	24	Disc	SCM RAP EARL STR REPL LEGACY BRKRS - 2020	331	331	1054	S	Maintain [Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	102452	245885	0	0	348337
2020	2020	Funde	1	25	Disc	SCM RAP LGE STR REPL LEGACY OIL BRKRS - 2020	130	130	690	S	Maintain [Aging Infrastructure  LGE  2 - Not required but high risk in 0-3 years	0	0	26446	63471	0	0	89917
2020	2020	Funde	1	26	Disc	DSP Ashland Ave 2 Ckt 0111 Distribution	160	160	0	L	Enhance [System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2020	2020	Funde	1	27	Disc	DSP Ashland Ave 2 Ckt 0050 Distribution	210	210	0	L	Enhance [System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2020	2020	Funde	1	28	Disc	DSP Salt Lick Substation Project	800	800	0	S	Enhance [System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2020	2019	Funde	1	29	Disc	DSP Black Branch Road Etown Industrial Tie Circuit Project	960	960	0	EI	Enhance [System Enhancements  KU  3A - Not required Prudent Utility Practice	0	0	0	0	0	0	0
2020	2019	Not	1	30	Disc	DSP Spencer Chemical 12KV Substation Upgrade Project	1025	0	0	S	Enhance [System Enhancements  KU  3A - Not required Prudent Utility Practice	0	0	0	0	0	0	0
2020	2020	Not	1	31	Disc	DSP Rogers Gap Ckt 0451 Breaker	84	0	0	S	Enhance [System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2021	2017	Funde	5	0	Non	Pole Inspection and Treatment KU STR - 2017	7816	7816	35	R	Maintain [Pole Inspection  KU  3A - Not required Prudent Utility Practice  Strategy	0	449119	251958	604116	0	0	1305194
2021	2017	Funde	5	0	Non	Pole Inspection and Treatment LG&E STR - 2017	5210	5210	35	R	Maintain [Pole Inspection  LGE  3A - Not required Prudent Utility Practice	0	318703	106659	430329	0	0	855691
2021	2017	Funde	5	0	Non	PILC UG Network Cable Replacement Program STR LG&E -	7165	7165	0	R	Maintain [Aging Infrastructure  LGE  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2021	2017	Funde	5	0	Non	Distribution Capacitors KU	137	137	0	L	Enhance [System Enhancements  KU  3B - Not required Economic Benefit  Non-	0	0	0	0	0	0	0
2021	2017	Funde	5	0	Non	Distribution Capacitors LG&E	150	150	0	L	Enhance [System Enhancements  LGE  3B - Not required Economic Benefit  Non-	0	0	0	0	0	0	0
2021	2020	Funde	2	0	Disc	DSP Salt Lick Substation Project	1200	1200	0	S	Enhance [System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0	0
2021	2020	Funde	2	0	Disc	DSP Floyd Circuit Work (2020-2021)	1000	1000	4470	L	Enhance [System Enhancements  LGE  2 - Not required but high risk in 0-3 years	0	0	44212	15948	0	0	60160
2021	2020	Funde	2	0	Disc	DSP Floyd Substation Project (2020 - 2021)	1040	1040	4470	S	Enhance [System Enhancements  LGE  2 - Not required but high risk in 0-3 years	0	0	0	0	25748143	25748143	
2021	2020	Funde	2	0	Disc	DSP Old Henry Circuit Work (2020-2021)	750	750	5311	L	Enhance [System Enhancements  LGE  2 - Not required but high risk in 0-3 years	0	0	10655	14882	0	0	25536
2021	2020	Funde	2	0	Disc	DSP Old Henry Substation Project (2020 - 2021)	850	850	5311	S	Enhance [System Enhancements  LGE  2 - Not required but high risk in 0-3 years	0	0	0	0	27247508	27247508	
2021	2017	Funde	5	0	Non	Distribution Automation - LGE	8345	8345	361	R	Enhance [Reliability Overhead  LGE  3A - Not required Prudent Utility Practice	0	940420	8175146	3884646	0	0	13000211
