WP-45 McKenzie Page 1 of 19

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Quote & News Quote Overview Quotes & News	Algonquin Power & Utilities (Real Time Quote from BATS) \$9.59 USD	Corp. (AQN)	Add to portfolige Trades from Zacks
Quote Overview Zacks News Partner News	+0.02 (0.21%) Updated Jul 18, 2018 01:22 PM ET		1-Strong Buy 1 Style S D Value B Growth C Momentum Industry
Zacks Research			Top 31%(78 ou Industry: Utility - Electric
Snapshot	Quete AD Zernie WRanked Sto	Enter Symbol Q	,
Analyst Report	Stock Activity	Key Earnings Data	Price and EPS Surprise Chart
Style Scores	Open 9.57	Earnings ESP 15.38%	1 Month 3 Months YTD
 Detailed Estimates Comparison to Industry 	Day Low 9.52	Most Accurate Est 0.10	EPS Surprise ++
Zacks Experts View	Day High 9.59	Current Qtr Est 0.09	
	52 Wk Low 9.45	Current Yr Est 0.66	1 11
More Research	52 Wk High 11.34	Exp Earnings Date *AMC 8/9/18	VIN 14
Broker Recommendations	Avg. Volume 155,041	Prior Year EPS 0.58	VW
Full Company Report Earnings Announcements	Market Cap 4.50 B	Exp EPS Growth (3-5yr) 8.00%	thans by the A
Key Company Metrics	Dividend 0.51 (5.36%)	Forward PE 14.55	A ZACKS
Broker Reports		PEG Ratio 1.82	May Jun J
Insiders		1.02	Interactive Chart Fundamental Chart
Earnings Transcripts	Utilities » Utility - Electric Power		
Charts	*BMO = Before	Market Open *AMC = After Market Close	Billion Dollar Secret
Price, Consensus and EPS	Research Report For AC	2N	
Surprise		analyst Reports »	
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Price & EPS Surprise	 Zacks News for AQN Other News for AQN 		
12 Month EPS	Alliant (LNT) Cuts Emissions, to B	mail haid and hild of his	_
Broker Recommendations	07/17/18-9:30AM EST Zacks	ACTUAL OF NAMES AND ADDRESS OF MANY	
Financials	MDU Resources Buys & Expends	Construction Material Business	
Financial Overview	07/17/18-9:20AM EST Zacks		
Income Statements	AQN: What are Zacks experts say	ing now?	
Balance Sheet	Zacks Private Portfolio Services		The Zacks Rank has been called the Billion Doll
Cash flow Statements	Pattern Energy (PEGI) in Focus: 3 07/17/18-7:44AM EST Zacks	lock Moves 5:1% Higher	Secret. Click here to watch the full certes. •
Options	SCANA & Dominion Energy's Marg	tor Dest Onte EEDC America	
Option Chain	07/16/18-5:20PM EST Zacks	ter ment mete Lettin vibbutat	Company Summary Algonguin Power & Utilities Corp. is a renewable
Options Greek Montage	Dominion & SCANA Merger Heads	Toward Closing, Gets FERC	energy and regulated utility company engaged i
	07/16/18-8:14AM EST Zacks		ownership of power generation facilities, and wa and energy utilities primarily in North America. T
Access Zacks Data Feed	More Zacks News for AQN	Alexande In Easter	Corporation invests in hydroelectric, wind and se
Data I CCU	Looking For A Utility With Growth? 07/16/18-8:54AM EST Seeking Alpha	Augusquan ni Por You	power facilities, and sustainable utility distributio businesses (water, electricity and natural gas)
	Owidend Sensel's Portfolio Updela	43: The 3 Essential Things All	through its subsidiaries. Algonquin Power & Utili
	07/16/18-3/4/AM TSC Seeking Alpha	Ū	Corp. is headquartered in Oakville, Canada.
	Buy 5 Defensive Stocks As US-Ch 07/11/18-11:15AM EST TalkMarkets	ina Trade Conflicts Intensity	Full Company Report for AQN x
	10 Best Stocks Under \$10 07/10/18-9:37AM EST InvestorPlace		
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Earnings ESP Research Report for AQN

= Change in last 30 days) View All Zacks Rank #1 Strong Buys

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Option Chain Options Greek Montage O6/20/18-8:30AM EST Zacks Alliant Energy Furthers Green Plans, Partners EDF Renewables of/15/18-10:18AM EST Zacks Company Summary Company Summary Access Zacks Data Feed Miraz Zacks News for LNT Milant Energy, Invenangy to develop 210 MW wind project in lows 07/17/18-11:22AM EST Zacks Milant Energy Corporation is a Midwest U.S. encompany. The Company is primarily engaged in electric generation and the distribution of electric and natural gas. They serve approximately elect and natural gas. They serve and Light (WPL). IPL provi tertail electric and gas service in I/wsconsin. IPL also sells electricity to wholesale customers in Minnesota, Illinois and the approximately electrance and the distribution of electric and retail gas. They serve approximately approximately electrance and the distribution of electric and retail gas. They serve approximately approximately electrance approximately approximately electrance approximately approximately electrance approximately approximately electrance approximately ap		07/02/18-9:25AM EST Zacks		
Options Greek Montage Alliant Energy Furthers Green Plant, Partners EDF Renewebles 06/16/18-10:18AM EST Zacks Company: The Company is primarily engaded in electric generation and the distribution of electric and natural gas. They serve approximately elect and natural gas. They serve and Light (IPPL). IPL provides retail electric and gas service in Iowa, and WPL provides retail and wholesale electric and retail service in Wisconsin. IPL also sells electricity to wholesale customers in Minnescha, Illinois and the service in Wisconsin. IPL also sells electricity to wholesale customers in Minnescha, Illinois and the service in Wisconsin. IPL also sells electricity to wholesale customers in Minnescha, Illinois and the service in Wisconsin. IPL also sells electricity to wholesale customers in Minnescha, Illinois and the service in Wisconsin. IPL also sells electricity to wholesale customers in Minnescha, Illinois and the service in Wisconsin. IPL also sells electricity to wholesale customers in Minnescha, Illinois and the service in Wisconsin. IPL also sells electricity to wholesale customers in Minnescha, Illinois and the service in Wisconsin. IPL also sells electricity to wholesale customers in Minnescha, Illinois and the service in Wisconsin. IPL also sells electricity to wholesale customers in Minnescha, Illinois and the service in Wisconsin to wholesale customers in Minnescha wholesale customers in Minnescha, Illinois and the service in W	-	XEL vs. LNT: Which Stock is the Be 06/20/18-8:30AM EST Zacks	ther Value Option?	
Access Zacks Data Feed More Zeks News for LNT electric generation and the distribution of electric and natural gas. They serve approximately elect and Nisconsin Power and Light (WPL). PL prov retail electric and gas service in lows, and WPL Alliant Energy Corporation declares quartitive common stock differences Alliant Energy Corporation declares quartitive common stock differences Alliant Energy declares 30.335 dividend 07101R3-744AM EST Seeking Alpha So Sels Cock Cock Per Share Revealed in The First Heif differences Rose Perticitio 93 Stock Cock Per Share Revealed in The First Heif differences for New Sort LNT More Other News for LNT	· ·	Alliant Energy Furthers Green Plant	s, Partners EOF Renewables	company. The Company is primarily engaged in
Alliant Energy (arvenargy to develop 210 MW wind project in lowe 07/17/16-11/26/M EST Seeking Ajpha Alliant Energy corporation declares quartiety common stock 07/16/16-300P/ EST PR Newswire Alliant Energy Corporation declares quartiety common stock 07/16/16-3/46/M EST PR Newswire Alliant Energy Corporation declares quartiety common stock 07/16/16-3/46/M EST PR Newswire Alliant Energy Corporation declares quartiety common stock 07/16/16-3/46/M EST Seeking Ajpha Rose Portbilo 93 Stock Code Per Share Revealed in The First Helf 07/06/18-3/46/M EST Seeking Ajpha More Other News for LNT				electric generation and the distribution of electric
Alliant Energy comparison dickrea quarking common stock of/16/18-5:00PM EST PR Newswire Alliant Energy comparison dickrea quarking common stock of/16/18-5:00PM EST PR Newswire Alliant Energy comparison dickrea quarking common stock of/16/18-7:44AM EST Seeking Alpha Rose Perfolio 93 Stock Cost Par Share Revealed In The First Helf or/032-0415 Addite Seeking Alpha More Other News for LNT		Alliant Energy, Invenergy to develop	210 MW wind project in lowe	and natural gas customers through their two pub
07/16/18-5.00PM EST PR Newswire provides retail and wholesale electric and retail generation disclame quartisity common stock of Minesota. III:nois and log service in Wisconsin. IPL also sells electricity to wholesale customers in Minesota, III:nois and log wholesale customers in Minesota. Alliant Emergy declames \$0.335 dividend 07/16/18-7:44AM EST Seeking Alpha Rose Pertoine \$0 Stock Cost Par Shere Revealed In The First Helf Alliant Exercise Customer Sort.NT		07/17/18-11:26AM EST Seeking Alpha		and Wisconsin Power and Light (WPL). IPL provi
Alliant Energy Corporation declares quartisity common stock (#746r68):30AM EST PR Newsvire Alliant Energy declares \$0,335 dividend 07/16/18-7:44AM EST Seeking Alpha Rose Pertolic \$3 Stock Cosk Per Share Revealed in The First Helf 8793213:30/18.746.6657 Seeking Alpha More Other News for LNT		Alliant Energy announces with project 07/16/18-5:00PM EST PR Newswire	ct in fowe wind expension	provides retail and wholesale electric and retail ga
dWddagil:30AM EST PR Newswire Full Company Report for LNT = Alliant Energy declares \$0.335 Gividend Full Company Report for LNT = 0716187-744AM EST Seeking Alpha Full Company Report for LNT = Rose Portfolio 93 Stock Codt Per Share Revealed In The First Heit Full Company Report for LNT = More Other News for LNT Full Company Report for LNT =			quarterly common stock	service in Wisconsin. IPL also sells electricity to wholesale customers in Minnesota, Illinois and Ic
07/16/18-7:44AM EST Seeking Alpha Rose Pertolic 93 Stock Cosk Per Share Revealed in The First Helf 97/93/13.30/15.04/1975 Seeking Alpha More Other News for LNT			land	
07/03/13.00/15/MA FEBT Seeking Alpha More Other News for LNT		07/16/18-7:44AM EST Seeking Alpha	and an a	
		07/03/13-10:15AM EST Seeking Alpha		
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		Zacks Rank	Thold 3	
Zacks Rank Thold 3				
Zacks Rank Top 31%(78 out of 255)		Zacks Industry Rank	Top 31%(78 out of 255)	

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Zacks Sector Rank

Research Reports for LNT

= Change in last 30 days) View All Zacks Rank #1 Strong Buys

Earnings ESP

Bottom 44% (9 out of 16)

-5.88%

Analyst | Snapshot

Style Scores C Value | F Growth | D Momentum | F VGM

WP-45 McKenzie Page 3 of 19



-2.80%

Analyst | Snapshot

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Earnings ESP

Research Reports for AEE

= Change in last 30 days)

View All Zacks Rank #1 Strong Buys

WP-45 McKenzie Page 4 of 19

Views Stocks	funda Baratalga Baranatag Piranas Parabala B	Join Sign In H
	S	Join Sign In H
Our Research, four succes		
Quote & News		
Quote & News Quote Overview	Avangrid, Inc. (AGR) (Real Time Quote from BATS)	Add to portfolio Trades from
Quotes & News	\$52.47 USD	Zacks R
Quote Overview Zacks News	-0.30 (-0.57%)	Style Sco
Partner News	Updated Jul 18, 2018 01:24 PM ET	C Value B Growth F Momentum D Industry R
Zacks Research		Top 31%(78 out of Industry: Utility - Electric P
	Quate AD genus WRanked Stocks Enter Symbol Q.	
Analyst Report Style Scores	Stock Activity Key Earnings Data	Price and EPS Surprise Chart
Detailed Estimates	Open 52.81 Earnings ESP -1.04% Day Low 52.20 Most Accurate Est 0.48	1 Month 3 Months YTD
Comparison to Industry	Day High 52.86 Current Qtr Est 0.48	EPS Surprise
Zacks Experts View	52 Wk Low 44.24 Current Yr Est 2.38	A
More Research	52 Wk High 54.55 Exp Earnings Date 'BMO7/24/18	MARIE
Broker Recommendations Full Company Report	Avg. Volume 391,451 Prior Year EPS 2.20	
Earnings Announcements	Market Cap 16.31 B Exp EPS Growth (3-5yr) 9.14%	a tiers by
Key Company Metrics	Dividend 1.73 (3.27%) Forward PE 22.30	May Jun Jul
Broker Reports Insiders	Beta 0.17 PEG Ratio 2.44	Interactive Chart Fundamental Chart
Earnings Transcripts	Utilities » Utility - Electric Power *BMO = Before Market Open *AMC = After Market Close	
Charts	"BMU = Berore Market Open "AMC = After Market Close	Billion Dollar Secret
e Price, Consensus and EPS	Research Report For AGR	
Surprise Fundamental Charts	All Zacks' Analyst Reports »	
Comparative		
Interactive Charts	News For AGR	
Price and Consensus Price & EPS Surprise	Zacks News for AGR Other News for AGR	
12 Month EPS	Duke Energy Completes 25MW Solar Project Buyout in New York	_
Broker Recommendations	07/11/18-9:08AM EST Zacks	
Financials	4 Reasons to Add Atlantice Yield (AY) to Your Portfolio Now 07/10/18-8:14AM EST Zacks	
Financial Overview	AGR: What are Zacks experts saying now?	
Income Statements Balance Sheet	Zacks Private Portfolio Services	The Zacka Rank has been called the Billion Dollar
Cash flow Statements	4 Reasons to Add Atmos Energy (ATO) to Enrich Your Portfolio 07/09/18-10:20AM EST Zacks	Secret. Citcle here to wetch the full earles. »
Options	Duke Energy (DUK) Announces 4.2% Quarterly Dividend Hilks	Company Summary
Option Chain	07/09/18-7:32AM EST Zacks	Avangrid, Inc. is an energy and utility company. Th
Options Greek Montage	Here's Why You Should Add CMS Energy (CMS) to Your Portfolio 07/05/18-10:11AM EST Zacks	company operates regulated utilities, electricity generation and natural gas storage primarily in the
Access Zacks	More Zacks News for AGR	United States. Avangrid, Inc. is based in New Gloucester, United States.
Data Feed	Stocks With Rising Relative Strength: Avangrid 07/11/18-11:29AM EST Investors Business Daily	Full Company Report for AGR a
	Avangrid deciares \$0.44 dividend	
	07/11/18-3:19AM EST Seeking Alpha	
	AGR Crosses Above Average Anelyst Target 07/09/18-7:16AM EST ETF Channel	
	Avengrid Larger Then S&P 500 Component Tiffany 07/05/18-3:33AM EST The Online Investor	
	Avangrid Stock Sees Short Interest Move 28.8% Higher	
	07/03/18-10:09AM EST Market News Video	
	More Other News for AGR	
	Premium Research for AGR	
	Zacks Rank THold 3	
	Zacks Industry Rank Top 31%(78 out of 255)	
	Zacks Sector Rank Bottom 44% (9 out of 16)	

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Research Report for AGR

(= Change in last 30 days) View All Zacks Rank #1 Strong Buys

WP-45 McKenzie Page 5 of 19

		Pinanoz Postolia 8	Australian Baralana (Usede ar Seger)
Dur Research. Your Succes		ż	Join Sign In
Quote & News Quote Overview Quotes & News	Black Hills Corporation (BKH) (Real Time Quote from BATS) \$60.52 USD		Add to portfolio Trades from
Quote Overview Zacks News Partner News	-0.37 (-0.61%) Updated Jul 18, 2018 12:44 PM ET		3-Hold Style 3 Style 4 B Value C Growth F Morentum Industry Top 31%(78 ou
Zacks Research	The designed		Industry: Utility - Electr
	Quate AD zernsie WRanked Stock	ks Enter Symbol Q	
 Analyst Report Style Scores 		Key Earnings Data	Price and EPS Surprise Chart
Detailed Estimates		Earnings ESP -2.44% Nost Accurate Est 0.40	1 Month 3 Months YTD
Comparison to Industry	· · · · · · · · · · · · · · · · · · ·	Current Qtr Est 0.40	EPS Surprise
Zacks Experts View	-, , ,	Current Yr Est 3.39	
More Research		Exp Earnings Date *AMC 8/6/18	M
Broker Recommendations	Avg. Volume 389,912 P	Prior Year EPS 3.36	ma 1
Full Company Report Earnings Announcements	Market Cap 3.26 B E	Exp EPS Growth (3-5yr) 4.26%	Tharts by
Key Company Metrics	Dividend 1.90 (3.12%) F	Forward PE 18.03	
Broker Reports	Beta 0.52 P	PEG Ratio 4.23	
Insiders Earnings Transcripts	Utilities » Utility - Electric Power		Interactive Chart Fundamental Chart
	*BMO = Before Ma	arket Open *AMC = After Market Close	Billion Dollar Secret
Charts © Price, Consensus and EPS Surprise © Fundamental Charts Comparative	Research Report For BKH All Zacks' Ana	alyst Reports »	
Interactive Charts	News For BKH		
Price and Consensus	 Zacks News for BKH 		
Price & EPS Surprise 12 Month EPS	 Other News for BKH 		
Broker Recommendations	FirstEnergy's (FE) Unit to Invest \$400 07/16/18-9:29AM EST Zacks	OM, Seeks BPU's Nod	
Financials	Slock Hills (BKH) Unit to Sulid Pipelin	nes, Seeks WPSC's Nod	
Financial Overview	07/03/18-9:44AM EST Zacks		
Income Statements	BKH: What are Zacks experts eaying Zacks Private Portfolio Services	now?	
Balance Sheet Cash flow Statements	What's in Store for PPL Corp (PPL) 1 04/30/18-6:56AM EST Zacks	This Earnings Season?	The Zacka Rank has been called the Billion Do Secret. Click here to watch the full series. •
Options	Are Options Traders Betting on a Big	Nove in Black Hills (BKH)	Company Summary
Option Chain	04/20/18-7:59AM EST Zacks		Black Hills Corporation is an energy company t
Options Greek Montage	Factors That Could Impact the Utility 01/09/18-12:00AM EST Zacks	Sector's Returns	generates wholesale electricity and produces r gas, crude oil and coal. They serve natural gas
Access Zacks	More Zacks News for BKH		electric utility customers in Arkansas, Colorado lowa, Kansas, Montana, Nebraska, South Dako
Data Feed	Black Hills Corp. Receives Approval Wythitiad:16PM EST InPublic	of Rete Request in Northwest	and Wyoming.
	How To Ratine At 62 With A Meanly M	Villion	Full Company Report for BKM a
	07/16/18-7:01AM EST Seeking Alpha		
	Senzinge's Top Upgrades, Downgrad 07/12/18-8:18AM EST Benzinga	des For July 12, 2018	
	BolA Downgrades Black Hills Corp. C	On Lack Of Projected Catelysts	
	07/12/18-3:45AM EST Benzinga Black Hills Corp. Schedules 2016 Se 07/10/19/8/16PM EBT InPublic	cond Quarter Earnings Release	
	More Other News for BKH		
	Premium Research for BKI	н	
	Zacks Rank	A Hold 3	
	Zacks Industry Rank	Top 31%(78 out of 255)	
		Bottom 44% (9 out of 16)	
	Zacks Sector Rank		

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Earnings ESP

Research Report for BKH

(= Change in last 30 days) View All Zacks Rank #1 Strong Buys

Style Scores B Value | C Growth | F Momentum | C VGM

-2.44%

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5	Join Sign In
5	
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5.	
Consolidated Edison Inc (ED) (Real Time Quote from BATS)	Add to portfolio Trades from
\$78.59 USD	Zacks
-0.37 (-0.47%)	3-Hold Style S
Updated Jul 18, 2018 01:28 PM ET	D Value F Growth D Momentum Undustry
	Top 31%(78 out Industry: Utility - Electric
QueteAD zedisie WRanked Stocks Enter St	ymbol Q,
Stock Activity Key Earnings Da	
Open 79.08 Earnings ESP	8.68% 1 Month 3 Months YTD
	t 0.60 EPS Surprise ♠♦
	4.26
52 Wk High 89.70 Exp Earnings Dat	
Avg. Volume 1,715,131 Prior Year EPS	4.09
Market Cap 24.54 B Exp EPS Growth	(3-5yr) 4.00%
Dividend 2.86 (3.62%) Forward PE	18.58 AZACKS V
Beta 0.07 PEG Ratio	4.65 Interactive Chart Fundamental Chart
Utilities » Utility - Electric Power	
*BMO = Before Market Open *AMC =	Billion Dollar Secret
Research Reports For ED	
All Zacks' Ar	nalyst Reports »
News For ED	
Zacks News for ED Other News for ED	
Top Stock Reports for Chevron, Glaup & T-Mobile	
	its (saf
06/04/18-4:15AM EST Zacks	
ED: What are Zacks experts saying row?	
	The Zacka Rank has been called the Billion Doll Secret. Click here to watch the full series. a
AES Corp (AES) Beats on Q1 Earnings, Cost of Sale 05/08/18-9:04AM EST Zacks	SUP Y/Y OWNELL OTHER (BYO CO INSELL) IND THE REFORE D
Should VictoryShares US EQ Income Enhanced Vote 05/08/18.8:29AM EST Zacks	Milly Wid Company Summary
	Consolidated Edison. Inc. is one of the nation's
05/04/18-7:57AM EST Zacks	The company provides a wide range of energy-
More Zacks News for ED Con Ediacin to Report 2nd Quanter 2018 Earnings on	August 2 related products and services to its customers through the following subsidiaries: Consolidated
07/16/18-4:30PM EST GlobeNewswire	utility providing electric, gas and steam service in
What JPMorgan, Festanel, CASS And The DoT Am 2 07/16/18-2:00AM EST Seeking Alpha	Orange and Rockland Utilities, Inc., a regulated
Dividend Update - June 2018	utility serving customers in southeastern New Yo State and northern New Jersey; Con Edison Cle
	Energy Businesses, Inc., which through its subsidiaries develops, owns and operates
Bert's June Dividend Income Summary 07/12/18-9:21AM EST Seeking Alpha	renewable and energy infrastructure projects an provides energy-related products and services to
Fix Your Roof While The Sun is Shining: The Dividen	d Anatocrata wholesale and retail customers; and Con Edison
A7/1 (38/12) OPNIEST Seeking Alpha More Other News for ED	Transmission, Inc., which through its subsidiarie invests in electric and natural gas transmission
More Other News for ED	
	invests in electric and natural gas transmission projects.
More Other News for ED	invests in electric and natural gas transmission projects.
More Other News for ED Premium Research for ED Zacks Rank	invests in electric and natural gas transmission projects. Full Company Report for ED o
	(Real Time Quote from BATS) \$78.59 usb -0.37(0.47%) Updated Jul 18, 2018 01:28 PM ET Stock Activity Open 79.00 Earlings ESP Day Low 78.28 Most Accurate Es Day Low 78.28 Most Accurate Es Day High 79.11 Current Yr Est 52 Wk Low 71.12 Current Yr Est 52 Wk High 89.70 Exp Earlings Dat Avg. Volume 1,715,131 Prior Year EPS Market Cap 24.54 B Exp EPS Growth Dividend 2.86 (3.62%) Forward PE Beta 0.07 PEG Ratio Utilities » Utility - Electric Power TBMO = Before Market Open *AMC = Research Reports For ED All Zacks' Ar News For ED • Other News for ED • Other News for Cb) • Other News for DC • Other News for Cb) • Other News for DC • Other News for DC) • Other News for DC • Other St DC Con Edeant Ne TD • Other News for DC • Other News f

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Earnings ESP

Research Reports for ED

= Change in last 30 days)

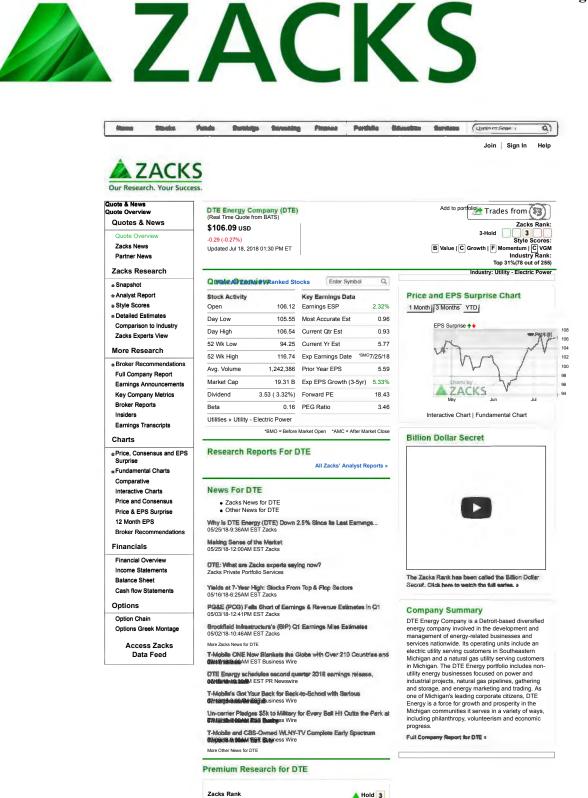
View All Zacks Rank #1 Strong Buys

Style Scores D Value | F Growth | D Momentum | F VGM

8.68%

Dte Energy Company - DTE - Stock Price Today - Zacks

WP-45 McKenzie Page 7 of 19



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Zacks Industry Rank

Research Reports for DTE

= Change in last 30 days)

View All Zacks Rank #1 Strong Buys

Zacks Sector Rank

Earnings ESP

Top 31%(78 out of 255)

Analyst | Snapshot

2.32%

Bottom 44% (9 out of 16)

Style Scores B Value | C Growth | F Momentum | C VGM

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A ZACKS	>		
Our Research. Your Succes	is.		
Quote & News Quote Overview	Duke Energy Corporation (D	UK)	Add to portfolio Trades from
Quotes & News	(Real Time Quote from BATS)	1	Zacks
Quote Overview	\$80.36 USD -0.29 (-0.36%)		3-Hold Style S
Zacks News	Updated Jul 18, 2018 01:30 PM ET		C Value D Growth A Momentum C Industry
Partner News			Top 31%(78 out
Zacks Research	Quate AD zernsi ewRanked Sto	cks Enter Symbol Q	Industry: Utility - Electric
	Stock Activity	Key Earnings Data	Price and EPS Surprise Chart
Style Scores	Open 80.74	Earnings ESP 0.25%	1 Month 3 Months YTD
Detailed Estimates	Day Low 79.90	Most Accurate Est 0.99	
Comparison to Industry Zacks Experts View	Day High 80.74	Current Qtr Est 0.99	EPS Surprise ++
More Research	52 Wk Low 71.96	Current Yr Est 4.72	m w
Broker Recommendations	52 Wk High 91.80	Exp Earnings Date *BMO8/2/18	st in a
Full Company Report	Avg. Volume 3,402,742	Prior Year EPS 4.57	
Earnings Announcements	Market Cap 56.54 B		A ZACKS
Key Company Metrics Broker Reports	Dividend 3.56 (4.41%)	Forward PE 17.11	May Jun Ju
Insiders		PEG Ratio 3.69	Interactive Chart Fundamental Chart
Earnings Transcripts	Utilities » Utility - Electric Power	Market Open *AMC = After Market Close	
Charts	Bivio - Belore i	Market Open Amo - Aner Market Oldae	Billion Dollar Secret
e Price, Consensus and EPS	Research Reports For D	UNK	
Surprise		All Zacks' Analyst Reports »	
Comparative	-		
Interactive Charts	News For DUK		-
Price and Consensus Price & EPS Surprise	 Zacks News for DUK Other News for DUK 		
12 Month EPS	Alliant (LNT) Cuts Emissions, to Ba	uld 210 MW Iowa Wind Farm	-
Broker Recommendations	07/17/18-9:30AM EST Zacks		
Financials	FirstEnergy's (FE) Unit to Invest \$4 07/16/18-9:29AM EST Zacks	COM, Seeks BPU's Nod	
Financial Overview	DUK: What are Zacks experts say	ing now?	
Income Statements Balance Sheet	Zacks Private Portfolio Services	-	The Zacka Rank has been called the Billion Doll
Cash flow Statements	Dominion & SCANA Merger Heads	s Toward Closing, Gets FERC	Secret. Click here to watch the full series. a
Options	07/16/18-8:14AM EST Zacks Duke Energy to Construct \$250M I	LNG Storage in North Cercelina	0
Option Chain	07/16/18-7:31AM EST Zacks		Company Summary Duke Energy Corporation is one of the largest
Options Greek Montage	Ouke Energy Supports Green Ener 07/13/18-9:44AM EST Zacks	rgy Output in South Carolina	energy holding companies in the United States.
Access Zacks	More Zacks News for DUK		Electric Utilities and Infrastructure business unit serves the customers. The company's Gas Utiliti
Data Feed	How Southern Company's Dividen 07/17/18-12:40PM EST Market Realist	d Profile Looks Next to its Peers	and Infrastructure business unit distributes natur gas to the customers in the Carolinas, Ohio,
]	Oute dumps planned 500 MW win		Kentucky and Tennessee. Its Commercial Renewables business unit operates a growing
	07/17/19/10:54AM EST Seeking Alpha	a	renewable energy portfolio across the United Sta
	A Look at the Top Utilities and The 07/17/18-8:04AM EST Market Realist	ir Price Targets	Full Company Report for DUK =
	What XLU's Ourrent Implied Volati	illy Suggests	
	07/17/18-6:37AM EST Market Realist		
	12 Dividend Increases: July 2-13, 2 07/17/18-4:29AM EST Seeking Alpha	2018	
	More Other News for DUK		
	Premium Research for D	UK	
	Zacks Rank	📥 Hold 3	
	Zacks Industry Rank	Top 31%(78 out of 255)	
	Zacks Industry Rank Zacks Sector Rank	Top 31%(78 out of 255) Bottom 44% (9 out of 16)	

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Earnings ESP

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Research Reports for DUK

= Change in last 30 days)

View All Zacks Rank #1 Strong Buys

Style Scores C Value | D Growth | A Momentum | C VGM

0.25%

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Earnings ESP

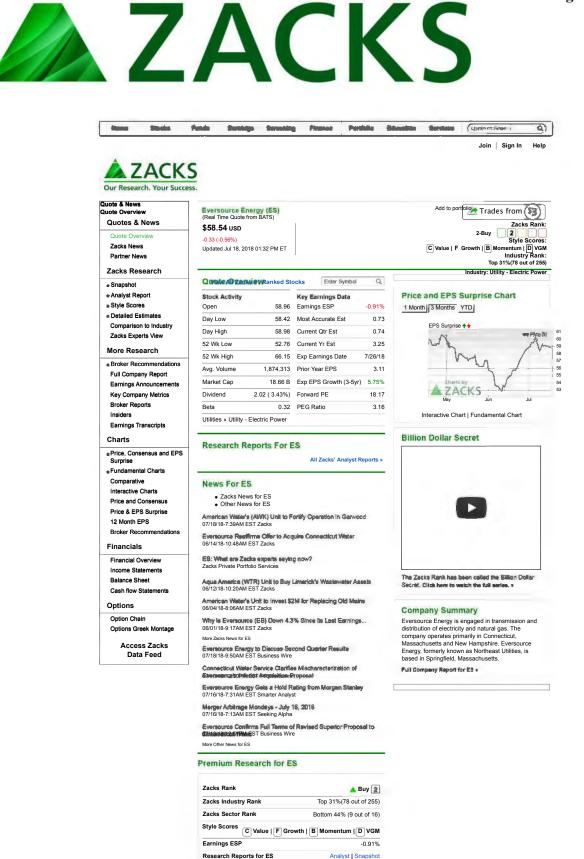
Research Reports for ETR

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View All Zacks Rank #1 Strong Buys

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	S		Join Sign In
Our Research, Your Succe Quote & News	Exelon Corporation (EXC)		Add to portfolio
Quote Overview Quotes & News	(Real Time Quote from BATS)		
Quote Overview	\$41.79 USD		Zaci 3-Hold
Zacks News Partner News	-0.14 (-0.32%) Updated Jul 18, 2018 01:34 PM ET		Style B Value B Growth A Momentum Indust
Zacks Research			Top 31%(78 o Industry: Utility - Elect
	Quete AD Zenkie WRanked St	cocks Enter Symbol Q,	mausuy. Junty - Elect
* Analyst Report	Stock Activity	Key Earnings Data	Price and EPS Surprise Chart
Style Scores	Open 41.96	and the second se	1 Month 3 Months YTD
 Detailed Estimates Comparison to Industry 	Day Low 41.60	Most Accurate Est 0.61	EPS Surprise ++
Zacks Experts View	Day High 42.02	Current Qtr Est 0.60	
More Research	52 Wk Low 35.57	Current Yr Est 3.08	
Broker Recommendations	52 Wk High 43.20		HA AM
Full Company Report	Avg. Volume 5,667,588	Prior Year EPS 2.60	MAN
Earnings Announcements	Market Cap 40.47 B	Exp EPS Growth (3-5yr) 5.67%	Dharts by
Key Company Metrics	Dividend 1.38 (3.29%)	Forward PE 13.69	May Jun
Broker Reports Insiders	Beta 0.19	PEG Ratio 2.42	Interactive Chart Fundamental Chart
Earnings Transcripts	Utilities » Utility - Electric Power		
Charts	and the mark the second		Billion Dollar Secret
ePrice, Consensus and EPS	Research Reports For	EXC	
Surprise		All Zacks' Analyst Reports »	
	territoria and and a second		
Comparative Interactive Charts	News For EXC		
Price and Consensus	 Zacks News for EXC Other News for EXC 		
Price & EPS Surprise	Exelon Unit & United Renewable	Complete 1 8 MW Solar Dedact	
12 Month EPS	06/13/18-7:15AM EST Zacks	condume to sets oots molect	
Broker Recommendations	Exelon (EXC) Up 2.1% Since Edu	wings Report: Cari Il Continue?	
Financials	06/01/18-10:07AM EST Zacks		
Financial Overview	EXC: What are Zacks experts an Zacks Private Portfolio Services	ying now?	
Income Statements Balance Sheet		100 11-0 Earlie - 200 / (paris) - a.	The Zecks Rank has been called the Billion (
Cash flow Statements	Should JPMorgan Diversified Rel 05/15/18-9:30AM EST Zacks	um U.S. Equity ETF (JPUS) Be	Secret. Click here to watch the full series. »
Options	Favorable Weather Drives Duke I	Energy's (OUK) Q1 Earnings	
Option Chain	05/10/18-9:01AM EST Zacks		Company Summary
Option Chain Options Greek Montage	Ameren (AEE) Q1 Earninge Top I 05/09/18-10:05AM EST Zacks	Estimates on Higher Sales Volume	Exelon Corporation is one of the nation's larg electric utilities. The company has one of the
	More Zacks News for EXC		industry's largest portfolios of electricity gene
Access Zacks Data Feed	BGE Named Among 'Most Trusts 07/16/18/10/45AM/EBT Business Wi		capacity, with a nationwide reach and strong positions in the Midwest and Mid-Atlantic. Ex
Duiu i ccu	GE Hitachi Selected by U.S. Dep		distributes electricity to the customers in nort Illinois and southeastern Pennsylvania and n
	Szivernent disabats Teshinakary/Qu	evelopment Project for BWRX-300	gas to the customers in the Philadelphia area
	with Exelon, Elechtel, HGNE and New Survey on Gender Inequality	MIT	Full Company Report for EXC #
	Grinese Mastrike East Magned the Young Women for the 21st Cantu How Exelon Stock is Valued Con	etorship Opportunities to Prepare	
	07/13/18-8:04AM EST Market Realis		
	How Analysts Currently Rate Exe 07/12/19 6:21 AM EST Market Basis	lon Stock	
	07/13/18-6:31AM EST Market Realis More Other News for EXC		
	Premium Research for E	xc	
		_	
	Zacks Rank	Hold 3	
	Zacks Industry Rank	Top 31%(78 out of 255)	
	Zacks Sector Rank	Bottom 44% (9 out of 16)	
	Style Scores	owth A Momentum A VGM	
	Earnings ESP	2.01%	

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View All Zacks Rank #1 Strong Buys

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Dur Research. Your Succe	S	Join Sign In
Our Research. Your Succe		
Quote & News	55.	
Quote Overview	Fortis Inc. (FTS) (Real Time Quote from BATS)	Add to portfolio Trades from
Quotes & News	\$32.32 USD	4-Sell
Quote Overview Zacks News	-0.18 (-0.55%)	Style Sco
Partner News	Updated Jul 18, 2018 01:34 PM ET	C Value C Growth F Momentum C Industry R
Zacks Research		Top 31%(78 out of Industry: Utility - Electric P
	Quate AD zernsi ewRanked Stocks Enter Symbol Q	industry. Junty - Liecule P
* Analyst Report	Stock Activity Key Earnings Data	Price and EPS Surprise Chart
Style Scores	Open 32.49 Earnings ESP -1.18%	1 Month 3 Months YTD
= Detailed Estimates	Day Low 32.20 Most Accurate Est 0.42	
Comparison to Industry Zacks Experts View	Day High 32.51 Current Qtr Est 0.43	EPS Surprise
	52 Wk Low 30.88 Current Yr Est 2.00	Mr.
More Research	52 Wk High 38.24 Exp Earnings Date 'BMO7/31/18	A
Broker Recommendations Full Company Report	Avg. Volume 295,004 Prior Year EPS 1.95	Vy I
Earnings Announcements	Market Cap 13.81 B Exp EPS Growth (3-5yr) 5.50%	thattery The
Key Company Metrics	Dividend 1.32 (4.06%) Forward PE 16.29	
Broker Reports	Beta -0.24 PEG Ratio 2.96	
Insiders Earnings Transcripts	Utilities » Utility - Electric Power	Interactive Chart Fundamental Chart
	*BMO = Before Market Open *AMC = After Market Close	Billion Dollar Secret
Charts	Personal Papart For FTC	binon bona secret
Price, Consensus and EPS Surprise	Research Report For FTS	
Fundamental Charts	All Zacks' Analyst Reports »	
Comparative	Name Far FTC	
Interactive Charts Price and Consensus	News For FTS	
Price & EPS Surprise	Zacks News for FTS Other News for FTS	
12 Month EPS	ALLETE (ALE) Ups Dividend by 4.7%, Revises Earnings Outlook	_
Broker Recommendations	01/25/18-6:20AM EST Zacks	
Financials	Is a Surprise Coming for Fortis (FTS) This Earnings Season? 11/02/17-8:00AM EST Zacks	
Financial Overview	FTS: What are Zacks experts saying now?	
Income Statements	Zacks Private Portfolio Services	The Zacka Rank has been called the Billion Dollar
Balance Sheet Cash flow Statements	What's in the Cards for Pinnacle West (PNW) in CS Earnings?	Secret. Click here to watch the full series. »
	11/02/17-5:50AM EST Zacks	
Options	What to Expect from NRG Energy (NRG) in Q3 Earnings? 11/01/17-6:00PM EST Zacks	Company Summary
Option Chain Options Greek Montage	Whet's in the Cards for Eversource (Es) in Q3 Earnings?	Fortis, Inc. is engaged in electric and gas utility business. The Company offers regulated utilities
	11/01/17-7:32AM EST Zacks	comprised of electric and gas as well as engages non-regulated hydroelectric operations. It operates
Access Zacks Data Feed	More Zacks News for FTS 5 SanJournily Underviewed Dividential Stocks To Bury Today	primarily in Canada, United States and Caribbean
24101 000	5 Sendualy Undervisued Dividend Stocks to Buy Today 07/18/18-10:55AM EST Seeking Alpha	Fortis, Inc. is based in St John's, Canada.
	Dividend Sensel's Portfolio Update 43: The 3 Essential Things All	Full Company Report for FTS #
	07/16/18/34/JAM TEESseliking Alpha	
	Q2 2018 Dividend Report	
	07/10/18-7:15AM EST Seeking Alpha	
	Dividend Sensei's Pontolio Update 42: 3 Reasons A Perfect Jobs	
	Dividend Sensei's Pontolio Update 42: 3 Reasons A Perfect Jobs RepartsSpeladSeat House-Eospitecks	
	Dividend Sensei's Pontolio Update 42: 3 Reasons A Perfect Jobs	
	Dividend Sanaei's Pontolio Update 42: 3 Reasons A Perfect Jobs BapartsSpeladReast Hanas-Forgiliacks June 2018 Pontolio Update	
	Dividend Sanaei's Pontolio Update 42: 3 Reasons A Perfect Jobs Repart/Spote/2 and Hears-Graphic Cks June 2018 Pontolio Update 07/06/18-8:16AM EST Seeking Alpha	
	Dividend Sensei's Portfolio Update 42: 3 Reasone A Perfect Jobs RepartsSpatialSeant Hause-Gougliaccks June 2018 Portfolio Update 07/06/18-8:16AM EST Seeking Alpha More Other News for FTS Premium Research for FTS	
	Dividend Sensei's Portfolio Update 42: 3 Reasone A Perfect Jobs RepartsSpetadSeast Haves_Graphiccks June 2018 Portfolio Update 07/09/18-8:16AM EST Seeking Alpha More Other News for FTS Premium Research for FTS Zacks Rank	
	Dividend Sensei's Portfolio Update 42: 3 Reasone A Perfect Jobs RepartsSpetadSearct House Graphic cks June 2018 Portfolio Update 07/06/18-8:16AM EST Seeking Alpha More Oher News for FTS Premium Research for FTS Zacks Rank Zacks Rank Sell ()	
	Dividend Sensei's Portfolio Update 42: 3 Reasone A Perfect Jobs RepartsSpetadSeast Haves_Graphiccks June 2018 Portfolio Update 07/09/18-8:16AM EST Seeking Alpha More Other News for FTS Premium Research for FTS Zacks Rank	

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Research Report for FTS

(= Change in last 30 days) View All Zacks Rank #1 Strong Buys Snapshot

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		Join Sign In He
Our Research. Your Succes		
Quote & News Quote Overview	NorthWestern Corporation (NWE)	Add to portfolion Trades from
Quotes & News	(Real Time Quote from BATS)	Zacks Rai
Quote Overview	\$57.53 USD	3-Hold
Zacks News	-0.58 (-1.00%) Updated Jul 18, 2018 01:38 PM ET	Style Score B Value C Growth D Momentum C Ve
Partner News	I	Industry Rai Top 31%(78 out of 2
Zacks Research		Industry: Utility - Electric Po
e Snapshot	Quete AD zernsi eWRanked Stocks Enter Symbol Q	
+ Analyst Report	Stock Activity Key Earnings Data	Price and EPS Surprise Chart
Style Scores	Open 58.11 Earnings ESP 0.00%	1 Month 3 Months YTD
 Detailed Estimates Comparison to Industry 	Day Low 57.33 Most Accurate Est 0.44	EPS Surprise ++
Zacks Experts View	Day High 58.20 Current Qtr Est 0.44	
More Research	52 Wk Low 50.01 Current Yr Est 3.42	N
Broker Recommendations	52 Wk High 64.47 Exp Earnings Date *AMC7/19/18	
Full Company Report	Avg. Volume 289,734 Prior Year EPS 3.30	M M
Earnings Announcements	Market Cap 2.88 B Exp EPS Growth (3-5yr) 3.01%	A there by
Key Company Metrics	Dividend 2.20 (3.79%) Forward PE 17.02	May Jun Jul
Broker Reports	Beta 0.20 PEG Ratio 5.65	Interactive Chart Eurodemontal Chart
Insiders Earnings Transcripts	Utilities » Utility - Electric Power	Interactive Chart Fundamental Chart
	*BMO = Before Market Open *AMC = After Market Close	Billion Dollar Secret
Charts	Bessereb Benert Fer NW/F	Dillor Dollar Secret
Price, Consensus and EPS Surprise	Research Report For NWE	
E Fundamental Charts	All Zacks' Analyst Reports »	
Comparative		
Interactive Charts Price and Consensus	News For NWE	
Price & EPS Surprise	Zacks News for NWE Other News for NWE	
12 Month EPS	Vexed by a Rocky Market? 5 Low-Beta Utility Picks to Rescue	
Broker Recommendations	04/09/18-8:30AM EST Zacks	
Financials	Itron's OpenWay Rive to be Leveraged by NorthWestern Energy 04/05/18-8:57AM EST Zacks	
Financial Overview		
Income Statements	NWE: What are Zecks experts saying now? Zacks Private Portfolio Services	The Zacka Rank has been called the Billion Dottar
Balance Sheet Cash flow Statements	North Western Energy (NWE) Mases Q4 Earnings Estimates	Secret. Click here to watch the full series
	02/13/18-2:25PM EST Zacks	
Options	Dynegy Continues to Lower Debt Burden, Sells \$119M Assets 09/26/17-6:20AM EST Zacks	Company Summary
Option Chain Options Greek Montage	4 Utilities to Bury in a Bear Market	NorthWestern Energy is a growing, financially sound, investor-owned energy company. It has
	01/27/16-12:00AM EST Zacks	provided reliable and affordable energy to customer
Access Zacks Data Feed	More Zacks News for NWE	in Montana, South Dakota and Nebraska. The company got its start in small communities,
	NorthWestern to Host Second Quarter 2018 Financial Results 07/02/19/02/09/IESTIPRofeest/ire	providing essential service that allowed them to grow and prosper.
	NWE Crosses Above Average Analyst Target	Full Company Report for NWE »
	06/19/18-6:45AM EST ETF Channel	
	Regulatory Climate, Valuation Turn KeyBanc Bullish On BB/0H/18:19:07A0:558T Benzinga	
	Benzinga's Top Upgrades, Downgrades For June 4, 2018	
	06/04/18-8:20AM EST Benzinga	
	3 Utilities For Stability, Income, And Relative Value 05/21/18-5:39AM EST Seeking Alpha	
	More Other News for NWE	
	Premium Research for NWE	
	Zacks Rank Thold 3	
	Zacks Rank Top 31%(78 out of 255)	