2021	2017	Funde	5	0	Non	Distribution Automation - KU	5405	5405	602	R	Enhance [Reliability Overhead  KU  3A - Not required Prudent Utility Practice	0	3662327	7782875	3695364	0	0	15140566
2021	2020	Funde	2	0	Disc	DSP Bromley Upgrade	750	750	10991	S	Enhance [System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	18683850	18683850	
2021	2020	Funde	2	0	Disc	DSP Bromley Distribution	200	200	10991	S	Enhance [System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	95769	136792	0	0	232560
2021	2021	Funde	1	0	Non	URD Cable Rep/Rejuv Program STR RAP LG&E - 2017 - 2021	1189	1189	399	R	Maintain [Aging Infrastructure  LGE  3A - Not required Prudent Utility Practice	227990	0	109295	136643	0	0	473928
2021	2021	Funde	1	0	Non	URD Cable Rep/Rejuv Program STR RAP KU - 2017 - 2021	358	358	436	R	Maintain [Aging Infrastructure  KU  3A - Not required Prudent Utility Practice	68590	0	38794	48519	0	0	155904
2021	2021	Funde	1	0	Non	Transmission Line Clearance RAP LGE 2017 - 2021	51	51	0	L	Maintain [Other  LGE  3D - Not required Improvements to Existing Assets  Non-	0	0	0	0	0	0	0
2021	2021	Funde	1	0	Non	Transmission Line Clearance RAP KU 2017 - 2021	289	289	0	L	Maintain [Other  KU  3D - Not required Improvements to Existing Assets  Non-	0	0	0	0	0	0	0
2021	2021	Funde	1	0	Non	Substation Exit Cable Replacement STR RAP LG&E - 2017 -	1160	1160	193	R	Maintain [Aging Infrastructure  LGE  3A - Not required Prudent Utility Practice	0	0	38525	184894	0	0	223420
2021	2021	Funde	1	0	Non	SCM RAP STR KU REPL LTC/REG CONTROLS - 2021	114	114	370	S	Maintain [Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	28453	13658	0	0	42111
2021	2021	Funde	1	0	Non	SCM RAP PINE SUBSTN BUILDINGS & GNDS - 2021	49	49	0	S	Maintain [Substation Maintenance  KU  3D - Not required Improvements to	0	0	0	0	0	0	0
2021	2021	Funde	1	0	Non	SCM RAP PINE REPLACE SUBSTATION BATTERIES - 2021	33	33	70307	S	Maintain [Aging Infrastructure  KU  1 - Required  Non-Strategy	0	0	1030349	1297828	0	0	2328177
2021	2021	Funde	1	0	Non	SCM RAP PINE MISC NESC COMPLIANCE - 2021	77	77	0	S	Maintain [Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2021	2021	Funde	1	0	Non	SCM RAP PINE MISC DIST CAPITAL SUB PROJ - 2021	177	177	1042	S	Maintain [Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	40010	144037	0	0	184048
2021	2021	Funde	1	0	Non	SCM RAP PINE FAILED BRKR/RECL PROJ - 2021	120	120	0	S	Maintain [Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2021	2021	Funde	1	0	Non	SCM RAP LGE SUBSTN BUILDINGS & GNDS - 2021	128	128	0	S	Maintain [Substation Maintenance  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2021	2021	Funde	1	0	Non	SCM RAP STR CAP AND PIN INSULATOR UPGRADE -	173	173	128	S	Maintain [Aging Infrastructure  LGE  2 - Not required but high risk in 0-3 years	0	0	2701	19448	0	0	22149
2021	2021	Funde	1	0	Non	SCM RAP LGE SMAC PROJECT - 2021	243	243	227	S	Enhance [System Enhancements  LGE  3A - Not required Prudent Utility Practice	55191	0	0	0	0	0	55191