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Style Scores B Value | C Growth | D Momentum | C VGM

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A ZACKS		
Our Research. Your Succes	s.	
Quote & News Quote Overview	PPL Corporation (PPL)	Add to portfolio Trades from
Quotes & News	(Real Time Quote from BATS)	Zacks
Quote Overview	\$28.01 USD -0.40 (-1.41%)	3-Hold Style S
Zacks News	Updated Jul 18, 2018 01:41 PM ET	C Value B Growth B Momentum
Partner News		Industry Top 31%(78 out
Zacks Research	Quale AD Red Nie WRanked Stocks Enter Symbol Q	Industry: Utility - Electric
	Stock Activity Key Earnings Data	Price and EPS Surprise Chart
Style Scores	Open 28.38 Earnings ESP -2.26%	1 Month 3 Months YTD
 Detailed Estimates Comparison to Industry 	Day Low 27.96 Most Accurate Est 0.52	EPS Surprise ++
Zacks Experts View	Day High 28.50 Current Qtr Est 0.53	
More Research	52 Wk Low 25.30 Current Yr Est 2.32	M. M
Broker Recommendations	52 Wk High 39.90 Exp Earnings Date *BMO8/7/18 Avg. Volume 5,606,150 Prior Year EPS 2.25	N H m
Full Company Report	Avg. Volume 5,606,150 Prior Year EPS 2.25 Market Cap 19.86 B Exp EPS Growth (3-5yr) 6.00%	1 V m F
Earnings Announcements Key Company Metrics	Dividend 1.64 (5.77%) Forward PE 12.32	A ZACKS
Broker Reports	Beta 0.53 PEG Ratio 2.05	May Jun
Insiders	Utilities » Utility - Electric Power	Interactive Chart Fundamental Chart
Earnings Transcripts	*BMO = Before Market Open *AMC = After Market Close	Billion Dollar Secret
Charts	Research Reports For PPL	Uniter Donal Secret
Price, Consensus and EPS Surprise	All Zacks' Analyst Reports >	
# Fundamental Charts		
Comparative Interactive Charts	News For PPL	
Price and Consensus	Zacks News for PPL	
Price & EPS Surprise 12 Month EPS	Other News for PPL	
Broker Recommendations	FirstEnergy (FE) Unit to invest \$4M to Strengthen Operation 07/12/18-7:45AM EST Zacks	
Financials	FirstEnergy to Deploy Dranes to Survey Bird Nests on Poles 06/15/18-8:16AM EST Zacks	
Financial Overview	PPL: What are Zacks experts saying now?	
Income Statements Balance Sheet	Zacks Private Portfolio Services	The Zacka Rank has been called the Billion Dol
Balance Sheet Cash flow Statements	PPL Corporation Acquires Safari Energy, Plans Expansion	Secret. Click here to watch the full series. a
Options	06/05/18-10:22AM EST Zacks Top Stock Reports for Berkshare Hathaway, Colgate & CME Group	
Option Chain	06/05/18-12:00AM EST Zacks	Company Summary Headquartered in Allentown, Pa., PPL Corporat
Options Greek Montage	PPL Corporation (PPL) Down 4.6% Since Semings Report: Can k 06/04/18-5:02AM EST Zacks	one of the largest companies in the U.S. utility
Access Zacks	More Zacks News for PPL	sector. PPL's seven high-performing, award-win utilities serve 10 million customers in the U.S. a
Data Feed	How Analysis' Ratings on PPL Stock Have Changed 07/16/18-6:38AM EST Market Realist	United Kingdom. The company and its 13,000 employees are dedicated to providing exception
	When PPL Stock Might Go from Ham-	customer service and reliability and delivering superior value for shareowners.
	07/13/18-12:35PM EST Market Realist	Full Company Report for MPL #
	101 Dividend Achievers Yield 2.8% To 9.7% For June 07/13/18-3:56AM EST Seeking Alpha	
	PPL's Dividend Yield Reaches Record High	
	07/13/18-3:40AM EST Market Realist How PPL's Current Valuation Compares to its Paers	
	07/13/18-2:12AM EST Market Realist	
	More Other News for PPL	
	Premium Research for PPL	
	Zacks Rank Ald 3	
	Zacks Industry Rank Top 31%(78 out of 255)	
	Zacks Sector Rank Bottom 44% (9 out of 16)	
	Style Scores	
	C Value B Growth B Momentum B VGM	

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Earnings ESP

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Research Reports for PPL

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-2.26%

Analyst | Snapshot

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			Join Sign In
Quote & News Quote Overview	Public Service Enterprise Group I	ncorporated (PEG)	Add to portfolige Trades from
Quotes & News	(Real Time Quote from BATS) \$51.67 USD		Zac
Quote Overview	-0.07 (-0.14%)		3-Hold Style
Zacks News Partner News	Updated Jul 18, 2018 01:41 PM ET		B Value D Growth D Momentum Indus
Zacks Research			Top 31%(78 c Industry: Utility - Elect
	Quate AD zernsie WRanked Stocks	Enter Symbol Q	
	and and all seconds to be	Earnings Data	Price and EPS Surprise Chart
Style Scores Detailed Estimates	Open 51.52 Earn	-	1 Month 3 Months YTD
Comparison to Industry		Accurate Est 0.62 ent Qtr Est 0.58	EPS Surprise
Zacks Experts View		ent Yr Est 3.10	1
More Research		Earnings Date *BMO8/1/18	·AC
Broker Recommendations Full Component		Year EPS 2.93	TATI
Full Company Report Earnings Announcements	Market Cap 26.14 B Exp I	EPS Growth (3-5yr) 6.13%	Charts b
Key Company Metrics	Dividend 1.80 (3.48%) Forw	ard PE 16.70	May King
Broker Reports	Beta 0.41 PEG	Ratio 2.72	interest for Ot and The State
Insiders Earnings Transcripts	Utilities » Utility - Electric Power		Interactive Chart Fundamental Char
Charts	*BMO = Before Market	Open *AMC = After Market Close	Billion Dollar Secret
Price, Consensus and EPS	Research Reports For PEG		Contract Promotives
Surprise	Love Man 11 & Construction for	All Zacks' Analyst Reports »	
Interactive Charts	News For PEG		
Price and Consensus	 Zacks News for PEG Other News for PEG 		
Price & EPS Surprise 12 Month EPS	Public Service Enterprise to Invest in En	eray Strong Phase 2	
Broker Recommendations	06/12/18-5:18PM EST Zacks		
Financials	Public Service Enterprise (PEG) Up 2.49 05/30/18-8:25AM EST Zacks	6 Since Earnings Report	
Financial Overview	PEG: What are Zacks experts saying no	w?	
Income Statements Balance Sheet	Zacks Private Portfolio Services		The Zacka Rank has been called the Billion 0
Balance Sheet Cash flow Statements	Public Service Enterprise to Gain from C	apital investments	Secret. Click here to watch the full series. a
Options	05/25/18-11:01AM EST Zacks Public Service Enterprise Gets Nod for G	as System Unoverla	
Option Chain	05/23/18-9:51AM EST Zacks	wa ekorani ekŝimia	Company Summary Public Service Entertainment Group has bee
Options Greek Montage	Public Service Enterprise Reveals Latest 05/18/18-1:56PM EST Zacks	t NJ Solar Project	active participant in the ongoing policy debate how the energy industry can best contribute t
Access Zacks	More Zacks News for PEG		achieving the nation's environmental objectiv
Data Feed	PBEG Declares Regular Quarterly Divide 07/17/18-9:43AM EST PR Newswire	and for Third Quarter Of	PSEG has advocated independently, and thro coalition of companies known as the Clean E
	Public Service declares \$0.45 dividend		Group, for the industry to make further reduct air pollutants traditionally associated with the
	07/17/18-9:38AM EST Seeking Alpha	to Mr. Down	production of electricity and to begin mandate carbon dioxide reductions. PSEG has been a
	How Exelon Stock is Velued Compared 1 07/13/18-8:04AM EST Market Realist	a im 14619	engaged in the climate change policy debate more than a decade.
	How Analysts Currently Rain Exelon Sto 07/13/18-6:31AM EST Market Realist	ck	Full Company Report for PEQ =
	Downside Protection For Dominion Energy 07/11/18-3:03AM EST Seeking Alpha	90/	
	More Other News for PEG		
	Premium Research for PEG		
	Zacks Rank	Hold 3	

Zacks Rank	Hold 3
Zacks Industry Rank	Top 31%(78 out of 255)
Zacks Sector Rank	Bottom 44% (9 out of 16)
Chula Caaraa	
B Value D Grow	.0
Earnings ESP	th D Momentum C VGM 6.44%
B Value D Grow	.0
Earnings ESP	6.44%

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Quote & News Quote Overview Quotes & News	Sempra Energy (SRE) (Real Time Quote from BATS)	Add to portfolio Trades from
Quote Overview Zacks News Partner News	\$114.27 USD -1.34 (-1.16%) Updated Jul 18, 2018 01:43 PM ET	5-Strong Sell Style 3 D Value C Growth A Momentum industry Top 39%(99 out
Zacks Research	0	Industry: Utility - Gas Dist
 	Curete AD Remain WRanked Stocks Enter Symbol Stock Activity Key Earnings Data	Price and EPS Surprise Chart
Style Scores Detailed Estimates	Open 115.20 Earnings ESP	0.00% <u>1 Month</u> <u>3 Months</u> <u>YTD</u>
Comparison to Industry	Day Low 114.00 Most Accurate Est Day High 115.60 Current Qtr Est	1.17 EPS Surprise ★★
Zacks Experts View	52 Wk Low 100.49 Current Yr Est	5.46
More Research		5.46 'BM07/25/18
Broker Recommendations	Avg. Volume 2,269,507 Prior Year EPS	5.42
Full Company Report	Market Cap 30.54 B Exp EPS Growth (3-5	Vial
Earnings Announcements Key Company Metrics	Dividend 3.58 (3.10%) Forward PE	21.20
Broker Reports		May Jun
Insiders	Beta 0.47 PEG Ratio	2.49 Interactive Chart Fundamental Chart
Earnings Transcripts	Utilities » Utility - Gas Distribution *BMO = Before Market Open *AMC = Afte	
Charts	-BNU = Berore Market Open *AMC = Afte	Billion Dollar Secret
e Price, Consensus and EPS	Research Reports For SRE	
Surprise	All Zacks' Analys	t Reports »
Interactive Charts	News For SRE	
Price and Consensus	Zacks News for SRE	
Price & EPS Surprise	Other News for SRE	
12 Month EPS	Sempra Energy's (Enove to Build \$150M Liquid Fuels Pri 07/10/18-8:43AM EST Zacks	ject .
Broker Recommendations	Sempra Energy to Sell Assets for Portfolio Optimization	
Financials	07/02/18-7:16AM EST Zacks	
Financial Overview	SRE: What are Zecks experts saying now?	
Income Statements Balance Sheet	Zacks Private Portfolio Services	The Zacks Rank has been called the Bäion Do
Cash flow Statements	Enbridge (ENB) Commences Mex-Border Pipeline's Offst 06/14/18-5:00PM EST Zacks	hore Work Secret. Click here to watch the full earles. a
Options	Company News For Jun 12, 2018	Company Summary
Option Chain	06/12/18-8:56AM EST Zacks	Company Summary Sempra Energy utility and infrastructure compa
Options Greek Montage	Sempra Unit to Up Energy Storage Project Via 83.5 MW 0 06/06/18-9:50AM EST Zacks	Cepecity are on a collective mission to maintain long-terr
Access Zacks	More Zacks News for SRE	sustainable growth. By operating regulated utili and developing smart energy infrastructure that
Data Feed	SoCalQue Announces New \$75 Residential Rebate for B	concerns provide a provide the world they
	07/17/18-2:46PM EST PR Newswire	providing safe, reliable energy to their custome
	Sempra Energy Named To NAACP Equity, Inclusion And 07/17/16-2:02PM EST(PR Newswire	while increasing value for all of their stakeholde -from investors and industry partners to custom
	Notable Tuesday Option Activity. SRE, BLK, GT	and employees.
	07/17/18-1:31AM EST Stock Options Channel	Full Company Report for SRE a
	Looking at Sempra Energy's Current Valuation 07/16/18-6:38AM EST Market Realist	
	Dividend Senser a Pontolio Update 43: The 3 Essential T 07/46/th:8/47AM TSE Selfking Alpha More Other News for SRE	hingu Ali
	Premium Research for SRE	
	righting Research IOF SRE	
	Zacks Rank TStron	g Sell 5
	Zacks Industry Rank Top 39%(99 c	ut of 255)

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Zacks Sector Rank

Research Reports for SRE

= Change in last 30 days)

View All Zacks Rank #1 Strong Buys

Earnings ESP

Bottom 44% (9 out of 16)

Analyst | Snapshot

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Style Scores D Value | C Growth | A Momentum | C VGM

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Our Research. Your Succes	is.	
Quote & News		
Quote Overview	Southern Company (The) (SO) (Real Time Quote from BATS)	Add to portfolio Trades from
Quotes & News	\$47.34 USD	Zacks Ra
Quote Overview	-0.31 (-0.65%)	3-Hold 3
Zacks News	Updated Jul 18, 2018 01:43 PM ET	C Value A Growth D Momentum B V
Partner News	1	Industry Ra Top 31%(78 out of
Zacks Research		Industry: Utility - Electric Po
	Quate AD zernsie WRanked Stocks Enter Symbol Q	
Analyst Report	Stock Activity Key Earnings Data	Price and EPS Surprise Chart
Style Scores	Open 47.73 Earnings ESP 0.00%	1 Month 3 Months YTD
 Detailed Estimates Comparison to Industry 	Day Low 47.18 Most Accurate Est 0.66	EPS Surprise ++
Zacks Experts View	Day High 47.73 Current Qtr Est 0.66	
More Research	52 Wk Low 42.38 Current Yr Est 2.90	· · · · · ·
	52 Wk High 53.51 Exp Earnings Date "BMO 8/8/18	MA M
Broker Recommendations Full Company Report	Avg. Volume 4,538,025 Prior Year EPS 3.02	A A
Earnings Announcements	Market Cap 48.20 B Exp EPS Growth (3-5yr) 4.50%	Charles by
Key Company Metrics	Dividend 2.40 (5.04%) Forward PE 16.47	May Jun Jul
Broker Reports	Beta 0.03 PEG Ratio 3.66	
Insiders	Utilities » Utility - Electric Power	Interactive Chart Fundamental Chart
Earnings Transcripts	*BMO = Before Market Open *AMC = After Market Close	Bullion Dollar Donat
Charts		Billion Dollar Secret
Price, Consensus and EPS Surprise	Research Reports For SO	
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Comparative	And do the	
Interactive Charts	News For SO	
Price and Consensus	Zacks News for SO Other News for SO	
Price & EPS Surprise 12 Month EPS	BIP vs. SO. Which Stock Should Value Investors Buy Now?	
Broker Recommendations	07/12/18-8:30AM EST Zacks	
Financials	Top Research Reports for Amezon, Intel & Eli Lilly	
	06/27/18-12:00AM EST Zacks	
Financial Overview Income Statements	80: What are Zecks experts saying now?	
Balance Sheet	Zacks Private Portfolio Services	The Zacka Rank has been called the Billion Octar Secret, Click here to watch the full earles, a
Cash flow Statements	Should You Invest in the Fidelity MSCI Utilities Index ETF (FUTY)? 06/19/18-7:30AM EST Zacks	Unit. Cher (Bro D WHEP The THE GATOR &
Options	Southern Company at Crossroads: Can Strategic Studes Aid?	Company Summer
Option Chain	06/15/18-9:00AM EST Zacks	Company Summary Southern Company is America's premier energy
Options Greek Montage	Dominion Energy's Atlantic Coast Pipeline Suffers Setback 06/14/18-8:32AM EST Zacks	company. The company provides clean, safe,
Access Zacks	Ub/14/18-8:32AM EST ZaCKS More Zacks News for SO	reliable and affordable energy through electric operating companies in the states, natural gas
Data Feed	How Southern Company's Dividend Profile Looks Next to its Peers	distribution companies in the states, a competitive generation company serving wholesale customers
	07/17/18-12:40PM EST Market Realist	across America and nationally recognized provider
	A Look at the Top Utilities and Their Price Targets 07/17/18-8:04AM EST Market Realist	of energy solutions, as well as fiber optics and wireless communications. Southern Company
	What XI,U's Current Implied Voistitity Suggests	brands are known for excellent customer service,
	07/17/18-6:37AM EST Market Realist	high reliability and affordable prices that are below the national average. Through an industry-leading
	Southern Company's Total Returns in the Last Five Yesne	commitment to innovation, the company and its subsidiaries are inventing America's energy future
	07/17/18-3:48AM EST Market Realist	by developing the full portfolio of energy resources.
	Where Southern Company Stands In Dividend Growth 07/17/18-2:17AM EST Market Realist	including carbon-free nuclear, 21st century coal, natural gas, renewables and energy efficiency, and
	More Other News for SO	creating new products and services for the benefit
	Premium Research for SO	customers. Full Company Report for SO »
	Zacks Rank Hold 3	
	Zacks Industry Rank Top 31%(78 out of 255)	
	Zacks Sector Rank Bottom 44% (9 out of 16)	

Style Scores C Value | A Growth | D Momentum | B VGM

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Research Reports for SO

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View All Zacks Rank #1 Strong Buys

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Quote & News			
Quote Overview	WEC Energy Group, Inc. (W (Real Time Quote from BATS)	EC)	Add to portfolion Trades from
Quotes & News	\$64.62 USD		Zacks R 3-Hold
Zacks News	-0.30 (-0.46%) Updated Jul 18, 2018 01:46 PM ET		C Value C Growth F Momentum C
Partner News		1	Industry R Top 31%(78 out of
Zacks Research	and the second second		Industry: Utility - Electric P
	Quate/DzenkieWRanked St		
 Analyst Report Style Scores 	Stock Activity Open 65.04	Key Earnings Data Earnings ESP -1.95%	1 Month 3 Months YTD
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Comparison to Industry Zacks Experts View	Day High 65.18	Current Qtr Est 0.64	EPS Surprise
	52 Wk Low 58.48	Current Yr Est 3.30	-
More Research	52 Wk High 70.09	Exp Earnings Date 'BMO7/26/18	JA /
Broker Recommendations Full Company Report	Avg. Volume 1,655,376	Prior Year EPS 3.14	m m f f
Earnings Announcements	Market Cap 20.49 B	Exp EPS Growth (3-5yr) 4.13%	tharts by
Key Company Metrics	Dividend 2.21 (3.40%)		May Jun Jul
Broker Reports Insiders	Beta 0.08	PEG Ratio 4.77	Interactive Chart Fundamental Chart
Earnings Transcripts	Utilities » Utility - Electric Power	e Market Open *AMC = After Market Close	
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Surprise Fundamental Charts		All Zacks' Analyst Reports »	
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Interactive Charts Price and Consensus	News For WEC		
Price & EPS Surprise	 Zacks News for WEC Other News for WEC 		
12 Month EPS	WEC Energy (WEC) to Buy 80%	Stake at Minole' Wind Farm	
Broker Recommendations	06/29/18-8:40AM EST Zacks AES Sells 17% State, Exits Distri	Index Regiment is Granti	
Financials	06/15/18-7:50AM EST Zacks		
Financial Overview Income Statements	WEC: What are Zacks experts sa	lying now?	
Balance Sheet	Zacks Private Portfolio Services		The Zacks Rank has been called the Billion Dollar Secret. Click here to watch the full series. a
Cash flow Statements	NRG Energy Innovates Renewab 06/13/18-10:00AM EST Zacks	ie Plans for Texas Customers	uncher. Unce parts to watch the full safes. A
Options	Enphase Energy to Buy SunPowe	er's Microinverter Business	Company Summary
Option Chain	06/13/18-9:25AM EST Zacks	t in Frank Stress Stress 9	WEC Energy Group is the natural gas distribution
Options Greek Montage	Public Service Enterprise to Invest 06/12/18-5:18PM EST Zacks	ar in crargy arong Phase 2	company. WEC Energy Group, Inc., formerly know as Wisconsin Energy Corporation, is based in
Access Zacks Data Feed	More Zacks News for WEC	Nearly 10%, Led By Kinder Morgan	MILWAUKEE, United States. Full Company Report for WEC =
Dala Feeu	Children Growth SU. Income Up r Q7/16/18-9:36AM EST Seeking Alpha		C WE CONTRACT AND AND A REC 2
	Subcontractor 'on sita' ahead of fe 07/12/18-2:45PM EST Associated Pr		
	My 4% Dividend Yield Partiblia: C	218 Summery And Next Steps	
	07/12/18-11:26AM EST Seeking Alph	na	
	2018 Second Querter Portfolio Re 07/11/10-5:55AN EST Seeking Alpha	eview - Paesive Portfolio	
	WEC Energy Group Gets a Hold	Reling from Citigroup	
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Xcel Energy Inc. - XEL - Stock Price Today - Zacks

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Our Research. Your Succes	s.	
Quote & News Quote Overview	(Real Time Quote from BATS)	Add to portfolio Trades from
Quotes & News	\$45.61 USD	Zacks Ra 3-Hold
Quote Overview Zacks News	-0.25 (-0.55%) Updated Jul 18, 2018 01:46 PM ET	Style Score C Value C Growth C Momentum C V
Partner News		Industry Ra Top 31%(78 out of
Zacks Research	Quote @georee@WRanked Stocks Enter Symbol Q	Industry: Utility - Electric Po
e Snapshot		Price and EPS Surprise Chart
Style Scores	Stock Activity Key Earnings Data Open 45.95 Earnings ESP 2.40%	1 Month 3 Months YTD
 Detailed Estimates Comparison to Industry 	Day Low 45.41 Most Accurate Est 0.48	EPS Surprise ++
Zacks Experts View	Day High 45.99 Current Qtr Est 0.47	N. PR
More Research	52 Wk Low 41.51 Current Yr Est 2.44 52 Wk High 52.22 Exp Earnings Date *BM07/26/18	Jan P
Broker Recommendations	Avg. Volume 2,875,246 Prior Year EPS 2.30	
Full Company Report Earnings Announcements	Market Cap 23.34 B Exp EPS Growth (3-5yr) 5.67%	tharts by
Key Company Metrics	Dividend 1.52 (3.31%) Forward PE 18.90	May Jun Jul
Broker Reports Insiders	Beta 0.12 PEG Ratio 3.33	Interactive Chart Fundamental Chart
Earnings Transcripts	Utilities » Utility - Electric Power *BMO = Before Market Open *AMC = After Market Close	
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Price and Consensus	Zacks News for XEL Other News for XEL	
Price & EPS Surprise 12 Month EPS	Other News for XEL Duke Energy Supports Green Energy Output in South Caroline	
Broker Recommendations	07/13/18-9:44AM EST Zacks	
Financials	FirstEnergy (FE) Unit to Invest \$4M to Strengthen Operation 07/12/18-7:45AM EST Zacks	
Financial Overview Income Statements	XEL: What are Zecks experts saying now?	
Balance Sheet	Zacks Private Portfolio Services	The Zacka Rank has been called the Billion Dollar Second, Click here to watch the full parties, a
Cash flow Statements	Xcel Energy Buys Wind Project From NextErs, Expands in Texas 07/06/18-9:51AM EST Zacks	Chipter, circle (1010 co implet) the part of role, a
Options	Should VictoryShares US EQ Income Enhanced Votability Wid 06/28/18-7:16AM EST Zacks	Company Summary
Option Chain Options Greek Montage	XEL vs. LNT: Which Stock to the Better Value Option?	Xcel Energy Inc. is predominantly an operating public utility engaged in the generation, transmission
Access Zacks	06/20/18-8:30AM EST Zacks More Zacks News for XEL	and distribution of electricity and the transportation storage and distribution of natural gas.
Data Feed	How Analysis' Ratings on PPL Stock Have Changed 07/16/18-6:38AM EST Market Realist	Full Company Report for XEL a
	Stocks To Watch: Prime Time in Retail	
	07/14/18-7:52AM EST Seeking Alpha	
	How PPL's Current Valuation Compares to its Paers 07/13/18-2:12AM EST Market Realist	
	American Electric Power: Analyst Recommendations, Price Targets 07/12/18-12:19PM EST Market Realist	
	Xcel Energy's proposed \$380M wind farm approved by South	
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Earnings ESP Research Reports for XEL

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View All Zacks Rank #1 Strong Buys

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era Inc	the state of the s	Period 2018*		Source Stan	
mings & Estimates Next Annou		CO LOU AVADA		Surges Internet	abit of the state
ashre LTG (%)			Deviation Fi	ilter 📒 🔞 🖫	As of 07/18/18
Fim	Analyst	Estimate:	Uate'	Deviation trop	n Shandard (13,400)
BEst Standard		13.400	06/22/18		0.0
🔒 Merningstar, Inc	Audrew Bischol	**	05/11/18		
P TD Securitres	Linda Esergaili		01/27/17		
A BND " Innfal Markets A Wells Fargo Securities	Ben Phám Neil A Kalton		06/22/18		
птолі Fe Rustralia 61 2 9777 860 Ларад 81 3 3201 8900	0.8razil 5511 2395 9000 Europe Singapore 65 6212 1000	Estin 44 20 7330 7500 Geri U.S. 1 212 318 2000	талу 49 69 920 Соругіз	04 1210 Hong Kong aht 2018 Bloomberg	852 2977 6000 Finance L.P. -309-1 13-701-2018 10 34

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LE US 4 01 17 51		77 /1	2 77.50	ч	Page 11 of 21
	29,548 D 77.89N	H 78.10			1 2,2941
	ctions - 97 Output to Ex				Analyst Distribution
érgy Carp		2018#		Saurce Sta	
nings & Estimates Next Annou					
asure LTG (般)		the second se	Deviation Fi		and the second se
Fim	Analyst	Estimate	Date	Ceviation I	rom Standard (3.005)
BEst Standard	and the left state	3,005	06/22/18		0,0
Argue Research Carb	David E Coleman	7,000	08/26/16		32,9
A Well's Fango Securities	Neil A Kalton		06/21/18		
a BofAML	Julien Dumoulin-Smith		06/22/18		
🗅 Horningstar, Inc	Charles J Fishman		14/17/18		
🗕 Telferiox 🖻 RBC Dapital Markets	Anthony Chawdell. Snelby G Tucker		14/27/17		
Buggennerm Sociation	Salahn in Pournei		06/18/17 38//06/17		
man Fallot		Estin	vales in gra	y tele been i	skaudet from andara
Bustralia 61 2 9777 860 Јарал 81 3 3201 8900	0 Brazil 5511 2395 9000 Europe 44 2 Singapore 65 6212 1000 U.S	20 7330 7500 Gern 1 212 318 2000	Copyrig	ht 2018 Bloombe	19 852 2977 6000 erg Finance L.P 270-309-1 13-Jul-2018 10:35

24 1	1 29,548 D 77.891	H 78.10		3350 Va	1 1 2,294M	
US Equit: 90 A rsource Energy	ctions - 97 Output to Exe	et E; d 2018.€		Source Sta		tribution
tings & Estimates Next Annou		A VALLE		Sugar and Cons	maana	CON NOR
sure LTG (%)			Deviation Fi			07/18/18
Firm	Analyst	Estimate	Date	Deviation I	iom Standar	
BEst Standard		6,267	06/25/18			0.
Argus Research Corp	Bate F Havis	7,000	01/17/17		1.0	11,
BBC Partners	liat Kanoline	7,000	08/06/14			11.
Siean Capital LLC	Michael E Gaugler	3.010	05/02/13			27.
🗅 Everaare ISI	Greg Gordon		01/26/16			
Danney Montgomery Scott			05/03/18			
Guggenheim Securities	Shahman Pourreza		01/06/17			
🖴 Morningstar, Inc	Travis Miller		06/25/18			
🗅 Wells Fargo Secunties	Neil A Kalton		04/30/18			
🖻 BofAML	Julien Dumoulin-Smith		02/01/18			
🖴 Williams Căpital	Christopher R. Ellinghaus		06/04/19			

	ر بالمراجع	77.00	27.54		Page 1 c WP-46 McKenzie Page 13 of 21
	19,548 D 77.89N	H 78.10	2 / 77 . 51 Z / L 77	1 2 3350 Val	2,294M
C C ANGIN	ons - 97) Output to Ex	cel E;		Stimates: Ana Source Stand	alyst Distribution
ton Corp nings & Estimates Next Announce		COL 2018*	- Vr	squice Stard	ard 👔 Our CAD
sure LTG (%)			Deviation Fi	lter 🚺 🖥	As of 07/18/18
Film	Analyst	Estimate	Date	Deviation from	n Standard (5,310)
BEst Standard		5.310	06/25/18		0.0
Argus Research Corp	Kalelyn Bayon	7.000	12/19/16		31,8
🗅 Morningstar, Inc	Travis Miller		06/25/18		
🗅 Wells Fargo Securities	Neil A Kalton		04/30/18		
	Ali Agha		04/13/18		
BofAML	Julien Dumoulin-Smith		05/25/18		
PBC Capital Markets	Shelby G Tucker		06/18/17		
🔒 Guytennerm Soci#itties	Shabhur Pourne/		01/06/17		
Hustralia 51 2 9777 8600 Br Japan 81 3 3201 8900 S	azil 5511 2395 9000 Europe 44 2 ingapore 55 6212 1000 U.S		төлу 49 69 920		1 dec from consens. 52 2977 6000 Finance L.P.

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ALE US 1 C T T7 51	11-20 Www		2 77.51		
	1 29,648 0 77.89				2.301M
	ctions 97 Output to				lyst Distribution
rtis Inc/Canada		Period 2018#	- VP	Source Shand	ard 🕺 💷 CAD 🔹
mings & Estimates Next Annou	uncement 07/31/10		Hardhard and Hard		
aasure LTG(%) Finn	Analyst	Estimate	Deviation Fi Date		As of 17/13/18 = n Standard (A 000) 1
BEst Standard	Puratyse.	5,000	05/01/18	Devidence from	0.00%
Est Scandard	Linda Ezergaila	0.000	04/27/17		0,000
A Morningstar, Inc.	Andrew Bischol		05/01/18		
A wells Fargo Securities	Neil A Kalton		05/01/18		-
🖴 ENC Capital Markets	Ben Pham		01/12/18		
		-			
Australia 51 2 9777 860	0 Brazil 5511 2395 9000 Europe	44 20 7330 7500 Ger	төлу 49 69 920	4 1210 Hong Kong 8	52 2977 6000
Харал 81 3 3201 8900	Singapore 65 6212 1000	0.5. 1 212 318 2000	COPUPig	aht 2018 Bloomberg	Finance L.P 309-1 13-Jul-2018 10:36:47

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(1) At 10 20 d Vol	29,668 0 77.89N	H 78.10	/ L 77	3350 Val	2.303M
E US Equitives you Act Activestern Corp		d 2018*		Source Stand	alyst Distribution lard
nings & Estimates Next Announ asure LTG (%)	cement 07/19/18		Deviation Fi	lter 61	As of 07/18/18
asure ITG (%) Firm	Analyst	Estimate	Date		TI Standard (2.407)
BEst Standard		2,407	07/02/18		0.00
A Plighho Section te USA Inc.	Jim Voli Riesemann		03/30/16		
A BofAML	Julien Dumoulin-Smith		04/26/18		
🖴 Wells Fargo Securities	Jonathan Reeder		04/30/19		
Hustralia 51 2 9777 8600 Japan 81 3 3201 8900	Brazil 5511 2395 9000 Europe 44 2 Singapore 65 6212 1000 U.S.		талу 49 69 920 Соругія	4 1210 Hong Kong 8 ht 2018 Bloomberg	352 2977 6000 Finance L.P. 309-1 13-701-2018 10:39

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ALE US 1 C 17 49	29,795 0 77,891		5 77.50P	1 3350 Val	2.3130	
	ctions - 11 Output to	and the second se	amings & i	Estimates: Ar	nalyst Distr	
Corp		eriod 2018* *	VP E	Source Star	idard	CUE CAD
mings & Estimates Next Annou asure LTG (%)	Incement 08/0//13		Deviation Fi	lter 🚺 🐻	the of W	7/18/18
Fim	Analyst	Estimate	Deviation H Date		om Standard	
Argus Research Corp	Katelyn Bayone	4.000	12/20/16	Clevidolum	onn Scandana	- 50.1
Big Partners	for konorne	5,040	08/01/14	-		-38,3
BEst Standard	tar isanocige	8.100	05/18/18			0.0
A Morningstar, Inc	Andrew Bischol		05/18/19			
D Jefferies	Anthony Crowdill		05/22/15			
A Well's Fargo Securities	Neil A Kalton	**	04/30/18			
P Everdore 1SI	Greg Gordon		01/26/18			
A Rec sanital Markets	Shelby G Tucker		93/06/18			
A BofAVIL	Brian Chin		01/23/17			
A Guggennerm Securities	Shahmur Pourner		71,400,129			
итили Fe Rustralia 51 2 9777 860 Иарал 61 3 3201 8900	0 Brazil 5511 2395 9000 Europe 4 Singapore 55 6212 1000 l	E:110 4 20 7330 7500 Geru .5. 1 212 318 2000	палу 49 69 920 Соругіз	4 1210 Hong Kong ht 2018 Bloomber DT GMT−5÷00 H27	852 2977 6000 9 Finance L.P.	

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nings & Estimates Next Annou asure LTG (%)	uncement 07/25/10		Deviation F	ilter il 1	As of 1	7/13/18
Firm	Analyst	Estimate:	Late		om Standard (16,3971
Argus Research Colip	Katelyn Bayone	6,000	12/27/16	1		- 63,2
960 Partners	tät konorige	7,000	08/11/14	0		-57.1
BEst Standard		16.337	07/12/18			0.0
🔒 Merningstar, Inc	Andrew Bischol		06/11/19			
🖴 Everçöre ISI	Greg Goldon		01/26/15			
🖴 Wells Fargo Securities	Sarah Akers		07/01/18			
🖴 Walfe Research	Steven I Fleishman		03/13/13			
A BOTAME	Julien Dumpulin-Smith		07/12/18			
Guggenheim Securities	Shahmar Pourreza		01/00/17			
🔒 RBC Capital Markets	Shelby G Tucker		04/09/18			

		Page 1 of 1
		WP-46
		McKenzie
		Page 19 of 21
50	77.55P	1 1
0Y	L 77 3350	Val 2.353M
Eam	ings & Estima	tes: Analyst Distribution
* - 1	/r Source	ce Standard 📓 Our CAD 📱
Dev	viation Filter	6 % As of 67/18/18 =
ei		ation from Standard (4.380)
a! 08	5/14/18	0.00%

nings & Estimates Next Announce asure LTG (%)			Deviation Fi	
Fim	Analyst	Estimate	Date	Deviation from Standard (4.380)
BEst Standard		4.380	06/14/18	0.0
Argus Research Corp Wolfe Research	t stelyn Bavone	5,000	11/09/16	4.1
🖴 Walie Research	Steven I. Fleishman		03/13/13	
🖻 Deulsche Bank	Jonathan Arnold		06/29/17	
SunTrust Robinson Humphrey			05/23/18	
🖻 Wells Fargo Securities	Neil A Kalton	**	04/30/18	
🔒 Guggenheim Securities	Shahmar Pourveza		01/06/17	
🗛 Merningstar, Inc	Charles J Fishman		05/02/18	
🖴 RBC Capital Markets	Shelby G Tucker		03/09/18	
A BOTAML	Julien Dumoulin-Smith		06/14/18	
🕒 Jefferies	Anthony Crowdell		10/29/15	
🖴 Ioventorë 181	farm function.		-44,7,30,736	

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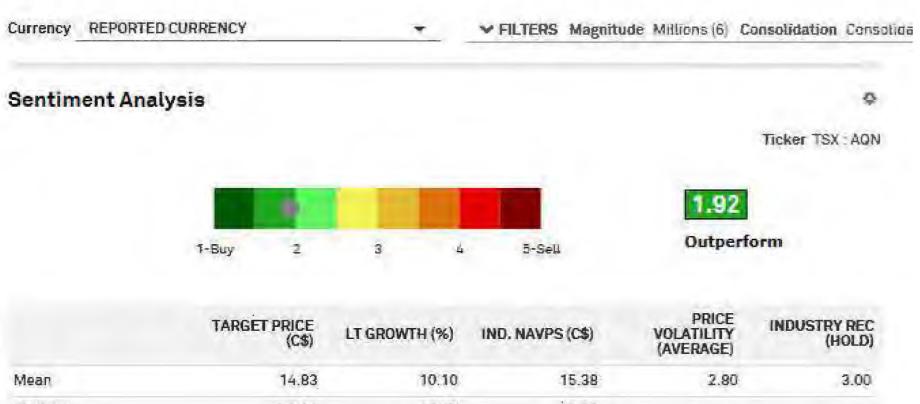
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US \$ C T 7 5	من الا المراجع (م) 30,310 D 77.89N	77.50 H 78.10	77.551	1 3350 Val	
US Equits 90 Act	tions - 97 Output to B	icel Ea	amings & i	Estimates: Ar	alyst Distributio
Energy Group Inc. ngs & Estimates Next Announ		iod 2018* *	- Vr	Source Star	idard 👔 💷 🤅
ure LTG (%)	1		Deviation Fi		As of 07/18/
m	Analyst	Estimate	Date	Denation Inc	im Standard (2.997
BEst Standard	COLUMN TRADES	2,997	06/20/18		
Argus Research Corp Guggenheim Securities	Fatelyn Boyone Shahnar Pourreza	5,000	01/06/17		i
Evennere ISI	Greg tiordon		04/26/16		
Wells Fargo Securities	Neil A Kalton		06/20/18		
Pliguho Securicie: USA Inc	In Van Riesemann		06/29/15		
Morningstar, Inc.	Andrew Bischot		05/01/18		
BotAML	Julien Lumbulin-Smith		06/06/18		

LE US \$ C † 17-55	- 0 (n wet-		3 /77.58⊺	1 1	
	80,411 D 77,89N 2015 - 97) Output to Ex	and the second sec	amings & E	Estimates: An	2.361M alyst Distribution
Energy Inc ings & Estimates Next Announce		od 2018# 🙎	- VP	Source Shand	lard 👔 💷 CA
sure LTG (%)			Deviation Fi	lter in t	As of 07/18/1
irm.	Analyst	Estimate	Date		m Standard (5,848)
Argus Research Corp	Gary F Hovis	4,000	01/12/17		- 31
BEst Standard	and the second se	5,848	07/05/18		0
🗅 Morningstar, Inc	Travis Miller		07/05/18		
🗅 Wells Fargo Securities	Neil A Kalton		04/30/18		
BofAML	Julien Dumoulin Smith		06/20/18		
P Evendere IST	Greg Gordon		0.1/26/16		
RBC Capital Markets	Shelby G Tucker		116/118/17		
🛾 SunTrust Robinson Humphrey	Ali Agha		04/12/19		

Algonquin Power & Utilities Corp. | ESTIMATE HIGHLIGHTS

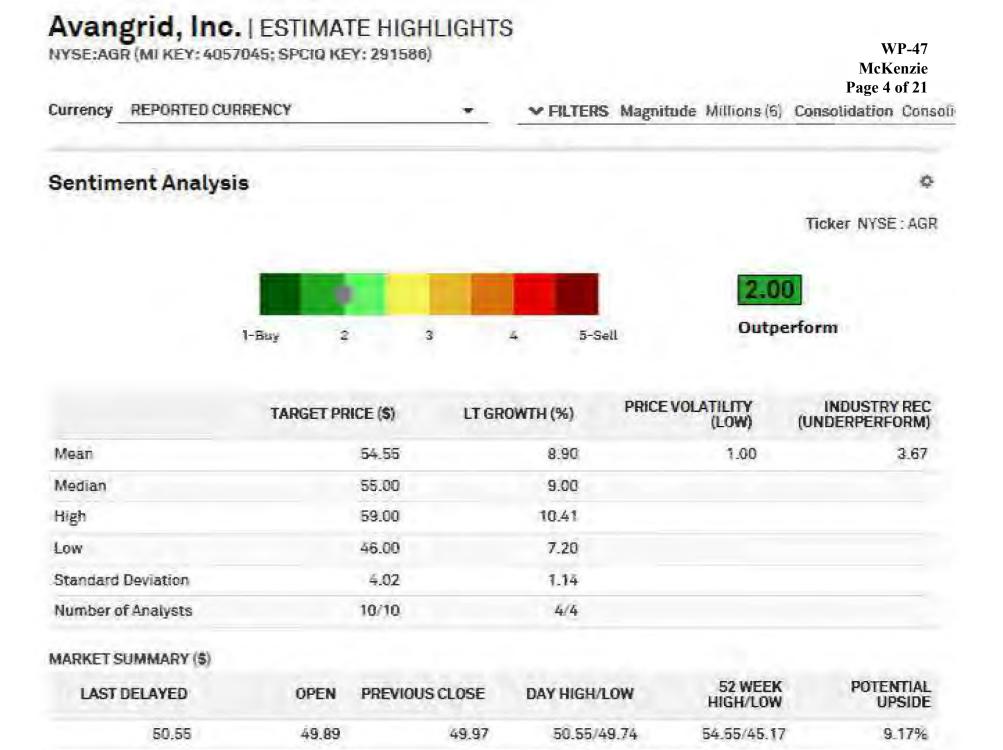
TSX:AQN (MI KEY: 4142273; SPCIQ KEY: 882318)



	(C\$)		IND. NAVPS (C\$)	VOLATILITY (AVERAGE)	(HOLD)	
Mean	14.83	3 10.10	15.38	2.80	3.00	
Median	15.50	10.00	15.38			
High	16.50	12.30	15.38			
Low	12.00	8.00	15.38			
Standard Deviation	1.35	i 1.76	0.00			
Number of Analysts	13/13	3 2/4	NA			
MARKET SUMMARY (C\$)						Mc Page
LAST DELAYED	OPEN	PREVIOUS CLOSE	DAY HIGH/LOW	52 WEEK HIGH/LOW	POTENTIAL UPSIDE	WP-47 Kenzie 1 of 21
12.91	12.82	12.84	12.96/12.81	14.40/12.18	15.47%	

Alliant Energ			LOTIN		Liamo		WP-47 McKenzie Page 2 of 21	
Currency REPORTED CU	JRRENCY		•	✓ FILTERS	Magnitude	Millions (6)	Consolidation	Consolid
Sentiment Analys	sis							Ģ
							Ticker NYSE	LNT
		0				2.89	9	
	1-Buy 2	3		4 5-Sel	i.	Hold		
		ICE (A)	ITCN	OWTH (%)	PRICE VOL	ATILITY	INDUSTRY	REC
	TARGET PR	ICE (S)	LIGRU	JWIH (70)	Contract Name	(LOW)	(UNDERPERFO	
Mean	TARGET PR	41.50	LIGRU	5.91			(UNDERPERFO	
Mean Median	TARGET PR		LIGRU			(LOW)	(UNDERPERFO	DRM)
	TARGET PR	41.50	LIGRU	5.91		(LOW)	(UNDERPERFO	DRM)
Median	TARGET PR	41.50 42.50	LIGRU	5.91 6.00		(LOW)	(UNDERPERFO	DRM)
Median High	TARGET PR	41.50 42.50 45.00	LIGRU	5.91 6.00 6.00		(LOW)	(UNDERPERFO	DRM)
Median High Low	TARGET PR	41.50 42.50 45.00 37.00	LIGRU	5.91 6.00 6.00 5.73		(LOW)	(UNDERPERFO	DRM)
Median High Low Standard Deviation Number of Analysts	TARGET PR	41.50 42.50 45.00 37.00 2.69	LIGRU	5.91 6.00 6.00 5.73 0.13		(LOW)	(UNDERPERFO	DRM)
Median High Low Standard Deviation	OPEN	41.50 42.50 45.00 37.00 2.69		5.91 6.00 6.00 5.73 0.13	W	(LOW)	OUNDERPERFO	DRM) 4.00