2021	2021	Funde	1	0	Non	LEO Downtown Network Vault Structural Repairs - RAP 2017 -	1325	1325	0	L	Maintain [Aging Infrastructure  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2021	2021	Funde	1	0	Non	LEO Manhole Structural Repairs - RAP 2017 - 2021	235	235	0	L	Maintain [Aging Infrastructure  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2021	2021	Funde	1	0	Non	SCM RAP LGE REPLACE TRANSFORMER FANS - 2021	226	226	0	S	Maintain [Substation Maintenance  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2021	2021	Funde	1	0	Non	LEO DTN Downtown Network Vent Type Protector Replacement	552	552	0	L	Maintain [Aging Infrastructure  LGE  1 - Required  Strategy	0	0	0	0	0	0	0
2021	2021	Funde	1	0	Non	REL System Hardening LGE RAP - 2021	4000	4000	11	R	Enhance [Reliability Overhead  LGE  3A - Not required Prudent Utility Practice	0	192	11205	33625	0	0	45022
2021	2021	Funde	1	0	Non	SCM RAP LGE REPLACE SUBSTATION BATTERIES - 2021	108	108	6061	S	Maintain [Aging Infrastructure  LGE  1 - Required  Strategy	0	0	113038	542584	0	0	655622
2021	2021	Funde	1	0	Non	REL System Hardening KU RAP - 2021	3681	3681	12	R	Enhance [Reliability Overhead  KU  3A - Not required Prudent Utility Practice	0	769	11227	33696	0	0	45693
2021	2021	Funde	1	0	Non	SCM RAP LGE OIL CONTAINMENT UPGRADES - 2021	116	116	0	S	Maintain [Substation Maintenance  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2021	2021	Funde	1	0	Non	SCM RAP LGE MISC NESC COMPLIANCE - 2021	59	59	0	S	Maintain [Substation Maintenance  LGE  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2021	2021	Funde	1	0	Non	SCM RAP LGE MISC DIST CAPITAL SUB PROJ - 2021	128	128	738	S	Maintain [Substation Maintenance  LGE  1 - Required  Non-Strategy	0	0	27802	68725	0	0	94527
2021	2021	Funde	1	0	Non	REL CEMI LGE RAP - 2021	469	469	2715	R	Enhance [Reliability Overhead  LGE  3A - Not required Prudent Utility Practice	0	521598	439456	312704	0	0	1273759
2021	2021	Funde	1	0	Non	REL CEMI KU RAP - 2021	911	911	6087	R	Enhance [Reliability Overhead  KU  3A - Not required Prudent Utility Practice	0	3284737	1127119	1131288	0	0	5543144
2021	2021	Funde	1	0	Non	SCM RAP LEX SUBSTATION BUILDINGS & GNDS - 2021	40	40	0	S	Maintain [Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2021	2021	Funde	1	0	Non	REL KU CIFI RAP - 2021	1500	1500	268	R	Enhance [Reliability Overhead  KU  3A - Not required Prudent Utility Practice	0	0	197941	204478	0	0	402419
2021	2021	Funde	1	0	Non	SCM RAP LEX STR LEGACY RTU REPL - 2021	174	174	111	S	Maintain [Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	9883	9489	0	0	19372
2021	2021	Funde	1	0	Non	SCM RAP LEX REPLACE SUBSTATION BATTERIES - 2021	34	34	30882	S	Maintain [Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years  Non-	0	0	181034	868962	0	0	1049995
2021	2021	Funde	1	0	Non	SCM RAP LEX REPL REGULATORS - 2021	93	93	0	S	Maintain [Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2021	2021	Funde	1	0	Non	SCM RAP LEX REPL BUSHINGS - 2021	116	116	11929	S	Maintain [Substation Maintenance  KU  1 - Required  Non-Strategy	33114	0	87630	1261872	0	0	1382617
2021	2021	Funde	1	0	Non	SCM RAP LEX REPL BREAKERS - 2021	148	148	0	S	Maintain [Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2021	2021	Funde	1	0	Non	SCM RAP LEX MISC NESC COMPLIANCE - 2021	59	59	0	S	Maintain [Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2021	2021	Funde	1	0	Non	REL LGE CIFI RAP - 2021	1250	1250	238	R	Enhance [Reliability Overhead  LGE  3A - Not required Prudent Utility Practice	0	0	159178	138873	0	0	298051
2021	2021	Funde	1	0	Non	SCM RAP LEX MISC DIST CAPITAL SUB PROJ - 2021	193	193	0	S	Maintain [Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2021	2021	Funde	1	0	Non	SCM RAP KU OIL CONTAINMENT UPGRADES - 2021	285	285	0	S	Maintain [Substation Maintenance  KU  1 - Required  Non-Strategy	0	0	0	0	0	0	0
2021	2021	Funde	1	0	Non	SCM RAP KU 34KV SUBSTATION MISC - 2021	89	89	292	S	Maintain [Substation Maintenance  KU  2 - Not required but high risk in 0-3 years	0	0	3188	22950	0	0	26138
2021	2021	Funde	1	0	Non	SCM RAP EARL SUBSTN BUILDINGS & GNDS - 2021	47											



Year	Scheduled Year	Funding	Rank	Disc	Project Name	Current Year Capital	Funded Dollars Total	Ratio	Other Descriptors	Financial	CEMI	CI	CMI	Com	Load	Total Project Score	
2021	2021	Funde	1	16	Disc	DSP Higby Mill 2 Substation	1978	1978	1966	S	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	7780194	7780194
2021	2021	Funde	1	16	Disc	DSP Higby Mill 2 Distribution	400	400	1966	L	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	12541	28063	0	40604
2021	2021	Funde	1	17	Disc	SCM RAP KU LTC OIL FILTRATION ADDITIONS - 2021	96	96	1896	S	Maintain  Substation Maintenance  KU  2 - Not required but high risk in 0-3 years	2760	0	60910	118418	0	182087
2021	2021	Funde	1	18	Disc	DSP Hoover 2 Substation	2450	2450	1603	S	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	7430750	7430750
2021	2021	Funde	1	18	Disc	DSP Hoover 2 Distribution	200	200	1603	L	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	17543	7314	0	24857
2021	2021	Funde	1	19	Disc	SCM RAP LEX STR REPL LEGACY BRKRS - 2021	136	136	1334	S	Maintain  Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	51226	129860	0	181085
2021	2021	Funde	1	20	Disc	SCM RAP PINE STR REPL LEGACY BRKRS - 2021	134	134	1308	S	Maintain  Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	51398	123355	0	174753
2021	2021	Funde	1	21	Disc	SCM RAP EARL STR WILDLIFE PROTECTION - 2021	60	60	1289	S	Maintain  Substation Maintenance  KU  2 - Not required but high risk in 0-3 years	0	0	22600	54239	0	76839
2021	2021	Funde	1	22	Disc	SCM RAP DAN STR REPL LEGACY BRKRS - 2021	136	136	1287	S	Maintain  Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	51398	123355	0	174753
2021	2021	Funde	1	23	Disc	SCM RAP STR LGE WILDLIFE PROTECTION - 2021	87	87	1163	S	Maintain  Substation Maintenance  LGE  2 - Not required but high risk in 0-3 years	0	0	29830	71591	0	101420
2021	2021	Funde	1	24	Disc	LEO Padmount Switchgear Repair/Replacement Program RAP	209	209	1140	L	Maintain  Repair/Replace Defective Equipment-UG  LGE  3A - Not required	0	18622	78296	140932	0	237850
2021	2021	Funde	1	25	Disc	SCM RAP LGE STR REPL LEGACY RTUS - 2021	168	168	1138	S	Maintain  Aging Infrastructure  LGE  2 - Not required but high risk in 0-3 years	0	0	119318	71591	0	190909
2021	2021	Funde	1	26	Disc	SCM RAP EARL STR REPL LEGACY BRKRS - 2021	339	339	1028	S	Maintain  Aging Infrastructure  KU  2 - Not required but high risk in 0-3 years	0	0	102452	245885	0	348337
2021	2021	Funde	1	27	Disc	SCM RAP LGE STR REPL LEGACY OIL BRKRS - 2021	134	134	673	S	Maintain  Aging Infrastructure  LGE  2 - Not required but high risk in 0-3 years	0	0	26446	63471	0	89917
2021	2021	Funde	1	28	Disc	DSP Paris Circuit 806 circuit addition	380	380	396	M	Enhance  System Enhancements  KU  3A - Not required Prudent Utility Practice	0	30851	69917	102223	0	202991