NYSE:AEE (MI KEY: 40 Currency REPORTED C		Y: 37320	34) •	✓ FILTERS	Magnitude	Millions (6)	WP-47 McKenzie Page 3 of 21 Consolidation Consoli
Sentiment Analy	sis						Q.
							Ticker NYSE: AEE
			-			2.5	5
	1- Виу 2		3	4 5-Sel	I	Hold	
	TARGET PR	HCE (S)	LT GR	OWTH (%)	PRICE VOL	ATILITY IN	DUSTRY REC (HOLD)
Mean		61.25		6.57		1.00	3.40
Median		62.00		6.62			
High		64.00		7.10			
Low		55.00		6.00			
Standard Deviation		2.47		0.45			
Number of Analysts		9/9		3/3			
MARKET SUMMARY (\$)							
LAST DELAYED	OPEN	PREVIO	US CLOSE	DÀY HIGH/LO	WQ	52 WEEK HIGH/LOW	POTENTIAL
61.70	61.56	_	61.36	61.95/60	90	64.89/51.89	(0.18)%

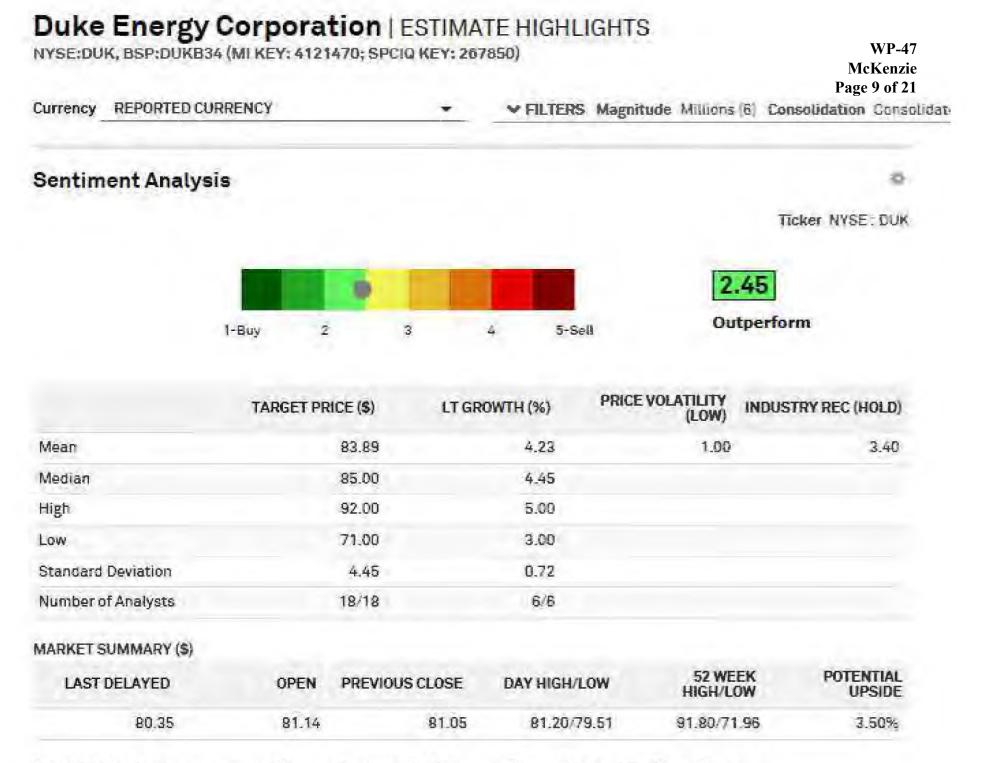




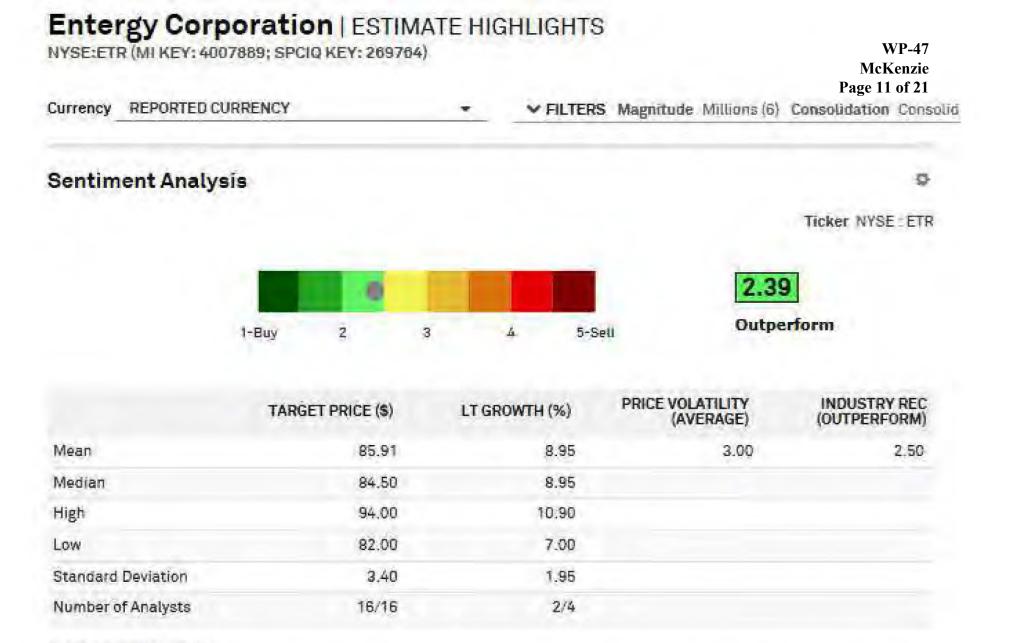
CMS Energy Corporation | ESTIMATE HIGHLIGHTS **WP-47** NYSE:CMS (MI KEY: 4004172; SPCIQ KEY: 257682) **McKenzie** Page 6 of 21 REPORTED CURRENCY Currency FILTERS Magnitude Millions (6) Consolidation Consolid Sentiment Analysis 2 Ticker NYSE: CMS 2.24 8 Outperform 3 5-Sell 1-Buy 2 4 PRICE VOLATILITY INDUSTRY REC LT GROWTH (%) **TARGET PRICE (\$)** (UNDERPERFORM) (LOW) Mean 49.44 6.66 1.00 3.67 Median 49.75 7.00 53.00 7.20 High Low 40.00 5.00 Standard Deviation 2.82 0.70 16/16 7/7 Number of Analysts MARKET SUMMARY (\$) POTENTIAL 52 WEEK LAST DELAYED OPEN PREVIOUS CLOSE DAY HIGH/LOW HIGH/LOW UPSIDE 3.30% 47.89 48.01 47.86 47.97/47.18 50.85/40.48

NYSE:ED	(MI KEY: 4057	041; SPCIO			MATE HIGHL		WP-47 McKenzie Page 7 of 21
Currency	REPORTED CU	IRRENCY		•	✓ FILTERS	Magnitude Millions	(6) Consolidation Consol
Sentim	ent Analys	is					0
							Ticker NYSE: ED
				1		3.	56
		1-Buy	2	3	4 5-Se	II. Un	derperform
		TARG	ET PRICE (\$)	LT	GROWTH (%)	PRICE VOLATILITY (BELOW AVG.)	INDUSTRY REC (HOLD)
Mean			77.38		3.18	2.00	3.50
Median			76.50		3.53		
High			84.00		4.00		
Low			72.00		2.00		
Standard	Deviation		3.62		0.85		
Number o	f Analysts		16/16		3/3		
MARKETS	UMMARY (\$)						
	UMMARY (\$) DELAYED	O	PEN PREV	IOUS CLOSE	E DAY HIGH/L	OW 52 WE	

DTE Energy NYSE:DTE (MI KEY: 40				STREETS OF			WP-47 McKenzie Page 8 of 21	
Currency REPORTED	CURRENCY		•	✓ FILTERS	Magnitude	Millions (6)	Consolidation	Consoli
Sentiment Analy	/sis							Ģ
							Ticker NYSE	E: DTE
						2.43	3	
	1-Buy 2		1	4 5-Sel	t	Outpe	erform	
	TARGET PF	RICE (\$)	LT GR	0WTH (%)	PRICE VOL	ATILITY ERAGE)	INDUSTRY (UNDERPERF	(REC ORM)
Mean		110.85		5.83		3.00		4.00
Median		112.00		6.00				
High		118.00		6.00				
Low		103.00		5.14				
Standard Deviation		4.62		0.34				
Number of Analysts		13/13		5/5				
MARKET SUMMARY (\$)								
LAST DELAYED	OPEN	PREVIOU	S CLOSE	DAY HIGH/LO	w	52 WEEK HIGH/LOW	POTEN	ITIAL SIDE
108.66	107.76		107.84	108.75/107	14 1	16.74/94.25	2	79%



Emer TSX:EMA	(MI KEY: 4072	693; SPCIQ KI						WP-47 McKenzie Page 10 of 21
Currency	REPORTED CL	IRRENCY		· ·	✓ FILTERS	Magnitude	Millions (6)	Consolidation Consol
Sentim	ent Analys	is						Ş
								Ticker TSX : EMA
							2.3	3
		1-Buy	2	3	4 5-Sel	J.	Outpe	erform
		TARGET P	RICE (C\$)	LT GR	OWTH (%)	PRICE VOLA (BELOW	TILITY IN VAVG.)	DUSTRY REC (HOLD)
Mean			47.73		6.53		2.20	3.00
Median	1		48.00		6.95			
High			55.00		9.20			
Low			38.00		3.00			
	Deviation		38.00 4.61		3.00 2.35			
Standard	Deviation f Analysts							
Standard Number o			4.61		2.35			
Standard Number o MARKET S	fAnalysts	OPEN	4.61 15/15	OUS ÇLOSE	2.35	ow	52 WEEK HIGH/LOW	POTENTIAL UPSIDE



MARKET SUMMARY (\$)

LAST DELAYED	OPEN	PREVIOUS CLOSE	DAY HIGH/LOW	52 WEEK HIGH/LOW	POTENTIAL
82.82	81.03	81.82	83.38/81.34	87.95/71.95	4.99%

	(MI KEY: 405	7052; SPCIC			HLIGHTS				VP-47 Cenzie of 21
Currency _	REPORTED C	URRENCY		•	✓ FILTER	S Magnitude	Millions (6)	Consolidation	Consolid
Sentim	ent Analy	sis							Q.
								Ticker NYS	E: ES
				-			2.1	3	
		1-Buy	2	3	4 5-S	eli	Outp	erform	
		TARG	ET PRICE (\$)	LT	GROWTH (%)	PRICE VOL (BELO	ATILITY WAVG.)	NDUSTRY REC (H	OLD)
Mean			62.67		5.57		2.00		3.50
Median			63.00		5,58				
High			70.00		6.00				
Low			53.00		5.11				
Standard	Deviation		3.88		0,41				
Numbero	f Analysts		15/15		4/4				
MARKETS	UMMARY (\$)								
LAST	DELAYED	O	PEN PREVI	OUS CLOSE	DAY HIGH	LOW	52 WEEK HIGH/LOW		SIDE

59.74

60.27/59.36

66.15/52.76

4.90%

59.80

60.07



LAST DELAYED	OPEN	PREVIOUS CLOSE	DAY HIGH/LOW	52 WEEK HIGH/LOW	POTENTIAL UPSIDE
42.44	42.18	42.00	42.88/41.96	43.20/35.57	NA

Fortis Inc. | ESTIMATE HIGHLIGHTS

TSX:FTS (MI KEY: 4082871; SPCIQ KEY: 875612)

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Currency REPORTED CURRENCY

✓ FILTERS Magnitude Millions (6) Consolidation Consoli

Sentiment Analysis

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Ticker TSX : FTS





Outperform

	TARGET PRIC	CE (C\$)	LT GROWTH (%)	PRICE VOLATILITY (LOW)	INDUSTRY REC (H	IOLD)
Mean		47.67	5.17	1.50	e	3.00
Median		48.00	5.00			
High		52.00	6.00			
Low		43.00	4.50			
Standard Deviation		2.57	0.62			
Number of Analysts		15/15	3/3			
MARKET SUMMARY (C\$)						
LAST DELAYED	OPEN	PREVIOUS CLO	DSE DAY HIGH	/LOW 52 WI HIGH/L		ITIAL
42.80	42.80	4	2.65 42.80	42.33 48.73/3	9.38 11.	76%



POTENTIAL

(3.26)%

HARRET JUMMART (9)				
LAST DELAYED	OPEN	PREVIOUS CLOSE	DAY HIGH/LOW	52 WEEK HIGH/LOW
58,79	59,10	58.23	58,96/58,17	64,47/50.01

PPL Corporation | ESTIMATE HIGHLIGHTS

NYSE:PPL (MI KEY: 4057058; SPCIQ KEY: 185508)

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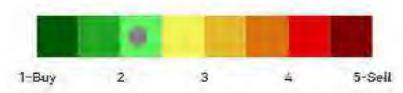
Currency REPORTED CURRENCY

✓ FILTERS Magnitude Millions (6) Consolidation Consoli

Sentiment Analysis

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Ticker NYSE: PPL

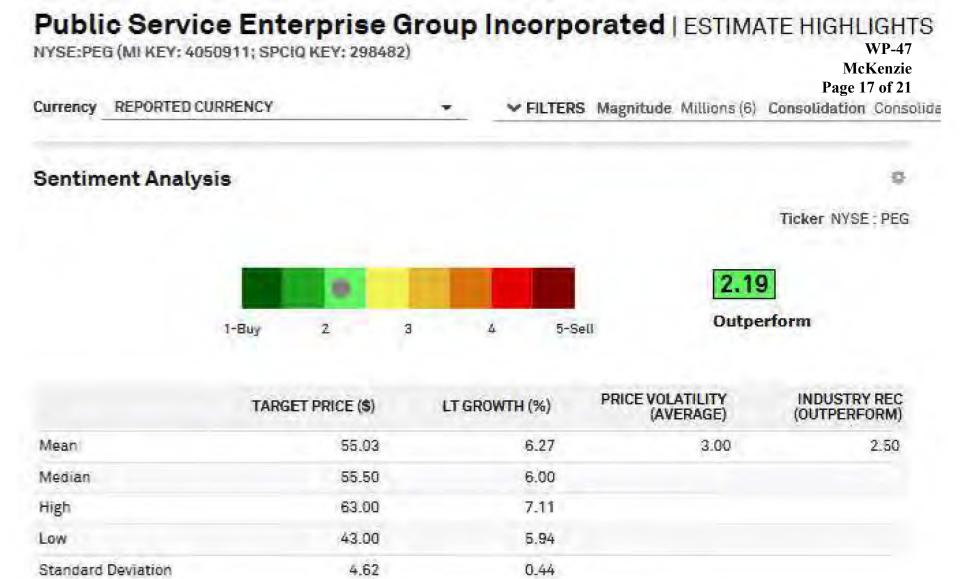




	TARGET PRICE (\$)	LT GROWTH (%)	PRICE VOLATILITY (AVERAGE)	INDUSTRY REC (HOLD)
Mean	31.65	4.14	3.00	3.50
Median	32.00	4.28		
High	36.00	5.00		
Low	25.60	3.00		
Standard Deviation	3.22	0.72		
Number of Analysts	13/13	NA		

MARKET SUMMARY (\$)

LAST DELAYED	OPEN	PREVIOUS CLOSE	DAY HIGH/LOW	52 WEEK HIGH/LOW	POTENTIAL UPSIDE
28.53	28.63	28.54	28.74/28.33	39.90/25.30	10.91%



Number of Analysts 15/15 5/5
MARKET SUMMARY (\$)

 LAST DELAYED
 OPEN
 PREVIOUS CLOSE
 DAY HIGH/LOW
 52 WEEK HIGH/LOW
 POTENTIAL UPSIDE

 51.01
 51.41
 50.54
 51.05/50.27
 54.50/45.05
 8.89%



LAST DELAYED	OPEN	PREVIOUS CLOSE	DAY HIGH/LOW	52 WEEK HIGH/LOW	POTENTIAL UPSIDE
115.89	114.68	114.90	116.16/114.38	122.98/100.49	5.65%

1.57

2/2

Potential Upside: The percentage difference between the Consensus Target Price and the Close Price.

6.20

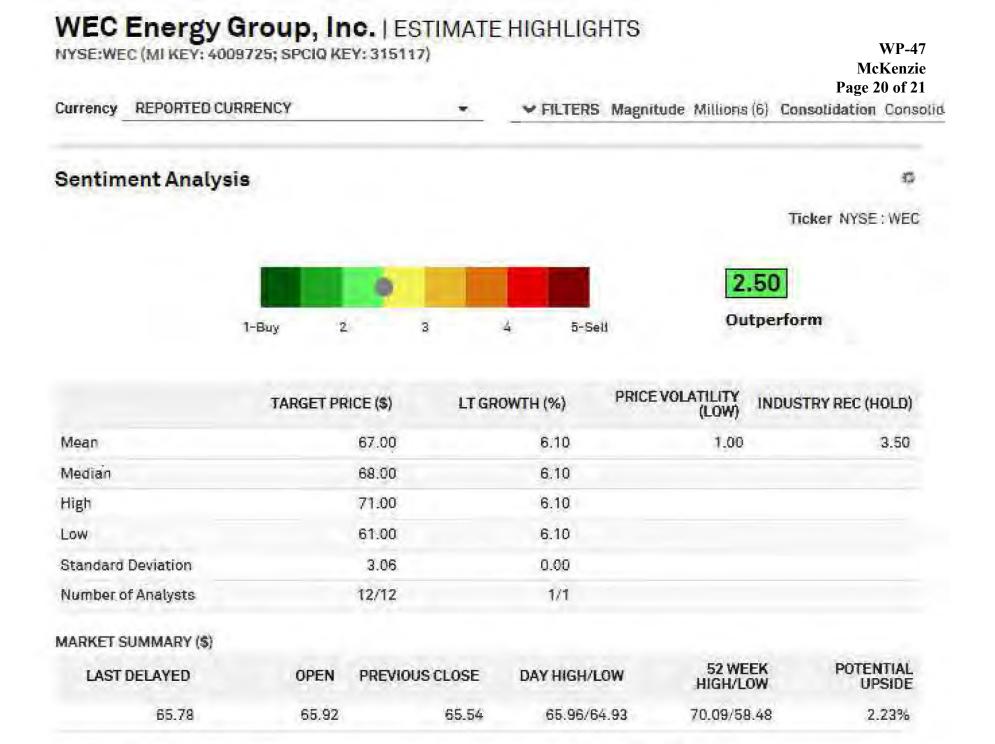
11/11

Standard Deviation

Number of Analysts

MARKET SUMMARY (\$)

Southern Co NYSE:SO (MI KEY: 400 Currency REPORTED C	4298; SPCIQ KEY				Magnituda	Millions (6)		
								-
Sentiment Analy	sis							¢
							Ticker NYS	E:SO
			-			3.00		
		9				Hold	2	
	1-8uy 2	2 3		4 5-Sel	L	noid		
	TARGET PR	RICE (\$)	LTGR	0WTH (%)	PRICE VOL	ATILITY IN	DUSTRY REC (H	IOLD)
Mean		47.07		4.13		1.00		3.40
Median		46.75		4.25				
High		53.00		5.00				
Low		40.00		3.00				
Standard Deviation		2.91		0.72				
		19/19		4/6				
Number of Analysts								
Number of Analysts MARKET SUMMARY (\$) LAST DELAYED	OPEN	PREVIOUS	CLOSE	DAY HIGH/LO	wo	52 WEEK HIGH/LOW	POTEI	ITIAL



NASDAQ:XEL (MI KEY:								VP-47 Kenzie Lof 21
Currency REPORTED C	URRENCY		•	← FILTERS	Magnitude	Millions (6)	Consolidation	
Sentiment Analy	sis							0
							Ticker NASDAG	:XEL
		0				2.5	D	
	1-Buy	2	3	4 5-Sel	I	Outpe	erform	
	TARGE	T PRICE (\$)	LT GR	OWTH (%)	PRICE VOL	ATILITY IN	DUSTRY REC (H	IOLD)
Mean		47.86		5.77		2.00		3.50
Median		48.50		5.80				
High		53.00		6.30				
Low		40.00		5.00				
Standard Deviation		2.85		0.41				
Number of Analysts		14/14		8/8				
MARKET SUMMARY (\$)								
				-		52 WEEK	POTEM	IAITA
LAST DELAYED	OP	EN PREVI	OUS CLOSE	DAY HIGH/LO	W	HIGH/LOW		SIDE

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(NYSE:AQN)	& Utilities Corp				
		Real-Time Quotes Add to Wate	h List Set Alert	The Motley Fool	Paid Pa
9.60 BATS BZX Real-Time Price As of 1:50pm ET	+0.03 / +0.31 Today's Change	% 9.45 ☐ 11.34 52-Week Range	-13.98% Year-to-Date	You Can Still Buy This "Million Stock	aire Make
		Forecasts Financials Shareholders	Competitors	Bitcoin Up 30,000X Here's Y Backdoor In	<i>Y</i> our
vs. Utilities	s News	Add ticker	Chart	Motley Fool Issues Rare Triple	e-Buy Aler
minut	M	ΛΛ AA	9.65	This Stock Could Be Like Buy	ing Amazo
5 m	, Mw	W MM PREVIOUS CLO	9.60 9.55	for \$3.19	Ū
	V ¹	5 DAY CHANGE C	95%		
Thu 7/12 Fri 7/13 +0.14 +1.47% -0.08 -0.8	Mon 7/16 +0.03 +0.319	Tue 7/17 Wed 7/18 -0.03 -0.31% +0.03 +0.3'	%		
Latest AQN News Press	s Releases				
Alliant (LNT) Cuts Emissions, t Nind Farm Iul 17 / Zacks.com - Paid Partner Ci		Duke Energy to Construct \$250M LNC Carolina Jul 16 / Zacks.com - Paid Partner Content	i Storage in North		
MDU Resources Buys & Expan Material Business Iul 17 / Zacks.com - Paid Partner Ci		The Zacks Analyst Blog Highlights: A CMS, Ameren and Brookfield Renewa Jul 16 / Zacks.com - Paid Partner Content			
Pattern Energy (PEGI) in Focus Higher Jul 17 / Zacks.com - Paid Partner Ci		Duke Energy Supports Green Energy Carolina Jul 13 / Zacks.com - Paid Partner Content	Output in South		
ERC Approval		PG&E Corporation to Reduce 1 Millio Emission by 2022 Jul 13 / Zacks.com - Paid Partner Content	1 Ton Gas		
FERC Approval Jul 16 / Zacks.com - Paid Partner Co Dominion & SCANA Merger He Gets FERC Nod Jul 16 / Zacks.com - Paid Partner Co	content eads Toward Closing,	Emission by 2022			
ERC Approval lul 16 / Zacks.com - Paid Partner Cr Joominion & SCANA Merger He Sets FERC Nod lul 16 / Zacks.com - Paid Partner Cr See All AQN News	content eads Toward Closing,	Emission by 2022 Jul 13 / Zacks.com - Paid Partner Content 4 Utility Stocks to Buy as US-China T Escalates			
FERC Approval Juli 16 / Zacks.com - Paid Partner Cr Dominion & SCANA Merger He Jets FERC Nod Juli 16 / Zacks.com - Paid Partner Cr See All AQN News Today's Trading	content eads Toward Closing,	Emission by 2022 Jul 13 / Zacks.com - Paid Partner Content 4 Utility Stocks to Buy as US-China T Escalates Jul 13 / Zacks.com - Paid Partner Content			
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FERC Approval UII 16 / Zacks.com - Paid Partner Ci Dominion & SCANA Merger He Gets FERC Nod UII 16 / Zacks.com - Paid Partner Ci See All AQN News Today's Trading Previous close Today's open Day's range Volume Average volume (3 months)	eontent eads Toward Closing, content 9.57 9.52 - 9.61 7,732 229,444	Emission by 2022 Jul 13 / Zacks.com - Paid Partner Content 4 Utility Stocks to Buy as US-China T Escalates Jul 13 / Zacks.com - Paid Partner Content Growth & Valuation Earnings growth (last year) Earnings growth (last year) Earnings growth (next 5 years) Revenue growth (last year) P/E ratio	ade War +11.35% +17.60% +83.56% 26.4		
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ERC Approval Util 16 / Zacks.com - Paid Partner Ci Dominion & SCANA Merger He Sets FERC Nod Util 16 / Zacks.com - Paid Partner Ci See All AQN News Today's Trading Previous close Today's open Day's range //olume Average volume (3 months) Warket cap Data Competitors	Content eads Toward Closing, content 9.57 9.52 - 9.61 7,732 229,444 \$4.2B eas of 1:50pm ET, 07/18/2018	Emission by 2022 Jul 13 / Zacks.com - Paid Partner Content 4 Utility Stocks to Buy as US-China T Escalates Jul 13 / Zacks.com - Paid Partner Content Earnings growth (last year) Earnings growth (last year) Earnings growth (this year) Earnings growth (this year) Earnings growth (this year) Pice/Sales Price/Book Financials	*11.35% +11.35% +17.60% +83.56% 26.4 2.83		
ERC Approval Juli 16 / Zacks.com - Paid Partner Ci Dominion & SCANA Merger He Gets FERC Nod Sets FERC Nod See All AQN News Today's Trading Previous close Today's open Day's range /olume Average volume (3 months) Market cap Data	content eads Toward Closing, content 9.57 9.52 - 9.61 7,732 229,444 \$4.2B eas of 1:50pm ET, 07/18/2018	Emission by 2022 Jul 13 / Zacks.com - Paid Partner Content 4 Utility Stocks to Buy as US-China T Escalates Jul 13 / Zacks.com - Paid Partner Content Earnings growth (last year) Earnings growth (last year) Earnings growth (this year) Earnings growth (this year) Earnings growth (this year) Pice/Sales Price/Sales Price/Book Financials Next reporting date	*11.35% +11.35% +17.60% +83.56% 26.4 2.83		
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ERC Approval Util 16 / Zacks.com - Paid Partner Ci Dominion & SCANA Merger He Gets FERC Nod Util 16 / Zacks.com - Paid Partner Ci See All AQN News Today's Trading Previous close Foday's open Day's range //olume Average volume (3 months) Warket cap Data Competitors POR Portland General Ele CTEEP Companhia de T BKH Black Hills Corp DA Idacorp Inc Data	Content Content Content Content 9.57 9.52 - 9.61 7,732 229,444 \$4.2B x4.2B x4.25 x4.42 x4.21 x	Emission by 2022 Jul 13 / Zacks.com - Paid Partner Content 4 Utility Stocks to Buy as US-China T Escalates Jul 13 / Zacks.com - Paid Partner Content Earnings growth (last year) Earnings growth (last year) Earnings growth (last year) Earnings growth (next 5 years) Revenue growth (last year) P/E ratio Price/Sales Price/Book Financials Next reporting date EPS forecast (this quarter) Annual revenue (last year) Annual profit (last year)	*11.35% +11.35% +17.60% +83.56% 26.4 2.83 1.66 \$1.5B \$148.8M		
FERC Approval Jul 16 / Zacks.com - Paid Partner Ci Dominion & SCANA Merger He Gets FERC Nod Jul 16 / Zacks.com - Paid Partner Ci See All AQN News Today's Trading Previous close Today's open Day's range Volume Average volume (3 months) Market cap Data Competitors POR Portland General Ele - CTEEP Companhia de T BKH Black Hills Corp IDA Idacorp Inc Data	Content Content Content Content 9.57 9.52 - 9.61 7,732 229,444 \$4.2B x4.2B x4.25 x4.42 x4.21 x	Emission by 2022 Jul 13 / Zacks.com - Paid Partner Content 4 Utility Stocks to Buy as US-China T Escalates Jul 13 / Zacks.com - Paid Partner Content Earnings growth (last year) Earnings growth (last year) Earnings growth (this year) Earnings growth (this year) Earnings growth (this year) P/E ratio Price/Sales Price/Book Financials Next reporting date EPS forecast (this quarter) Annual revenue (last year) Annual profit (last year) Net profit margin	rade War +11.35% +17.60% +83.56% 26.4 2.83 1.66 2.83 1.66 \$148.8M 9.73%		
Today's Trading Previous close Today's open Day's range Volume Average volume (3 months) Market cap Data Competitors POR Portland General Ele EVEN POR Portland General Ele BKH Black Hills Corp Data Poffile Sector	Content sads Toward Closing, content 9.57 9.52 - 9.61 7,732 229,444 \$4.28 as of 1:50pm ET, 07/18/2018 *0.45 *1.05% -4.80 -7.64% -0.60 -0.99% -0.30 *0.32% ras of 1:52pm ET, 07/18/2018 Utilities	Ension by 2022 Jul 13 / Zacks.com - Paid Partner Content 4 Utility Stocks to Buy as US-China T Escalates Jul 13 / Zacks.com - Paid Partner Content 6 Annual growth (last year) Earnings growth (last year) Earnings growth (last year) Picariso Price/Sales Price/Book Financials Next reporting date EPS forecast (this quarter) Annual revenue (last year) Net profit (last year) Net profit margin	+11.35% +11.35% +17.60% +83.56% 26.4 2.83 1.66 \$1.5B \$148.8M 9.73%		
FERC Approval Util 6 / Zacks.com - Paid Partner Ci Dominion & SCANA Merger He Gets FERC Nod Util 16 / Zacks.com - Paid Partner Ci See All AQN News Today's Trading Previous close Today's open Day's range Volume Average volume (3 months) Market cap Data Competitors POR Portland General Ele CTEEP Companhia de T BKH Black Hills Corp IDA Idacorp Inc Data Profile Sector Industry	Content sads Toward Closing, content 9.57 9.52 - 9.61 7,732 229,444 \$4.28 ras of 1:50pm ET, 07/18/2018 *0.45 +1.05% 4.80 -7.64% -0.60 -0.99% -0.32 -0.32% ras of 1:52pm ET, 07/18/2018 *0.45% -0.30 -0.32% ras of 1:52pm ET, 07/18/2018	Ension by 2022 Jul 13 / Zacks.com - Paid Partner Content 4 Utility Stocks to Buy as US-China T Escalates Jul 13 / Zacks.com - Paid Partner Content Automatic Stress Jul 13 / Zacks.com - Paid Partner Content Growth & Valuation Earnings growth (last year) Earnings growth (last year) Earnings growth (last year) Partner Content P/E ratio Price/Book Einancials Next reporting date EPS forecast (this quarter) Annual profit (last year) Net profit margin Forecasts Net profit margin	+11.35% +11.35% +17.60% +83.56% 26.4 2.83 1.66 \$1.5B \$148.8M 9.73%		
FERC Approval Jul 16 / Zacks.com - Paid Partner Ci Dominion & SCANA Merger He Gets FERC Nod Jul 16 / Zacks.com - Paid Partner Ci See All AQN News Today's Trading Previous close Today's open Day's range Volume Average volume (3 months) Market cap Data Competitors POR Portland General Ele - CTEEP Companhia de T BKH Black Hills Corp IDA Idacorp Inc Data	Content sads Toward Closing, content 9.57 9.52 - 9.61 7,732 229,444 \$4.28 as of 1:50pm ET, 07/18/2018 *0.45 *1.05% -4.80 -7.64% -0.60 -0.99% -0.30 *0.32% ras of 1:52pm ET, 07/18/2018 Utilities	Emission by 2022 Jul 13 / Zacks.com - Paid Partner Content 4 Utility Stocks to Buy as US-China T Escalates Jul 13 / Zacks.com - Paid Partner Content Growth & Valuation Earnings growth (last year) Earnings growth (last year) Earnings growth (last year) Pariner Sorowth (last year) Price/Book Financials Next reporting date EPS forecast (lhis quarter) Annual revenue (last year) Net profit margin Forecasts Net TORICAL Forecast Partner Sorter Partner Sorter Proteint Torre Annual profit (last year) Net profit margin	+11.35% +17.60% +83.56% 26.4 2.83 1.66 2.83 1.66 \$1.5B \$148.8M 9.73%		
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FERC Approval Util 16 / Zacks.com - Paid Partner Ci Dominion & SCANA Merger He Gets FERC Nod Util 16 / Zacks.com - Paid Partner Ci See All AQN News Today's Trading Previous close Today's open Day's range Volume Average volume (3 months) Market cap Data Competitors POR Portland General Ele CTEEP Companhia de T BKH Black Hills Corp Data Profile Sector Industry Chief Executive Officer & Director	Content sads Toward Closing, content 9.57 9.55 9.52 - 9.61 7,732 229,444 \$4.2B ************************************	Emission by 2022 Jul 13 / Zacks.com - Paid Partner Content 4 Utility Stocks to Buy as US-China T Escalates Jul 13 / Zacks.com - Paid Partner Content Growth & Valuation Earnings growth (last year) Earnings growth (last year) Earnings growth (last year) Earnings growth (last year) Earnings growth (last year) P/E ratio Price/Sales Price/Book Financials Next reporting date EPS forecast (this quarter) Annual revenue (last year) Annual revenue (last year) Net profit margin Forecasts NISTORICAL FORECAST \$13 12 11 11 11 11 11 11 11 11 11	+11.35% +11.35% +17.60% +83.56% 26.4 2.83 1.66 \$1.5B \$148.8M 9.73%		

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Alliant Energy Cor	P (NYSE:LNT)			
		Real-Time Quotes	Watch List Set Alert	The Motley Fool Paid P
42.65 BATS BZX Real-Time Price As of 1:57pm ET	-0.23 / -0.5 Today's Change	54% 36.84 45 52-Week Range	5.55 +0.09% Year-to-Date	You Can Still Buy This "Millionaire Make Stock
Quote Profile Ne	ews Charts	Forecasts Financials Sharef	nolders Competitors	Bitcoin Up 30,000X Here's Your
5 days vs. Utilitie	s News	Add ticker	Chart	Backdoor In
k			43.20	Motley Fool Issues Rare Triple-Buy Ale
Marine	m	MAN MAN PREVIOUS	42,60	This Stock Could Be Like Buying Amaz for \$3.19
Thu 7/12 Fri 7/13 +0.03 +0.07% -0.21 -0.4	Mon 7/16 19% -0.15 -0.38	Tue 7/17 Wed 7/	18 -0.54%	
atest LNT News Press Illiant (LNT) Cuts Emissions, 1 Vind Farm JI 17 / Zacks.com - Paid Partner C	to Build 210 MW lowa	Brookfield Infrastructure (BIP) L Adds 5.5% in Session Jul 06 / Zacks.com - Paid Partner Co		
See All LNT News				
oday's Trading		Growth & Valuation		
revious close	42.8	8 Earnings growth (last year)	+21.34%	
oday's open	42.8		+10.07%	
ay's range	42.41 - 42.8		+5.86%	
olume	38,30		+1.87%	
verage volume (3 months)	1,659,29		20.5	
larket cap Data	\$9.6 as of 1:57pm ET, 07/18/20		2.89 2.29	
competitors		Financials		
	Today's Today change % chang	e Next reporting date	August 2, 2018	
VRG Evergy Inc	-0.52 -0.93		\$0.43	
LE ALLETE Inc	-0.29 -0.37		\$3.4B	
VA Avista Corp	-0.18 -0.36		\$467.5M	
WE NorthWestern Corp	-0.53 -0.91 ⁴ as of 1:56pm ET, 07/18/20 ⁻		13.78%	
Profile		Forecasts		
ector	Utilitie	S HISTORICAL FORE	CAST HIGH \$45.00	
ndustry	Electric Utilitie	s \$45.0 A \$42.65	+5.5% MEDIAN	
hairman & Patri hief Executive Officer	icia Leonard Kamplin	g 42.5 / /	\$42.00	
resident	John O. Larse		\$37.00	
corporate headquarters	Madison, Wisconsi	n ≪Last 12 Months Next 1	-13.2%	

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	IYSE:AEE)			a Wateh List	
		I	Real-Time Quotes	o Watch List Set Alert	The Motley Fool Paid Paid Paid Paid Paid Paid Paid Paid
61.10 BATS BZX Real-Time Price	-0.17 Today's Cl	/ -0.28%	51.89 6	4.89 +3.58% Year-to-Date	You Can Still Buy This "Millionaire Make
As of 1:57pm ET	loday's Ci	nange	52-Week Range	fear-to-Date	Stock
Quote Profile	News C		Add ticker	holders Competitors	Bitcoin Up 30,000X Here's Your Backdoor In
			AL M		Motley Fool Issues Rare Triple-Buy Ale
mm	mm	M	M PREVIOUS	61.40 s close 61.27 61.20	This Stock Could Be Like Buying Amaz
Wm I				AV 61.00	for \$3.19
			5 DAY CHANC	GE -0.46%	
Thu 7/12 Fri 7/13 -0.01 -0.02% +0.02		n 7/16 05 -0.08%	Tue 7/17 Wed 7/ -0.07 -0.11% -0.17	/18 -0.28%	
_atest AEE News Pr	ress Releases				
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Corporate headquarters Orange, Connecticut	Jul 11 / Zacks.com - Paid Partner Content 4 Reasons to Add Atlantica Yield (AY) to Your Portfolio Now Jul 10 / Zacks.com - Paid Partner Content See All AGR News Today's Trading Previous close 52.27 Today's open 52.86 Day's range 52.25 - 52.86 Volume 8,689 Average volume (3 months) 482,920 Market cap \$16.28 Data as of 1:58pm ET, 07/18/2018 Competitors FTS Fortis Inc -0.17 -0.52% AEE Ameren Corp -0.15 -0.24% FE FirstEnergy Corp -0.61 -1.68% ETR Entergy Corp -0.11 -0.52% AEE Ameren Corp -0.15 -0.24% FE FirstEnergy Corp -1.11 -1.36% Data as of 1:58pm ET, 07/18/2018 Profile Sector Utilities Sector Utilities Chief Executive Officer & James P. Torgerson Director	Jul 05 / Zacks.com - Paid Partner Content Growth & Valuation Earnings growth (last year) -33.57 Earnings growth (last year) +9.03 Earnings growth (next 5 years) +9.77 Revenue growth (last year) -0.93 P/E ratio -0.93 P/E	% % 20 33 37 77 88 89 98 M %
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Partner Offers

Paid Partner SmartAsset

Paid Partner

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				Page
Black Hills Corp (N)	(SE:BKH)	Add to t	Watch List Set Alert	
Delayed Data	-0.57 / -0.94% iday's Change	50.49 71.01 52-Week Range	+0.35% Year-to-Date	The Motley Fool Paid Pa You Can Still Buy This "Millionaire Maker
Quote Profile Net	ws Charts	Forecasts Financials Shareho	Iders Competitors	Stock
* 5 datyti vs. Utilities	News	Add ticker	Chart	Bitcoin Up 30,000X Here's Your Backdoor In
			62.00	Motley Fool Issues Rare Triple-Buy Alert
1. manur	Lm.	ontrue .	£1.50	
	Www	PREVIOUS	CLOSE 60.89 61.00	This Stock Could Be Like Buying Amazo for \$3.19
		5 DAY CHANGE	-3.24% 60.50	
Thu 7/12 Fri 7/13 -0.94 -1.51% -0.08 -0.13	Mon 7/16 3% -0.12 -0.20	Tue 7/17 Wed 7/18		
Latest BKH News Press	Releases			
FirstEnergy's (FE) Unit to Inves BPU's Nod Jul 16 / Zacks.com - Paid Partner Co See All BKH News				
Today's Trading		Growth & Valuation		
Previous close	60.89	Earnings growth (last year)	+134.31%	
Today's open	60.78	Earnings growth (this year)	+1.01%	
Day's range	60.23 - 61.06	Earnings growth (next 5 years)	+4.89%	
Volume	166,811	Revenue growth (last year)	+7.57%	
Average volume (3 months)	480,633	P/E ratio	13.1	
Market cap Data a	\$3.1B as of 1:46pm ET, 07/18/2018	Price/Sales Price/Book	1.97 1.82	
Competitors		Financials		
	Today's Today's change % change	Next reporting date	August 7, 2018	
HE Hawaiian Electric In	+0.10 +0.29%	EPS forecast (this quarter)	\$0.40	
CTEEP Companhia de T	-4.80 -7.64%	Annual revenue (last year)	\$1.7B	
AQN Algonquin Power & Ut	+0.03 +0.31%	Annual profit (last year)	\$177.0M	
PNM PNM Resources Inc	-0.33 -0.86% as of 2:01pm ET, 07/18/2018	Net profit margin	11.55%	
Profile		Forecasts		
Sector	Utilities	HISTORICAL FORECA	ST	
Industry	Electric Utilities	\$80	HGH	
Chairman &	David R. Emery	70 ~~	\$62.00 +2.8%	
Chief Executive Officer		\$60.31	MEDIAN \$60.00	
President & Chief Operating Officer	Linden R. Evans	60 Mun	-0.5%	
Corporate headquarters Rap	id City, South Dakota	Last 12 Months Next 12	\$57.00 Months > -5.5%	
Partner Offers	Paid Partner	SmartAsset	Paid Partner	
		Hire a pro: compare to advisors in your area	op 3 financial	

Top Bank Announces 1.65% APY Savings Account

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CMS Energy Corp (NYSE:CMS)			
		Real-Time Quotes	atch List Set Alert	The Metley Feel
47.36				The Motley Fool Paid Paid Paid Paid Paid Paid Paid Paid
HAT . 30 BATS BZX Real-Time Price As of 2:03pm ET	-0.24 / -0.50 Today's Change)% 40.48 50.88 52-Week Range	+0.13% Year-to-Date	You Can Still Buy This "Millionaire Maker Stock
Quote Profile News	charts	Forecasts Financials Sharehold	ers Competitors	Bitcoin Up 30,000X Here's Your Backdoor In
5 days vs. Utilities	News	Add ticker	Chart	
. m.M			46.00	Motley Fool Issues Rare Triple-Buy Alert
Mr. M. Mr.	mpp	M PREVIOUS CL	47,80 DSE 47.60 47,80 47,80 47,40	This Stock Could Be Like Buying Amazon for \$3.19
	hands	5 DAY CHANGE	-1.11% 47.20	
Thu 7/12 Fri 7/13 +0.03 +0.06% -0.07 -0.15%	Mon 7/16 -0.14 -0.299	Tue 7/17 Wed 7/18 6 -0.11 -0.23% -0.24 -0.8	0%	
Latest CMS News Press F	Releases			
The Zacks Analyst Blog Highlight Power, CMS, Ameren and Brookfi	s: Algonquin ield Renewa	FirstEnergy (FE) Unit to Invest \$4M Operation		
Jul 16 / Zacks.com - Paid Partner Cont		Jul 12 / Zacks.com - Paid Partner Conter		
4 Utility Stocks to Buy as US-Chir Escalates	na Trade War	Here's Why You Should Add CMS E Your Portfolio	energy (CMS) to	
Jul 13 / Zacks.com - Paid Partner Cont See All CMS News	ent	Jul 05 / Zacks.com - Paid Partner Conter	ıt	
Today's Trading		Growth & Valuation		
Previous close	47.60	Earnings growth (last year)	-17.17%	
Today's open	47.59	Earnings growth (this year)	+7.42%	
Day's range	47.14 - 47.59	Earnings growth (next 5 years)	+7.00%	
Volume	247,231	Revenue growth (last year)	+2.88%	
Average volume (3 months) Market cap	2,715,459 \$12.8B	P/E ratio Price/Sales	26.5	
	of 2:03pm ET, 07/18/2018		2.82	
Competitors		Financials		
	Today's Today's change % change	Next reporting date	July 26, 2018	
ETR Entergy Corp	-1.21 -1.48%	EPS forecast (this quarter)	\$0.36	
FE FirstEnergy Corp	-0.64 -1.77%	Annual revenue (last year)	\$6.6B	
CNP CenterPoint Energy I	-0.21 -0.76%	Annual profit (last year)	\$460.0M	
AEE Ameren Corp	-0.24 -0.39% of 2:03pm ET, 07/18/2018	Net profit margin	6.99%	
	2. 2. copin 2 1, on Tor2010	Formanata		
Profile		Forecasts HISTORICAL FORECAS	r	
Sector	Utilities Electric Utilities	HISTORICAL FORECAS	\$52.00	
Industry President, Chief Executive Officer &		647.30	+9.8% MEDIAN	
Director	. и апола п. горре	50 M \$47.36	\$48.75	
Senior Vice President- Operations	Garrick J. Rochow	45 WWW	LOW \$40.00	
Corporate headquarters	Jackson, Michigan	«Last 12 Months Next 12 M	-15 5%	

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Partner Offers	Paid Partner	SmartAsset Hire a pro: compare to advisors in your area	Paid Partner p 3 financial	
Corporate headquarters	New York, New York	Lest 12 Months Next 12 Months Next 12 Months	-9.6%	
enior Vice President		75	\$71.00	
Chief Executive Officer Chief Financial Officer &	Robert N. Hoglund	an home	\$75.50	
Chairman, President &	John J. McAvoy	85 1 \$78.55	+4.4% MEDIAN	
ndustry	Electric Utilities	\$90 _A	HIGH \$82.00	
ector	Utilities	HISTORICAL FORECAS	st	
rofile		Forecasts		
Data	as of 2:04pm ET, 07/18/2018			
CG PG&E	-0.48 -1.13%	Net profit margin	12.68%	
Engie Brasil Energia	-0.70 -1.94%	Annual profit (last year)	\$1.5B	
EG Public Service Enter	-0.11 -0.21%	Annual revenue (last year)	\$12.0B	
EL Xcel Energy Inc	-0.29 -0.63%	EPS forecast (this quarter)	\$0.56	
	Today's Today's change % change	Next reporting date	August 3, 2018	
ompetitors		Financials		
Data	as of 2:03pm ET, 07/18/2018	Price/Book	1.54	
arket cap	\$23.8B	Price/Sales	2.18	
verage volume (3 months)	1,822,441	P/E ratio	15.6	
olume	37,396	Revenue growth (last year)	-0.31%	
ay's range	78.28 - 79.10	Earnings growth (next 5 years)	+3.53%	
oday's open	78.90	Earnings growth (this year)	+3.53%	
revious close	78.96	Earnings growth (last year)	+19.90%	
oday's Trading		Growth & Valuation		
lo recent news for Cons	olidated Edison Ind	c .		
atest ED News Press F	Releases			
hu 7/12 Fri 7/13 0.19 +0.24% +0.24 +0.	Mon 7/16 30% -0.26 -0.33%	Tue 7/17 Wed 7/18	.52%	
		5 DAY CHANGE	78.50	
N.M. M.	A A	WPREVIOUSC	105E 78.96 79.00 78.75	This Stock Could Be Like Buying Amazo for \$3.19
4 m.M.N	WW I.M	My Mr.	79.25	Motley Fool Issues Rare Triple-Buy Ale
5 days vs. Utilities	s News	Add ticker	Chart	Backdoor In
Quote Profile Ne	ews Charts	Forecasts Financials Sharehold	ders Competitors	Bitcoin Up 30,000X Here's Your
ATS BZX Real-Time Price s of 2:03pm ET	-0.41 / -0.52 Today's Change	9% 71.12 89.7 52-Week Range	o -7.53% Year-to-Date	You Can Still Buy This "Millionaire Make Stock
78.55		0/	7 500/	The Motley Fool Paid P
		Real-Time Quotes Add to V	Vatch List Set Alert	
	(NYSEED)			
Jui sullateu Euis	UTTILC (NYSE:ED)			
Consolidated Edis	on Inc			

Top Bank Announces 1.65% APY Savings Account

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•••	'SE:DTE)			
		Real-Time Quotes Add to	Watch List Set Alert	The Motley Fool Paid Pa
106.01 BATS BZX Real-Time Price As of 1:06pm ET	-0.37 / -0.3 Today's Change	5% 94.25 11 52-Week Range	16.74 -3.17% Year-to-Date	You Can Still Buy This "Millionaire Make Stock
Quote Profile Ne	ews Charts	Forecasts Financials Shareh	nolders Competitors	Bitcoin Up 30,000X Here's Your
5 days 📃 vs. Utilitie	s News	Add ticker	Chart	Backdoor In
		MA MAMPREVIOUS	CLOSE 106.38 106.50	Motley Fool Issues Rare Triple-Buy Aler
MMMM	www.	Y W W	108.25 106.00 105.75	This Stock Could Be Like Buying Amazo for \$3.19
M.M		5 DAY CHANG	GE 0.31% 105.50	
Thu 7/12 Fri 7/13	Mon 7/16	Tue 7/17 Wed 7/1		
Composed & CO Investment Ad FireEye Inc, TE Connectivity, C Iul 13 / GuruFocus News - Paid Pai See All DTE News	rane Co, Sel	Crouth ? \/shuston		
Today's Trading		Growth & Valuation		
Previous close	106.38		+30.63%	
īoday's open	106.19		+3.46%	
Day's range	105.57 - 106.54		+4.87% +15.95%	
/olume Average volume (3 months)	26,689 1,235,009	• • • • •	+15.95%	
Market cap	\$18.6B		1.57	
	as of 2:06pm ET, 07/18/2018		1.93	
Competitors		Financials		
	Today's Today's change % change		July 25, 2018	
S Eversource Energy	-0.37 -0.63%		\$0.96	
VEC WEC Energy Group Inc	-0.33 -0.51%		\$12.5B \$1.1B	
KEP Korea Electric Power	-0.33 -2.33%	Net profit margin	\$1.1B 9.09%	
	as of 2:06pm ET, 07/18/2018			
Profile		Forecasts		
Sector	Utilities	HISTORICAL FORE	CAST HIGH	
ndustry	Electric Utilities	\$120	\$114.00 +7.6%	
Chairman & Chief Executive Officer	Gerard M. Anderson	110 \$105.99	MEDIAN \$107.75 +1.7%	
President & Chief Operating Officer	Jerry Norcia	300 WWW	+1.7% LOW \$97.00 -8.5%	
	Detroit, Michigan	<last 12="" 1<="" months="" next="" td=""><td></td><td></td></last>		
Corporate headquarters				
Corporate headquarters				

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Top Bank Announces 1.65% APY Savings Account

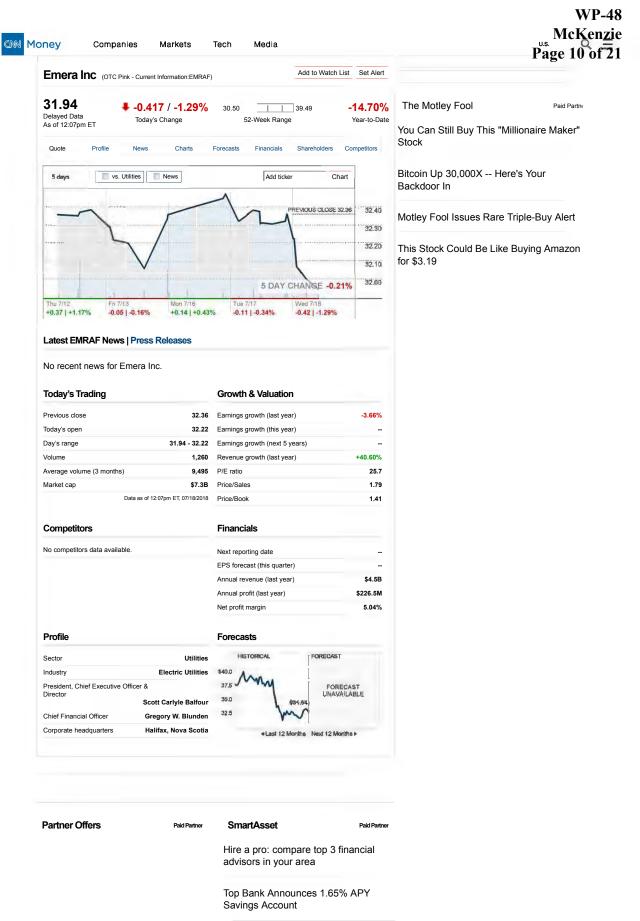
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	Real-Time Quotes		
~ ~ ~		Th	e Motley Fool Paid Paid
80.29 BATS BZX Real-Time Price As of 1:07pm ET	45% 71.96 91.80 52-Week Range	-4.51% You Year-to-Date	Can Still Buy This "Millionaire Maker ck
Quote Profile News Charts	Forecasts Financials Shareholders		oin Up 30,000X Here's Your kdoor In
5 days vs. Utilities News	Add ticker Cha		
	WWW WWREVIOUS CLOSE B	50 BO	ley Fool Issues Rare Triple-Buy Alert
monterman	MM		s Stock Could Be Like Buying Amazo \$3.19
	5 DAY CHANGE -0.10	80.20 80.00	
Thu 7/12 Fri 7/13 Mon 7/16 +0.12 +0.15% +0.12 +0.15% +0.16 +0	Tue 7/17 Wed 7/18 .20% -0.13 -0.16% -0.35 -0.43%		
Latest DUK News Press Releases		1	
Alliant (LNT) Cuts Emissions, to Build 210 MW low	a Duke Energy Supports Green Energy Ou	out in South	
Wind Farm Jul 17 / Zacks.com - Paid Partner Content	Carolina Jul 13 / Zacks.com - Paid Partner Content		
FirstEnergy's (FE) Unit to Invest \$400M, Seeks BPU's Nod Jul 16 / Zacks.com - Paid Partner Content	Top Stock Reports for Apple, NVIDIA & L Martin Jul 11 / Zacks.com - Paid Partner Content	ckheed	
Dominion & SCANA Merger Heads Toward Closing Gets FERC Nod	New York	ect Buyout in	
Jul 16 / Zacks.com - Paid Partner Content Duke Energy to Construct \$250M LNG Storage in North Carolina Jul 16 / Zacks.com - Paid Partner Content	Jul 11 / Zacks.com - Paid Partner Content Duke Energy (DUK) Announces 4.2% Qu Dividend Hike Jul 09 / Zacks.com - Paid Partner Content	rterly	
See All DUK News			
See All DOR News			
	Growth & Valuation		
Today's Trading	65 Earnings growth (last year)	+13.27%	
Today's Trading Previous close 80 Today's open 80	65 Earnings growth (last year)66 Earnings growth (this year)	+13.27% +3.37% +5.00%	
Today's Trading Previous close 80 Today's open 80 Day's range 79.90 - 80	 65 Earnings growth (last year) 66 Earnings growth (this year) 75 Earnings growth (next 5 years) 	+3.37%	
Today's Trading Previous close 80 Today's open 80 Day's range 79.90 - 80 Volume 275,1	 Earnings growth (last year) Earnings growth (this year) Earnings growth (next 5 years) Revenue growth (last year) 	+3.37% +5.00%	
Today's Trading Previous close 80 Today's open 80 Day's range 79.90 - 80 Volume 275,1 Average volume (3 months) 3,660,5 Market cap \$54.	 Earnings growth (last year) Earnings growth (this year) Earnings growth (next 5 years) Revenue growth (last year) P/E ratio Price/Sales 	+3.37% +5.00% +3.57% 19.0 2.50	
Today's Trading Previous close 80 Today's open 80 Day's range 79.90 - 80 Volume 275,1 Average volume (3 months) 3,660,5 Market cap \$54. Data as of 2.06pm ET, 07/182	 Earnings growth (last year) Earnings growth (this year) Earnings growth (next 5 years) Revenue growth (last year) P/E ratio Price/Sales Price/Book 	+3.37% +5.00% +3.57% 19.0	
Today's Trading Previous close 80 Today's open 80 Day's range 79.90 - 80 Volume 275,1 Average volume (3 months) 3,660,5 Warket cap \$54. Data as of 2:06pm ET, 07/18/2 Competitors	 Earnings growth (last year) Earnings growth (this year) Earnings growth (next 5 years) Earnings growth (last year) P/E ratio P/E ratio Price/Sales Price/Book 	+3.37% +5.00% +3.57% 19.0 2.50 1.31	
Today's Trading Previous close 80 Today's open 80 Day's range 79.90 - 80 Volume 275,1 Average volume (3 months) 3,660,5 Market cap \$54. Data as of 2.06pm ET, 07/18/2 Competitors	65 Earnings growth (last year) 66 Earnings growth (this year) 75 Earnings growth (next 5 years) 04 Revenue growth (last year) 9/E ratio 68 Price/Sales 9/ice/Book Financials 9/se Next reporting date	+3.37% +5.00% +3.57% 19.0 2.50 1.31	
Today's Trading 80 Today's open 80 Day's range 79.90 - 80 Day's range 79.90 - 80 Volume 275,1 Average volume (3 months) 3,660,5 Market cap \$54. Data as of 2.06pm ET, 07/18/2 Competitors Today's	66 Earnings growth (last year) 66 Earnings growth (last year) 75 Earnings growth (next 5 years) 04 Revenue growth (last year) 9/E ratio 68 Price/Sales 9rice/Book Financials 98 Next reporting date 5% EPS forecast (this quarter)	+3.37% +5.00% +3.57% 19.0 2.50 1.31 uust 2, 2018 \$1.09	
Today's Trading 80 Today's open 80 Day's range 79.90 - 80 Day's range 79.90 - 80 Volume 275,1 Average volume (3 months) 3,660,5 Market cap \$54. Data as of 2.06pm ET, 07/18/2 Competitors Today's	66 Earnings growth (last year) 66 Earnings growth (last year) 75 Earnings growth (this year) 76 Earnings growth (next 5 years) 77 Arcel (ast year) 78 P/E ratio 79 P/E ratio 79 P/E ratio 70 P/E ratio 70 P/E ratio 70 P/E ratio 70 P/E ratio 71 P/E ratio 72 P/E ratio 73 P/E ratio 74 P/E ratio 75 P/E ratio 75 P/E ratio 76 Price/Book 77 Price/Book 78 Price/Book 79 Price/Book 79 Price/Book 79 Price/Book 79 Price/Book 70 Price/Book 70 Price/Book 70 Price/Book 70 Price/Book 71 Price/Book 71 Price/Book 72 Price/Book 73 Price/Book 74 Price/Book 75 Price/Book 75 Price/Book 75 Price/Book 76 Price/Book 76 Price/Book 77 Price/Book 76 Price/Book 77 Price/Book 77 Price/Book 78 Price/Book 79 Price/Book 79 Price/Book 70	+3.37% +5.00% +3.57% 19.0 2.50 1.31 uust 2, 2018 \$1.09 \$23.6B	
Today's Trading 80 Today's open 80 Day's range 79.90 - 80 Day's range 79.90 - 80 Volume 275,1 Average volume (3 months) 3,660,5 Market cap \$54. Data as of 2.06pm ET, 07/18/2 Data as of 2.06pm ET, 07/18/2 Competitors EXC Exelon -0.11 -0.2 PCG PG&E -0.47 -1.11 ED Consolidated Edison -0.43 -0.5 XEL Xcel Energy Inc -0.30 -0.6	66 Earnings growth (last year) 66 Earnings growth (last year) 75 Earnings growth (next 5 years) 76 Earnings growth (next 5 years) 77 Earning growth (last year) 78 P/E ratio 79 P/E ratio 79 P/E ratio 70 P/E ratio 70 P/E ratio 70 P/E ratio 71 P/E ratio 72 P/E ratio 73 P/E ratio 74 P/E ratio 75 P/	+3.37% +5.00% +3.57% 19.0 2.50 1.31 uust 2, 2018 \$1.09	
Today's Trading 80 Today's open 80 Day's range 79.90 - 80 Volume 275,1 Average volume (3 months) 3,660,5 Market cap \$54. Data as of 2.06pm ET, 07/18/2 Data as of 2.06pm ET, 07/18/2 Competitors Today's (% char EXC Exelon -0.11 -0.22 PCG PG&E -0.47 -1.11 ED Consolidated Edison -0.43 -0.51 XEL Xcel Energy Inc -0.30 -0.61	66 Earnings growth (last year) 66 Earnings growth (last year) 75 Earnings growth (next 5 years) 76 Earnings growth (next 5 years) 77 Earning growth (last year) 78 P/E ratio 79 P/E ratio 79 P/E ratio 70 P/E ratio 70 P/E ratio 70 P/E ratio 71 P/E ratio 72 P/E ratio 73 P/E ratio 74 P/E ratio 75 P/	+3.37% +5.00% +3.57% 19.0 2.50 1.31 yust 2, 2018 \$1.09 \$23.6B \$3.1B	
Today's Trading 80 Previous close 80 Today's open 80 Day's range 79.0 80 Day's range 79.0 80 Volume 275,1 Average volume (3 months) 3,660,5 Market cap \$54. Data as of 2.08pm ET, 07/182 Competitors EXC Exelon -0.11 -0.22 PCG PG&E -0.47 -1.11 ED Consolidated Edison -0.43 -0.6 KEL Xcel Energy Inc -0.30 -0.6 Data as of 2.08pm ET. 07/18/2 Data as of 2.08pm ET. 07/18/2	65 Earnings growth (last year) 66 Earnings growth (this year) 75 Earnings growth (next 5 years) 76 Revenue growth (last year) 77 P/E ratio 78 Price/Sales 79 Price/Book 79 Price/Book 79 Next reporting date 79 Annual revenue (last year) 70 Annual revenue (last year) 70 Annual profit (last year) 70 Annual profit (margin 70 Net profit margin 78 Forecasts	+3.37% +5.00% +3.57% 19.0 2.50 1.31 yust 2, 2018 \$1.09 \$23.6B \$3.1B	
Today's Tracking Previous close 80 Today's open 80 Day's range 79.90 - 80 Volume 275,1 Average volume (3 months) 3,660,5 Market cap \$54. Data as of 2.06pm ET, 07/182 Competitors 1.01 EXC Exelon -0.11 -0.22 PCG PG&E -0.47 -1.11 ED Consolidated Edison -0.43 -0.53 XEL Xcel Energy Inc -0.30 -0.68 Data as of 2.06pm ET, 07/182 Data as of 2.06pm ET, 07/182	66 Earnings growth (last year) 66 Earnings growth (this year) 75 Earnings growth (next 5 years) 04 Revenue growth (last year) 75 Earnings growth (last year) 76 Earnings growth (last year) 75 Earnings growth (last year) 76 Earnings growth (last year) 75 Earnings growth (last year) 76 Price/Sales 918 Price/Book 79 Next reporting date 79 Annual revenue (last year) 74 Annual profit (last year) 75 Net profit margin 76 Forecasts 77 Forecasts	+3.37% +5.00% +3.57% 19.0 2.50 1.31 uust 2, 2018 \$1.09 \$23.6B \$3.1B 13.01%	
Today's Trading 80 Today's open 80 Day's range 79.90 - 80 Day's range 79.90 - 80 Volume 275,1 Average volume (3 months) 3,660,5 Market cap \$54. Data as of 2:06pm ET, 07/18/2 Competitors EXC Exelon -0.11 EXC Exelon -0.11 Consolidated Edison -0.43 Data as of 2:06pm ET, 07/18/2 PCG PG&E -0.47 EXC Exelon -0.11 Dota as of 2:06pm ET, 07/18/2 PCG PG&E -0.43 PCG PG&E -0.43 Data as of 2:06pm ET, 07/18/2 Profile Sector Utilit Industry Electric Utilit Chairman, President & Lynn J. Go	66 Earnings growth (last year) 66 Earnings growth (this year) 75 Earnings growth (next 5 years) 04 Revenue growth (last year) 75 Earnings growth (last year) 76 Earnings growth (last year) 75 Earnings growth (last year) 76 Earnings growth (last year) 77 P/E ratio 68 Price/Sales 97 Price/Book Yige Next reporting date Autors 80 Annual revenue (last year) 75 Annual revenue (last year) Annual profit (last year) 76 Net profit margin Forecasts Net profit margin	+3.37% +5.00% +3.57% 19.0 2.50 1.31 uust 2, 2018 \$1.09 \$23.6B \$3.1B 13.01%	
Today's Trading 80 Today's open 80 Day's range 79.90 - 80 Day's range 79.90 - 80 Volume 275,1 Average volume (3 months) 3,660,5 Market cap \$54. Data as of 2.06pm ET, 07/18/2 Competitors EXC Exelon -0.11 -0.2 PCG PG&E -0.47 -1.1 ED Consolidated Edison -0.43 -0.5 XEL Xcel Energy Inc -0.30 -0.6 Data as of 2.06pm ET. 07/18/2 Data as of 2.06pm ET. 07/18/2 Profile Sector Utilit Sector Utilit Electric Utilit Industry Electric Utilit Chairman, President & Lynn J. Go	66 Earnings growth (last year) 66 Earnings growth (this year) 75 Earnings growth (next 5 years) 04 Revenue growth (last year) 125 P/E ratio 68 Price/Sales 108 Price/Book Financials 125 P/E ratio 68 Price/Book Financials 108 Price/Book System Colspan="2">Annual revenue (last year) 126 P/S forecast (this quarter) 127 Annual profit (last year) 128 Forecasts Forecasts 129 Net profit margin 129 90 \$80.32	+3.37% +5.00% +3.57% 19.0 2.50 1.31 uust 2, 2018 \$1.09 \$23.6B \$3.1B 13.01%	
Today's Tracking Previous close 80 Today's open 80 Day's range 79.00 - 80 Volume 275,1 Average volume (3 months) 3,660,5 Market cap \$54. Data as of 2.06pm ET, 07/182 Competitors 10.11 EXC Exelon -0.11 -0.22 PCG PG&E -0.47 -1.11 ED Consolidated Edison -0.43 -0.53 XEL Xcel Energy Inc -0.30 -0.68 Data as of 2.06pm ET, 07/182 Data as of 2.06pm ET, 07/182	66 Earnings growth (last year) 66 Earnings growth (last year) 75 Earnings growth (next 5 years) 64 Revenue growth (last year) 75 Earnings growth (last year) 76 Price/Sales 77 Price/Book 78 Price/Book 79 Price/Book 79 Price/Book 79 Price/Book 79 Price/Book 70 Price/Book 71 Price/Book 70 Price/Book 71 Price/Book 71 Price/Book 72 Price/Book 73 Price/Book 74 Price/Book 75 Price/Book 75 Price/Book 75 Price/Book 76 Price/Book 77 Price/Book 76 Price/Book 77 Price/Book 77 Price/Book 78 Price/Book 79 Price/Book 79 Price/Book 70 Price	+3.37% +5.00% +3.57% 19.0 2.50 1.31 gust 2, 2018 \$1.09 \$23.6B \$3.1B 13.01%	

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Partner Offers	Pa	id Partner	SmartAsset		Paid Partner	
Executive Vice President	New Orleans, I		Last 12 Months Next	12 Months •	\$80.00 -0.7%	
Chairman & Chief Executive Officer Chief Operating Officer &	Leo F Paul D. Hin	P. Denault nenkamp	50 580.56 80 mm	4	MEDIAN \$84.25 +4.6%	
ndustry		c Utilities	\$100		\$94.00 +16.7%	
Sector		Utilities		CAST	HIGH	
Profile			Forecasts			
Da	ita as of 2:16pm ET	07/18/2018				
AGR Avangrid Inc	-0.29	-0.55%	Net profit margin		3.92%	
CMS CMS Energy Corp	-0.19	-0.40%	Annual profit (last year)		\$425.4M	
EE Ameren Corp	-0.20	-0.33%	Annual revenue (last year)		\$10.9B	
E FirstEnergy Corp	change -0.60	% change -1.65%	Next reporting date EPS forecast (this quarter)	Augus	t 1, 2018 \$1.54	
Jonipeutors	Today's	Today's		Augus	1 2019	
Competitors			Financials			
	ita as of 2:16pm ET		Price/Book		1.77	
/arket cap		\$14.2B	Price/Sales		1.35	
werage volume (3 months)		1,570,751	P/E ratio		31.6	
/olume	50.	50,620	Revenue growth (last year)		+2.80%	
loday's open Day's range	80	81.64 29 - 81.72	Earnings growth (this year) Earnings growth (next 5 years)		-10.90% -2.00%	
Previous close		81.70	Earnings growth (last year)		40.00%	
Foday's Trading			Growth & Valuation			
No recent news for Ent	ergy Corp.					
Latest ETR News Pres	s Releases					
Thu 7/12 Fri 7/13 -0.03 -0.04% -0.29 -0		n 7/16 08 -0.10%	Tue 7/17 Wed 7/ -0.11 -0.13% -1.14	18 -1.40%		
			5 DAY CHANC	₩ E -2.01%	80.50	
			h-		81.00	for \$3.19
man In	mmy,	Mar	M Wirevious	S CLOSE 81.70	82.00	This Stock Could Be Like Buying Amaz
]	Add ticker	Chart		Motley Fool Issues Rare Triple-Buy Aler
Quote Profile		harts I	Forecasts Financials Share	holders Con	petitors	Bitcoin Up 30,000X Here's Your Backdoor In
BATS BZX Real-Time Price As of 2:16pm ET	Today's C	hange	52-Week Range	Y	ear-to-Date	You Can Still Buy This "Millionaire Make Stock
80.56	↓ _1 14	/ -1.40	% 71.95 8	7.95	1.02%	The Motley Fool Paid F

Top Bank Announces 1.65% APY Savings Account

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		A -1 -1	Notob Lint Oct Als 1	
		Real-Time Quotes	Watch List Set Alert	The Motley Fool Paid P
41.83 BATS BZX Real-Time Price As of 2:18pm ET	-0.095 / -0.23 Today's Change	35.57]43.: 52-Week Range	20 +6.13% Year-to-Date	You Can Still Buy This "Millionaire Make Stock
Quote Profile Net	ws Charts	Forecasts Financials Shareho	Iders Competitors	Bitcoin Up 30,000X Here's Your
5 days 🗾 vs. Utilities	News	Add ticker	Chart	Backdoor In
1			42.40	Motley Fool Issues Rare Triple-Buy Aler
M. molum	May 1	water	42.20	This Stock Could Be Like Buying Amazo
Wi	my .	PREVIOUS	CLOSE 41 92 42.00	for \$3.19
		5 DAY CHANGE	41.80	
Thu 7/12 Fti 7/13	Mon 7/16	Tue 7/17 Wed 7/18	3	
-0.10 -0.24% +0.04 +0.0	-0.24 -0.57%	-0.23 -0.55% -0.09 -0	1.23%	
Latest EXC News Press	Releases			
lexus Investment Management lotors Co, Exelon Corp	t Inc. Buys General			
ul 13 / GuruFocus News - Paid Part See All EXC News	iner Content			
Foday's Trading		Growth & Valuation		
Previous close	41.92	Earnings growth (last year)	+225.41%	
roday's open	41.87	Earnings growth (this year)	+18.35%	
Day's range /olume	41.60 - 42.02 231,649	Earnings growth (next 5 years) Revenue growth (last year)	+4.92% +3.75%	
volume werage volume (3 months)	6,017,790	P/E ratio	+3.75%	
Market cap	\$38.9B	Price/Sales	1.12	
	as of 2:18pm ET, 07/18/2018	Price/Book	1.30	
Competitors		Financials		
Competitors	Today's Today's change % change	Financials Next reporting date	August 2, 2018	
		Next reporting date EPS forecast (this quarter)	\$0.61	
PCG PG&E ED Consolidated Edison	change % change -0.46 -1.08% -0.40 -0.51%	Next reporting date EPS forecast (this quarter) Annual revenue (last year)	\$0.61 \$33.4B	
PCG PG&E ED Consolidated Edison KEL Xcel Energy Inc	change % change -0.46 -1.08% -0.40 -0.51% -0.23 -0.50%	Next reporting date EPS forecast (this quarter) Annual revenue (last year) Annual profit (last year)	\$0.61 \$33.4B \$3.8B	
PCG PG&E ED Consolidated Edison (EL Xcel Energy Inc PEG Public Service Enter	change % change -0.46 -1.08% -0.40 -0.51%	Next reporting date EPS forecast (this quarter) Annual revenue (last year)	\$0.61 \$33.4B	
PCG PG&E ED Consolidated Edison (EL Xcel Energy Inc PEG Public Service Enter Data a	change % change -0.46 -1.08% -0.40 -0.51% -0.23 -0.50% -0.06 -0.12%	Next reporting date EPS forecast (this quarter) Annual revenue (last year) Annual profit (last year)	\$0.61 \$33.4B \$3.8B	
PCG PG&E ED Consolidated Edison KEL Xcel Energy Inc PEG Public Service Enter Data a	change % change -0.46 -1.08% -0.40 -0.51% -0.23 -0.50% -0.06 -0.12%	Next reporting date EPS forecast (this quarter) Annual revenue (last year) Annual profit (last year) Net profit margin	\$0.61 \$33.4B \$3.8B 11.29%	
PCG PG&E ED Consolidated Edison KEL Xcel Energy Inc PEG Public Service Enter Data a Profile Sector ndustry	change % change -0.46 -1.08% -0.40 -0.51% -0.23 -0.50% -0.06 -0.12% as of 2:18pm ET, 07/18/2018 Utilities Electric Utilities Electric Utilities	Next reporting date EPS forecast (this quarter) Annual revenue (last year) Annual profit (last year) Net profit margin Forecasts HISTORICAL FORECA 550	\$0.61 \$33.4B \$3.8B 11.29% NST HKCH \$48.00 +14.8% MKEDIAN	
PCG PG&E ED Consolidated Edison (KEL Xcel Energy Inc PEG Public Service Enter Data a Profile Sector ndustry President, Chief Executive Officer Director	change % change -0.46 -1.08% -0.40 -0.51% -0.23 -0.50% -0.06 -0.12% as of 2:18pm ET, 07/18/2018 Utilities Electric Utilities & Chris Crane	Next reporting date EPS forecast (this quarter) Annual revenue (last year) Annual profit (last year) Net profit margin Forecasts HISTORICAL FORECA 550 45	\$0.61 \$33.4B \$3.8B 11.29% NST HIGH \$48.00 +14.8% NEDIAN \$44.00 +5.2%	
Profile Sector ndustry President, Chief Executive Officer Director Executive Vice President- Corporate Operations	change % change -0.46 -1.08% -0.40 -0.51% -0.23 -0.50% -0.06 -0.12% as of 2:18pm ET, 07/18/2018 Utilities Electric Utilities Chris Crane Bridget M. Reidy	Next reporting date EPS forecast (this quarter) Annual revenue (last year) Annual profit (last year) Net profit margin Forecasts HISTORICAL 550 40 40 40 40 40 40 40 40 40 40 40 40 40	\$0.61 \$33.4B \$3.8B 11.29% VST HCM \$48.00 +14.8% S44.00 +5.2% LOW \$37.00 -11.5%	
PCG PG&E ED Consolidated Edison KEL Xcel Energy Inc PEG Public Service Enter Data a Profile Sector ndustry President, Chief Executive Officer Director Executive Vice President- Corporate Operations	change % change -0.46 -1.08% -0.40 -0.51% -0.23 -0.50% -0.06 -0.12% as of 2:18pm ET, 07/18/2018 Utilities Electric Utilities & Chris Crane	Next reporting date EPS forecast (this quarter) Annual revenue (last year) Annual profit (last year) Net profit margin Forecasts HISTORICAL FORECA 550 45	\$0.61 \$33.4B \$3.8B 11.29% VST HCM \$48.00 +14.8% S44.00 +5.2% LOW \$37.00 -11.5%	
PCG PG&E ED Consolidated Edison KEL Xcel Energy Inc PEG Public Service Enter Data a Profile Sector ndustry President, Chief Executive Officer Director Executive Vice President-	change % change -0.46 -1.08% -0.40 -0.51% -0.23 -0.50% -0.06 -0.12% as of 2:18pm ET, 07/18/2018 Utilities Electric Utilities Chris Crane Bridget M. Reidy	Next reporting date EPS forecast (this quarter) Annual revenue (last year) Annual profit (last year) Net profit margin Forecasts HISTORICAL 550 40 40 40 40 40 40 40 40 40 40 40 40 40	\$0.61 \$33.4B \$3.8B 11.29% VST HCM \$48.00 +14.8% S44.00 +5.2% LOW \$37.00 -11.5%	

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FE FirstEnergy Corp ETR Entergy Corp Profile Sector Industry President, Chief Executive Offi Director EVP-Eastern Canadian & Caribbean Operations Corporate headquarters	Electric cer & Barry	Utilities Utilities V. Perry J. Smith	HISTORICAL 538 36 34 32	FORECAST FORECAST UNAVAILAB		
FE FirstEnergy Corp ETR Entergy Corp Profile Sector Industry President, Chief Executive Offi Director EVP-Eastern Canadian &	Electric cer & Barry	Utilities Utilities V. Perry	HISTORICAL 38 36 34 34 35 34 36 34 36 36 36 36 36 36 36 36 36 36	FORECAS		
FE FirstEnergy Corp ETR Entergy Corp D Profile Sector Industry President, Chief Executive Offi	Electric	Utilities Utilities		FORECAS		
FE FirstEnergy Corp ETR Entergy Corp Profile Sector		Utilities	HISTORICAL	FORECAST		
E FirstEnergy Corp ETR Entergy Corp D Profile	ata as oi 2.20pm e 1, t			FORECAST		
E FirstEnergy Corp ETR Entergy Corp Dr	ata as oi 2:20pm E I, t		Forecasts			
E FirstEnergy Corp		nn 10/2018				
E FirstEnergy Corp	-1.16 ata as of 2:20pm ET, (Net profit margin		12.38%	
ALL Ameren Corp	-0.60		Annual profit (last year)		\$792.0M	
AEE Ameren Corp	-0.19		Annual revenue (last year)		\$6.4B	
AGR Avangrid Inc	-0.29	-0.55%	EPS forecast (this quarter)		-	
	Today's change %	Today's change	Next reporting date		-	
Competitors			Financials			
Di					1.30	
Aarket cap	ata as of 2:17pm ET, (Price/Sales Price/Book		2.40 1.30	
Average volume (3 months)			P/E ratio		18.1	
/olume			Revenue growth (last year)		+23.91%	
Day's range	32.2		Earnings growth (next 5 ye		-	
Today's open			Earnings growth (this year)		-	
Previous close Today's open		32.45			+25.30% 	
No recent news for For Today's Trading	tis Inc.		Growth & Valuation			
Latest FTS News Pres	s Releases					
Thu 7/12 Fri 7/13 +0.45 +1.41% -0.03 -1	Mon +0.1	7/16 5 +0.46%	Tue 7/17	Wed 7/18 0.13 -0.42%		
mary	and a		P V	how	32.25	This Stock Could Be Like Buying Amazo for \$3.19
	v	m	n	EVIOUS CLOSE 32.50	32.50	Motley Fool Issues Rare Triple-Buy Aler
5 days 📃 vs. Utili	ties News		Add ticker	Chart		Backdoor In
Quote Profile	News Ch	arts F	precasts Financials	Shareholders Con	npetitors	Bitcoin Up 30,000X Here's Your
	-0.135 / Today's Character		o 30.88 52-Week Ra		11.74%	You Can Still Buy This "Millionaire Make Stock
BATS BZX Real-Time Price As of 2:17pm ET						The Motley Fool Paid P
			Real-Time Quotes			The Metley Feel

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NorthWestern Corp (NYSE:NWE)	F	dd to Watch List Set Alert	
57.55 Velayed Data Is of 2:11pm ET	% 50.01 ↓ ↓ 64 52-Week Range	.47 -3.60% Year-to-Date	The Motley Fool Paid I You Can Still Buy This "Millionaire Mak
Quote Profile News Charts	Forecasts Financials S	hareholders Competitors	Stock
5 days vs. Utilities News	Add ticker	Chart	Bitcoin Up 30,000X Here's Your
			Backdoor In
Mun min	Anhan	58.75 58.50	Motley Fool Issues Rare Triple-Buy Ale
Thu 7/12 Fri 7/13 Mon 7/16 0.16 +0.27% +0.04 +0.07% -0.41 -0.	5 DAY CH.	58.25 58.00 57.76 57.76 57.50 57.50 57.50 57.50	This Stock Could Be Like Buying Amaz for \$3.19
atest NWE News Press Releases			
o recent news for NorthWestern Corp.	Once the B Malanting		
oday's Trading	Growth & Valuation		
	Earnings growth (last year)	-1.47%	
	Earnings growth (this year)	+3.94%	
ay's range 57.33 - 58			
blume 106,		+3.85%	
verage volume (3 months) 446,		17.2	
	6B Price/Sales	2.22	
Data as of 2:11pm ET, 07/18/2	2018 Price/Book	1.47	
Competitors	Financials		
Today's Toda change % cha		July 20, 2018	
VA Avista Corp -0.28 -0.5	5% EPS forecast (this quarter)	\$0.47	
	6% Annual revenue (last year)	\$1.3B	
GEE MGE Energy Inc -0.80 -1.2			
	2% Annual profit (last year)	\$162.7M	
E ALLETE Inc -0.48 -0.6	2% Net profit margin	\$162.7M 12.46%	
LE ALLETE Inc -0.48 -0.6 JKH Duke Energy Corp -0.08 -0.3 Data as of 2:09pm ET, 07/187	2% Net profit margin		
LE ALLETE Inc -0.48 -0.6 UKH Duke Energy Corp -0.08 -0.3 Data as of 2:09pm ET, 07/18/2 rofile	Net profit margin		
LE ALLETE Inc -0.48 -0.6 UKH Duke Energy Corp -0.08 -0.3 Data as of 2:09pm ET, 07/182 -0.7/182 rofile	Section 2% Net profit margin Forecasts	12.46% ORECAST	
LE ALLETE Inc 0.48 0.6 UKH Duke Energy Corp 0.08 0.3 Data as of 2.09pm ET, 07182 Profile ector Utilin dustry Electric Utilin resident, Chief Executive Officer & Robert C. Ro	Porecasts HISTORICAL F ies \$55	12.46%	
LE ALLETE Inc 0.48 0.6. UKH Duke Energy Corp 0.08 0.3 Data as of 2.09pm ET, 07/187 Profile ector Utilit resident, Chief Executive Officer & Robert C. Ro irector bief Financial Officer & Brian B. E	Forecasts HISTORICAL F wwe 60 \$57.55	12.46%	
LE ALLETE Inc 0.48 0.6. UKH Duke Energy Corp 0.08 0.3 Data as of 2.09pm ET, 07/182 rofile ector Utilit dustry Electric Utilit resident, Chief Executive Officer & Robert C. Ro infe Financial Officer & Brian B. E	Porecasts Forecasts Forecasts Fies \$55 60 \$57.55 Fird 55	12.46%	
LE ALLETE Inc 0.48 0.6 UKH Duke Energy Corp 0.08 0.3 Data as of 2.09pm ET, 07/18/2 Profile sector Utilit hdustry Electric Utilit resident, Chief Executive Officer & Robert C. Ro chief Financial Officer & Brian B. E	Forecasts Forecasts ies HISTORICAL F ies \$65 50 55 55 55 55 55 55 55 55 5	12.46%	

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						Page 1
PPL Corp	NYSE:PPL)		Real-Time Quotes	Add to Watch List	Set Alert	
			Real-Time Quotes			The Motley Fool Paid Pa
28.03 BATS BZX Real-Tim As of 2:35pm ET	no Drino	.38 / -1.34 ay's Change	25.30 52-Week	39.90 39.90	-9.43% Year-to-Date	You Can Still Buy This "Millionaire Make Stock
Quote Pro	file News	Charts	Forecasts Financials	Shareholders Co	mpetitors	Bitcoin Up 30,000X Here's Your
5 days	vs. Utilities	News	Add tick	er Chart		Backdoor In
mm	Manny	Ann	man		28.60	Motley Fool Issues Rare Triple-Buy Aler
v	An		w	PREVIOUS CLOSE 28.41	28.40	This Stock Could Be Like Buying Amazo for \$3.19
				bulw	28.20	
Thu 7/12	Fri 7/13	Mon 7/16	5 DAY	CHANGE -1.55%	20.02	
+0.18 +0.63%	-0.13 -0.45%	+0.00 +0.00%		-0.38 -1.34%		
Latest PPL Nev	ws Press Relea	ses				
FirstEnergy (FE) Un Operation Iul 12 / Zacks.com - F See All PPL		Strengthen				
Today's Trading	g		Growth & Valuation	on		
Previous close		28.41	Earnings growth (last ye	ear)	-41.22%	
īoday's open		28.30	Earnings growth (this ye	ear)	+3.02%	
Day's range		27.96 - 28.43	Earnings growth (next 5	years)	+4.26%	
/olume		141,437	Revenue growth (last ye	ear)	-0.93%	
Average volume (3 r	months)	7,220,697	P/E ratio		16.5	
Market cap		\$19.3B	Price/Sales		2.86	
	Data as of 2:35	ipm ET, 07/18/2018	Price/Book		1.78	
Competitors			Financials			
	Toda chan		Next reporting date	Augu	st 7, 2018	
EIX Edison Internati		41 -0.63%	EPS forecast (this quart		\$0.54	
KEP Korea Electric			Annual revenue (last ye	ar)	\$7.4B	
NEC WEC Energy			Annual profit (last year)		\$1.1B 15.12%	
DTE DTE Energy C		22 -0.21% ipm ET, 07/18/2018	Net profit margin		13.1276	
Profile			Forecasts			
Sector		Utilities	HISTORICAL	FORECAST		
ndustry	E	lectric Utilities	840 M		HIGH \$36.00	
Chairman, Presiden Chief Executive Offic		iam H. Spence	35		+28.4% MEDIAN	
Chief Financial Offic	er &	Vincent Sorgi	30 4 \$28.	.03	\$32.00 +14.2%	
Senior Vice Presider Corporate headquar		, Pennsylvania	+ Last 12 Month	hs Next 12 Months >	\$25.50 -9.0%	
Partner Offers		Paid Partner	SmartAsset		Paid Partner	
			Hire a pro: con advisors in you		incial	

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Public Service En	nterprise Group			
Inc (NYSE:PEG)		Real-Time Quotes	h List Set Alert	The Motley Fool Paid Part
51.70 BATS BZX Real-Time Price As of 1:45pm ET	-0.05 / -0.10 Today's Change	% 43.15 _ 54.50 52-Week Range	+0.45% Year-to-Date	You Can Still Buy This "Millionaire Maker" Stock
Quote Profile	News Charts	Forecasts Financials Shareholders	Competitors	Bitcoin Up 30,000X Here's Your Backdoor In
5 dagsi	ties	Add ticker	Chart	Motley Fool Issues Rare Triple-Buy Alert
ини и поредини поредини и поредини и поредини и поредини и поредини и пореди	Mon 7/16	5 DAY CHANGE -1	S1.75	This Stock Could Be Like Buying Amazor for \$3.19
-0.29 -0.55% -0.29 -0.29	0.55% -0.23 -0.44%	-0.07 -0.14% -0.01 -0.029	6	
Today's Trading		Growth & Valuation		
Previous close	51.74	Earnings growth (last year)	+77.14%	
oday's open	51.76	Earnings growth (this year)	+6.43%	
Day's range	51.23 - 51.82	Earnings growth (next 5 years)	+6.30%	
/olume	141,235	Revenue growth (last year)	+2.05%	
Average volume (3 months)	2,930,529	P/E ratio	13.0	
Market cap	\$25.7B	Price/Sales	2.90	
	ata as of 2:35pm ET, 07/18/2018	Price/Book	1.85	
Competitors		Financials		
	Today's Today's	Next reporting date	August 1, 2018	
- Engie Brasil Energia	change % change	EPS forecast (this quarter)	\$0.66	
EL Xcel Energy Inc	-0.26 -0.57%	Annual revenue (last year)	\$9.0B	
D Consolidated Edison	-0.35 -0.44%	Annual profit (last year)	\$1.6B	
CG PG&E	-0.37 -0.86%	Net profit margin	17.47%	
D	ata as of 2:36pm ET, 07/18/2018			
Profile		Forecasts		
Sector	Utilities	HISTORICAL FORECAST	HIGH	
ndustry	Electric Utilities	\$70	\$63.00 +21.8%	
Chairman, President & Chief Executive Officer	Ralph Izzo	60 \$51.73	MEDIAN \$55.00	
Chief Operating Officer	Ralph A. LaRossa	50 mum	+6.3%	
Corporate headquarters	Newark, New Jersey	~	\$43.00	
		<lest 12="" mont<="" months="" next="" th=""><th></th><th></th></lest>		
Partner Offers	Paid Partner	SmartAsset	Paid Partner	
		Hire a pro: compare top 3 advisors in your area	omancial	

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Sempra Energy				Page
oempia Energy (NTSE:SRE)	Real-Time Quotes	Watch List Set Alert	
				The Motley Fool Paid P.
114.34 BATS BZX Real-Time Price As of 2:45pm ET	-1.27 / -1.10 Today's Change	100.49 12 52-Week Range	22.98 +6.94% Year-to-Date	You Can Still Buy This "Millionaire Make Stock
Quote Profile	News Charts	Forecasts Financials Shareho	olders Competitors	Bitcoin Up 30,000X Here's Your Backdoor In
5 days 🔲 vs. Utilit	ies News	Add ticker	Chart	
44	A		116.50	Motley Fool Issues Rare Triple-Buy Aler
how have	~ WV	PREVIOUS C	LOSE 115.61 116.00 115.50	This Stock Could Be Like Buying Amazo for \$3.19
	lane i lane i lane (lane)	M	115.00	
		5 DAY CHANG	1.16% 114.50	
Thu 7/12 Fri 7/13 -0.05 -0.04% +0.88 +	Mon 7/16 -0.76% -0.75 -0.64%	Tue 7/17 Wed 7/1 -0.15 -0.13% -1.27 -		
Latest SRE News Pres	ss Releases			
empra Energy's IEnova to E uels Project ul 10 / Zacks.com - Paid Partner				
See All SRE News				
loday's Trading		Growth & Valuation		
Previous close	115.61	Earnings growth (last year)	-81.48%	
oday's open	115.09	Earnings growth (this year)	-0.03%	
Day's range	114.02 - 115.09	Earnings growth (next 5 years)	+13.00%	
/olume	43,390	Revenue growth (last year)	+9.84%	
Average volume (3 months)	2,305,386	P/E ratio	193.8	
Narket cap Da	\$28.1B ata as of 2:45pm ET, 07/18/2018	Price/Sales Price/Book	2.41 2.11	
Competitors		Financials		
	Today's Today's change % change	Next reporting date	August 7, 2018	
VC Vectren Corp	+0.02 +0.03%	EPS forecast (this guarter)	\$1.16	
	ata as of 2:43pm ET, 07/18/2018	Annual revenue (last year)	\$11.2B	
		Annual profit (last year)	\$257.0M	
		Net profit margin	2.30%	
Profile		Forecasts		
Sector	Utilities	HISTORICAL FOREC	MIGH	
ndustry	Gas Distributors	\$140	\$131.00 +14.6%	
Chief Executive Officer	Jeffrey Walker Martin	130 \$114.34	MEDIAN \$122.00	
President & Jo Chief Operating Officer	seph Allan Householder	120 MM -	+6.7%	
Corporate headquarters	San Diego, California	110 WWW 4 Lest 12 Months Next 1;	\$107.00 -6.4%	
Partner Offers	Paid Partner	SmartAsset	Paid Partner	
		Hire a pro: compare to advisors in your area	op 3 financial	