2021	2021	Funde	1	28	Disc	DSP Paris 819-1 substation breaker addition	132	132	396	S	Enhance  System Enhancements  KU  3A - Not required Prudent Utility Practice	0	0	0	0	0	0
2021	2021	Funde	1	29	Disc	DSP Bond 1 Ckt 0660 Breaker	84	84	0	S	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0
2021	2020	Funde	1	30	Disc	DSP Rogers Gap Ckt 0451 Breaker	86	86	0	S	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0
2021	2021	Funde	1	31	Disc	DSP East Stone Gap 2 Ckt 4721 Distribution	570	570	0	N	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0
2021	2021	Not	1	32	Disc	DSP GE Lamp Substation	960	0	0	S	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0
2021	2019	Funde	1	33	Disc	DSP Spencer Chemical 12KV Substation Upgrade Project	1051	740	0	S	Enhance  System Enhancements  KU  3A - Not required Prudent Utility Practice	0	0	0	0	0	0
2021	2021	Not	1	34	Disc	DSP Beltline Ckt 0129 Breaker	84	0	0	S	Enhance  System Enhancements  KU  2 - Not required but high risk in 0-3 years	0	0	0	0	0	0

Special Projects	Type	Code	Utility	RAC	Strategy	Hierarchical Descriptors	Year	Discretionary	Funded Dollars Total
NO PROJECT	Enhance	System Enhancements	KU	2 - Not	Non-Strategy	Substations	2021	Discretion	1978
NO PROJECT	Enhance	System Enhancements	KU	2 - Not	Non-Strategy	Lexington	2021	Discretion	400
NO PROJECT	Maintain	Substation Maintenance	KU	2 - Not	Non-Strategy	Substations	2021	Discretion	96
NO PROJECT	Enhance	System Enhancements	KU	2 - Not	Non-Strategy	Substations	2021	Discretion	2450
NO PROJECT	Enhance	System Enhancements	KU	2 - Not	Non-Strategy	Lexington	2021	Discretion	200
NO PROJECT	Maintain	Aging Infrastructure	KU	2 - Not	Strategy	Substations	2021	Discretion	136
NO PROJECT	Maintain	Aging Infrastructure	KU	2 - Not	Strategy	Substations	2021	Discretion	134
NO PROJECT	Maintain	Substation Maintenance	KU	2 - Not	Strategy	Substations	2021	Discretion	60
NO PROJECT	Maintain	Aging Infrastructure	KU	2 - Not	Strategy	Substations	2021	Discretion	136
NO PROJECT	Maintain	Substation Maintenance	LGE	2 - Not	Strategy	Substations	2021	Discretion	87
NO PROJECT	Maintain	Equipment-UG	LGE	3A - Not	Non-Strategy	Louisville Electric	2021	Discretion	209
NO PROJECT	Maintain	Aging Infrastructure	LGE	2 - Not	Strategy	Substations	2021	Discretion	168
NO PROJECT	Maintain	Aging Infrastructure	KU	2 - Not	Strategy	Substations	2021	Discretion	339
NO PROJECT	Maintain	Aging Infrastructure	LGE	2 - Not	Strategy	Substations	2021	Discretion	134
NO PROJECT	Enhance	System Enhancements	KU	3A - Not	Non-Strategy	Maysville	2021	Discretion	380
NO PROJECT	Enhance	System Enhancements	KU	3A - Not	Non-Strategy	Substations	2021	Discretion	132
NO PROJECT	Enhance	System Enhancements	KU	2 - Not	Non-Strategy	Substations	2021	Discretion	84
NO PROJECT	Enhance	System Enhancements	KU	2 - Not	Non-Strategy	Substations	2021	Discretion	86
NO PROJECT	Enhance	System Enhancements	KU	2 - Not	Non-Strategy	Norton	2021	Discretion	570
NO PROJECT	Enhance	System Enhancements	KU	2 - Not	Non-Strategy	Substations	2021	Discretion	0
NO PROJECT	Enhance	System Enhancements	KU	3A - Not	Non-Strategy	Substations	2021	Discretion	740
NO PROJECT	Enhance	System Enhancements	KU	2 - Not	Non-Strategy	Substations	2021	Discretion	0