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Southern Co (NYSE:SO)		bhA	to Watch List Set Alert	
		Real-Time Quotes	to traton List Oct Alert	The Motley Fool Paid Pa
DATO DZV Deel Time Drive	- 0.21 / -0.44 oday's Change	•% 42.38 ↓ ↓ 52-Week Range	53.51 -1.35% Year-to-Dat	YOU Can Still BUV This "Millionaire Make
Quote Profile News	Charts	Forecasts Financials Shar	eholders Competitors	Bitcoin Up 30,000X Here's Your
5 days vs. Utilities	News	Add ticker	Chart	Backdoor In
			48.00	Motley Fool Issues Rare Triple-Buy Aler
Marrie Marrie	man	M PREVIO	47.80 47.80 47.80	This Stock Could Be Like Buying Amazo for \$3.19
		5 DAY CHAN	V"	
Thu 7/12 Fri 7/13 +0.21 +0.44% -0.02 -0.04%	Mon 7/16 -0.25 -0.52%	Tue 7/17 Wed -0.06 -0.13% -0.21	7/18 -0.44%	
Latest SO News Press Rele	ases			
Southern Company: A Sleep-Well-at With a 5% Dividend Yield Jul 17 / GuruFocus News - Paid Partner C See All SO News		BIP vs. SO: Which Stock Shou Now? Jul 12 / Zacks.com - Paid Partner (
Today's Trading		Growth & Valuation		
Previous close	47.65	Earnings growth (last year)	-67.13%	
Today's open	47.66	Earnings growth (this year)	-4.01%	
Day's range	47.18 - 47.67	Earnings growth (next 5 years)	+4.00%	
Volume	147,036	Revenue growth (last year)	+16.38%	
Average volume (3 months) Market cap	5,175,629 \$45.1B	P/E ratio Price/Sales	43.1	
	2:47pm ET, 07/18/2018	Price/Book	1.84	
Competitors		Financials		
	day's Today's ange % change	Next reporting date	August 8, 2018	
D Dominion Energy Inc	-0.50 -0.71%	EPS forecast (this quarter)	\$0.65	
	-0.56 -1.00%	Annual revenue (last year)	\$23.1B	
	-0.09 -0.13%	Annual profit (last year)	\$880.0M	
	-0.37 -1.30% 2:47pm ET, 07/18/2018	Net profit margin	3.81%	
Profile		Forecasts		
Sector	Utilities	HISTORICAL FOR	ECAST	
Industry	Electric Utilities	\$55	\$53.00	
Chairman, President & Th Chief Executive Officer	omas A. Fanning	50 M \$47.44	+11.7% MEDIAN	
	Andrew W. Evans	as www	\$46.75 -1.5% LOW \$42.00	
Corporate headquarters	Atlanta, Georgia	Last 12 Months Next	-11.5%	

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		Real-Time Quotes	h List Set Alert	
				The Motley Fool Paid Pa
64.76 BATS BZX Real-Time Price As of 2:49pm ET	-0.16 / -0.25 Today's Change	% 58.48	-2.51% Year-to-Date	You Can Still Buy This "Millionaire Maker Stock
Quote Profile News	Charts	Forecasts Financials Shareholders	Competitors	Bitcoin Up 30,000X Here's Your
5 days vs. Utilities	News	Add ticker	Chart	Backdoor In
m			65.50	Motley Fool Issues Rare Triple-Buy Aler
Man Man	myn	PREVIOUS CLOS	65.25 E 64.92 65.00	This Stock Could Be Like Buying Amazo for \$3.19
		Mm	e4.75	
Thu 7/12 Fri 7/13 +0.27 +0.41% -0.39 -0.59%	Man 7/16	5 DAY CHANGE -0	.84%	
		-0.12 -0.18% -0.16 -0.25%	•	
Latest WEC News Press F				
Today's Trading		Growth & Valuation		
	64.00		100.049/	
Previous close loday's open	64.92 65.04	Earnings growth (last year) Earnings growth (this year)	+28.04% +4.97%	
Day's range	64.33 - 65.15	Earnings growth (next 5 years)	+3.80%	
/olume	151,310	Revenue growth (last year)	+2.36%	
Average volume (3 months)	1,789,425	P/E ratio	16.6	
Market cap	\$19.5B	Price/Sales	2.76	
Data as	of 2:49pm ET, 07/18/2018	Price/Book	2.06	
Data as o	or 2.30pm 21, 07710/2010			
Competitors		Financials		
Competitors	Today's Today's	Financials Next reporting date	July 25, 2018	
Competitors			July 25, 2018 \$0.66	
Competitors	Today's Today's change % change	Next reporting date		
Competitors	Today's Today's change % change -0.09 -0.08%	Next reporting date EPS forecast (this quarter)	\$0.66	
Competitors	Today's % Change -0.09 -0.08% -0.21 -0.36% -0.33 -2.36% -0.11 -0.34%	Next reporting date EPS forecast (this quarter) Annual revenue (last year)	\$0.66 \$7.6B	
Competitors	Today's Today's change % change -0.09 -0.08% -0.21 -0.36% -0.33 -2.36%	Next reporting date EPS forecast (this quarter) Annual revenue (last year) Annual profit (last year)	\$0.66 \$7.6B \$1.2B	
Competitors	Today's change Today's % change -0.09 -0.08% -0.21 -0.36% -0.33 -2.36% -0.11 -0.34% of 2.49pm ET, 07/18/2018	Next reporting date EPS forecast (this quarter) Annual revenue (last year) Annual profit (last year) Net profit margin	\$0.66 \$7.6B \$1.2B 15.75%	
Competitors	Today's % Change -0.09 -0.08% -0.21 -0.36% -0.33 -2.36% -0.11 -0.34%	Next reporting date EPS forecast (this quarter) Annual revenue (last year) Annual profit (last year) Net profit margin Forecasts HISTORICAL FORECAST	\$0.66 \$7.6B \$1.2B 15.75%	
Competitors	Today's change Today's % change -0.09 -0.08% -0.21 -0.36% -0.33 -2.36% -0.11 -0.34% of 2-49pm ET, 07/18/2018	Next reporting date EPS forecast (this quarter) Annual revenue (last year) Annual profit (last year) Net profit margin Forecasts	\$0.66 \$7.6B \$1.2B 15.75% +KGH \$69.00 +6,6% MEDIAN \$65.00	
Competitors	Today's change Today's % change -0.09 -0.08% -0.21 -0.36% -0.33 -2.36% -0.11 -0.34% of 2-49pm ET, 07/18/2018 Utilities Electric Utilities	Next reporting date EPS forecast (this quarter) Annual revenue (last year) Annual profit (last year) Net profit margin Forecasts HISTORICAL FORECAST	\$0.66 \$7.6B \$1.2B 15.75% +KGH \$69.00 +6.8% MEDIAN \$65.00 +0.4% LOW	
Competitors	Today's Today's change % change -0.09 -0.08% -0.21 -0.36% -0.33 -2.36% -0.11 -0.34% of 2.49pm ET. 07/18/2018 Utilities Electric Utilities Gale E. Klappa Scott J. Lauber	Next reporting date EPS forecast (this quarter) Annual revenue (last year) Annual profit (last year) Net profit margin Forecasts HISTORICAL FORECAST	\$0.66 \$7.68 \$1.28 15.75% HIGH \$68.00 +6.6% MEDIAN \$65.00 +0.4%	
Competitors	Today's change Today's % change -0.09 -0.08% -0.21 -0.36% -0.33 -2.36% -0.11 -0.34% of 2.49pm ET, 07/18/2018 Utilities Electric Utilities Gale E. Klappa	Next reporting date EPS forecast (this quarter) Annual revenue (last year) Annual profit (last year) Annual profit (last year) Net profit margin Forecasts	\$0.66 \$7.6B \$1.2B 15.75% +KGH \$69.00 +6.5% MEDIAN \$65.00 +0.4% \$65.00 +0.4% \$65.00 +0.4% \$65.00 +0.4% \$65.00 +0.4%	
Competitors	Today's Today's change % change -0.09 -0.08% -0.21 -0.36% -0.33 -2.36% -0.11 -0.34% of 2.49pm ET. 07/18/2018 Utilities Electric Utilities Gale E. Klappa Scott J. Lauber	Next reporting date EPS forecast (this quarter) Annual revenue (last year) Annual profit (last year) Annual profit (last year) Net profit margin Correctasts	\$0.66 \$7.6B \$1.2B 15.75% +KGH \$69.00 +6.5% MEDIAN \$65.00 +0.4% \$65.00 +0.4% \$65.00 +0.4% \$65.00 +0.4% \$65.00 +0.4%	

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Kcel Energy Inc (NASDAQ:)	KEL)				
		Real-Time Quotes	Add to Watch List	Set Alert	
					The Motley Fool Paid Pa
ATO DZV Deal Time Drive	0.22 / -0.48 ay's Change	6 41.51 52-Week F		-5.13% ear-to-Date	You Can Still Buy This "Millionaire Maker Stock
Quote Profile News	Charts F	Forecasts Financials	Shareholders Cor	npetitors	Bitcoin Up 30,000X Here's Your Backdoor In
5 days vs. Utilities	News	Add ticke	r Chart		
marmar home	han	m.n		46.25	Motley Fool Issues Rare Triple-Buy Aler
		n www.	REVIOUS CLOSE 45.86	46.00 45.75	This Stock Could Be Like Buying Amazo for \$3.19
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	Kent T. Larson	45 hrm		+3.0% LOW \$40.00	
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NEW REGULATORY FINANCE

Roger A. Morin, PhD

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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

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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:

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

where $\dot{\alpha}$ 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 $\dot{\alpha}$, which must be estimated econometrically from market data. Table 6-2 summarizes¹⁰ the empirical evidence on the magnitude of alpha.¹¹

¹¹ Adapted from Vilbert (2004).

¹⁰ 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.

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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:

$$K = R_F + 0.25 (R_M - R_F) + 0.75 \beta (R_M - R_F)$$
(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 6-5.¹²

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

¹² 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:

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 Return = $0.0829 + 0.0520 \beta$ is between 0.25 and 0.30. If x = 0.25, the equation becomes:

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

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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.¹³

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:

 $K = 5\% + 0.25 (12\% - 5\%) + 0.75 \times 0.80 (12\% - 5\%)$ = 5.0% + 1.8% + 4.2%= 11.0%

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.

¹³ 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.

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Chapter 7 Divisiona Applicati

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		Ele	ctric utiliti	ies		Gas utiliti	85
Year	Period	Average ROE (%)	Median ROE (%)	Number of observations	Average ROE (%)	Median ROE (%)	Number of observations
1990	ull year	12.70	12.77	38	12.68	12.75	33
1991	Full year	12.54	12.50	42	12.45	12.50	31
1992	Full year	12.09	12.00	45	12.02	12.00	28
993	Full year	11.46	11.50	28	11.37	11.50	40
1994	Full year	11.21	11.13	28	11.24	11.27	24
1995	Full year	11.58	11.45	28	11.44	11.30	13
996	Full year	11.40	11.25	18	11.12	11.25	17
1997	Full year	11.33	11.58	10	11.30	11.25	12
1998	Full year	11.77	12.00	10	11.51	11.40	10
1999	Full year	10.72	10.75	6	10.74	10.65	6
2000	Full year	11.58	11.50	9	11.34	11.16	13
2001	Full year	11.07	11.00	15	10.96	11.00	5
2002	Full year	11.21	11.28	14	11.17	11.00	19
2003	Full year	10.96	10.75	20	10.99	11.00	25
2004	Full year	10.81	10.70	21	10.63	10.50	22
2005	Full year	10.51	10.35	24	10.41	10.40	26
2006	Full year	10.32	10.23	26	10.40	10.50	15
2007	Full year	10.30	10.20	38	10.22	10.20	35
2008	Full year	10.41	10.30	37	10.39	10.45	32
2009	Full year	10.52	10.50	40	10.22	10.26	30
2010	Full year	10.37	10.30	61	10.15	10.10	39
2011	Full year	10.29	10.17	42	9.92	10.03	16
2012	Full year	10.17	10.08	58	9.94	10.00	35
2013	Full year	10.03	9.95	49	9.68	9.72	21
	1st quarter	10.23	9,86	8	9.54	9.60	6
	2nd quarter	9.83	9.70	5	9.84	9,95	8
	3rd quarter	9.87	9.78		9.45	9.33	6
	4th quarter	9.78	9.80	13	10.28	10.20	6
2014	Full year	9.91	9.78	38	9.78	9.78	26
	1st quarter	10.37	9.83	9	9.47	9.05	3
	2nd quarter	9,73	9,60	7	9.43	9.50	3
	3rd quarter	9.40	9,40		9.75	9.75	1
	4th guarter	9.62	9,55		9.68	9.75	9
2015	Full year	9.85	9.65		9.60	9.68	16
	, un jour	0.00	0.00		0.00	0.00	10
	1st quarter	10.29	10.50	9	9.48	9.50	6
	2nd quarter	9.60	9.60	7	9.42	9.52	6
	3rd quarter	9.76	9.80	8	9.47	9.50	4
	4th quarter	9.57	9.58	18	9.68	9.73	10
2016	Full year	9.77	9.75	42	9.54	0.50	26
							-
	1st quarter	9.87	9.60	15	9.60	9.25	3
	2nd quarter	9.63	9.50		9.47	9.60	7
	3rd quarter	9.66	9.60		10.14	9.90	6
	4th quarter	9.73	9.60	19	9.68	9.55	8
2017	Full year	9.74	9.80	53	9.72	9.60	24

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Average Equity Returns Authorized January 1960 - December 1969

			(Return Percent - No.	of Observations)	· · · · · · · · · · · · · · · · · · ·	2
-		Period	Electric Utilities	Can Utilities	Rinter	Ç
ريمينيني :	1980	ist Courter 2nd Quarter 3rd Quarter 4th Quarter	13.97 (21) 14.25 (26) 14.30 (25) 14.33 (35)	13,45 (13) 14,58 (9) 13,67 (12) 14,35 (25)		
•	1980	Pull Year	14.29(104)	14.06 (57)	12.94 (40)	
	1981	lst Quarter 2nd Quarter 3rd Quarter 4th Quarter	14.87 (21) 15.03 (40) 15.31 (26) 15.58 (36)	14.69 (9) 14.61 (10) 14.86 (16) 15.70 (23)	13.50 (10) 14.19 (10) 14.77 (10)	
7	1981	Pull Year	15.22(128)	15.11 (80)	14.42 (44)	
·	1982	let Quarter 2nd Quarter 3rd Quarter 4th Quarter	15,71 (29) 15,00 (35) 15,83 (27) 15,97 (34)	18,55 (16) 15,62 (16) 18,72 (26) 15,62 (30)		••••••••••••••••••••••••••••••••••••••
. '	1982	Pull Year	15.76(125)	15.62 (83)	18.12 (44)	.
	1983	1st Quarter 2nd Quarter 3rd Quarter 4th Quarter	15.53 (26) 15.10 (16) 15.39 (22) 15.35 (28)	15.41 (15) 14.84 (14) 15.24 (16) 18.41 (20)	11:78 (17) 11:78 (17) 11:78 (12)	
	1983	Pull Year	10.36 (95)	18.25 (65)	34.10 (71)	.
	1984	1st Quarter 2nd Quarter 3rd Quarter 4th Quarter	15.08 (19) 15.07 (15) 15.36 (22) 15.69 (19)	15.39 (6) 15.07 (7) 15.57 (12) 15.55 (12)		P
2	1984	Foll Year	16.32 (75)	16.31 (39)	14.50 (35)	
	1985	1st Guarter 2nd Guarter 3rd Guarter 4th Guarter	16.51 15.27 14.91 15.11 17	15.03 (8) 15.44 (4) 14.64 (5) 14.44 (13)		- -
	1963	Pell Year	15.20 (88)	14.75 (34)	14.88 (10)	
	1986	1st Quarter 2sd Quarter 3rd Quarter 4th Quarter	14.35 {14 14.27 {16 13.16 {10 13.52 {0}	14.05 (4) 13.28 (9) 13.00 (5) 13.62 (7)		
	1986	Full Year	13.93 (49)	13.46 (26)	10.90 (18)	· ·
	1967	ist Quarter 2nd Quarter 3rd Quarter 4th Quarter	12.02 (12) 13.18 (10) 13.17 (16) 12.79 (19)	12.61 (7) 13.13 (8) 12.56 (6) 13.73 (12)		
	1967	Tall Year	12.99 (57)	12.74 (29)	12.66 (13)	in .
	1988	lat Quarter and Quarter ard Quarter 4th Quarter	12.74 (8) 13.70 (7) 12.68 (8) 12.96 (10)	12.94 (5) 12.48 (4) 12.78 (9) 12.04 (15)		
	1988	Pull Year	12.79 (35)	12.65 (81)	18.10 (18)	
τά,	1.103	1st Quarter 2nd Quarter 3rd Quarter 4th Quarter	13.04 (9) 13.22 (7) 12.36 (2) 12.64 (9)	12.90 (4) 13.35 (2) 12.56 (3) 12.94 (16)		
•		Pull Your	12.97 (27)	12.68 (81)	12.97 (15)	*
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ARGUS RESEARCH CORPORATION, 42 BROADWAY, NEW YORK, N.Y. 10004

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	Year		ROE	Year	ROE
مى	1974 1975 1976 1977 1978 1978	÷	13.1 13.2 13.1 13.3 13.3 13.2 13.5	1980 1981 1982 1983 1984 1985	14.1 15.2 15.8 15.4 15.4 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.

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	TI	NC. N	YSE-T				R P	ecent Rice	32.68	B P/E RATI	9 .	6 (Trailin Media	ng: 10.3) an: 13.0)	RELATIV P/E RATI		DIV'D YLD	6.2	% Y	/ALUI LINE		Pag
	ESS	3 Raised 8		High: Low:	43.0 32.7	41.9 20.9	29.5 21.4	29.6 23.8	31.9 27.2	38.6 29.0	39.0 32.8	37.5 31.7	36.4 31.0	43.9 33.4	43.0 32.6	39.3 31.2				Price	
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ECHNIC ETA .75		3 Lowered = Market)	6//8	Options: '	Yes	ce Strength ates recess	ion														
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	rice 60 (Gain (+85%)	Return 20%		₩₩₩₩₩₩						p ^{ell} ends	առուս	սուրես	, ₁₉₉ 11	ո., սիվի	¹¹ 1.0					32
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	ASC 001	000						.	••••		····			•••••							
Sell (0 0 0 0										*********	********	·	·····	•••		% TO	i T. retur	I N 5/18	\mathbb{L}_8^2
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o Buy o Sell Ild's (000) 31	989 845 78346		966 1052 3386886	shares traded														1 yr. 3 yr. 5 yr.	-11.5 9.1 18.4	29.1 67.5	_
00	003		005	2006	2007	2008	2009	2010		2012	013	2014	2015	2016	017	2018	2019		JE LINE PI		21-2
15.60 5.14	12.36 3.91		11.31	16.24 4.63	19.83	21.05 5.56	20.84 5.46	21.05	21.38	22.83 5.70	24.64 6.10	25.53 6.04	23.89 6.05	26.68	26.15 7.04	25.40 7.20	26.05 7.35		es per sh low" per s		28. 7.8
2.16	1.52	2 1.47	1.72	2.34	2.76	2.16	2.12	2.29	2.20	2.33	2.50	2.50	2.69	2.84	3.05	3.40	3.50	Earnings	s per sh 4	۰ I	3.
1.07 2.05	1.37 1.58		1.29 1.44	1.33 2.14	1.42 2.93	1.60 3.34	1.64 2.81	1.68 3.30	1.72 3.39	1.76 3.49	1.80 4.01	1.84 4.09	1.88 3.26	1.92 3.50	1.96 3.51	2.00 3.60	2.04 3.70	Cap'l Sp	ecl'd per ending pe	er sh	2 4.
10.01 3317.6	11.57 3305.2		14.11 3876.9	29.76 3882.0	19.09 6043.5	16.35 5893.0	17.34 5901.9	18.94 5911.1	17.85 5926.5	16.61 5581.4	17.50 5226.3	16.76 5186.9	19.96 6144.9	20.06 6139.0	22.94 6139.4	24.25 6141.0			lue per sh n Shs Out		29. 6145
14.2	15.6	6 17.2	13.9	12.6	14.2	15.4	12.1	11.7	13.4	14.5	14.2	13.8	12.6	13.8	12.7	Bold fig	ires are	Avg Ann	'l P/E Rat	io	14
.78 3.5%	.89. 5.8%		.74 5.4%	.68 4.5%	.75 3.6%	.93 4.8%	.81 6.4%	.74 6.3%	.84 5.8%	.92. 5.2%	.80 5.1%	.73 5.3%	.63 5.6%	.72 4.9%	.62 5.1%	Value estim			P/E Ratio 'I Div'd Yi		4.3
					0.0 mill	124028	123018	124399	126723	127434	128752	132447	146801	163786	160546	156000	160000		es (\$mill)	E	1730
		3046 mill. 24 mill. I				12867 35.4%	12535 32.4%	13612 39.3%	13103 33.6%	13698 32.6%	13463 33.2%	13056 34.6%	15188 32.4%	17577 32.7%	18860 9.5%	20900 23.0%	21500 23.0%	Net Prof Income			243 23.0
						10.4%	10.2%	10.9%	10.3%	10.7% 41.7%	10.5% 43.1%	9.9%	10.3% 48.9%	10.7% 47.8%	11.7% 47.0%	13.4% 47.5%		Net Profi	<u> </u>		14.0 45.5
ension ill.	Asset	ts-1 /17 \$	45463 mil	II. Oblig. S	\$59294	38.7% 61.3%	38.7% 61.3%	34.5% 65.5%	36.7% 63.3%	41.7% 58.3%	56.9%	46.7% 53.3%	48.9% 50.7%	51.8%	47.0% 52.6%	47.5% 52.5%	53.0%		rm Debt R n Equity R		45.5 54.5
fd Stoc	k Non					157219 99088	167045 100093	170921	167097 107087	159053 109767	160772 110968	162935 112898	242155 124450	237791 124899	267979 125222	283000 125500	288500 126000	Total Ca Net Plan	pital (\$mil t (\$mill)	II)	3300 1275
ommor	n Stoc	k 6,141 m	ill. ha s	\$		9.3%	8.5%	8.8%	8.9%	9.7%	9.6%	9.1%	7.2%	8.5%	8.2%	8.5%	8.5%	Return o	n Total Ca		8.5
s of 4/3	0/18					13.4% 13.4%	12.3% 12.3%	12.2%	12.4% 12.4%	14.8% 14.8%	14.7% 14.7%	15.0% 15.0%	12.4% 12.4%	14.3% 14.3%	13.4% 13.4%	14.0% 14.0%			n Shr. Eq n Com Ec		13.5 13.5
URREN		:\$ 01 bill	ion (Larg 016		3/31/18	3.5% 74%	2.8% 77%	3.3% 73%	2.8% 78%	3.7% 75%	4.1% 72%	4.0% 73%	4.1% 67%	4.7% 67%	4.8% 64%	6.0% 59%			l to Com I s to Net P	· ·	5.5 61
(\$MILI CahA				50498	48872				formerly \$										ISouth, 1		
Dh Cun	A	_3	2581 2	28648 79146	29633 78505	the wor	'ld's large	est teleco	om holding BC only) v	compa	nies and	is the lar	gest in	7/15. '1	7 sales	mix: Se	vi e, 91	l%; Équi	pment, 9 ommon si	%. Has	s abo
A Pa DbDu	ayabl			34470 38374	31569 29322	ices in	13 stat	es, inclu	iding Calif ticut. India	iornia, T	exas, III	inois, Mie	chigan,	director	s as a g	roup ow	n less th	han 1%	(3/18 Pro ldr.: 208	oxy). Cł	nrmn.
)h Cunl	Liab.		9606	8545 81389	9689 70580	, .			ada. Also				,						nternet: v		
ix. Chg				333% st Est'd	350%				T&T's rner s										le. In /arner		
fhang (Rvnu	(p h)		. 5 Yr	rs. to' 5%	'21-'23 1.5%	cide	d. Th	e Jus	stice D	epart	ment	has s	sued	estin	nates 1	until t	h de	al is f	inalize	ed.	
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Divid nd Book Va	Ł	3.5	5% 2.	.0% 4	4.0% 5.5%	to hi	gher j	prices	for con ilar v	nsum	ers. (A	T&T	con-	top- a	and bo	ottom-	line fi	igures	missonsens	ed ou	r e
Cal-		RTERLY RE			Full	twee	n tele	com a	ınd me	dia o	utfits,	inclu	ding	due	to so	ft wir	eless	pricir	ıg an	d fui	rthe
	Mar.31 32576			Dec.31 42119	Year 146801	Com sal,	cast s have	had l	purch ittle ti	iase ouble	e clea	ring r	ver- egu-			loss and			the V bu		
	40535 39365	40520 39837	40890 39668		163786 160546	lator	y hur	dles.)	That t eral_ju	rial i	s now	wrap	ping						d us t nd 20		
018 3	38038 39000	38562	39000	40400	156000 160000	DCs	set to	rule o	on the	case	just a	fter w	e go	net c	alls, y	which	stand	l at \$	3.40 a	nd \$	3.50
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ndar	.72	.72	.74 .74	.66 .78	2.84 3.05	carri	er be	tter o	compet	e wi	th th	e like	s of	comp	any's	strea	ning	pay so	ervice.	. And	l th
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 gan (Io
): '03, '\$1.04; '04, '\$0.32; '05, '03, '\$0.25. • Div'd reinvestment plan available.
 Incl. in top line.
 Incl. in top line.

 (\$0.30); '06, (\$0.45). N x a nings eport due (C) Incl. goodwill: '17: \$105449 mill., a July. (B) Div'd paid in F b uary, May, Au- (\$1.18/sh. (D) In millions. (E) Starting in '03, '\$1.04 without black in the plan available.
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 Stock's Prive Grow Earnings Plan available.

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 To subscriber's own.

CHURCH & DWI	GHT	NYSE	-CHD	R	ecent Rice	49.6	9 P/E RATIO	o 22.'	1	24.2 22.0	RELATIVE P/E Ratio	1.2	O DIV'D YLD	1.8		/ALU LINE	E	Page
ELINESS 3 Lowered 3/30/18	High: Low:	14.3 10.6	16.4	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	54.2 43.2	51.1 44.9				t Price	
ETY 1 Raised 7/6/07	LEGEN	NDS		h												2021	2022	128
CHNICAL 4 Lowered 6/8/18	2-tor-1 spl	olit 6/11	h Flow" p sł æ Strength															96
TA .75 (1.00 = Market)	2-for-1 spl Options: Y	olit 9/16 Yes									2-fo	-1						80
2021-23 PROJECTIONS Ann'l Total	Shaded	area indica	ates recessi	on							Ý Litu.	ر ۱۳۹۰ میل						64 48
Price Gain Return h 75 (+50%) 12%									لليجيب	<u>nampi</u>		11 - سسل	111 V					40
w 60 (+20%) 7%						2-for-1		und and and a state of the second state of the	the start of the									32 24
SIDERIDECISIONS A S O N D J F M A						[n , .											
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Sell 2 1 0 0 0 1 3 0	In the second	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		11-12- 	•••••		•••	· · · · · · · · · · · ·	************			•••	•••••		% то	T. RETUR	RN 5/18	_12
stitutional Decisions 302017 402017 102018	Percent		. h	11							u .					STOCK	VL ARITH.* INDEX	
Buy 288 265 306 Sell 330 297 338	shares	12			1		անհե		մահմես	1111111	10.00	hhadi			1 yr. 3 yr.	-7.6 17.3	14.3 29.1	F
l's(000) 219454 202260 199234	traded														5 yr.	67.8	67.5	
02 2003 2004 2005		2007		2009	2010		2012	2013	2014	2015		2017	2018	2019		UE LINE P	UB. LLC	
4.37 4.32 5.78 6.87 .40 .44 .51 .66	7.44	8.38 .85	8.64 .97	8.93 1.18	9.09 1.16	9.66 1.31	10.53 1.46	11.49 1.63	12.36 1.77	13.06 1.89	13.75 2.06	15.25 2.26	16.95 2.55	17.45 2.70	Sales pe "Cash F	ersn ⊏ low" per	sh	20.00 3.30
.27 .31 .34 .46	.52	.62	.72	.87	.99	1.11	1.23	1.40	1.51	1.63	1.77	1.94	2.25	2.40		s per sh		3.00
.05 .05 .06 .06	.07	.07	.09	.12	.16	.34	.48	.56	.62	.67	.71	.76	.87	.90	Div'ds D	ecl'd per	sh ^B ∎	1.00
.16 .13 .14 .15	.18	.18	.35	.48 5.69	.22	.27	.27	.24	.26	.24	.20	.18	.25	.30		ending p		.50
1.45 1.79 2.22 2.76 39.38 244.72 252.75 252.75	3.30 261.44	4.08 264.98	4.75 280.29	5.68 282.20	6.57 284.82	7.17 284.57	7.43 277.56	8.28 277.93	7.88 266.70	7.78 259.91	7.79 253.96	8.96 247.63	10.95 242.50	12.10 242.00		llue per s n Shs Ou		16.65 240.00
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	26.5	25.3	Bold fig	ires are		n'i P/E Ra	•	240.00
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	1.39	1.26	Value estin	Line	Relative	P/E Rati	b l	1.20
1.0% .9% .8% .7%	.7%	.5%	.6%	.8%	.9%	1.7%	1.9%	1.8%	1.8%	1.6%	1.5%	1.5%			-	n'l Div'd Y	ïeld	1.5%
APITAL STRUCTURE as of 3/3 tal Debt \$2354.8 mill. Due in 5		0 mill	2422.4	2520.9	2589.2	2749.3	2921.9	3194.3	3297.6	3394.8	3493.1	3776.2	4110	4225	Sales (\$,		4800
Debt \$1802.1 mill. LT Intere			17.2%	20.0% 85.4	18.9% 44.1	20.3% 49.8	20.6% 56.0	21.3% 59.7	21.2% 57.1	22.2% 58.3	22.6% 59.7	22.1% 60.9	23.0%	23.5% 65.0		ng Margin ation (\$m		26.0% 75.0
otal interest coverage: 15.0x)	(59% of	f Cap'l)	200.9	248.7	285.9	324.2	349.8	394.4	413.9	432.3	463.9	497.9	550	585		it (\$mill)	<i>y</i> -	720
ases, Uncapitalized Annual rer	ntals \$19.5	5 mill.	36.0%	37.4%	34.1%	36.3%	35.5%	34.0%	33.8%	34.2%	34.7%	32.3%	25.0%	25.0%		Tax Rate		25.0%
Defined Benefit Plan			8.3%	9.9%	11.0%	11.8%	12.0%	12.3%	12.6%	12.7%	13.3%	13.2%	13.4%	13.8%		it Margin		15.0%
d Stock None			278.0 781.4	361.3 597.3	202.4 249.7	371.6 249.7	208.2 649.4	464.6 649.5	127.2 698.6	33.3 692.8	d245.1 693.4	65.2 2103.4	5.0 2000	150 2000		Cap'l (\$ rm Dobt		750 2000
ommon Stock 244,702,059 sha	res		1331.5	1601.8	1870.9	249.7	2060.9	2299.9	2101.9	2023.2	1977.9	2103.4	2000	2000	-	rm Debt ity (\$mill	. ,	4000
s of 5/1/18			10.6%	11.9%	14.1%	14.3%	13.2%	13.8%	15.3%	16.5%	17.9%	12.1%	12.0%	12.0%	•	on Total C	,	12.0%
ARKET CAP: \$12.2 billion (Lar	ge Cap)		15.1%	15.5%	15.3%	15.9%	17.0%	17.1%	19.7%	21.4%	23.5%	22.4%	21.0%	20.0%		on Shr. Eo		18.0%
URRENT POSITION 2016 (\$MILL.)	2017 3	3/31/18	13.4%	13.5%	12.9%	11.1%	10.4%	10.4%	11.7%	12.7%	14.2%	13.9%	13.0%	12.5%		to Com	•	12.0%
ash Assets 187.8	278.9	119.8	12%	13%	15%	30%	38%	39%	40%	41%	39%	38%	38%	37%		s to Net		33%
eceivables 287.0 ventory (LIFO) 258.2	345.9 330.7	361.1 357.2				Dwight C nge of co							nted for 2 ployees.					
ther 23.8 urrent Assets 756.8	44.7 1000.2	53.3 891.4	sales),	persona	l care (3	32%), and	special	ty care p	products	(24%).	8.0%; S	tate St.,	6%; Va	nguard (Group, 1	2.0% (3/	18 prox	/). Inc.:
ccts Payable 545.1	659.1	635.3				MMER, T. XTRA, L'il							lames R. 0 Charles					
ebt Due 426.8 ther 6.2	270.9 5.0	552.7 42.7	1 '	, ,		narkets ad	,		,	,			-5900. In					20. 161-
		1230.7	Shar	es of	f Chu	rch &	Dwi	ght h	ave b	een	negat					-		forts
	st Est'd		unde	er so	me p	pressu	ire o	f late	e. In	late	(more	e belo	w) sh	ould	spur	resul	ts. In	all,
change (per sh) 10 Yrs. 5 Y ales 6.5% 7	.5% 6	' 21-'23 6.0%				any re							earn					
Cash Flow" 10.5% 9.	.5% 8	8.0% 9.0%				ni-tend dge fu							lip th her, t					
vidends 27.5% 17	.0% 6 .0% 12	6.0% 2.5%				CHI					shoul	d exp	band	anoth				
			apiec	e thr	ough	June	20th.	The	board	has	respe	ctivel	y, in 2	019.				-
cal- QUARTERLY SALES (\$ n ndar Mar.Per.Jun.Per.Sep.Per.		Full Year				hareho has d							: Dwi					
015 812.3 847.1 861.8	873.6	3394.8				nas d In fac							its ontinເ					
016 849.0 877.4 870.7	896.0	3493.1	slipp	ed ab	oout 6	5% in	value	since	the	year	novat	tion a	ind pi	oduct	deve	elopm	ent. 1	Plus,
017 877.2 898.0 967.9 018 1006.0 1015 1035		3776.2 4110				arison							well					
019 1025 1050 1050		4225				inche ikewis							ing e e, tec					
Cal- EARNINGS PER SHAR		Full	en a	rung	in ou	ir Tim	elines	s Rar	king	Sys-			st e-o					
Idar Mar.Per.Jun.Per.Sep.Per.		Year	tem	andi	is nov	v set	to tra	ick th	e bro		comb	ined v	with a	a stro	nger	globa	l dist	ribu-
015 .40 .37 .45 016 .43 .43 .47	.41 .44	1.63 1.77	mark	tet av	erage	s in th	e com	ing ye	ear.	to c	tion	netwo	ork, s	hould	l cap	ture	additi	onal
017 .52 .41 .49	.52	1.94		.us 01 stai	vn, ti rt thi	he con s year	npan r. Du	ring t	he M	iu a arch	mark sider		are. T -in ac					
018 .63 .45 .55	.62	2.25				net i					its cu	rrent	roste	r.			-	
019 .60 .50 .60	.70 DAIDB-	2.40	15%	sales	s adv	ance.	Cont	ributi	ons f	rom	This	issue	e doe	sn't s				
		Full Year				ons, co							rm p					
Cal- QUARTERLY DIVIDENDS		.62				seas n rating			pea to	011-			ranke aver					
Cal- QUARTERLY DIVIDENDS ndar Mar.31 Jun.30 Sep.30	.155		1 200 00						.:14									
QUARTERLY DIVIDENDS ndar Mar.31 Jun.30 Sep.30 2014 .155 .155 .155 2015 .168 .168 .168	.155 .168	.67	The	con	ipany	v oug	ςnι ι	υυ	ma	mo-	over	the lo	ing na	ui. IN	everu	ieless	, the	com-
QUARTERLY DIVIDENDS ndar Mar.31 Jun.30 Sep.30 014 .155 .155 .155 015 .168 .168 .168 016 .178 .178 .178	.168 .178	.67 .71	men	tum	in the	e neai	r terr	n. Ev	en the	ough	pany	's stel	lar fir	ances	s and	defen		har-
QUARTERLY DIVIDENDS Indar Mar.31 Jun.30 Sep.30 014 .155 .155 .155 015 .168 .168 .168	.168	.67	ment Chur	tum ch &	in the Dwig		r terr ill pro	n. Evo bably	en tho cont	ough inue	pany	's stel istics	lar fir give i	ances	s and	defen stmer	sive o	har- eal.

	0 0 0 0 0 0 0	, _010
Ι	Company's Financial Strength	A+
	Stock's Price Stability	100
I	Price Growth Persistence	80
	Earnings Predictability	100
18		

 '02, 2c; '03, 6c; '08, 4c; '09, 3c; '10, (10c); '11, (5c); '10, (10c); '11, ind Dec. = Dividend reinvestment plan availar. June, Sep., and Sep

COCA-COLA NYS	Е-ко			R P	ecent Rice	44.9	7 P/E RATIO	₀ 21.	4 (Traili Medi	ng: 23.1) an: 19.0)	RELATIV P/E RATI	[₽] 1.1	5 div'd Yld	3.6	5%	/ALUI LINE		Page
MELINESS 4 Raised 11/3/17	High: Low:	32.2 22.8	32.8 20.1	29.7 18.7	32.9 24.7	35.9 30.6	40.7 33.3	43.4 36.5	45.0 36.9	43.9 36.6	47.1 39.9	47.5 40.2	48.6 41.4		5	Target	Price	Range 2023
FETY 1 New 7/27/90	LEGEI	NDS 5.0 x "Cast	n Flow″ps	<u> </u>												2021	2022	128
ECHNICAL 4 Raised 7/6/18 TA .75 (1.00 = Market)	2-for-1 sp Options:		e Strength															96
2021-23 PROJECTIONS	Shaded	area indica	ates recess	ion			2-for-	1										80 64
Ann'l Total Price Gain Return							1			lunu.lu	, 11-11-1 ₁₁		1					48
gh 60 (+35%) <i>11%</i> w 50 (+10%) <i>6%</i>		ر. ساللنظيرية	1. <u></u>															32
SONDJFMAM		مس <u>نالن</u> لهم	····	••••••••••••••••••••••••••••••••••••••	<u></u>	·	•.•••••••••											-24
Buy 0	*******	******			··	••••	•.•• •••	•••••	•••••	•••••	••••••							16 12
ell 0 0 1 0 3 0 2 0 0 stitutional Decisions									-		•	•••••	***		% то	T. RETUR		- 12
3Q2017 4Q2017 1Q2018	Percen														1 yr.	THIS STOCK	INDEX 13.9	-
luy 673 746 715 ell 857 750 997 s(000)302975528197042808241	shares traded	10 - 5 +										illiniii	ilim		3 yr. 5 yr.	23.5 28.2	32.8 71.5	F
002 2003 2004 2005	2006	2007	2008	2009	2010		2012	2013	2014	2015	2016	2017	2018	2019		UE LINE P		21-23
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	9.76	8.31	7.50	7.85	Sales pe		- h	9.20
.99 1.16 1.23 1.29 .83 .98 1.03 1.09	1.40	1.54 1.29	1.79 1.51	1.75 1.47	2.09 1.75	2.41 1.92	2.46 1.97	2.58 2.08	2.53 2.04	2.49 2.00	2.37	2.23	2.45 2.10	2.60 2.25		low" per sh		3.20 2.80
.40 .44 .50 .56	.62	.68	.76	.82	.88	.94	1.02	1.12	1.22	1.32	1.40	1.48	1.56	1.66		Decl'd per		1.95
.17 .17 .16 .19 2.39 2.89 3.31 3.45	.30 3.65	.36 4.69	.43 4.43	.43 5.38	.48 6.76	.65 6.99	.62 7.34	.58 7.54	.55 6.94	.59 5.91	.53 5.38	.39 4.01	.45 4.20	.40 4.25		pending per sl		.45 4.60
42.0 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	4288.0	4259.0	4225.0	4175.0	Commo	n Shs Out	st'g D	4025.0
30.2 22.6 22.6 19.7 1.65 1.29 1.19 1.05	18.5	21.0	17.8 1.07	16.6 1.11	16.2 1.03	17.4 1.09	18.8 1.20	19.1 1.07	20.0	20.6	22.8	23.2 1.16	Bold fig Value	ures are Line	-	n'I P/E Rat P/E Ratio		20.0 1.10
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%	3.2%	3.3%	estin			'l Div'd Y		3.5%
APITAL STRUCTURE as of 3/31			31944	30990	35123	46554	48017	46854	45998	44294	41863	35410	31750	32750	Sales (\$	mill)		37000
otal Debt \$48.947 bill. Due in 5 Y Debt \$29.792 bill. Total Int. \$			30.3% 1228.0	30.5% 1236.0	31.4% 1443.0	27.9%	26.6% 1982.0	28.3% 1977.0	28.1% 1976.0	27.9% 1970.0	28.1%	30.9%	37.5%	38.0% 1225		ng Margin ation (\$mi		38.5% 1350
otal interest coverage: 14.0x)	(60% o	f Cap'l)	7050.0	6824.0	8144.0	8932.0	9019.0	9374.0	9091.0	8797.0	8354.0	8240.0	9085	9660		fit (\$mill)	,	11600
	•	• •	22.2%	22.8%	22.7%	23.9%	23.1%	23.0%	22.5%	22.5%	22.5%	24.0%	21.0%	21.0%		Tax Rate		21.0%
ension Assets-12/17 \$8.8 bill. O	blig. \$9.5	DIII.	22.1% d812.0	22.0% 3830.0	23.2% 3071.0	19.2% 1214.0	18.8% 2507.0	20.0% 3493.0	19.8% 612.0	19.9% 6465.0	20.0%	23.3% 9351.0	28.6%	29.5% 9500		it Margin Cap'l (\$n	nill)	31.3% 9250
d Stock None			2781.0	5059.0	14041	13656	14736	19154	19063	28407	29684	31182	30500	30500	Long-Te	rm Debt (\$mill)	31500
			20472 30.6%	24799 23.4%	31003 18.5%	31635 20.2%	32790 19.4%	33173 18.3%	30320 18.7%	25554 16.5%	23062	17072	17720	17720 21.0%		uity (\$mill) on Total C		18545 24.0%
ommon Stock 4,259,000,000 sł	1S.		34.4%	27.5%	26.3%	28.2%	27.5%	28.3%	30.0%	34.4%	36.2%	48.3%	51.5%	54.5%		on Shr. Eq		62.5%
ARKET CAP: \$192 billion (Larg		2/24/40	17.2%	12.2%	13.1%	14.6%	13.5%	13.3%	12.3%	12.0%	10.0%	11.2%	13.5%	14.5%		d to Com	•	19.5%
URRENT POSITION 2016 (\$MILL.) ash Assets 22201 2	2017 20675	3/31/18 21373	50%	56%	50%	48% a-Cola Co	51%	53%	59%	65%	72%	77%	74%	73%		Is to Net F net sales:		69%
eceivables 3856 ventory (Avg Cst) 2675	3667 2655	3904 2937	bevera	ge comp	bany. Ma	arkets ov	/er 500	nonalco	holic be	verage	penses,	11.2%	of 2017	revenues	s. Has a	bout 61,7	750 emp	oloyees.
ther <u>5278</u>	9548	9828				ork of co blesalers,										k; Berks % (3/18		
ccts Payable 2682	36545 2288	38042 2500	ny/licer	ised brai	nds inclu	ide Coca	-Cola, D	iet Coke	, Sprite,	Fanta,	James	Quincey.	Inc.: DE	. Addres	s: One C	oca-Cola	Plaza,	
ebt Due 16025 her 7825	16503 8403	19155 2 <i>70</i> 25	,	,	0	vitaminwa	,	,								coca-cola		nor
urrent Liab. 26532	27194	31480				a Con siness										perati ed alo		
change (per sh) 10 Yrs. 5 Yr	st Est'd rs. to	'21-'23	to w	veigh	on t	he top ng of 1	p line	•. In	partic	ular,	afore	menti	oned	orgai	hic re	evenue for	gro	wth.
ales 5.5% Cash Flow" 5.5%	5%	5% 5.0%	tling	oper	ations	s, whi	ch w	rappe	d up	last	quart	ter wa	as like	ely m	ore m	odest,	owii	ng to
arnings 5.0% . vidends 8.5% 8.	.5%	6.5% 5.5% 1.5%				tructu revenu			s will	like-						inclu d Sou		
ook Value 2.5% -6.		1	Órga	anic 1	reven	ues, t	houg	h, ar			and	a di	fficult	com	pariso	on in	Wes	stern
al- QUARTERLY SALES (\$) Idar Mar.Per Jun.Per Sep.Per		Full Year	resp	ectak	ole p	rogre ut the	ss. Ē	sy thi	is me	etric,						shoul year,		
)15 10711 12156 11427	10000	44294	ing,	curr	ency	fluct	uation	is, a	nd o	ther	the t	iming	of ex	pense	s and	produ	ctivit	y in-
D16 10282 11539 10633 D17 9118 9702 9078	9409 7512	41863 35410				se 3% ter. T					itiati	ves. I	n all,	we l	ook f	or sha 7% in	are n	et to
018 7626 8550 8100 019 7500 9000 8550	7474 7700	31750 32750				x was										7% in a hol e		
al- EARNINGS PER SHAR		52750 Full	open	ing s	tages	of 2	018 (up 1	% in	the	tern	. Res	traine	d by	a st	agnar	it bo	ttom
dar Mar.Per Jun.Per Sep.Per	Dec.Per	Year	year), pa	rticul	versus arly	in N	orth	Ame	rica,						ading The co		
015 .48 .63 .51 016 .45 .60 .49	.38 .37	2.00 1.91	thou	gh soi	ne of	the fa	ctors	at pla	y, suc	h as	\mathbf{show}	ing s	igns	of re	turniı	ng to	an	nore-
017 .43 .59 .50	.39	1.91				produo shoulo										trajec ge ran		
018 .47 .60 .57 019 .50 .67 .59	.46 .49	2.10 2.25	In fa	ict, m	anage	ement	expec	ts pri	cing g	ains	Time	liness	sugg	ests	there	is no	need	l for
al- QUARTERLY DIVIDENDS P		Full				upco ll-year										That mber		
ndar Mar.31 Jun.30 Sep.30		Year	in or	ganic	reven	ues.					utes,	incl	uding	a t	op s	core	for 1	Price
014 305 .305 015 33 .33	.61 .66	1.22 1.32				begin rose 9					Stabi yield			abov vill		rage		dend nore-
01635 .35	.70	1.40	od, o	one of	Coke	's stro	ngest	quar	terly o	com-	conse	rvati	ve acc	ounts		al t	0 11	1016-
01737 .37 01839 .39	.74	1.48	paris	sons ii	n rece	nt yea	rs. Ai	nđ eve	en wit	hout	Robe	rt M.	Green			Jul	y 20,	2018
Based on diluted shares. Ne ort due July 25th. Excludes n	xt earnin	gs (8¢)	; '13, (18); '17 (\$	3¢); '14, 1.64) (P	(44¢);	'15, (33¢ historicall); '16, v paid	(C) Inclu \$3,91/sh	des inta	ngibles.	In '17:	\$16.6 bi	II., Col		Financia e Stabili	al Strengt	h	A++ 100
n/(losses): '02, (22¢); '03, (9¢)); '04, (30	¢); abou	ut the firs	st April,	July, Oct	t., Dec.	Div'd	(D) In mi	lions, adj	justed for	r stock sp	lit.	Prie	e Grow	h Persis	tence		35
(7¢); '06, (11¢); '08, (27¢); '10 018 Value Line, Inc. All rights reso						believed to	be reliat	ole and is	provided	without w	varranties	of any kir		_	edictabi			100

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$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Options: Y Shaded a	lative Price les <i>area indica</i>	e Strength ates recess	ion								-						32
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sider Decisions A S O N D J F M A uv 0								¹¹ µµı.		ասիս։		որերու,	<u>لسم</u>					+12
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stitutional Decisions 302017 402017 102018 Buy 167 155 188 Sell 153 146 173 Is(000) 76653 70086 69090 Federal Realty Investmer				4 ·				····•	*******			·····	••••					+ ⁴
Buy 167 155 188 Sell 153 146 173 I's(000) 76653 70086 69090 Federal Realty Investmen																T. RETUR	L ARITH.*	-18
is(000) 76653 70086 69090 Federal Realty Investmen	Percent shares	20 -										1.11			1 yr. 3 yr.	о.0 0.0 -3.8	INDEX 14.3 29.1	Ē
	traded	10 -												2010	5 yr.	26.0	67.5	
שומכט ווו ושטב מש מ וכמו כאוי			2008 19.00	2009 19.06	2010 18.53	2011 18.98	2012 19.70	2013 21.56	2014 23.24	2015	2016 27.32	2017 30.87	2018 31.30	2019 31.85		UE LINE PU lue per sh		21-2 34.
ist that specializes in the ow			3.87	3.87	3.88	4.00	4.31	4.41	4.79	5.05	5.65	5.74	6.20	6.55	Funds fr	om Ops p	er sh	7
ement, and redevelopment xed-use properties. Shares			1.95 2.52	1.60 2.62	1.96 2.66	1.99 2.72	2.16 2.84	2.00 3.02	2.34 3.30	2.62 3.62	3.06 3.84	3.97 3.96	3.15 4.04	3.25 4.12	-	s per sh A ecl'd per :		4
e NYSE under the ticker syn	nbol "FR		48.19 58.67	46.06	46.50 61.53	52.04 63.54	54.85 64.82	56.96 66.70	60.37	64.62 69.49	69.86 72.00	78.79 73.09	84.45 74.00	92.00 75.00	Loans &	Real Est	per sh	119
APITAL STRUCTURE as of 3/31, tal Debt \$3335.4 mill. Due in 5 Y		i mill.	279%	192%	306%	63.54 343%	64.82 415%	391%	68.61 418%	69.49 485%	458%	325%	Bold fig	vres are		n Shs Out n Over Bo		78 48
tal Interest \$100.1 mill. tal interest coverage: 3.9x)	(60% of	f Cap'l)	36.9 18.6	34.7 14.4	38.4 19.4	42.6 21.2	47.0 23.6	NMF NMF	NMF NMF	NMF NMF	49.8 27.0	33.1 22.9	Value estim		Avg Ann Avg Ann	i'l P/E Rati	io	5 2
Defined Benefit Pension Plan		· · · · /	3.5%	4.8%	3.5%	3.2%	23.0	2.9%	2.7%	2.6%	27.0	3.0%			-	i'l Div'd Yi	eld	2.2
d. Stock \$160.0 mill. Pfd. Div'c		"	502.0 18.5	513.2 17.8	525.5 19.1	538.7 14.4	582.3 25.7	620.1 17.3	666.3 19.8	727.8 16.2	786.6 15.0	841.5 15.9	895 20.0	950 20.0		ncome (\$n come (\$m	'	1
mmon Stock 73,221,384 shs.	, ,		63.1%	61.3%	64.3%	64.0%	25.7 65.3%	65.1%	64.4%	63.8%	64.2%	64.0%	64.0%	64.0%		ig Margin)	2 64.:
of 4/27/18			114.8 22.1%	96.8 18.2%	121.7 22.3%	125.9 22.8%	140.1 23.0%	132.9 20.8%	160.1 23.3%	181.9 24.4%	217.5 27.1%	289.9 33.8%	240 26.2%	250 25.8%	Net Prof	it (\$mill) it Margin		27.
ARKET CAP:\$9.1 billion (Large	Cap)		14.4	1.5	1.1	18.1	11.9	29.8	4.4	28.3	32.5	77.9	Nil	Nil		Gains (\$m	ill)	27.
INDS FLOW (\$mill.) 2016 et Profit Plus	2017 3/3	31/18	2827.4 1292.8	2821.1 1793.8	2860.7 1767.1	3307.0 2110.4	3555.4 2208.6	3799.0 2321.9	4141.9 2409.7	4490.4 2642.4	5029.8 2798.5	5758.5 3284.8	6250 3500	6900 3600		Real Est bt (\$mill)	(\$mill)	93 40
Noncash Charges 452.5		121.0	1114.6	1177.3	1149.8	1216.1	1286.8	1448.2	1604.4	1663.7	1976.7	2266.7	2325	2400	Shr. Equ	ity (\$mill)		26
ew Equity 313.0		50.6 -15.1	65.1% 6.2%	67.7% 6.4%	68.6% 6.2%	68.0% 5.4%	65.9% 5.4%	68.5% 5.3%	68.9% 5.4%	71.7% 5.5%	68.0% 5.3%	69.0% 4.9%	65.0% 5.5%	63.0% 5.5%		ecl'd to Fl s to Asse		55.: 5.:
	974.6 283.0	97.7 74.9	6.8%	5.1%	5.9%	5.3%	5.6%	4.9%	5.2%	5.3%	5.5%	6.1%	5.0%	5.0%	Return o	on Total Ca	ap'l	5.5
NANCIAL POSITION 3/31/17 enior Debt (\$mill.) 3013.4		31/18 335.4	10.3%	8.2%	10.6%	10.3% ealty Inve	10.9%	9.2%	10.0%	10.9%	11.0%	12.8%	10.5%	10.5%		n Shr. Eq		12. (
bordinated Debt (\$mill.)			owners	hip, mar	agement	, and rec	levelopm	nent of hi	gh-qualit	y retail	time en	ployees.	Officers	& directo	ors own l	ess than	1% of (comm
Debt/Cap'l Funds .60:1 tal Debt/Equity 1.52:1		.60:1 I.48:1	as wel	l as in	California	s in the N a and So	uth Flor	ida, total	ing 24.2	million	(3/18 pi	oxy). Inc	orporated	d: Maryla	nd. Presi	7.2%; Bla ident & C	EO: Do	nald
ORTFOLIO CONDITION Year on-Earn Assets—%/Invests.	Ago L NA	_atest NA				1/17). Ma nies; The												
al- LOANS & REAL ESTATE (\$						ty co												
dar Mar.31 Jun.30 Sep.30	Dec.31					ation : ance o												
115 4236.4 4335.8 4370.7 116 4741.8 4806.8 4915.8	5029.8					its ting s												
117 5249.1 5283.1 5699.8 118 5799.8 5950 6100	5758.5 6250		prim	arily	increa	ases in	ı rent	al rat	es on	new	Pike	& Ros	se, wh	ich ha	as a R	ROI of	6%-7	7%,
019 6400 6575 6725	6900					iewals ancy.												
al- EARNINGS PER SHARE dar Mar.31 Jun.30 Sep.30		Full Year	first	quar	ter, co	ompara	able 1	proper	ty pr	oper-	of co	ndos.)	Mea	nwhil	e, effo	orts at	t Sai	ntar
115 .67 .46 .75 116 .73 .77 .75	.73 .80	2.62 3.06	3.8%	. Ful	l-year	2017	comp	parabl	e proj	perty	et a	nd on	sche	dule,	with	leasir	ng di	iscu
)17 .78 1.05 1.47	.67	3.97	POI rang		cpecte Wha	d to	climb mo									f note, rede		
018 .81 .77 .78 019 .80 .81 .82	.79 .82	3.15 3.25	ment	t/rede	velopr	nents	(disc	ussed	below	7), in	ende	avors	in pr	ocess	, whie	ch ha	ve a	n 8
al- QUARTERLY DIVIDENDS P dar Mar.31 Jun.30 Sep.30		Full Year	as w	ell as	expa	erchai	throu	igh ac	quisit	ions,	to be	adde	d in th	ne nex	t 12 r	nonth	s.	
114 .78 .78 .78	.87	3.21	shou	ld pro	omote	portfe	olio a	dvanc	ement	t. All	We l	ike t	his is	ssue	for lo	onger	-terr	
015 .87 .87 .87 016 .94 .94 .94	.94 .98	3.55 3.80	total	ed \$1	.52 a	n ope share	durin	ig the	Marc	h pe-	tradi	ng ro	oughly	8%	belo	w its	52 -	wee
17 .98 .98 .98 18 1.00 1.00	1.00	3.94	riod \$6 09	(+5% 3-\$6 2	year 4 for	over y the c	year), urren	is gu	ided t	to be	high,	as it	rema d ung	ins m	ired k	oy ong	oing	cha
al- QUARTERLY FFO PER SH/	ARE D	Full	ing	a 6%	-9% e	idvanc	e. W	e look	for	mid-	real	estat	e, we	e thi	nk tl	his pi	resen	ts
dar Mar.31 Jun.30 Sep.30	Dec.31	Year	The	com	pany)-per-s has d	conti	nued	to in	vest	turn	poter	ntial	out to	2021	1-2023	is a	abo
115 1.26 1.06 1.36 116 1.38 1.42 1.41	1.37 1.45	5.05 5.65	in it	s miz	xed-u	se de	velop	ment	proj	ects.	avera	ige.	We n	nust	note,	howe	ever,	$^{\mathrm{th}}$
017 1.45 1.49 1.50 018 1.52 1.54 1.56	1.30 1.58	5.74 6.20	Asse	mbly	Row	(MA)) and	l Pike	e &	Rose	tive,	due to	o risin			ates.	_	
019 1.59 1.62 1.65	1.69	6.55				swing	,,		v						First 1		ly 6, .	
Diluted egs. May not sum due to re count. Excl. nonrecurring gai gains/(losses) from property	ins/(losse	s) gain	s/(losses)	from p	roperty s	16, 44¢. ales starl Aug. (B)	ting in	Div'd rein	vt. plan a	available.	. (C) In n	nillions. (I	D) Sto	npany's ck's Pric ce Growt	e Stabili		n	9: 7

share count. Excl. nonrecurring gains/(losses) | gains/(losses) from property sales starting in and gains/(losses) from property sales: '08, 24¢; '09, 3¢; '10, 2¢; '11, 29¢; '12, 19¢; '13, (bisorically paid in late Jan., Apr., Jul., and Oct. | Counterpresent to total due to changes in share count. © 2018 Value Line, Inc. All rights reserved. Factual material is obtained from sources believed to be reliable and is provided without warranties of any kind. THE PUBLISHER IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS HEREIN. This publication is strictly for subscriber's own, non-commercial, internal use. No part of it may be reproduced, resold, stored or transmitted in any printed, electronic or other form, or used for generating or marketing any printed or electronic publication, service or product. Price Growth Persistence Earnings Predictability

KELLOGG CO. TIMELINESS 3 Raised 5/18/18 SAFETY 1 Raised 1/30/09 TECHNICAL 4 Lowered 6/8/18 BETA .75 (1.00 = Market) 2021-23 PROJECTIONS Ann'l Tot Market) Price Gain Return Return Y High 105 (+50%) 13% Insider Decisions S 0 N D J F M S 0 N D J F M A S 0 N D J F M A S 0 N D J F M A S 0 N D O	High: Low: LEGE	56.9 48.7	58.5 40.3	54.1 35.6	56.0 47.3	70.6 4	57.2	68.0 56.0	69.5	73.7	87.2	76.7	5 DIV'D YLD 72.2	3.1	1		t Price	D
TECHNICAL 4 Lowered 6/8/18 BETA .75 (1.00 = Market) 2021-23 PROJECTIONS Ann'l Toi Price Gain Return High 105 (+50%) 13% (+20%) Low 85 (+20%) 8% Insider Decisions S N D J F M to Buy 0 0 0 0 0 0 0	LEGE 10 R Options:	NDS					46.3	56.0	55.7	61.1	68.7	58.8	56.4					
BETA .75 (1.00 = Market) 2021-23 PROJECTIONS Ann'l Tot Price Gain Return Return High 105 (+50%) 13% Low 85 (+20%) 8% Insider Decisions S N D J F M A to Buy 0 1 0 <td< td=""><td>Options:</td><td></td><td>Flow″ps</td><td>h</td><td></td><td></td><td>.0.0</td><td>00.0</td><td>0017</td><td>•</td><td></td><td>00.0</td><td></td><td></td><td></td><td>2021</td><td>2022</td><td></td></td<>	Options:		Flow″ps	h			.0.0	00.0	0017	•		00.0				2021	2022	
2021-23 PROJECTIONS Ann'l Tol Price Gain Return tigh 105 (+50%) 13% ow 85 (+20%) 8% Insider Decisions S N D J F M A o Buy 0 1 0	Shaded	elative Prici Yes	e Strength															160
Ann'l Tot Price Gain Return tigh 105 (+50%) 13% ow 85 (+20%) 8% Insider Decisions S N D F M o Buy 0 1 0 0 0 0 ptrices 0 1 0 0 0 0	Onddou	area indica	ates recessi	on														100
ligh ow 105 85 (+50%) (+20%) 13% 8% nsider Decisions 8% solar Decisions 8% o Buy 0 1 0 0 0 o Buy 0 1 0 0 0 0 o ptrions 0 1 0 0 7 0 0										hhur an	1 ^{,1,1} ,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,	ւսերերը Մերերերը	<u>, , , , , , , , , , , , , , , , , , , </u>					
S O N D J F M A o Buy 0 1 0 </td <td></td> <td><u></u></td> <td><mark>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</mark></td> <td></td> <td>-</td> <td>11¹¹¹11</td> <td>Pitration, in the second se</td> <td></td> <td>50 40</td>		<u></u>	<mark>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</mark>		-	11 ¹¹¹ 11	Pitration, in the second se											50 40
o Buy 0 0 1 0 <td>····</td> <td>•.••</td> <td>••*••</td> <td>1,1*** ****</td> <td>··.,··, ··,</td> <td>.**</td> <td></td> <td>30</td>	····	•.••	••*••	1,1*** ****	··.,··, ··,	.**												30
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	D											•••••••••••••••••••••••••••••••••••••••	···.,			1		15
nstitutional Decisions															%10	T. RETUR	VL ARITH.*	
3Q2017 4Q2017 1Q20 to Buy 267 280 28	8 shares	t 18 – 12 –	1	11.1.			1		th. r		1. 11				1 yr.	STOCK 3.9	INDEX 13.9	-
to Sell 315 274 33 Hld's(000) 328507 317072 30861	6 traded	6													3 yr. 5 yr.	21.7 26.1	32.8 71.5	_
2002 2003 2004 200	-	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019		UE LINE P	UB. LLC	
20.36 21.51 23.28 25.1 2.60 2.83 3.15 3.3		30.19 3.78	33.58 3.99	32.97 4.18	33.91 4.48	36.94 4.48	39.30 4.83	40.77 5.27	40.95 5.34	38.64 5.12	37.07 5.22	37.39 5.49	39.05 5.90	40.30 6.25	Sales pe	er sh Flow" per :	ch	44.00 7.25
1.73 1.93 2.16 2.3		2.76	2.99	3.16	3.30	3.38	3.37	3.77	3.87	3.53	3.72	4.04	4.45	4.75		s per sh A		5.60
1.01 1.01 1.01 1.0		1.20	1.30	1.43	1.56	1.67	1.74	1.80	1.90	1.98	2.04	2.12	2.20	2.36		Decl'd per		2.75
.62 .60 .67 .9 2.19 3.52 5.47 5.6		1.21 6.48	1.21 3.79	.99 5.96	1.30 5.90	1.66 4.93	1.48 6.70	1.76 9.77	1.63 7.83	1.58 6.08	1.44 5.44	1.45 6.40	1.50 8.25	1.55 10.35		pending per sl		1.70 17.35
407.85 409.70 413.02 405.3	3 397.70	390.05	381.86	381.38	365.60	357.30	361.27	362.80	356.00	350.02	351.07	345.60	342.50	340.00	Commo	n Shs Out	tst'g D	333.00
19.5 17.3 19.2 18. 1.07 .99 1.01 1.0		19.0 1.01	17.0 1.02	14.5 .97	15.7 1.00	15.8 .99	15.3 .97	16.5 .93	16.5 .87	18.7 .94	20.5 1.08	17.1 .85		ures are Line	-	n'I P/E Rat P/E Ratic		17.0 .95
3.0% 3.0% 2.4% 2.4%		2.3%	2.6%	.97 3.1%	3.0%	.99 3.1%	.97 3.4%	.93 2.9%	.87 3.0%	.94 3.0%	2.7%	.85 3.1%		ates		n'l Div'd Y		.95 2.9%
CAPITAL STRUCTURE as of 3/	31/18		12822	12575	12397	13198	14197	14792	14580	13525	13014	12923	13375	13700	Sales (\$			14650
Total Debt \$8758 mill. Due in T Debt \$7881 mill. LT Inter	5 Yrs \$381 est \$253 m		18.2%	19.0%	19.2%	17.8%	16.7%	18.2%	18.2%	16.3%	19.5%	19.9%	18.5%	19.0%		ng Margin		20.5%
Total interest coverage: 8.6X)			375.0 1148.0	384.0 1212.0	392.0 1247.0	369.0 1231.0	448.0 1297.2	532.0 1379.7	503.0 1397.3	534.0 1258.0	517.0 1317.0	481.0 1416.0	490 1535	500 1625		ation (\$mi fit (\$mill)	III)	540 1880
Pension Assets-12/17 \$5.04 bil		of Cap'l) .65 bill.	29.7%	28.3%	28.8%		22.7%	28.4%	28.2%	11.2%	15.0%	22.6%	20.5%	21.0%		Tax Rate		21.0%
	•		9.0%	9.6%	10.1%	9.3%	9.1%	9.3%	9.6%	9.3%	10.1%	11.0%	11.5%	11.9%		fit Margin		12.8%
Pfd Stock None			d1031 4068.0	270.0 4835.0	d269.0 4908.0	d286.0 5037.0	d1143 6082.0	d568.0 6330.0	d1024 5935.0	d2503 5289.0	d1534 6698.0	d1443 7836.0	d650 7875	d200 7400		g Cap'l (\$n erm Debt (1175 7500
Common Stock 346,848,322 sh as of 4/28/18	S.		1448.0	2272.0	2158.0		2419.0	3545.0	2789.0	2128.0	1910.0	2212.0	2830	3510	-	uity (\$mill)		5780
	rao Con)		23.1%	19.1%	19.9%		16.8%	15.1%	17.3%	18.6%	17.5%	15.3%	15.5%	16.0%		on Total C		15.0%
MARKET CAP: \$24.5 billion (La CURRENT POSITION 2016		3/31/18	79.3% 45.1%	53.3% 29.3%	57.8% 30.7%		53.6% 27.9%	38.9% 20.5%	50.1% 25.7%	59.1% 26.2%	69.0% 31.5%	64.0% 30.7%	54.0% 27.5%	46.5%		on Shr. Eq d to Com		32.5% 16.5%
(\$MILL.) Cash Assets 280	281	370	43%	45%	47%	49%	48%	47%	49%	56%	54%	52%	50%	50%		ds to Net F		49%
Receivables 1231 nventory (Avg Cst) 1238	1389 1217	1601 1214				mpany ar										: 5.7% of		
Other 191	149	135 3320				cereals a toaster pa										ees. W.K. orp, 7.5%		
Current Assets 2940 Accts Payable 2014	3036 2269	2230	snacks.	frozen	waffles.	and veggi gles, Che	ie foods	. Brand	names i	nclude:	(3/18 pr	oxy). Chi	ef Execu	tive Offic	er: Steve	en A. Cah	nillane. Ir	nc.: DE.
Debt Due 1069 Dther 1391	779 1431	877 1408	Amos, I	s, need Pop-Tarts	s, Eggo,	igies, Crie Kashi, Pai	rati, and	Nutri-Gra	ain. Fore	ign op-				ernet: wv		ek, MI 490 Igs.com.	010-359	a. Tele-
Current Liab. 4474	4479	4515	Kelle	ogg s	starte	d the	e yea	ar on	as	olid	for th	ne sna	acks k	ousine	ss, ai	nd hig	her i	nput
	'ast Est'o Yrs. to	i '15-'17 '21-'23	note	. Inde	ed, th	ne cere	al an	d snac	eks m	aker	(com					vever,		
Sales 3.0% 'Cash Flow'' 4.0%	.5% 3.0%	2.5% 5.5%				share oth ou										overly appear		
Earnings 4.0%	2.5%	7.0%	previ	ous-y	ear ta	ally of	\$1.0	6. Th	e bot	tom-	hedge	ed on	the k	ey con	nmodi	ities.		v
Book Value .5%	4.5% .5% 1	5.0% 9.5%				nt was ronger										s brigl ears k		
Cal- QUARTERLY SALES		Full	perfo	rman	ce an	d the	cost s	saving	gs der	ived	Proje	ct K	resti	uctur	ing r	olan ł	nas n	nade
endar Mar.Per Jun.Per Sep.P 2015 3556 3498 3329	3142	Year 13525	from enhe	the c	ompa	ny's Pı and its	roject	K pro	oducti d bud	vity løet-	Kello	gg a	more	effic	iently	run ufactu	comp	any,
2016 3395 3268 3254	3097	13014	ing p	olan. '	The n	nost ei	ncour	aging	aspe	ct of	distri	butio	n net	twork	in j	place.	Man	age-
2017 3254 3187 3273 2018 3401 3250 3400	3209 3324	12923 13375	the I	March	-perio	od shov	wing	was t	he ne	early	ment	also	noted	that	all of	its un	profi	table
2019 3450 3325 3500	3425	13700				ear top owth o										en sol Kellog		
Cal- EARNINGS PER SH/ Mar.Per Jun.Per Sep.P		Full	best	quart	erly	perforn	nance	e in se	ome t	ime.	more	of its	marl	keting	and	advert	tising	dol-
endar Mar.Per Jun.Per Sep.P 2015 .98 .92 .85		Year 3.53				that U cereal)										We als rging		
2016 .96 .91 .96	.90	3.72	at a	decel	erate	d pace	, whi	ich, a	long	with	wher	e sale	es gro	owth	poten	tial is	s gre	ater.
2017 1.06 .97 1.05 2018 1.19 1.04 1.1 4		4.04 4.45				or the										o plac		
2019 1.18 1.15 1.23	1.19	4.75				ad ano n froz										ny's pı ich ha		
Cal- QUARTERLY DIVIDENDS		Full	playe	ed key	y role	s in th	ne im				pansi	ive ir	nterna	ationa	l pre	esence.	. Kel	logg
endar Mar.31 Jun.30 Sep.3 2014 .46 .46 .49		Year 1.90				aid main		ng o	ann a	018		nues † Africa.		get Ir	ndia,	South	east 1	Asia,
2015 .49 .49 .50	.50	1.98				nate o								ked K	ellog	g sha	res o	offer
2016 .50 .50 .52		2.04 2.12	ny	still	must	conte	end	with	list-p	orice	dece	nt ris	sk-ad	juste		o 5-y		
2017 .52 .52 .54						ngoing elivery						rn po am G.				Jul	y 20,	2018
2017 .52 .52 .54 2018 .54 .54		1				5			- 5				0				∠ = ~,	
2018 .54 .54	xcludes no	on-Qua	rterlv earr	ings ma	v not sun	n to total d	due to I f	Div'd rein	vestmen	t plan av	ailable. (() Include	es Co	npanv's	Financia	I Strengt	th	Α
	\$0.02; '	on- Qua 12, a ch	rterly earr nange in rt due oo	the shar	y not sun e count.	n to total d Next ear ividends h	due to I nings i	Div'd rein ntangible	vestmen s. In '17	t plan av 7: \$8.143	ailable. (C 3 billion,	c) Include \$23.56/s	h. Sto	mpany's ck's Pric ce Growt	e Stabili		th	A 100 20

(\$0.09); '13, \$1.17; '14, (\$2.12); '15, (\$1.81); report due early August. (B) Dividends histori (\$1.76); '17, (\$0.42); '18, Q1, \$0.08. cally paid mid-Mar, June, Sept., and Dec.
 (\$1.76); '17, (\$0.42); '18, Q1, \$0.08. cally paid mid-Mar, June, Sept., and Dec.
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 (\$1.76); '17, (\$

of 9

	RLY-	CLA	RK _{N'}	YSE-ki	MB	R P	ECENT 1 Rice	03.53	B P/E Ratio	15.	0	16.3 18.0	RELATIV P/E RATI	0.8	2 DIV'D YLD	3.9		/ALUI LINE		Page
			High: Low:	72.8	69.7 50.3	67.0 43.1	67.2 58.3	74.1 61.0	88.3 70.5	111.7 83.9	118.8 102.8	129.9 103.0	138.9 111.3	136.2 109.7	123.5 97.1			Target	Price	
AFETY	New 7/2		LEGEN 14	.0 x "Cash	n Flow″ps	sh												2021	2022	
	4 Lowered	6/22/18	Options:	elative Pric Yes	e Strength															200 160
TA .75 (1.00 - 2021-23 PR	ROJECTIO		Snaded	area indica	ates recess						րութվո	եսուլյի	11111. 	n ⁿ ⁿⁿ	17	1				100
Price	A Gain	nn'l Total Return							Ē	1										-80
igh 200 (· ow 165 (·	(+95%) (+60%)	20% 15%	H-++++ ⁺⁺⁺⁺	-	<u>''''''''</u>	1.1.1 ¹¹	,,,,,,,,,,,, ,,,,	PUnde .				-								+60 +50
nsider Decis A S O		FMA	••••••	******	*******	· · • • * • • • •			,,	····	·····	·	· · · ·							+40
Buy 1 0 0 bitions 0 0 0	0 0 0	0 0 0											-		••••					+30
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nstitutional I 3Q2017	4Q2017	1Q2018	Percent	t 24 –														STOCK	INDEX	
o Buy 537 o Sell 568	532	563 632	shares traded	16 - 8 +							hilaan	di					1 yr. 3 yr. 5 yr.	-19.7 1.7 21.7	14.3 29.1 67.5	_
lld's(000) 280520 2002 2003		257169 2005	2006	2007	2008	2009	2010		2012	2013	2014	2015	2016	2017	2018	2019		UE LINE P		21-23
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	51.04	52.01	54.40	56.05	Sales pe			66.0
4.81 4.91 3.36 3.38	5.39 3.61	5.74 3.78	6.10 3.90	6.34 4.25	5.98 4.06	6.40 4.52	6.53 4.45	6.78 3.99	6.70 4.42	7.89 5.53	6.40 3.91	4.87 2.77	8.05 5.99	8.38 6.23	9.15 6.90	9.70 7.40		low" per s s per sh 4		12.3 9.2
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	3.68	3.88	4.00	4.08		ecl'd per		4.6
1.70 1.75 11.06 13.49		1.54 12.04	2.13 13.38	2.35 12.41	2.19 9.38	2.03 12.96	2.37 14.54	2.45 13.27	2.81 12.81	2.50 12.75	2.84 2.00	2.93 d.48	2.16 d.29	2.24 1.97	2.50 2.15	2.60 3.70		ending pe lue per sh		2.7 16.1
510.80 501.60		461.50	455.60	420.90	413.60	417.00	406.90	395.70	389.30	380.80	365.30	360.90	356.60	351.10	345.00	340.00		n Shs Out		325.0
17.5 14.9 .96 .85		16.5 .88	15.9 .86	16.3 .87	15.2 .91	12.2 .81	14.1 .90	16.9 1.06	18.2 1.16	17.8 1.00	28.1 1.48	40.6 2.04	21.2	19.9 .99	Bold figu Value		-	'I P/E Rat P/E Ratio		20
.90 .05 2.0% 2.7%		.00 2.9%	.00 3.2%	.07 3.0%	3.7%	4.3%	.90 4.1%	4.1%	3.7%	3.3%	3.1%	3.1%	1.11 2.9%	.99 3.1%	estim			'l Div'd Yi		1. 2.5
APITAL STRU					19415	19115	19746	20846	21063	21152	19724	18591	18202	18259	18775	19050	Sales (\$	mill)		214
otal Debt \$768 T Debt \$6081 r			s \$2100 m st \$700 m		17.2% 775.0	19.4% 783.0	18.7% 813.0	16.7% 1091.0	16.8% 857.0	19.3% 863.0	17.2% 862.0	12.7% 746.0	22.1%	22.2% 724.0	22.5% 750	23.0% 775		g Margin ation (\$mi	IIV	22.0 100
T interest earn.	ned: 10.8>		0% of Tot.	. Cap'l)	1698.0	1884.0	1843.0	1591.0	1750.0	2142.0	1476.0	1013.0	2166.0	2217.0	2400	2520	Net Prof	•	,	300
acco Uncon	italizad A			• •	27.0% 8.7%	29.0% 9.9%	30.9% 9.3%	30.2% 7.6%	31.7% 8.3%	31.5% 10.1%	38.0% 7.5%	31.3% 5.4%	30.6%	28.6% 12.1%	24.0% 12 8%	23.5% 13.2%	Income Net Prof			23.0 14.0
eases, Uncapi ension Assets					1061.0	932.0	9.3%	886.0	498.0	702.0	d667.0	d923.0	d731.0	d647.0	d650	d475		Cap'l (\$n	nill)	d1
fd Stock None	e				4882.0	4792.0	5120.0	5426.0	5070.0	5386.0	5630.0	6106.0	6439.0	6472.0	6000	6000	-	rm Debt (600
ommon Stock s of 4/16/18	k 349,329	,075 shs.			3878.0 20.9%	5406.0 19.7%	5917.0 17.7%	5249.0 16.1%	4985.0 18.8%	4856.0 22.3%	729.0 25.4%	d174.0 19.6%	d102.0 36.7%	690.0 33.2%	750 35.5%	1250 35.0%	•	ity (\$mill) n Total C		523 26.5
ARKET CAP:	\$36.2 hil	lion (Lar	ne Can)		43.8%	34.9%	31.1%	30.3%	35.1%	44.1%	NMF		NMF	NMF	NMF	NMF		on Shr. Eq		57.0
URRENT POS		2016	,	3/31/18	19.3% 56%	16.6% 52%	13.1% 58%	9.4% 69%	12.0% 66%	18.9% 57%	30.2% 85%	NMF	NMF 61%	NMF 61%	NMF 58%	NMF 55%		l to Com I s to Net P		28.5 50
(\$MILL.) ash Assets		923 2176	616	626 2470	BUSIN	ESS: Kir	nberly-Cla	ark develo	ops, mar	nufacture	s, and m	narkets	provides	s medical	l supplies	, infectio	n preven	tion & he	ealth ed	ucatior
leceivables	O)E	1679	2315 1790	1778				Huggies, F Depend, a							nted for 1 1% of st					
Other Current Assets	, –	337 5115 -	490 5211	498 5372	product	ts (Kleer	iex, Scot	t, Cottone	lle, and	Ýiva). k	C Profe	ssional	State S	t., 5.1%	(3/18 P	roxy). In	c.: DE.	Pres.: M	lichael I	D. Hs
ccts Payable bebt Due		2609 1133	2834 953 2071	2826 1599				ealth/safet nitizers, tis							Thomas 972-281-1				,	
Other Surrent Liab.		<u>2104</u> 5846 -	2071 5858	2249 6674				k got							ow ai					
NNUAL RATE			st Est'd					e ar. I d shai							ocus o g capa					
f change (per sh) ales	10 Yrs 3.0	1%	8	21-'23 8.0%	9 %,	on a	1 5%	rever	nue g	gain.	Howe	ever,	initia	tives.	Kim	berly	will	proba	bly s	slasł
Cash Flow" arnings	1.5 2.5	% 3.	0% 10	9.5% 0.5%				note tł ficant							costs, nline					
	6.5	% 6. 	0%	3.5% NMF	with	the	compa	ny's G	Hobal	l Rest	ructu	ring	busir	lesses	. And	even	thoug	gh the	com	pany
lividends	ADTEDIN	SALES (\$ r		Full				ssed of tl							bly iı restru					
Dividends Book Value		Sep.30		Year 18591	comi	ng in	\$0.26	a shai	re for	the p	eriod.	The	of 20	20, w	e expe	ect th	at the	cam	paign	wil
Dividends Book Value Cal- ndar Mar.31	Jun.30	4718		10001				ly driv risons							ear fi nberly					
vidends ook Value Cal- QU ndar Mar.31 2015 4691 2016 4476	Jun.30 4643 4588	4718 4594	4539 4544	18202	exch	ange				ne inte	erim.		millio	on-\$70) milli	on thi	is yea	r.	-	
vividends ook Value Cal- Ndar Mar.31 2015 4691 2016 4476 2017 4483	Jun.30 4643			18202 18259 18775	uct p	pricing				· · · · ·			1 116	100-0	mailt	V 1661	ne no		UCCE 1	rısk
viderids ook Value Cal- 015 4691 016 4476 017 4483 018 4731 2019 4750	Jun.30 4643 4588 4554 4675 4820	4594 4640 4750 4780	4544 4582 4619 4700	18259 18775 19050	uct p The	oricing com	pany	ougl e nea	nt to						tota			lds go pos		
Widends book Value Cal- QU ndar Mar.31 2015 4691 2016 4476 2017 4483 2018 4731 2019 4750 Cal- EA	Jun.30 4643 4588 4554 4675	4594 4640 4750 4780 PER SHARI	4544 4582 4619 4700 E ^	18259 18775	uct p The prog earn	oricing com gress ings	pany in th will p	ougł e nea robably	nt to r tern y clin	m. In nb at	all, s 10%-	hare 15%	adju over	sted the 2	tota 2021-2	l re 2023	turn pull.	pos It offe	sibil i ers a	i tie s n at
vividerids look Value Cal- QU. ndar Mar.31 2015 4691 2016 4476 2016 4476 2017 4483 2018 4731 2019 4750 Cal- EA Mar.31 2015 1.27	Jun.30 4643 4588 4554 4675 4820 ARNINGS F Jun.30 d.83	4594 4640 4750 4780 PER SHAR Sep.30 1.41	4544 4582 4619 4700 E A Dec.31 .91	18259 18775 19050 Full Year 2.77	uct p The prog earn for t	oricing com gress ings the fu	pany in th will pa ill yea	ougł e nea	nt to r tern y clin a 3%	m. In nb at % rev	all, s 10%- enues	hare 15% ad-	adju over tract	sted the 2 ive di	tota	l re 2023 1 yiel	turn pull. d, and	pos It offe d furt	sibil i ers a her h	itie s n at nikes
ividerids icook Value Cal- QU. ndar Mar.31 2015 4691 2016 4476 2016 4476 2017 4483 2018 4731 2019 4750 Cal- E/ Mar.31 2015 1.27 2016 1.50	Jun.30 4643 4588 4554 4675 4820 ARNINGS F Jun.30 d.83 1.56	4594 4640 4750 4780 PER SHARI Sep.30	4544 4582 4619 4700 E A Dec.31	18259 18775 19050 Full Year 2.77 5.99 6.23	uct p The prog earn for t vanc with	oricing com gress ings the fu e. Re reor	pany in th will pa cent U ganiza	ough e nean robably ar, on J.S. ta ation e	nt to r tern y clin a 3% ax ref efforts	m. In nb at % rev form, s, and	all, s 10%- enues comb d ong	hare 15% ad- ined oing	adju over tract shoul focus	sted the si ive di d sw ed ac	tota 2021-2 vidence veeten counts	l re 2023 d yiel the s. And	turn pull. d, and dea d KM	pos It offe d furt l for B ofte	sibili ers a her h inc en st	ities n at nikes ome ands
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Widends Book Value Cal- ndar QU. Mar.31 2015 4691 2016 4476 2017 4483 2018 4731 2019 4750 Cal- ndar Mar.31 2015 1.27 2015 1.27 2015 1.27 2016 1.50 2017 1.57 2018 1.71 2019 1.80	Jun.30 4643 4588 4554 4675 4820 ARNINGS F Jun.30 d.83 1.56 1.49 1.60	4594 4640 4750 4780 PER SHAR Sep.30 1.41 1.52 1.60 1.75 1.85	4544 4582 4619 4700 E ^ Dec.31 .91 1.40 1.57 1.84 1.95	18259 18775 19050 Full Year 2.77 5.99 6.23	uct p The prog earn for t vanc with stock net Like	oricing com gress ings the fu e. Re reor to buy to no wise,	pany in th will part cent U ganiza packs nparis we loc	ough e nean robably ar, on J.S. ta tion e should ons bk for t	nt to r tern y clin a 3% ax ref efforts also mov the bo	m. In nb at % revo form, s, and help ing ottom	all, s 10%- enues comb l ong lift sh forw line t	hare 15% ad- ined oing are- ard. o in-	adju over tract shoul focus out overa shoul	sted the 2 ive di ld sw ed ac for its ill co ld not	tota 2021-2 vidence veeten counts s defe onserv te, ho	l re 2023 d yiel the s. And ensive ative weven	turn pull. d, and dea d KM char app c, tha	pos It offe d furt l for B offe eateri eal. t thes	sibili ers a: her l inc en st stics Inves se sh	ities n at nikes ome ands and stors ares
bividerids sook Value Cal- QU, ndar Mar.31 2015 4691 2016 4476 2017 4483 2018 4731 2019 4750 Cal- EF Mar.31 2015 1.27 2016 1.50 2017 1.57 2018 1.71 2019 1.80 Cal- QUAR ndar Mar.31	Jun.30 4643 4588 4554 4675 4820 ARNINGS F Jun.30 d.83 1.56 1.49 1.60 1.80 RTERLY DIV Jun.30	4594 4640 4750 4780 PER SHARI Sep.30 1.41 1.52 1.60 1.75 1.85 VIDENDS P. Sep.30	4544 4582 4619 4700 E^ Dec.31 1.40 1.57 1.84 1.95 AID ^B ■ Dec.31	18259 18775 19050 Full Year 2.77 5.99 6.23 6.90 7.40 Full Year	uct p The prog earn for t vanc with stock net Like creas	oricing com gress ings the fu e. Re reor to buy to no wise,	pany in th will particular cent Uganization parisation we location a mid	ough e nean robably ar, on J.S. ta tion e should ons	nt to r tern y clin a 3% ax ref efforts also mov the bo	m. In nb at % revo form, s, and help ing ottom	all, s 10%- enues comb l ong lift sh forw line t	hare 15% ad- ined oing are- ard. o in-	adju over tract shoul focus out shoul have	sted the 2 ive di ld sw ed ac for its ill co ld not pulle	tota 2021-2 vidence veeten counts s defe	l re 2023 d yiel the s. And ensive ative weven about	turn pull. d, and dea d KM char app c, tha it 14%	pos It offe d furt l for B offe acteri eal. t thes since	sibili ers a her h inc en st stics Inves se sh e the	ities n at nikes ome ands and stors ares stars
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bividerids sook Value Cal- QU, ndar Mar.31 2015 4691 2016 4476 2017 4483 2018 4731 2019 4750 Cal- EF Mar.31 2015 1.27 2016 1.50 2017 1.57 2018 1.71 2019 1.80 Cal- QUAR ndar Mar.31	Jun.30 4643 4588 4554 4675 4820 ARNINGS F Jun.30 d.83 1.56 1.49 1.60 1.80 RTERLY DIV Jun.30	4594 4640 4750 4780 PER SHARI Sep.30 1.41 1.52 1.60 1.75 1.85 VIDENDS P. Sep.30	4544 4582 4619 4700 E^ Dec.31 1.40 1.57 1.84 1.95 AID ^B ■ Dec.31	18259 18775 19050 Full Year 2.77 5.99 6.23 6.90 7.40 Full Year	uct p The prog earn for t vanc with stock net Like creas throw Rest	ricing com gress ings the fu e. Re reor to buyh con wise, se at ugh 20 tructo ageme	pany in th will particular cent U ganiza backs nparis we loce a mid 019. uring ent ar	ough e near robably ar, on J.S. ta tion e should ons bk for t - to u	nt to r tern y clim a 3% ax relefforts also mov the bo pper- ts ar ced a	m. In nb at % rev form, s, and help ing ottom single e un new	all, s 10%- enues comb l ong lift sh forw line t -digit der v wides	hare 15% ad- ined oing are- ard. o in- clip vay. scale	adju over tract shoul focus out focus over a shoul have of the term track	sted the sive di- ive di- id sw ed ac- for its dl not pulled e year volat the k	tota 2021-2 vidence vecten counts s defe onserv te, ho d back	l re 2023 d yiel the s. And ensive ative wever about nay e thought	turn pull. d, and d KM char app c, tha it 14% xperie gh it rket a	pos It offe furt for B ofte acteri eal. t thes since ence se is r verag	sibilitiers at her h incen st stics Invest se sh the ome n ankee es for	ities n at nikes ome ands and stors ares star near d to r rel

Stock's Price Stability Price Growth Persistence 95 65 40 Earnings Predictability

(A) Dil. earnings. Excl. non-recurring in shares out. Next earnings report due late (C) Incl. intang. In '1.' \$1,5/6.0 mill., \$4.49/sh. gains/(losses): '02, (\$0.12); '03, (\$0.05); '04, (\$0.05); '07, (\$0.16); '(B) Div's hist. paid in early Jan., Apr., Jul., and '(D) In millions.
 (B) Div's hist. paid in early Jan., Apr., Jul., and '(C) Div's hist. Provided without warranties of any kind. THE PUBLISHER IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS HEREIN. This publication is strictly for subscriber's own, non-commercial, internal use. No part of it may be reproduced, resold, stored or transmitted in any printed, electronic or other form, or used for generating or marketing any printed or electronic publication, service or product

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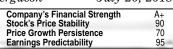
PROC	TER	& GA	MBI	ENV	SF-PG	R	ecent Rice	77.2		₀ 17 .'	7	18.7 18.0	RELATIV P/E RAT	E 0.9	6 DIV'D YLD	3.7		/ALUE LINE	I	Pag
TIMELINESS	-		High:	75.2		63.5 43.9	65.4	67.7	71.0 59.1	85.8	93.9 75.3	91.8	90.3 74.5	94.7 83.2	91.9	•		Target	Price	
AFETY		d 1/11/02	Low:	NDS	54.9		39.4	57.6	59.1	68.4	/5.3	65.0	/4.5	83.2	70.7		-	2021	2022	202
ECHNICAL	4 Lower		Options:	elative Pric	e Strength															-16 -12
ETA .70 (1.0 2021-23	00 = Market PROJEC		Shaded	area indic	ates reces															+10
Price	Gain	Ann'l Total Return		" السينان				1						, 1° 1, 11° 1, 1	1.4 Q. ~ .	-				+80 -60
igh 130 ow 105	(+70%) (+35%)	17%			••••	I _I III		_												+50 40
nsider Dec	cisions		1					••••••		**********	******		*******							-30
Buy 0 0	0 0 0	J F M A 0 0 0 0 1 2 1 5 0										·····		*********						<u> </u>
Sell 19 0	153	2360			h										•		% то	T. RETUR		_15
nstitutiona 302	017 4Q20	17 1Q2018	Percen	t 12 -													1.vr	THIS V STOCK -14.2	INDEX 14.3	L
oSelí 10		2 1137	shares traded	8 4													1 yr. 3 yr. 5 yr.	2.9 10.9	29.1 67.5	F
Hd's(000)16634 2002 200			2006	2007	2008	2009	2010		2012	2013	2014	2015	2016	2017	2018	2019		UE LINE PI		21-23
15.47 16.			21.46	24.42	27.53	27.09	27.81	29.85	30.45	30.69	30.64	28.10	24.47	25.48	26.80	28.00	Sales pe			32.0
	82 3.1 04 2.3		3.51 2.64	4.25	4.97 3.64	4.86 3.58	4.87 3.53	5.21 3.93	5.20 3.85	5.33 4.05	5.57 4.22	5.31	4.97	5.21 3.92	5.50 4.25	5.85 4.50		low" per s s per sh ^A		7.9 6.4
		1.03	1.15	1.28	1.45	1.64	1.80	1.97	2.14	2.29	2.45	2.59	2.66	2.70	2.84	2.88		ecl'd per		3.
	57 .8 63 6.1	80 .88 9 6.47	.84 19.33	.94 20.87	1.00 22.46	1.11 21.18	1.08 21.20	1.20 24.14	1.44 22.87	1.46 24.64	1.42 25.40	1.38 22.83	1.24 21.34	1.33 21.45	1.35 22.10	1.30 23.00		ending pe lue per sh		1.: 28.8
2601.5 2594 22.4 21	1.4 2543 1.6 21		3178.8 21.5	3131.9 20.5	3032.7 18.6	2917.0 16.4	2838.5 17.0	2765.7 16.0	2748.0 16.7	2742.3 17.8	2710.8 19.0	2714.5 20.9	2668.1 21.4	2553.3 22.3	2500.0	2475.0	Commo	n Shs Out I'l P/E Rat	st'g E	2450
	23 1.1		1.16	1.09	1.12	1.09	1.08	1.00	1.06	17.8	1.00	1.05	1.12	1.09	Bold fig Value	Line		P/E Ratio	-	18 1.
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%	3.1%	estin			i'l Div'd Yi	eld	3.0
Otal Debt\$3) bill.	83503 24.2%	79029	78938 24.2%	82559 22.6%	83680 22.6%	84167 22.3%	83062 23.7%	76279 23.4%	65299 26.2%	65058 26.4%	67000 26.5%	69250 26.5%	Sales (\$	mill) ^A Ig Margin		800 28.0
T Debt \$22.4 Tot. Int. Cove			t \$1.350 b	oill.	3166.0	3082.0	3108.0	2838.0	3204.0	2982.0	3141.0	3134.0	3078.0	2820.0	3000	3225	Deprecia	ation (\$mi	II)	35
		(2	9% of Tot		12075 24.9%	11293 26.3%	10946 27.3%	11797 22.3%	11344 24.2%	11869 23.2%	12220 23.5%	11535 20.2%	10441	10733	10750 23.0%	11250 22.0%	Net Prof	<u>, , , , , , , , , , , , , , , , , , , </u>		158 21.0
eases, Unca ension Ass					14.5%	14.3%	13.9%	14.3%	13.6%	14.1%	14.7%	15.1%	16.0%	16.5%	16.0%	16.2%	Net Prof	it Margin		19.8
rid Stock \$1			Oblig. \$1 I Div'd \$1	98 mill.	d6443 23581	d8996 20652	d5500 21360	d5323 22033	d2997 21080	d6047 19111	d2109 19811	d144.0 18329	3012.0	d3716 18038	d500 20000	325 20000		Cap'l (\$n rm Debt (\$		150 2000
ESOP owns Class B share					69494	63099	61439	68001	64035	68709	69976	63050	57983	55778	55250	56930	Shr. Equ	ity (\$mill)		706
Common Sto				,	13.8% 17.4%	14.3% 17.9%	13.8% 17.8%	13.5% 17.3%	13.8% 17.7%	13.9% 17.3%	14.0% 17.5%	14.6%	13.9%	14.9% 19.2%	14.5% 19.5%	14.5% 20.0%		on Total Ca on Shr. Eq		17.5 22.5
MARKET CA			,	0/04/40	10.9%	10.1%	9.1%	9.0%	8.3%	7.9%	7.7%	6.9%	5.3%	6.4%	7.0%	7.5%	Retained	to Com I	Eq	10.0
CURRENT P		2016		3/31/18	39%	45%	50%	49% r & Gambl	54%	55%	57%	63%	71%	67%	64%	62%		s to Net P		54
Cash Assets Receivables nventory (F		13348 4373 4716	15137 4594 4624	15534 5149 5207	sumer	package	d goods,	which are	market	ed and so	old in ma	ore than	Diveste	d battery	busines	s in 2/16	6. Has 98	5,000 em	ployees.	Off.
Other Current Asse		11345	2139 26494	2070				he world. ire (18%					Vangua	ırd, 6.6%	(8/17 pr	oxy). Ch	nairman/P	ock; Bla resident/	CEO: D	avid S
Accts Payab		9325	9632	9716				6); Fabric e (28%). I										amble Pl ernet: ww		
Debt Due Other		11653 9792	13554 7024	12862 8133	<u> </u>			rocter										vear.		
Current Liab			30210 ist Est'd	30711 1'15-'17				essur					botto	m lir	ne wil	l lik	ely gi	row a		
f change (per s Sales	h) 10 Y	rs. 5 Y	rs. to	' 21-'23 4.0%				nearly 1e yea									al 201 r ts ar	e und	ler v	vay
Cash Flow" Earnings	' 3	.0% .	.5%	7.5% 9.0%				r yea the										y cor ols a		
Dividends Book Value	8	.5% 6	.0%	4.5% 4.5%	mak	ing p	orogre	ss, in	vesto	rs we	ere li	kely	uctiv	ity im	prove	ment	s, thou	igh we	e imâ	gine
Fiscal Q	UARTERL	' SALES (\$ n	nill.) A	Full Fiscal				difficu been f										ning e 1 the (
Year Ends Sep. 2015 2018			Jun.30 17790	Year 76279	P&C	l's res	tructi	aring e					Heal	th bu	siness	of L	D arms	tadt, (Germ	any
2016 1652	7 16915	15755	16102	65299		ie nea com		n. is p	ooised	d to	rebo	und						ghly 3 d helj		
2017 1651 2018 1665		5 15605 5 16281	16079 16671	65058 67000				cal ye had										kewise Cjoin		
	0 17500) 17000 PER SHARI	17650 F AB	69250 Full	unfa	vorab	le cu	irrency	env	rironm	ient	over	with	Teva	in Jul	y, and	d this	deal v	vill li	kely
		Mar.31		Fiscal Year				ears, a oded s					repla	ice th		bus		from		
2015 1.0	04 1.0 98 1.0		1.00 .79	4.02 3.67	gain	s froi	n ove	erseas	marl	cets.	Never	the-	P&G	hâs	been	sĥor		p its i		
2017 1.0	03 1.0	8.96	.85	3.92				any ha focusin										e a ter nately		
2018 1.0 2019 <i>1.</i> 1			.97 1.00	4.25 4.50	rema	aining	bran	ds and	d pro	duct l	ines.	Too,	lion	of it	s lon	g-teri	n de	bt. Ťl		
		DIVIDENDS F		Full				ntinue vision			hen 1 stribu						t expe orthv	nse. vhile	total	re
endar Mar.: 2014 .60		60 Sep.30 4 .644	Dec.31 .644	Year 2.53	netw	vork t	o helj	p expa	nd it	s reac	h. Wl	hat's	turn	pote	ntial	over	the c	omin	g 3- t	to 5
2015 .64	.66 14	3.663	.663	2.63	initi	atives	and	any ma mercha	indisi	ng an	d mar	ket-	yield	, ās v	vell a	s the	comp	active any's	defer	sive
2016 .66 2017 .67	.69	.69	.67 .69	2.67 2.74	ing o	campa	ign to	o gain ought	mark	et sha	are. Ir	ı all,		ities, a Seidn		o its i	nvesti	nent a	ippea <i>e 22</i> ,	
2018 .69 A) Fiscal yea			(B) Dilut	ed EPS			-	ings repo			-		v			npanv's	Financia	I Strengt		Z01 A++
re earnings 5¢); '03, (19	 Exclud 	es nonrec	urríng: 'C	02, late	July.			d in Feb.,		(E) In mil	lions.		, ,=50		Sto	ck's Ýric	e Stabili th Persis	ty		100
								ble. (D) Inc								nings Pr				100

(25¢); '03, (19¢); '08, (12¢); '09, (64¢); '10, (C) Dividends historically paid in Feb., May, 58¢; '11, (61¢); '12, (73¢); '13, d19¢; '14, d21¢. (Aug., and Nov. = DRIP available. (D) Includes © 2018 Value line, Inc. All rights reserved. Factual material is obtained from sources believed to be reliable and is provided without warranties of any kind. THE PUBLISHER IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS HEREIN. This publication is strictly for subscriber's own, non-commercial, internal use. No part of it may be reproduced, resold, stored or transmitted in any printed, electronic or other form, or used for generating or marketing any printed or electronic publication, service or product.

WP-51 enzie

SMUCKER (J.M.)) CO	NYS	SE-SJM	R P	ECENT 1	09.14	4 P/E RATIO	o 15 .	O (Traili Medi	ng: 15.7) an: 17.0)	RELATIVE P/E RATIO		1 DIV'D YLD	2.9		/ALU LINE		Page
MELINESS 3 Raised 3/2/18	High: Low:	64.3 46.6	56.7	62.7 34.1	66.3 53.3	80.3 61.2	89.4 70.5	114.7 86.5	107.7 87.1	125.3 97.3	157.3 117.4	143.7 99.6	133.4 96.1		7			Range 2023
AFETY 1 Raised 5/1/09	LEGEN 11	.5 x "Cash	n Flow" p sh		F											2021	2022	320
CHNICAL 4 Lowered 7/6/18	Options:	elative Price Yes	e Strength															
TA .75 (1.00 = Market) 2021-23 PROJECTIONS	Snaded	area indica	ates recessi	on														200 160
Ann'l Total Price Gain Return								ihu.	աստութ	UPHONE I		رال 11.11	н _г				+	120
gh 175 (+60%) <i>15%</i> w 140 (+30%) <i>9%</i>						- arriali	in the second second											100 80
sider Decisions						יוווןיייק												60
SONDJFMAM Buy 1000000000	-+			İ.	••••••	•••••	******	······		-*************	••••••	••••						40
ions 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			· · ·			•							••••		% то	T. RETUR	I RN 6/18	
stitutional Decisions 302017 402017 102018	Percent	l t 30 -														STOCK	VL ARITH.* INDEX	_18
Buy 315 306 329 Sell 363 306 338	shares traded	20 – 10 –		Ասհո	hullu		hat ha	d. 1. d		1. 1111					1 yr. 3 yr.	-6.7 6.5	13.9 32.8	E
J's(000) 93087 87895 91258 DO2 2003 2004 2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	5 yr. © VΔI	17.2 UE LINE P	71.5	21-23
6.36 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	65.17	64.78	72.90	74.80	Sales pe		00.220	83.85
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	10.33	10.64	11.05	11.75		low" per		13.90
2.19 2.40 2.60 2.65 .83 .92 1.02 1.08	2.89 1.14	3.15 1.22	3.77 1.31	4.37 1.45	4.79 1.68	4.73 1.92	5.37 2.08	5.64 2.32	5.35 2.56	5.89 2.68	6.49 3.00	6.97 3.12	7.10 3.18	7.70 3.36		s per sh ⁴ Decl'd per		9.30 3.90
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	1.70	2.83	3.15	2.65	Cap'l Sp	Dending p	er sh	2.75
22.59 24.13 28.88 30.34 49.77 50.17 58.54 56.95	31.62 56.78	32.95 54.62	41.71 118.42	44.71 119.12	46.35 114.17	46.82 110.28	48.35 106.49	49.46 101.70	59.27 119.58	60.26 116.31	60.39 113.44	69.48 113.57	73.50 113.50	77.55 113.00		alue per s n Shs Ou		91.00 110.00
16.5 18.4 18.1 17.1	16.5	16.9	12.0	12.5	13.2	16.2	16.0	101.70	19.56	20.1	21.0	17.0	Bold fig			n'i P/E Rat	•	17.0
.90 1.05 .96 .91	.89	.90	.72	.83	.84	1.02	1.02	1.03	1.03	1.01	1.10	.85	Value estin	Line	Relative	P/E Ratio	D	.95
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%	2.2%	2.6%			-	n'l Div'd Y	'ield	2.5%
APITAL STRUCTURE as of 4/30 tal Debt \$4832.0 mill. Due in 5 Y		4 mill.	3757.9 17.5%	4605.3 22.1%	4825.7 23.0%	5525.8 20.1%	5897.7 20.5%	5610.6 21.4%	5692.7 19.2%	7811.2 20.0%	7392.3 22.4%	7357.1 22.7%	8275 21.0%	8450 21.5%	Sales (\$ Operatir	ng Margin		9225 22.5%
Debt \$4688.0 mill. LT Interest otal interest coverage: 7.20)	t \$174.0	mill.	119.8	181.9	239.6	208.4	250.9	256.4	268.4	430.1	419.0	413.1	450	465		ation (\$m		510
0 ,	(37% of		321.4 32.9%	520.3	566.5 29.6%	535.6 35.3%	584.5 32.6%	588.0	552.9	704.2	752.5	795.1	805	865		fit (\$mill)		1020
ases, Uncapitalized Annual rent	ials \$42.8	3 mill.	8.6%	33.1% 11.3%	29.0%	35.3% 9.7%	32.0% 9.9%	32.8% 10.5%	26.6% 9.7%	9.0%	10.2%	26.6% 10.8%	24.5% 9.7%	24.5% 10.2%		Tax Rate fit Margin		24.0% 11.1%
ension Assets-4/18 \$639.7 mill.			337.7	744.7	1154.3	1026.5	998.4	648.1	1029.7	360.4	d190.8	521.2	d675	d400	Working	g Cap'l (\$r		775
blig. \$497.0 mill.			910.0 4939.9	900.0 5326.3	1304.0 5292.4	2020.5 5163.4	1967.8 5148.8	1879.8 5029.6	5944.9 7086.9	5146.0 7008.5	4445.5 6850.2	4688.0 7891.1	5450 8345	5300 8765	-	erm Debt (uity (\$mill		5800 10010
fd Stock None ommon Stock 113,535,111 shs.			6.0%	8.9%	9.1%	8.0%	8.9%	9.1%	4.5%	6.5%	7.4%	7.0%	6.5%	7.0%	•	on Total C		7.0%
s of 6/12/18			6.5%	9.8%	10.7%	10.4%	11.4%	11.7%	7.8%	10.0%	11.0%	10.1%	9.5%	10.0%		on Shr. Ec		10.0%
IARKET CAP: \$12.4 billion (Larg URRENT POSITION 2015	2016 04	4/30/18	4.3% 34%	6.6% 32%	7.0% 34%	6.2% 40%	7.0% 38%	7.0% 40%	4.2% 46%	5.5% 45%	6.0% 45%	5.6% 44%	5.5% 45%	5.5% 44%		d to Com Is to Net F		6.0% 42%
(\$MILL.)	166.8	192.6				mucker C										Bits, Pup-	-	
eceivables 450.1	438.7 905.7	385.6 854.4	jams, je	llies, co	ffee, and	peanut b	utter. Als	so produc	es cooki	ng oils,	ture's R	ecipe. H	as about	7,000 e	mployee	s. Smuch	ker fami	y owns
ther <u>114.1</u>	130.6	122.4 1555.0				s, baking brand, the										Vanguaro CEO & I		
ccts Pavable 459.4	477.2	512.1				ids includ										berry La		
ebt Due 284.0 9	953.0 402.4	144.0 377.7		-		Bustelo,		,		,		<u>.</u>	-			www.jms		-
urrent Liab. 1213.0 18		1033.8		-		wea	_	_ ^		_						roteins weig		
change (per sh) 10 Yrs. 5 Yrs		21-23	note	for	J.M.	Smu	cker.	The	comp	bany	gins.	Furt	her, i	n ord	er to	try t	to rev	verse
ales 5.0% 6.0 Cash Flow" 9.5% 7.0	0% 4 0% 5	4.0% 5.0%				l Apri hile u										l top-l to inv		
arnings 8.5% 5.5 ividends 10.0% 9.0	5% 6 0% 5	6.5% 5.0%	well	short	t of or	ur exp	ectat	ion. (l	Note:	Our	ily in	adve	rtisin	g, ma	rketir	ng, an	d pro	oduct
ook Value 7.0% 6.0	0% 6	6.0%				ntatio he pri										w fisca 1e co i		
scal QUARTERLY SALES (\$ mi gins Jul.31 Oct.31 Jan.31		Full Fiscal Year	other	• dīffi	icult p	perform	nance	from	the	U.S.	ongo	ing.	In	a nu	tshell	l, Sm	nucke	r is
015 1952.0 2077.7 1973.9		7811.2				with f										xposu atego		
016 1815.8 1913.9 1878.8 017 1748.9 1923.6 1903.3		7392.3				ner F					creas	ing it	ts sta	kes ii	n the	coffe	e and	l pet
018 1975 2150 2125 2	2025	7357.1 8275				decli and <i>Pi</i>										t, the rchase		
		8450				ofit g										ling p		
iscal EARNINGS PER SHARE ear Jul.31 Oct.31 Jan.31		Full Fiscal Year	silvei	r lin	ing d	uring	an o	otherv	vise l	ack-	pet f	ood a	nd pe	et sna	cks, i	for \$1	.7 bi	llion,
	1.19	5.89				vas an offee s										xplore S. ba		
	1.46 1.99	6.49 6.97	strug	gled	earlie	r in th	e fisca	al yea	r.		(Pills	bury).	. In t	ime,	these	mov	es sh	
016 1.57 1.76 1.70	1.80	7.10				ring th fig										nargin		har
2016 1.57 1.76 1.70 2017 1.12 1.71 2.15 2018 1.35 1.95 2.00		7.70				o th fis revisio										wn m il rep		
2016 1.57 1.76 1.70 2017 1.12 1.71 2.15 2018 1.35 1.95 2.00 2019 1.55 2.10 2.10	1.95	/			some	e indu	stryw	vide a	nd ot	hers	likely	v refl	ects	the v	veake	r-than	n-expe	\mathbf{cted}
2016 1.57 1.76 1.70 2017 1.12 1.71 2.15 2018 1.35 1.95 2.00 2019 1.55 2.10 2.10 Cal- QUARTERLY DIVIDENDS PA	AID⊂∎	Full Year					ronore	al Sm	110201			mainn	to fig	001 9				hoor
2016 1.57 1.76 1.70 2017 1.12 1.71 2.15 2018 1.35 1.95 2.00 2019 1.55 2.10 2.10 Cal- ndar QUARTERLY DIVIDENDS PA- Mar.31 Jun.30 Sep.30	AID⊂∎	Full Year 2.44	comp		specifi											nd th		
1.57 1.76 1.70 1.12 1.71 2.15 1018 1.35 1.95 2.00 1019 1.55 2.10 2.10 Cal- ndar QUARTERLY DIVIDENDS PA Mar.31 Jun.30 Sep.30 2014 .58 .58 .64 2015 .64 .67	AID ⊂ ■ Dec.31 .64 .67	Year 2.44 2.62	comp erate the-s	s in tore	the isles,	ultraco where	ompet prici	itive ng ar	cente id pro	r-of- omo-	botto pullb	m-line ack, †	e out thoug	look i h, ma	for fis akes 1	scal 2 recove	2018. ry po	The
2016 1.57 1.76 1.70 2017 1.12 1.71 2.15 2018 1.35 1.95 2.00 2019 1.55 2.10 2.10 Cal- QUARTERLY DIVIDENDS PArticles PArticles Mar.31 Jun.30 Sep.30 2014 .58 .58 .64	AID ^c ∎ Dec.31 .64	Year 2.44	comp erate the-s tiona	s in tore l act	the isles, ivity	ultraco	ompet prici ce. T	titive ng ar his, a	cente nd pro long	r-of- omo- with	botto pullb tial t	m-line ack, †	e out thoug 1-2023	ook h, ma more	for fis akes 1	scal 2 recove ealing	2018. ery po	The

year. (B) Dil. egs. Excl. nonrecur./disc. (22c); '14, (\$2.02); '15, (13¢); '16, (\$1.39); '17, avail. Paid \$5-a-snr. spcl. divd., luvus. (u) incl. gain/(loss): '02, (17¢); '03, (19¢); '04, (36¢); '04, (36¢); '05, (20¢); '06, (13¢); '07, (15¢); '08, (65¢); '09, Next egs. report due late August. (C) Div'd paid Merged with Folgers. (© 2018 Value Line, Inc. All rights reserved. Factual material is obtained from sources believed to be reliable and is provided without warranties of any kind. THE PUBLISHER IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS HEREIN. This publication is strictly for subscriber's own, non-commercial, internal use. No part of it may be reproduced, resold, stored or transmitted in any printed, electronic or other form, or used for generating or marketing any printed or electronic publication, service or product.



of 9

NALMART, INC.	NYSE	-WMT		R P	ecent Rice	87.90) P/E Ratio	• 18. 4	4 (Traili Media	ng: 19.9) an: 15.0)	RELATIV P/E RATI	^E 0.9	8 DIV'D YLD	2.4	% ¥	ALUI LINE		Pag
IMELINESS 4 Raised 11/24/17	High: Low:	51.4 42.1	63.8 43.1	57.5 46.3	56.3 47.8		77.6 57.2	81.4 67.7	88.1 72.3	91.0 56.3	75.2 60.2	100.1 65.3	110.0 84.8		1		Price	
FETY 1 Raised 2/15/02	LEGE	NDS	h Flow″ p s				07.2	0	. 2.0		00.2	00.0	00			2021	2022	
CHNICAL 2 Lowered 4/20/18	Options:	elative Price	e Strength															-16
FA .70 (1.00 = Market)	Shaded	area indica	ates recess	ion									I I	_				+12 +10
2021-23 PROJECTIONS Ann'l Total									un and li	1. - 4. - 1.	an ^{en} in	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						80
Price Gain Return		11 states		illin, tul	····	dhata phat	μľ			- "	1							+60 +50
v 115 (+30%) <i>10%</i>		, II, T ^{, I} , II,			•••••••••		•*•••											<u>+</u> 40
Sider Decisions		*********	1		**********************	••••••		****	•••••	•••••								+30
uy 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0											•••••••	******	•					+20
ell 101106100															% TOT	. RETUR	N 3/18	-18
stitutional Decisions 202017 302017 402017	Percen	l t 12 -	1													STOCK	/L ARITH.* INDEX	L
Buy 713 704 718 Sell 691 705 648	shares							1			Ուհու				1 yr. 3 yr.	26.4 17.3	9.7 24.3	E
l's(000) 998023 995036 893157	traded													0040	5 yr.	35.4	68.8	
02 2003 2004 2005 00 00 00 00 75 70	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019		IE LINE PL	UB. LLC	21-2 209
6.09 60.00 68.02 75.79 2.61 2.95 3.47 3.78	84.40 4.27	95.34 4.83	103.34 5.16	107.82 5.64	119.98 6.42	130.76 6.92	141.57 7.69	147.32 7.92	150.45 7.93	152.48	159.41	166.25 7.91	168.65 8.80	180.40 9.30	Sales per "Cash Fl	ow"per s	h	209.
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	4.32	4.42	4.95	5.25	Earnings	per sh 4	AВ	6.
.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	2.08	2.12	Div'ds De			3.
8.95 10.12 11.67 12.77 95.0 4311.0 4234.0 4165.0	14.91 4131.0	16.26 3973.0	16.63 3925.0	18.69 3786.0	19.49 3516.0	20.86 3418.0	23.04 3314.0	23.59 3233.0	25.22 3228.0	25.47 3162.0	25.52 3048.0	26.38 3010.0	24.00 3000.0	25.00 2910.0	Book Val Common			32. 260
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	16.2	18.6	Bold fig		Avg Ann		v	
1.66 1.53 1.20 .97	.86	.79	.97	.93	.83	.78	.86	.84	.81	.78	.85	1.00	Value estin		Relative			1.
.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%	2.9%	2.5%			Avg Ann		ield	2.8
APITAL STRUCTURE as of 1/31/ tal Debt \$46487 mill. Due in 5 Y	'rs \$1252		405607 24.5%	408214 25.4%	421849 25.3%		469162 24.9%	476294 24.8%	485651 24.8%	482130 25.1%	485873 25.6%	500343 25.6%	506000 25.0%	525000 25.0%	Sales (\$n Gross Ma			565 25.
Debt \$36825 mill. LT Interest I. \$6780 mill. capitalized leases.	t \$2300	mill.	7.3%	7.6%	7.9%	7.7%	7.7%	7.7%	7.6%	7.0%	6.7%	6.7%	6.5%	6.5%	Operating	•		7.
otal interest coverage: 10.0x)	(32% c	of Cap'l)	7720	8416	8970	10130	10773	10942	11453	11528	11695	11700	11910	12080	Number			126
ases, Uncapitalized Annual rent	tale \$227	70 mill	13512 34.2%	14204 34.1%	14921 34.0%	15523 33.4%	16999 31.0%	16728 32.2%	16426 31.9%	14694 30.3%	13452 30.6%	13283 30.4%	14400 25.5%	14950 25.5%	Net Profi Income T			17: 25.0
	ιαιο ψεει	0 11111.	3.3%	3.5%	3.5%	3.5%	3.6%	3.5%	3.4%	3.0%	2.8%	2.7%	2.8%	2.8%	Net Profi			3.
Defined Benefit Pension Plan I Stock None		1	d6441	d7230	d6591	1 1	111878	d8160	d1994	d4380	d9239	d18857	d15000	d8800	Working			53
		1	34549 65285	36401 70749	43842 68542	47079 71315	41417 76343	44559 76255	43692 81394	44030 80546	42018	36825 79404	42500 72000	45200 72750	Long-Ter Shr. Equi	•		480 864
ommon Stock 2,950,696,818 shs of 3/28/18	3.	1	14.5%	14.1%	14.1%	14.0%	15.3%	14.7%	14.0%	12.6%	12.1%	11.4%	12.5%	12.5%	Return of			13.0
ARKET CAP: \$259 billion (Large	o Can)	ſ	20.7%	20.1%	21.8%		22.3%	21.9%	20.2%	18.2%	17.3%	16.7%	20.0%	20.5%	Return o	n Shr. Eq	uity	20.
	. /	1/31/18	15.0% 28%	14.1% 30%	15.3% 30%	14.7% 33%	15.2% 32%	13.9% 37%	12.6% 38%	10.4%	9.3%	9.0% 46%	9.5% 42%	10.5% 40%	Retained All Div'ds		•	10. 4
(\$MILL.)	6867	6756				Stores, Inc.									n 400 mil			
ceivables 5624	5835 3046	5614 43783				supercen					,				of U.S.			
her <u>1441</u>	1941	3511				ores, 660 S S., plus 6,3									300,000 e airman: G			
cts Pavable 38487 4	7689 1433	59664 46092				Asia, Can									E. Addr.:			
ebt Due 6004 her 20128 2	3920 1575	9662 22767				billion squ									1000. Inte			
		78521			-	ck ha									ig to			
	st Est'd	1 '14-'16				ares we leading									eader als in o			
change (per sh) 10 Yrs. 5 Yrs Iles 7.5% 5.0)%	' 21-'23 5.0%	fisca	l first	-quar	ter resi	ults.	That :	report	t did	nova	tive w	ays to	mer	ge the	onlir	ne an	d iı
ash Flow" 7.5% 4.0 rnings 6.0% 3.0)%	6.5% 5.5%				ell with vn aro									ences. been g			
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calendar year. Sales exclude rentals from Iicensed depts. (B) Based on diluted shares. May not sum due to rounding. Excls. n/r (\$0.23); '15 (\$0.08). Next earnings report due (D) In millions. © 2018 Value Line, Inc. All rights reserved. Factual material is obtained from sources believed to be reliable and is provided without warranties of any kind. THE PUBLISHER IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS HEREIN. This publication is strictly for subscriber's own, non-commercial, internal use. No part of it may be reproduced, resold, stored or transmitted in any printed, electronic or other form, or used for generating or marketing any printed or electronic publication, service or product.

Stock's Price Stability95Price Growth Persistence25Earnings Predictability95

	Search for news	S	earch		0	Sign in
Finance Home Watchlists	My Portfolio My Screener	rs Markets Industrie	s Personal Finance Te	echnology +++	-	TC DISRUPT SAN FRANCISCO
S&P 500 2,815.62 +6.07 (+0.22%)	25,199.29	Nasdaq 7,854.44 -0.67 (-0.01%)	•		Martin Chaven CFO, Goldinen Sachs	SAN FRANCISCU Septemblik 557470185 Get Your Place Nove
AT&T In . (T) NYSE - NYSE Dela ed Price. Curre	Add to watchlist	t			Quote Lookup	٩
	0.16%) 31.72 +0.0 After hours: 5:01PM E		Buy Sell			
Summar Chart Conve	rsations Statistics Profile	Financials Options Hold	ders Historical Data Analy	sis Sustainabilit 📷		
				Currenc in USD		
Earning E imate	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)	People Also Watch	
No. of Anal sts	8	8	12	12	Symbol Last Price	Change % Chang
Avg. Estimate	0.85	0.92	3.4	3.5	MCD 157.93 McDonald's Corporation	-1.82 -1.14
Low Estimate	0.8	0.86	3	3.36	GE 13.75 General Electric Company	+0.06 +0.449
High Estimate	0.9	0.98	3.59	3.77	VZ 51.14	-0.29 -0.56
Year Ago EPS	0.79	0.74	3.05	3.4	Verizon Communications Inc. XOM 82.22 Exxon Mabil Corporation	-0.09 -0.11
Revenue E imate	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)	Exxon Mobil Corporation PFE 37.66 Pfizer, Inc.	+0.01 +0.03
No. of Anal sts	6	5	9	9		
Avg. Estimate	39.34B	45.97B	172.78B	185.97B	Recommendation Tre	ends 🕨
Low Estimate	38.42B	45.58B	171.5B	184.09B	10 30 30 30	29
High Estimate	39.9B	46.55B	174.18B	187.3B	3 3 3	Strong Buy
Year Ago Sales	39.84B	39.76B	160.79B	172.78B	20	Buy Hold
Sales Growth (ear/est)	-1.20%	15.60%	7.50%	7.60%	10 20 20 1 0	Underperform
Gales Growin (ear/est)	-1.2U%	15.60%	7.50%	7.00%		Sell
Earning Hi ry	6/29/2017	9/29/2017	12/30/2017	3/30/2018	Jul Jun May	Apr
EPS Est.	0.73	0.75	0.65	0.87	Recommendation Ra	
EPS Actual	0.79	0.74	0.78	0.85	2.6	
Difference	0.06	-0.01	0.13	-0.02	1 2 3	
Surprise %	8.20%	-1.30%	20.00%	-2.30%	Strong Buy Ho Buy	old Under- Sell perform
					Analyst Price Targets	s (27) ,
EPS Tren	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)		Average 36.91
Current Estimate	0.85	0.92	3.4	3.5	Low 24.00	High 43.
7 Da s Ago	0.82	0.93	3.38	3.51	Current 31.	
30 Da s Ago	0.89	0.87	3.39	3.43	Yahoo Sma	all Business
60 Da s Ago	0.9	0.87	3.4	3.46		
90 Da s Ago	0.91	0.88	3.46	3.47	Data Disclaimer H Privacy (Updated) A	bout Our Ads Terms
EPS Revi i n	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)	(Upda	ated) ft
Up Last 7 Da s	N/A	1	N/A	N/A	1 Xin	Annual Alignment
Up Last 30 Da s	1	3	4	3		
Down Last 7 Days	N/A	N/A	N/A	N/A		
Down Last 30 Days	2	1	1	1		
Cr whE insta		1.2 ·	A . :			
Gr w h E imates	T	Industr	Sector	S&P 500		
Current Qtr.	7.60%	N/A	N/A	0.43		
Next Qtr.	24.30%	N/A	N/A	0.47		
Current Year	11.50%	N/A	N/A	0.22		
Next Year	2.90%	N/A	N/A	0.10		
Next 5 Years (per annum)	5.29%	N/A	N/A	0.11		

Finance schlists	s		Bearch nal Finance Tec	echnology 🚥	-	Average \$1.50 gn in	McK Page 2
S&P 500 2,815.62 +6.07 (+0.22%)	Dow 30 25,199.29 +79.40 (+0.32%)	Nasdaq 7,854.44 -0.67 (-0.01%)	Russell 2000 1,691.87 +4.61 (+0.27%)	Crude Oil 68.98 +0.90 (+1.32%)	Low 44.00 Upgrades a Upgrade	Deutsche Bank: Buy to	5/7/2018
Church & Dwight Co., NYSE - NYSE Delayed Price. Curr		watchlist			Upgrade	Hold	
53.79 -0.98 (-		.05 (0.09%)	Sell		Initiated	Deutsche Bank: to Buy	12/14/2017
At close: 4:02PM EDT	After hours: 4:11PM		Buy Sell	<u> </u>		Societe Generale: Hold to	
Summary Chart Conve	versations Statistics Profile	Financials Options Hole	olders Historical Data Analysis	rsis Sustainability		Buy	
				Currency in USD	Initiated	Macquarie: to Neutral	9/15/2017
Earnings Estimate	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)	l N	More Upgrades & Downgrades	:5
No. of Analysts	19	18	20	21			
Avg. Estimate	0.47	0.57	2.27	2.44		Yahoo Small Business	
Low Estimate	0.46	0.52	2.23	2.29	Data	a Disclaimer Help Suggestion	ons
High Estimate	0.5	0.59	2.28	2.5		cy (Updated) About Our Ads To (Updated)	
Year Ago EPS	0.41	0.49	1.94	2.27		WFt	
Revenue Estimate	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)		S Witnes Present	
No. of Analysts	15	14	18	19			
Avg. Estimate	1.01B	1.03B	4.11B	4.23B			
Low Estimate	998M	1.01B	4.08B	4.15B			
High Estimate	1.02B	1.07B	4.13B	4.29B			
Year Ago Sales	898M	967.9M	3.78B	4.11B			
Sales Growth (year/est)	12.10%	6.40%	8.70%	3.00%			
Earnings History	6/29/2017	9/29/2017	12/30/2017	3/30/2018			
EPS Est. EPS Actual	0.39	0.47	0.5	0.61			
Difference	0.41	0.49	0.52	0.63			
Surprise %	5.10%	4.30%	4.00%	3.30%			
EPS Trend	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)			
Current Estimate	0.47	0.57	2.27	2.44			
7 Days Ago	0.47	0.57	2.27	2.44			
30 Days Ago	0.47	0.57	2.27	2.44			
60 Days Ago	0.47	0.57	2.27	2.44			
90 Days Ago	0.49	0.58	2.27	2.44			
EPS Revisions	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)			
Up Last 7 Days	1	N/A	1	1			
Up Last 30 Days	1	N/A	1	3			
Down Last 7 Days	N/A	N/A	N/A	N/A			
Down Last 30 Days	N/A	1	1	1			
Growth Estimates	CHD	Industry	Sector	S&P 500			
Current Qtr.	14.60%	N/A N/A	N/A N/A	0.43			
Next Qtr. Current Year	16.30%	N/A N/A	N/A N/A	0.47			
Next Year	7.50%	N/A N/A	N/A	0.22			
Next real							
Next 5 Years (per annum)	10.45%	N/A	N/A	0.11			

	Taxon in succession		eerch			verage 49.6 Sign in	McKen Page 3 o
Finance chlists		1. Contraction		nnology 🚥	Low 44.00		
					Low 44.00 Current 4	45.12	High 61.00
					Upgrades	& Downgrades >	e ero closod
S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil	1 Upgrade	Barclays: Equal-Weight to	
2,815.62 +6.07 (+0.22%)	25,199.29 +79.40 (+0.32%)	7,854.44	1,691.87 +4.61 (+0.27%)	68.98 +0.90 (+1.32%)		Goldman Sachs: Soll to	
					Upgrade	Goldman Sachs: Sell to Neutral	4/17/2018
The Coca-Cola Compa NYSE - NYSE Delayed Price. Curro		hlist			1 Upgrade	Evercore ISI Group: In-Lin to Outperform	e 1/12/2018
45.12 -0.13 (-0		09 (0.20%)	Buy Sell		Initiated	Deutsche Bank: to Buy	12/14/2017
At close: 4:00PM EDT	After hours: 4:21PM		Buy			Wells Fargo: Market	
Summary Chart Conve	ersations Statistics Profile	Financials Options Hold	ders Historical Data Analysis	Sustainability	Upgrade	Perform to Outperform	11/14/2017
					Initiated	Daiwa Capital: to Outperform	6/13/2017
Earnings Estimate	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Currency in USD Next Year (2019)	D N	lore Upgrades & Downgrades	
No. of Analysts	20	19	26	26		lore opgrades & comigrados	5
Avg. Estimate	0.6	0.56	2.08	2.25		14 La Druell Divelaces	
						Yahoo Small Business	
Low Estimate	0.53	0.54	2.03	2.17	Data	Disclaimer Help Suggestio	ns
High Estimate	0.62	0.6	2.13	2.4	Privacy	y (Updated) About Our Ads (Updated)	Terms
Year Ago EPS	0.59	0.5	1.91	2.08		WEL	
Revenue Estimate	Current Qtr. (Jun 2018)	Next Ofr (Cap 2019)	Current Year (2018)	Next Year (2019)		S Mins Frank	
		Next Qtr. (Sep 2018)					
No. of Analysts	16	15	23	23			
Avg. Estimate	8.55B	8.13B	31.66B	32.73B			
Low Estimate	8.22B	7.79B	30.86B	31.03B			
High Estimate	8.77B	8.89B	32.86B	34.57B			
Year Ago Sales	9.71B	9.06B	35.42B	31.66B			
Sales Growth (year/est)	-11.90%	-10.30%	-10.60%	3.40%			
Ferninge History	6/29/2017	9/29/2017	12/30/2017	3/30/2018			
Earnings History							
EPS Est.	0.58	0.49	0.39	0.46			
EPS Actual	0.59	0.5	0.39	0.47			
Difference	0.01	0.01	0	0.01			
Surprise %	1.70%	2.00%	0.00%	2.20%			
EPS Trend	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)			
Current Estimate	0.6	0.56	2.08	2.25			
7 Days Ago	0.6	0.56	2.09	2.26			
30 Days Ago	0.61	0.57	2.09	2.20			
	0.61	0.57		2.20			
60 Days Ago			2.1				
90 Days Ago	0.63	0.56	2.09	2.26			
EPS Revisions	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)			
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 7 Days	N/A	N/A	N/A	N/A			
Down Last 30 Days	1	1	1	1			
	·						
Growth Estimates	ко	Industry	Sector	S&P 500			
Current Qtr.	1.70%	N/A	N/A	0.43			
Next Qtr.	12.00%	N/A	N/A	0.47			
	8.90%	N/A	N/A	0.22			
Current Year							
Next Year	8.20%	N/A	N/A	0.10			
	8.20%	N/A N/A	N/A N/A	0.10			

Finance chlists	(Income) (1000)		Search pal Finance Tec	chnology (**	Allalyst Flice largets (14) .	McKer
S&P 500 2,815.62	Dow 30 25,199.29	Nasdaq 7,854.44	Russell 2000 1,691.87	Crude Oil 68.98	Lew 120.00 Current 123.16 Upgrades & Downgrades > ↔ Us Mari Upgrade SunTrust Robinson ↓Umpgrade ↓Umpgrade	High 145.00 Arkets are closed UV 0/25/2018
+6.07 (+0.22%)	+79.40 (+0.32%)	-0.67 (-0.01%)	+4.61 (+0.27%)	+0.90 (+1.32%)	DA Davidson: Neutral Buy	
Federal Realty Investm NYSE - NYSE Delayed Price. Curre	nent Trust (FRT) 🙀	Add to watchlist			Upgrade UBS: Neutral to Buy	11/9/2017
123.16 -0.82 (0.00 (0.00%)	Buy Sell		Initiated BMO Capital: to Outperform	9/12/2017
At close: 4:02PM EDT	After hours: 4:41		Historical Data Analys	Sustainability	Downgrade Evercore ISI Group: In Line to Underperform	
Summary Chart Conver	ersations Statistics Profile	Financials Options Hol	olders Historical Data Analysis	sis Sustainability	Bank of America: Neut	
F-timeta	Current Qtr. (Jun 2018)	···· 0+ (Can 2018)	Voor (2018)	Currency in USD		
Earnings Estimate	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)	More Upgrades & Downgrad	des
No. of Analysts Avg. Estimate	0.77	0.78	3.19	3.3	Yahoo Small Business	
Low Estimate	0.76	0.76	3.14	2.92		
High Estimate	0.81	0.81	3.25	3.64	Data Disclaimer Help Sugges Privacy (Updated) About Our Ads	
Year Ago EPS	1.05	1.47	3.97	3.19	(Updated)	
Revenue Estimate	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)		
No. of Analysts	10	10	11	12		
Avg. Estimate	223.53M	227.1M	907.59M	953.84M		
Low Estimate	221.34M	223M	894.54M	921M		
High Estimate Year Ago Sales	227.1M 208.05M	230.85M 217.95M	917.8M 857.35M	979.8M 907.59M		
Sales Growth (year/est)	7.40%	4.20%	5.90%	907.59M 5.10%		
Gales Growin (year cot)			0.00 %	0.10%		
Earnings History	6/29/2017	9/29/2017	12/30/2017	3/30/2018		
EPS Est.	0.8	0.72	0.73	0.78		
EPS Actual	1.05	1.47	0.67	0.81		
Difference	0.25	0.75	-0.06	0.03		
Surprise %	31.20%	104.20%	-8.20%	3.80%		
EPS Trend	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)		
Current Estimate	0.77	0.78	3.19	3.3		
7 Days Ago	0.77	0.78	3.19	3.3		
30 Days Ago	0.77	0.78	3.18	3.35		
60 Days Ago	0.77	0.78	3.18	3.34		
90 Days Ago	0.8	0.81	3.21	3.41		
EPS Revisions	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)		
Up Last 7 Days	N/A	N/A	N/A	N/A		
Up Last 30 Days	1	N/A	1	1		
Down Last 7 Days	N/A	N/A	N/A	N/A		
Down Last 30 Days	N/A	N/A	N/A	N/A		
Growth Estimates	FRT	Industry	Sector	S&P 500		
Current Qtr.	-26.70%	N/A	N/A	0.43		
Next Qtr.	-46.90%	N/A	N/A	0.47		
Current Year	-19.60%	N/A	N/A	0.22		
Next Year	3.40%	N/A	N/A	0.10		
Next 5 Years (per annum)	5.00%	N/A	N/A	0.11		

			-		Analyst Fille I	erage 69.60 Sign in	N Pa
Finance chlists		lane and	nal Finance Te	chnology 🚥		- Sign in	-
					Low 54.00 Cun	rrent 68.96	High 90.00
					Upgrades & Do	wngrades >	s are closed
S&P 500	Dow 30	Nasdaq	Russell 2000	Crude Oil		iper Jaffray: to verweight	5/25/2017
2,815.62 +6.07 (+0.22%)	25,199.29 +79.40 (+0.32%)	7,854.44	1,691.87 +4.61 (+0.27%)	68.98 +0.90 (+1.32%)	Be	ernstein: Mkt Perform to	
Kellogg Company (K)	Add to watch	iet			L Downgrade	nderperform	3/21/2017
NYSE - NYSE Delayed Price. Curro	ency in USD	ist.			Initiated Okup De	eutsche Bank: to Hold	2/15/2017
68.96 -1.69 (-2			Buy Sell		Downgrade to	redit Suisse: Outperforn Neutral	n _{12/7/2016}
At close: 4:01PM EDT	After hours: 4:45PM	EDT			t Upgrade Go	oldman: Sell to Neutral	3/16/2016
Summary Chart Conve	rsations Statistics Profile	Financials Options Ho	Iders Historical Data Analys	is Sustainability	Cr	redit Agricole:	
				Currency in USD		nderperform to utperform	1/8/2016
Earnings Estimate	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)	More Up	pgrades & Downgrades	
No. of Analysts	19	18	19	22			
Avg. Estimate	1.05	1.13	4.45	4.69	Yah	noo Small Business	- 1
Low Estimate	1.01	1.06	4.34	4.13	Data Dia-I-	imer Holo Suggestion	05
High Estimate	1.11	1.15	4.5	5		aimer Help Suggestion lated) About Our Ads T	
Year Ago EPS	0.97	1.05	4.04	4.45		(Updated)	
						C When Planet	
Revenue Estimate	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)			
No. of Analysts	15	15	18	19			
Avg. Estimate	3.29B	3.4B	13.41B	13.62B			
Low Estimate	3.2B	3.28B	13.04B	13.23B			
High Estimate	3.39B	3.5B	13.71B	14.16B			
Year Ago Sales	3.19B	3.27B	12.92B	13.41B			
Sales Growth (year/est)	3.30%	4.00%	3.80%	1.60%			
Earnings History	6/29/2017	9/29/2017	12/30/2017	3/30/2018			
EPS Est.	0.92	0.94	0.96	1.08			
EPS Actual	0.97	1.05	0.96	1.23			
Difference	0.05	0.11	0	0.15			
Surprise %	5.40%	11.70%	0.00%	13.90%			
EPS Trend	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)			
Current Estimate	1.05	1.13	4.45	4.69			
7 Days Ago	1.05	1.13	4.45	4.7			
30 Days Ago	1.05	1.13	4.45	4.7			
60 Days Ago	1.05	1.14	4.45	4.7			
90 Days Ago	1.1	1.18	4.45	4.7			
EPS Revisions	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)			
Up Last 7 Days	1	1	1	1			
Up Last 30 Days	1	1	2	1			
Down Last 7 Days	N/A	N/A	N/A	N/A			
Down Last 30 Days	1	2	2	2			
Growth Estimates	К	Industry	Sector	S&P 500			
Current Qtr.	8.20%	N/A	N/A	0.43			
Next Qtr.	7.60%	N/A	N/A	0.47			
Current Year	10.10%	N/A	N/A	0.22			
Next Year	5.40%	N/A	N/A	0.10			

Finance chlists	1	1	Search nal Finance Te	chnology 🚥	Analysi File Targets (10) . Average 107,88 in	Mc Pag
S&P 500 2,815.62 +6.07 (+0.22%)	Dow 30 25,199.29 +79.40 (+0.32%)	Nasdaq 7,854.44 -0.67 (-0.01%)	Russell 2000 1,691.87 +4.61 (+0.27%)	Crude Oil 68.98 +0.90 (+1.32%)	Low 93.00 Current 103.90 Upgrades & Downgrades >	High 124.00 kets are closed 6/21/2018 d 12/14/2017
Kimberly-Clark Corpo		o watchlist			Downgrade Citigroup: Neutral to Si	
103.90 -2.57 (0.79 (-0.76%)	D	-	Societe Generale: Hole	
At close: 4:03PM EDT	After hours: 5:1		Buy Sell		IP Morgan: Neutral to	
Summary Chart Conver	rsations Statistics Profile	Financials Options Ho	olders Historical Data Analys	is Sustainability	Downgrade	10/20/2017
				Currency in USD	Initiated Berenberg: to Hold	6/9/2017
Earnings Estimate	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)	More Upgrades & Downgrad	les
No. of Analysts	14	12	17	18		
Avg. Estimate	1.58	1.7	6.82	7.15	Yahoo Small Business	
Low Estimate	1.52	1.64	6.64	6.78	Data Disclaimer Help Sugges	tions
High Estimate	1.66	1.77	7.1	7.5	Privacy (Updated) About Our Ads (Updated)	
Year Ago EPS	1.49	1.6	6.23	6.82	W F 1	
Revenue Estimate	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)	C Mites Finnet	
No. of Analysts	10	9	14	15		
Avg. Estimate	4.62B	4.58B	18.53B	18.72B		
Low Estimate	4.5B	4.49B	18.18B	18.03B		
High Estimate	4.73B	4.72B	18.98B	19.39B		
Year Ago Sales	4.55B	4.64B	18.26B	18.53B		
Sales Growth (year/est)	1.50%	-1.30%	1.50%	1.00%		
Earnings History	6/29/2017	9/29/2017	12/30/2017	3/30/2018		
EPS Est.	1.49	1.54	1.55	1.69		
EPS Actual	1.49	1.6	1.57	1.71		
Difference	0	0.06	0.02	0.02		
Surprise %	0.00%	3.90%	1.30%	1.20%		
EPS Trend	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)		
Current Estimate	1.58	1.7	6.82	7.15		
7 Days Ago	1.58	1.72	6.85	7.19		
30 Days Ago	1.6	1.74	6.91	7.27		
60 Days Ago	1.61	1.75	6.92	7.29		
90 Days Ago	1.64	1.78	6.97	7.38		
EPS Revisions	Current Oir (Inc. 0040)	Nov: 01: 10:- 00:01	Current Voor (2010)	Next Year (2010)		
	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)		
Up Last 7 Days Up Last 30 Days	1	N/A N/A	N/A N/A	1		
Down Last 7 Days	N/A	N/A N/A	N/A	N/A		
Down Last 30 Days	1	2	2	2		
Growth Estimates	KMB	Industry	Sector	S&P 500		
Current Qtr.	6.00%	N/A	N/A	0.43		
Next Qtr.	6.20%	N/A	N/A	0.47		
Current Year	9.50%	N/A	N/A	0.22		
Next Year	4.80%	N/A	N/A	0.10		

Finance chlists	1 <u>-</u>		Search	chnology 🚦	Allalyst Filce largets (21) . Average 80.98
S&P 500 2,815.62 +5.07 (+0.22%)	Dow 30 25,199.29 +73.40 (+0.32%)	Nasdaq 7,854.44 -0.67(-0.01%)	Russell 2000 1,691.87 +4.61 (+0.27%)	Crude Oil 68.98 +0.90 (+1.32%)	Lew 72.00 Current 79.72 High 91.00 Upgrades & Downgrades US Markets are closed Downgrade Jefferies: Buy to Hold 7/9/2018 Bank of America: Buy to upproce
The Procter & Gamble		Add to watchlist			Neutral 4/20/2018
NYSE - NYSE Delayed Price. Curre 79.72 -0.31 (-0		01 (0.01%)	- Coll		Downgrade Argus: Buy to Hold
At close: 4:02PM EDT	After hours: 5:19PM		Buy Sell	P.	Initiated Berenberg: to Sell 2/28/2018
Summary Chart Conver	ersations Statistics Profile	Financials Options Hold	Iders Historical Data Analysis	is Sustainability m	Coldman Sache: Soll to
				Currency in USD	Upgrade Goldman Sachs. Sein to 1/16/2018 Neutral
Earnings Estimate	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)	More Upgrades & Downgrades
No. of Analysts	19	15	23	23	
Avg. Estimate	0.9	1.13	4.18	4.4	Yahoo Small Business
Low Estimate	0.86	1.07	4.15	4.21	Data Disclaimer Help Suggestions
High Estimate	0.95	1.19	4.24	4.59	Privacy (Updated) About Our Ads Terms (Updated)
Year Ago EPS	0.85	1.09	3.92	4.18	W.F.E.
Revenue Estimate	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)	© Wahar Pennin D An Gali Jawad
No. of Analysts	16	12	20	20	
Avg. Estimate	16.57B	16.86B	66.86B	67.8B	
Low Estimate	16.03B	16.31B	66.35B	65.74B	
High Estimate	16.88B	17.32B	67.2B	69.61B	
Year Ago Sales	16.08B	16.65B	65.06B	66.86B	
Sales Growth (year/est)	3.10%	1.30%	2.80%	1.40%	
Earnings History	6/29/2017	9/29/2017	12/30/2017	3/30/2018	
EPS Est.	0.78	1.08	1.14	0.98	
EPS Actual	0.85	1.09	1.19	1	
Difference	0.07	0.01	0.05	0.02	
Surprise %	9.00%	0.90%	4.40%	2.00%	
EPS Trend	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)	
Current Estimate	0.9	1.13	4.18	4.4	
7 Days Ago	0.9	1.14	4.18	4.42	
30 Days Ago	0.91	1.15	4.19	4.45	
60 Days Ago	0.91	1.16	4.19	4.47	
90 Days Ago	0.92	1.18	4.18	4.5	
EPS Revisions	Current Qtr. (Jun 2018)	Next Qtr. (Sep 2018)	Current Year (2018)	Next Year (2019)	
Up Last 7 Days	1	N/A	1	N/A	
Up Last 30 Days	1	N/A	1	N/A	
Down Last 7 Days	N/A	N/A	N/A	N/A	
Down Last 30 Days	1	2	1	3	
Growth Estimates	PG	Industry	Sector	S&P 500	
Current Qtr.	5.90%	N/A	N/A	0.43	
Next Qtr.	3.70%	N/A	N/A	0.47	
Current Year	6.60%	N/A	N/A	0.22	
Next Year	5.30%	N/A	N/A	0.10	
INEXT TEAT					

Finance chlist	s ,		Search nal Finance Te	chnology	Average 05.77 in	Pag
S&P 500 2,815.62 +6.07 (+0.22%)	Dow 30 25,199.29 +79.40 (+0.32%)	Nasdaq 7,854.44 -0.67 (-0.01%)	Russell 2000 1,691.87 +4.61 (+0.27%)	Crude Oil 68.98 +0.90 (+1.32%)	Current 109.01	closed 16/2018
The J. M. Smucker C		to watchlist			Positive	28/2017
NYSE - NYSE Delayed Price. Cu 109.01 -1.98 At close: 4:01PM EDT		0.00 (0.00%)	Buy Sell		Otrahana & Os eta Faural	19/2017
	After nours: 4:4		olders Historical Data Analys	sis Sustainability ee	Upgrade Hilliard Lyons: to Long- Term Buy 7/11	11/2017
			1	Currency in USD	Downgrade Morgan Stanley: to 4/10	10/2017
Earnings Estimate	Current Qtr. (Jul 2018)	Next Qtr. (Oct 2018)	Current Year (2019)	Next Year (2020)	More Upgrades & Downgrades	
No. of Analysts	14	2 25	8 46	8	No. 2 Decision	_
Avg. Estimate	1.79	2.25	8.46	8.7	Yahoo Small Business	
High Estimate	1.93	2.35	8.62	9.2	Data Disclaimer Help Suggestions	
Year Ago EPS	1.51	2.02	8.06	8.46	Privacy (Updated) About Our Ads Terms (Updated)	5
					WEL	
Revenue Estimate	Current Qtr. (Jul 2018)	Next Qtr. (Oct 2018)	Current Year (2019)	Next Year (2020)	C Wiles Friend	
No. of Analysts	11	6	10	9		
Avg. Estimate	1.96B	2.14B	8.22B	8.34B		
Low Estimate	1.91B	2.11B	8.08B	8.12B		
High Estimate	2.01B	2.17B	8.29B	8.52B		
Year Ago Sales	1.75B	1.92B	7.36B	8.22B		
Sales Growth (year/est)	11.90%	11.10%	11.70%	1.50%		
Earnings History	7/30/2017	10/30/2017	1/30/2018	4/29/2018		
EPS Est.	1.62	1.9	2.14	2.18		
EPS Actual	1.51	2.02	2.5	2.03		
Difference	-0.11	0.12	0.36	-0.15		
Surprise %	-6.80%	6.30%	16.80%	-6.90%		
EPS Trend	Current Qtr. (Jul 2018)	Next Qtr. (Oct 2018)	Current Year (2019)	Next Year (2020)		
Current Estimate	1.79	2.25	8.46	8.7		
7 Days Ago	1.78	2.25	8.45	8.45		
30 Days Ago	1.84	2.27	8.48	8.84		
60 Days Ago	2	2.45	9.15	9.34		
90 Days Ago	2.01	2.47	9.17	9.6		
EPS Revisions	Current Qtr. (Jul 2018)	Next Qtr. (Oct 2018)	Current Year (2019)	Next Year (2020)		
Up Last 7 Days	N/A	1	N/A	N/A		
Up Last 30 Days	N/A	3	N/A	N/A		
Down Last 7 Days	N/A	N/A	N/A	N/A		
Down Last 30 Days	N/A	N/A	1	1		
Growth Estimates	SJM	Industry	Sector	S&P 500		
Current Qtr.	18.50%	N/A	N/A	0.43		
Next Qtr.	11.40%	N/A	N/A	0.47		
Current Year	5.00%	N/A	N/A	0.22		
Next Year	2.80%	N/A	N/A	0.10		
Next 5 Years (per annum)	4.50%	N/A	N/A	0.11		

Finance chlists			Bearch nal Finance Tect	chnology 🚥	Low 85 00	Average 95.12 not a large 10.12 not a large 10.1	McK Page
S&P 500 2,815.62 +6.07 (+0.22%)	Dow 30 25,199.29 +79.40 (+0.32%)	Nasdaq 7,854.44 -0.67 (-0.01%)	Russell 2000 1,691.87 +4.61 (+0.27%)	Crude Oil 68.98 +0.90 (+1.32%)		e & Downgrades >	rkets closed 5/17/2018 4/19/2018
Walmart Inc. (WMT) NYSE - NYSE Delayed Price. Curr	Add to watch	nlist			Downgrade	Oppenheimer:	3/22018
		04 (0.040/.)				Outpendin to Pendin	
88.07 -0.12 (-0 At close: 4:00PM EDT	0.14%) 88.08 +0.0 After hours: 5:19PM		Buy Sell	í -	Initiated		
Summary Chart Conve	ersations Statistics Profile	Financials Options Hole	olders Historical Data Analysis	is Sustainability	Upgrade	Goldman Sachs: Neutral to Buy	1/18/2018
				Currency in USD	1 Upgrade	Citigroup: Neutral to Buy	12/19/2017
Earnings Estimate	Current Qtr. (Jul 2018)	Next Qtr. (Oct 2018)	Current Year (2019)	Next Year (2020)	M	fore Upgrades & Downgrades	3
No. of Analysts	27	27	29	30	<u> </u>	E SEMICIONE E	
Avg. Estimate	1.22	1.05	4.82	4.99		Yahoo Small Business	
Low Estimate	1.11	0.92	4.56	4.55	L		
High Estimate	1.26	1.16	5.1	5.56		Disclaimer Help Suggestion y (Updated) About Our Ads Te	
Year Ago EPS	1.08	1	4.42	4.82		(Updated)	
						C Mine Present	
Revenue Estimate	Current Qtr. (Jul 2018)	Next Qtr. (Oct 2018)	Current Year (2019)	Next Year (2020)			
No. of Analysts	21	20	27	27			
Avg. Estimate	126.09B	125.87B	514.45B	529.69B			
Low Estimate	124.59B	124.16B	510.94B	506.68B			
High Estimate	127.5B	128.18B	519.758	541.32B			
Year Ago Sales	123.36B	123.18B	500.34B	514.45B			
Sales Growth (year/est)	2.20%	2.20%	2.80%	3.00%			
Earnings History	7/30/2017	10/30/2017	1/30/2018	4/29/2018			
EPS Est.	1.07	0.97	1.37	1.12			
EPS Actual	1.08	1	1.33	1.14			
Difference	0.01	0.03	-0.04	0.02			
Surprise %	0.90%	3.10%	-2.90%	1.80%			
EPS Trend	Current Qtr. (Jul 2018)	Next Qtr. (Oct 2018)	Current Year (2019)	Next Year (2020)			
Current Estimate	1.22	1.05	4.82	4.99			
7 Days Ago	1.22	1.05	4.82	4.99			
30 Days Ago	1.22	1.05	4.82	4.99			
60 Days Ago	1.23	1.06	4.84	5.06			
90 Days Ago	1.23	1.11	4.93	5.25			
EPS Revisions	Current Qtr. (Jul 2018)	Next Qtr. (Oct 2018)	Current Year (2019)	Next Year (2020)			
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 7 Days	N/A	N/A	N/A	N/A			
Down Last 30 Days	N/A	N/A	N/A	N/A			
Growth Estimates	WMT	Industry	Sector	S&P 500			
Current Qtr.	13.00%	N/A	N/A	0.43			
Next Qtr.	5.00%	N/A	N/A	0.43			
Current Year	9.00%	N/A	N/A	0.22			
Next Year	3.50%	N/A	N/A	0.10			
Next 5 Years (per annum)	6.47%	N/A	N/A	0.11			

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Our Research. Your Succes	5		
ALL COLLEGE AND AND POLICIES	is.		
Quote & News Quote Overview	AT&T Inc. (T)		Add to portfolio Trades fro
Quotes & News	(Delayed Data from NYSE) \$31.71 USD		2
Quote Overview	-0.05 (-0.16%)		2-Buy
Zacks News Partner News	Updated Jul 18, 2018 04:00 PM ET After-Market: \$31.73 +0.02 (0.06%)		A Value C Growth A Moment
Zacks Research	After-Market: \$31.73 +0.02 (0.06%) 5:22 PM ET		Bottom 13%(2: Industry: Wire
Snapshot	Quicke AD Zeansie WRanked Sto	ocks Enter Symbol Q	Industry: Wire
■ Analyst Report	Stock Activity	Key Earnings Data	Price and EPS Surprise Char
Style Scores Detailed Estimates		Earnings ESP 0.85%	Month 3 Months YTD
 Detailed Estimates Comparison to Industry 	Day Low 31.70	Most Accurate Est 0.87	EPS Surprise
Zacks Experts View	Day High 31.95		1
More Research	52 Wk Low 31.40	Current Yr Est 3.45	× 1
Broker Recommendations	52 Wk High 39.80	Exp Earnings Date *AMC7/24/18	Í.
Full Company Report	Avg. Volume 41,619,568	Prior Year EPS 3.05	Jan Marine M
Earnings Announcements	Market Cap 194.97 B Dividend 2.00 (6.30%)	Exp EPS Growth (3-5yr) 3.42%	ZACK
Key Company Metrics Broker Reports		PEG Ratio 2.70	May Jun
Insiders	Computer and Technology » Wirel		Interactive Chart Fundamental C
Earnings Transcripts		Market Open *AMC = After Market Close	
Charts			Billion Dollar Secret
 Price, Consensus and EPS Surprise Fundamental Charts 	Research Reports For T	All Zacks' Analyst Reports »	
Comparative	-		
Interactive Charts	News For T		
Price and Consensus Price & EPS Surprise	 Zacks News for T Other News for T 		
2 Month EPS	Ericason (ERIC) Q2 Earnings Miss	s Estimates; Revenues Beat	
Broker Recommendations	07/18/18-8:41AM EST Zacks		
Financials	1s Joining Forces the Only Path to 07/17/18-2:41PM EST Zacks	Survival for Tribune (TRCO)	
Financial Overview	T: What are Zacks experts saying	nnw/?	
Income Statements	Zacks Private Portfolio Services	11871.	The Zacks Rank has been called the Sillio
Balance Sheet Cash flow Statements	Netilix Sinks on Weak Q2 Subscrit	ber: ETFs to Watch	Secret. Click here to watch the full series.
	07/17/18-9:35AM EST Zacks		
Options	Will Netflor's Subscriber Addition D 07/17/18-8:27AM EST Zacks	7p Heat Up Streaming War?	Company Summary
Option Chain Options Greek Montage	Can Telecom Stocks Defy Tariff Er	rgonomics With Solid Q2?	AT&T provides communication, entertainm internet services to consumers and busine
Access Zacks	07/17/18-8:06AM EST Zacks More Zacks News for T		around the world. In the U.S., the compan largest pay-TV provider and owns the sec
Access Zacks Data Feed	Will AT&T's Merger Appeal Pose a	a Threat to Comcast's Bid for	largest wireless network. AT&T provides connectivity, security, broadband, video and
	07/18/18-12:37PM EST Market Realis	st	services under the AT&T, U-verse and DIF
	Netiliz To Bring Cornedy To New S 07/18/18-12:31PM EST Benzinga	Sinus XM Channel	brands. Full Company Report for T »
	Why Sony Joined AT&T in Raising	Streaming Service Fees	Less combany subout tot, ().
	07/18/18-11:35AM EST Market Realis	t	
	Key Drivers of Accenture's Comm 07/18/18/10:40AM EST Market Realis		
	Expectations for AT&T's Prepaid N		
	07/18/18-9:31AM EST Market Realist More Other News for T		
	Premium Research for T		
	Zaaka Bank		
	Zacks Rank	Bottom 12%/(222 out of 255)	
	Zacks Industry Rank	Bottom 13%(223 out of 255)	
	Zacks Industry Rank Zacks Sector Rank	Bottom 13%(223 out of 255) Top 19% (3 out of 16)	
	Zacks Industry Rank Zacks Sector Rank	Bottom 13%(223 out of 255)	

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Harry Webrick	Puesto Kinyanga Gorvening		
Nume Wests	Puede Electricity Conuning		
Itana Monto	Pueste Kanning Gonoming		
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The second se			Join Sign In
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AZACKS			
Our Research. Your Succes	55.		
Quote & News Quote Overview	Church & Dwight Co., Inc. (CHD) (Real Time Quote from BATS)		Add to portfolion Trades from
Quotes & News	\$53.78 USD		Zacks 3-Hold
Zacks News	-1.04 (-1.90%) Updated Jul 18, 2018 03:58 PM ET		Style S D Value C Growth F Momentum
Partner News	After-Market: \$53.77 -0.01 (-0.02%) 5:24 PM ET		Industry Bottom 4%(246 out
Zacks Research	Quote DrecksewRanked Stocks	Enter Symbol Q	Industry: Soap and Cleaning M
Analyst Report	Stock Activity Key	r Earnings Data	Price and EPS Surprise Chart
Style Scores Detailed Estimates		nings ESP 0.64%	1 Month 3 Months YTD
Comparison to Industry		t Accurate Est 0.47 rent Qtr Est 0.46	EPS Surprise
Zacks Experts View		rent Yr Est 2.27	
More Research	52 Wk High 55.94 Exp	Earnings Date 'BMO 8/2/18	N
Full Company Report		or Year EPS 1.94	1 m at
Earnings Announcements Key Company Metrics		EPS Growth (3-5yr) 10.02% ward PE 24.15	ZACKS
Broker Reports	Beta 0.42 PEC		May Jun J
Insiders Earnings Transcripts	Consumer Staples » Soap and Cleaning	g Materials	Interactive Chart Fundamental Chart
Charts	*BMO = Before Market	t Open *AMC = After Market Close	Billion Dollar Secret
Price, Consensus and EPS Surprise Fundamental Charts	Research Reports For CHD	All Zacks' Analyst Reports »	
Comparative Interactive Charts	News For CHD		
Price and Consensus	Zacks News for CHD Other News for CHD		
Price & EPS Surprise 12 Month EPS	Other News for CHD Church & Dwight Hits 52-Week High. Is	There More Room to Run?	
Broker Recommendations	07/13/18-7:45AM EST Zacks		
Financials	Will Segment Sales Growth Drive Pepsi 07/05/18-8:45AM EST Zacks	en a futtui ura tenundat.	
Financial Overview Income Statements	CHD: What are Zacks experts saying no Zacks Private Portfolio Services	ow?	
Balance Sheet Cash flow Statements	Will Online Strength Aid Helen of Tray (07/02/18-4:10PM EST Zacks	HELE) in Q1 Earnings?	The Zacks Rank has been called the Billion Do Secret. Click here to watch the full series, #
Options	Can Consumer International Unit Aid Ci	hurch & Dwight Stock?	Company Summary
Option Chain	06/11/18-2:32PM EST Zacks Church & Dwight (CHD) Down 1.3% Sin	nce Eaminos Report: Can	Church & Dwight, Inc. is the leading U.S. produ of sodium bicarbonate, popularly known as bak
Options Greek Montage	06/04/18-4:09AM EST Zacks More Zacks News for CHD		soda, a natural product that cleans, deodorized leavens and buffers. The Company's ARM &
Access Zacks Data Feed	Investors cautious on large sweth of hor	usehold names	HAMMER brand is one of the nation's most trus trademarks for a broad range of consumer and
	07/18/18-2:02AM EST Seeking Alpha Church & Dwight Io Report Second Qua	arter 2018 Results	specialty products developed from the base of bicarbonate and related technologies. Church &
	07/13/18-10:25AM EST Business Wire		Dwight's consumer products business is organiz into two segments: Consumer Domestic, which
	Church & Dwight Vs. Procter & Gamble 07/13/18/1/23AMIEST Stekitig Alpha	The Discrepancy In	encompasses both household and personal care products, and Consumer International, which
	Internationally Recognized Hair Loss E attancts logan/Cosmuto-livegeny & Aes	ad at the set	primarily consists of personal care products. The combination of the core ARM & HAMMER brand
	Symposium to Advise Fortune 500 Com Parts And Duals Stores in Cost 200 Avenue 15 San Est Sector and Stores Willing 15 San Est Sector application	panles on Product	and the other ten power brands make Church & Dwight one of the leading consumer packaged
	More Other News for CHD		goods companies in the United States. It's third business segment is Specialty Products. This business is a leader in specialty inorganic
	Premium Research for CHD		business is a leader in specialty inorganic chemicals, animal nutrition, and specialty cleane Full Company Report for CHD >
	Zacks Rank	Hold 3	
		Bottom 4%(246 out of 255)	
	Zacks Sector Rank	Bottom 6% (15 out of 16)	

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ZACKS (Cercia or Ser 10 Points **Lippings** 200 aning . Riter Particilia Schending | Sarrinals. Join Sign In Help ZACKS Our Research, Your Succe Quote & News Quote Overview Add to portfolio Trades from Coca-Cola Company (The) (KO) (Delayed Data from NYSE) Quotes & News Zacks Ra \$45.12 USD 4-Sell 4 Quote Overview -0.13 (-0.29%) Style Sci Zacks News D Value | C Growth | C Momentum | D VGM Industry Rank: Updated Jul 18, 2018 04:00 PM ET After-Market: \$45.11 -0.01 (-0.02%) 5:26 PM ET____ Partner News Bottom 9%(233 out of 255) Zacks Research Industry: Beverages - Soft drinks Quate A Zerise WRanked Stocks Enter Symbol Q * Snapshot Analyst Report Stock Activity Key Earnings Data Price and EPS Surprise Chart Style Scores 45.19 Earnings ESP -0.42% 1 Month 3 Months YTD Open Detailed Estimates Day Low 44.84 Most Accurate Est 0.60 Comparison to Industry EPS Surprise 🛧 Day High 45.29 Current Otr Est 0.60 45.5 Zacks Experts View :e6\$ 45 44.5 52 Wk Low 41.45 Current Yr Est 2.08 More Research 52 Wk High 48.62 Exp Earnings Date *BMO7/25/18 43.5 Broker Recommendations 9,791,577 Prior Year EPS 43 Avg. Volume 1.91 Full Company Report 42.5 Market Cap 193.03 B Exp EPS Growth (3-5yr) 8.05% Earnings Announcements 41.5 1.56 (3.45%) Forward PE 21.55 Key Company Metrics Dividend Broker Reports Beta 0.74 PEG Ratio 2.68 Interactive Chart | Fundamental Chart Insiders Consumer Staples » Beverages - Soft drinks Earnings Transcripts *BMO = Before Market Open *AMC = After Market Close **Billion Dollar Secret** Charts **Research Reports For KO** * Price, Consensus and EPS Surprise All Zacks' Analyst Reports » Fundamental Charts Comparative News For KO Interactive Charts Price and Consensus Zacks News for KO Other News for KO Price & EPS Surprise 12 Month EPS Factors Setting the Tone for Coca-Cola's (KD) 02 Earnings 07/18/18-9:33AM EST Zacks Broker Recommendations Consumer Staples ETF (XLP) Hits New 52-Week High 07/11/18-9:03AM EST Zacks Financials Financial Overview KO⁻ What are Zacks experts saying now? Zacks Private Portfolio Services Income Statements The Zacks Rank has been called the Billion Dollar Balance Sheet Stock Market News For Jul 11, 2016 Cash flow Statements 07/11/18-9:02AM EST Zad Options Nike Aiready Won the FIFA World Cup Over Adidas 07/10/18-6:38PM EST Zacks **Company Summary** Option Chain The Coca-Cola Company is the world's largest total PepsiCo (PEP) Stock Up on Q2 Earnings Beat, Revenues Lag 07/10/18-8:39AM EST Zacks beverage company. In addition to their namesake Coca-Cola drinks, some of their household names around the world include: AdeS soy-based Options Greek Montage More Zacks News for KO Access Zacks beverages, Ayataka green tea, Dasani waters, Del Valle juices and nectars, Fanta, Georgia coffee, Gold Peak teas and coffees, Honest Tea, Minute Maid juices, Powerade sports drinks, Simply juices, Data Feed Werren Buffett may soon join the stock buyback party 07/18/18-10:00AM EST CNN Saladworks, the Nation's Leading Salad-Centric Franchise Brand, 07/18/18:10 smartwater, Sprite, vitaminwater, and Zico coconut water. At Coca-Cola, they are serious about making Circulate Capital Launches New Venture to Invest in Solutions to 07/16/(69030AM EST PR Newswire positive contributions to world. That starts with reducing sugar in drinks and bringing new and different drinks to people everywhere. It also means 20 Russian Stocks to Watch Alter Trump's Helsinki Galle 07/18/18-2:13AM EST InvestorPlace continuously working to reduce environmental impact, creating rewarding careers for associates, and bringing economic opportunity wherever they Shark Tank Winner Tilfany Krumins Joins the HeartRadio Family 07/17/18-10:15AM EST PR Web operate More Other News for KO Full Company Report for KO » Premium Research for KO 🔻 Sell 👔 Zacks Rank Zacks Industry Rank Bottom 9%(233 out of 255) Zacks Sector Rank Bottom 6% (15 out of 16)

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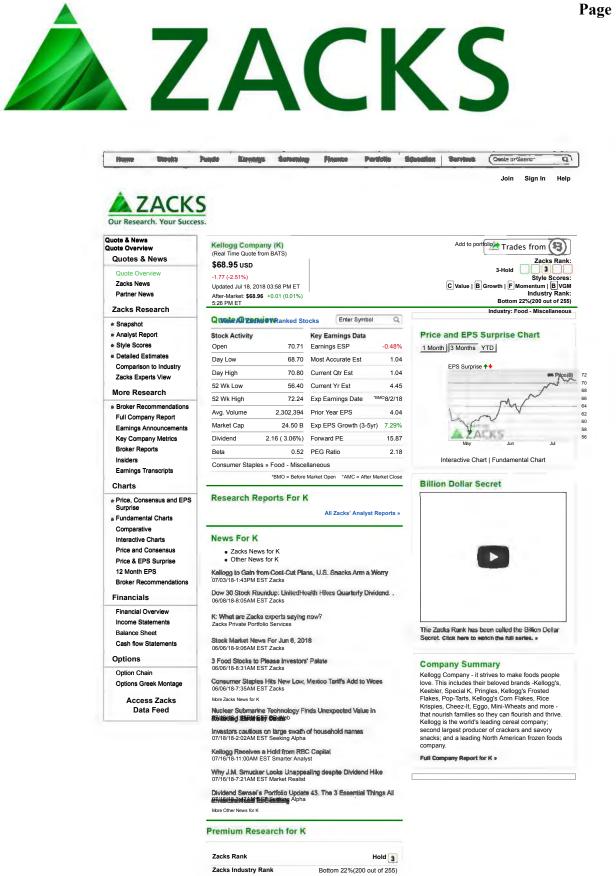
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Our Research. Your Succes	ss.	
Quote & News Quote Overview	Federal Realty Investment Trust (FRT) (Real Time Quote from BATS)	Add to portfolion Trades from
Quotes & News	\$123.15 USD	Zacks Ra 3-Hold
Quote Overview Zacks News	-0.81 (-0.65%) Updated Jul 18, 2018 03:58 PM ET	F Value D Growth A Momentum D V
Partner News	After-Market: \$123.15 0.00 (0.00%) 5:26 PM ET	Industry Ra Bottom 18%(209 out of
Zacks Research	Quale @ zerwiewRanked Stocks Enter Symbol Q	Industry: REIT and Equity Trust - R
	Stock Activity Key Earnings Data	Price and EPS Surprise Chart
	Open 123.72 Earnings ESP -0.23%	1 Month 3 Months YTD
Detailed Estimates Comparison to Industry	Day Low 122.32 Most Accurate Est 1.53	EPS Surprise 🛧 🔸
Zacks Experts View	Day High 124.49 Current Qtr Est 1.53 52 Wk Low 106.41 Current Yr Est 6.18	~70
More Research	52 WK LOW 100.41 Current HT Est 6.16 52 Wk High 135.59 Exp Earnings Date *AMC8/1/18	
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Earnings Announcements	Market Cap 9.08 B Exp EPS Growth (3-5yr) 6.00%	diana of
Key Company Metrics Broker Reports	Dividend 4.00 (3.23%) Forward PE 20.18	May Jun Jul
Insiders	Beta 0.25 PEG Ratio 3.36 	Interactive Chart Fundamental Chart
Earnings Transcripts	*BMO = Before Market Open *AMC = After Market Close	
Charts	Research Reports For FRT	Billion Dollar Secret
* Price, Consensus and EPS Surprise	All Zacks' Analyst Reports -	
Fundamental Charts Comparative		
Interactive Charts	News For FRT	
Price and Consensus Price & EPS Surprise	Zacks News for FRT Other News for FRT	
12 Month EPS	Federal Reality (FRT) Up 3.3% Since Earnings Report: Can J 06/01/18-9:24AM EST Zacks	_
Broker Recommendations Financials	Interest Rates to Be Less of a Drag for REITs?	
Financial Overview	05/11/18-12:00AM EST Zacks	
Income Statements	FRT: What are Zacks expects saying now? Zacks Private Portfolio Services	The Zacks Rank has been called the Billion Dollar
Balance Sheet Cash flow Statements	Federal Realty (FRT) Q1 FFO & Revenues Beat, Mew Intect 05/03/18-9:14AM EST Zacks	Secret. Click here to watch the full series, #
Options	REITs to Watch for Earnings on May 2. ESS, MAA, MAC & More	Company Summany
Option Chain	05/01/18-9:43AM EST Zacks	Company Summary Federal Realty Investment Trust is a recognized
Options Greek Montage	Regency Centers (REG) Q1 FFO and Revenues Beat Estimates 05/01/18-9:35AM EST Zacks	leader in the ownership, operation and redevelopment of high-quality retail based properti
Access Zacks Data Feed	More Zacks News for FRT Goldman pulls bearish outlook for retail REITs	located primarily in major coastal markets from Washington, D.C. to Boston as well as San
	07/17/18-7:38AM EST Seeking Alpha	Francisco and Los Angeles. Federal Realty Investment Trust mission is to be the preeminent
	Real Estate Earnings Preview 07/16/18-12:54PM EST Seeking Alpha	force in creating, operating, and re-imagining the most relevant retail and mixed use environments in the USA's largest markets that exceed the
	10 Dividend Stocks That Will Double Your Money 07/16/18-10:58AM EST InvestorPlace	expectations of the communities they serve in ever way while providing a superior return to
	How To Retire At 62 With A Measty Million	shareholders. Federal Realty Investment Trust expertise includes creating urban, mixed-use
	07/16/18-7:01AM EST Seeking Alpha 10 Dividend Stocks That Will Double Your Money	neighborhoods like Santana Row in San Jose, California, Pike & Rose in North Bethesda, Maryla
	07/14/18-5:03AM EST The Online Investor More Other News for FRT	and Assembly Row in Somerville, Massachusetts. These unique and vibrant environments that
	Premium Research for FRT	combine shopping, dining, living and working provide a destination experience valued by their respective communities.
		Full Company Report for PRT >
	Zacks Rank Hold 3	
	Zacks Industry Rank Bottom 18%(209 out of 255) Zacks Sector Rank Bottom 38% (10 out of 16)	

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 $\label{eq:style_scores} $$ F Value [D] Growth [A] Momentum [D] VGM $$$

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WP-53 McKenzie Page 5 of 9



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Zacks Sector Rank

Bottom 6% (15 out of 16)

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Style Scores C Value | B Growth | F Momentum | B VGM

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Our Research. Your Succes	s.	
Quote & News Quote Overview	Kimberly-Clark Corporation (KMB)	Add to portfolio
Quotes & News	(Real Time Quote from BATS)	Zacks Ra
Quote Overview	\$103.91 USD -2.62 (-2.46%)	4-Sell
Zacks News	Updated Jul 18, 2018 03:58 PM ET	Style Scor C Value B Growth F Momentum C V
Partner News	After-Market: \$103.91 0.00 (0.00%) 5:28 PM ET	Industry Ra Bottom 7%(237 out of 2
Zacks Research	Quote @ zervie WRanked Stocks Enter Symbol Q	Industry: Consumer Products - Stap
 Snapshot Analyst Report 	Stock Activity Key Earnings Data	Price and EPS Surprise Chart
Style Scores	Open 105.89 Earnings ESP -1.57%	1 Month 3 Months YTD
Detailed Estimates	Day Low 103.80 Most Accurate Est 1.57	
Comparison to Industry Zacks Experts View	Day High 105.90 Current Qtr Est 1.60	EPS Surprise ++
	52 Wk Low 97.10 Current Yr Est 6.82	T man
More Research	52 Wk High 125.39 Exp Earnings Date *BMO7/24/18	I AN W I ON N
Broker Recommendations Full Company Report	Avg. Volume 1,974,729 Prior Year EPS 6.23	WW WW
Earnings Announcements	Market Cap 37.19 B Exp EPS Growth (3-5yr) 6.97%	Charis by
Key Company Metrics	Dividend 4.00 (3.76%) Forward PE 15.46	May Jun Jul
Broker Reports Insiders	Beta 0.68 PEG Ratio 2.22	Interactive Chart Fundamental Chart
Earnings Transcripts	Consumer Staples » Consumer Products - Staples *BMO = Before Market Open *AMC = After Market Close	
Charts		Billion Dollar Secret
* Price, Consensus and EPS	Research Reports For KMB	
Surprise Fundamental Charts	All Zacks' Analyst Reports »	
Comparative		
Interactive Charts Price and Consensus	News For KMB	_
Price & EPS Surprise	Zacks News for KMB Other News for KMB	
12 Month EPS	Can Savings Keep Kimberly-Clark (KMB) Alitat in G2 Earnings?	_
Broker Recommendations	07/18/18-7:33AM EST Zacks Will Restructuring Plans Revive Kimberty-Clark's Stock?	
Financials	06/25/18-7:26AM EST Zacks	
Financial Overview Income Statements	KMB: What are Zacks experts saying now?	
Balance Sheet	Zacks Private Portfolio Services	The Zacks Rank has been called the Billion Dollar Secret. Click here to watch the full series, #
Cash flow Statements	Top Research Reports for CSX Corporation, Eni & Kimberly-Clark 06/14/18-12:00AM EST Zacks	Source waak many to worken the full series, a
Options	Top Analyst Reports for Merck, Occidental Petroleum & Capital	Company Summary
Option Chain	06/07/18-12:00AM EST Zacks Why is Kimberly-Clerk (KMB) Up 6.3% Since its Last Earnings.	Kimberly-Clark Corporation and its well-known
Options Greek Montage	05/23/18-9:31AM EST Zacks	global brands are an indispensable part of life for people in more than 175 countries. Every day, near
Access Zacks Data Feed	More Zacks News for KMB Buy This Dividend Aristocrat For 10% Annual Returns	a quarter of the world's population trust K-C's brand and the solutions they provide to enhance their
Data reeu	07/18/18-11:02AM EST Seeking Alpha	health, hygiene and well-being. Kimberly-Clark Professional partners with businesses to create
	Circulate Capital Launches New Venture to Invest in Solutions to 07/44/(Second	Exceptional Workplaces, helping to make them healthier, safer and more productive. When
	What Analysts' Ratings Indicate for Kimberly-Clark	consumers purchase our instantly recognizable brands, they also help make the world a better
	07/18/18-8:06AM EST Market Realist	place. They seek opportunities to make more of the
	Will Cost Pressures Hurt KMB's C2 2018 EPS Growth Rete? 07/18/18-6:39AM EST Market Realist	products with sustainable wood fiber, find ways to recycle their packaging, and challenge every day to
	Investors cautious on large swaft of household names	discover ways to carry on the resources they enjoy today for generations to come.
	07/18/18-2:02AM EST Seeking Alpha More Other News for KMB	Full Company Report for KNB +
	Premium Research for KMB	
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	Zacks Rank Vell 4	
	Zacks Industry Rank Bottom 7%(237 out of 255)	
	Editori 1/8(237 Out 01 233)	

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Zacks Sector Rank

Bottom 6% (15 out of 16)

-1.57%

Style Scores C Value | B Growth | F Momentum | VGM

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ZACKS **Exercises** Screening: Persidia Scheduline | Sarvina. Cente or% Q\ Public Finance No. **Weeks** Join | Sign In | Help ZACKS Our Research. Your Succes Quote & News Add to portfolio Trades from The J. M. Smucker Company (SJM) (Delayed Data from NYSE) uote Overview Quotes & News Zacks Rank \$109.01 USD 5-Strong Sell 5 Quote Overview -1.98 (-1.78%) Style Sc Zacks News C Value | D Growth | F Momentum | D VGM Industry Rank: Bottom 22%(200 out of 255) Updated Jul 18, 2018 04:01 PM ET After-Market: **\$109.02** +0.01 (0.01%) 5:30 PM ET Partner News Zacks Research Industry: Food - Miscellaneous Quete AD Zenvie WRanked Stocks Enter Symbol Q * Snapshot Analyst Report Price and EPS Surprise Chart Stock Activity Key Earnings Data Style Scores 110.95 Earnings ESP -1.45% 1 Month 3 Months YTD Open Detailed Estimates Day Low 108.46 Most Accurate Est 1.84 Comparison to Industry EPS Surprise Day High 111 14 Current Otr Est 1 87 Zacks Experts View 120 118 116 114 112 110 108 106 104 102 52 Wk Low 96.13 Current Yr Est 8.43 More Research 133.38 Exp Earnings Date 52 Wk High 8/23/18 Broker Recommendations 1,164,203 Prior Year EPS Avg. Volume 7.96 Full Company Report Market Cap 12.60 B Exp EPS Growth (3-5yr) 7.50% Earnings Announcements ZACK5 3.12 (2.81%) Forward PE Key Company Metrics Dividend 12.86 Broker Reports 0.63 PEG Ratio Beta 1.71 Interactive Chart | Fundamental Chart Insiders Consumer Staples » Food - Miscellaneous Earnings Transcripts **Billion Dollar Secret** Charts **Research Reports For SJM** Price, Consensus and EPS Surprise All Zacks' Analyst Reports » Fundamental Charts Comparative News For SJM Interactive Charts Zacks News for SJM
 Other News for SJM Price and Consensus Price & EPS Surprise TreeHouse Foods, B&G Foods to Gain From McCanri's Oatmeal... 12 Month EPS 07/17/18-9:35AM EST Zacks Broker Recommendations Can Smucker's Shareholder-Friendly Moves Help Revive Stock? 07/16/18-7:15AM EST Zacks Financials SJM: What are Zacks experts saying now? Financial Overview Zacks Private Portfolio Services Income Statements The Zacks Rank has been called the Billion Dollar Secret. Click here to watch the full series. • Company News For Jul 11, 2018 07/11/18-9:04AM EST Zacks Balance Sheet Cash flow Statements Smucker (SJM) to Divest Baking Unit, Bolster Other Areas Options 07/10/18-8:12AM EST Zacks **Company Summary** Option Chain Can United Natural's Growth Strategies Wipe Off Cost Woes? The J.M. Smucker Company has been committed to offering consumers quality products that bring families together to share memorable meals and moments. Smucker is a leading marketer and Options Greek Montage 07/09/18-1:43PM EST Zacks More Zacks News for SJM Access Zacks Will Mondel; ¿z Sustain Double-Digit EPS Growth in Q2 2018? 07/18/18-3:49AM EST Market Realist manufacturer of fruit spreads, retail packaged Data Feed coffee, peant butter, shortening and oils, ice cream toppings, sweetened condensed milk, and natural foods products in North America. Its family of brands What to Expect from Mondel¿¿z and Hershey in Q2 2018 07/18/18-2:14AM EST Market R includes Smucker's, Folgers, Dunkin' Donuts, Jif. Investors cautious on large sweth of household names 07/18/18-2:02AM EST Seeking Alpha Crisco, Pillsbury, Eagle Brand, R.W. Knudsen Family, Hungry Jack, Café Bustelo, Café Pilon, truRoots, White Lily and Martha White in the United States, along with Robin Hood, Five Roses, 12 Dividend Increases; July 2-13, 2018 07/17/18-4:29AM EST Seeking Alpha Carnation and Bick's in Canada. The Company remains rooted in the Basic Beliefs of Quality, People, Ethics, Growth and Independence established by its founder. Video: Daily Dividend Report: SJM, NNN, CPG, JNJ, PEP 07/16/18-11:55AM EST Market News Video More Other News for SJM Full Company Report for SJM = Premium Research for SJM Zacks Rank TStrong Sell Zacks Industry Rank Bottom 22%(200 out of 255) Zacks Sector Rank Bottom 6% (15 out of 16) Style Scores C Value | D Growth | F Momentum | D VGM Earnings ESP -1 45%

Research Reports for SJM

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Quote & News		
Quote Overview Quotes & News	Walmart Inc. (WMT) (Delayed Data from NYSE)	Add to portfolion Trades from
Quote Overview	\$88.07 USD -0.12 (-0.14%)	3-Hold 3
Zacks News Partner News	Updated Jul 18, 2018 04:00 PM ET	Style Score B Value B Growth D Momentum B Vo Industry Rar
Zacks Research	After-Market: \$88.09 +0.02 (0.02%) 5:34 PM ET	Bottom 4%(244 out of 2 Industry: Retail - Supermark
* Snapshot	QUALE AD Zertwie WRanked Stocks Enter Symbol Q	industry: Ketail - Supermark
Analyst Report	Stock Activity Key Earnings Data	Price and EPS Surprise Chart
Style Scores Detailed Estimates	Open 88.33 Earnings ESP 0.00% Day Low 87.94 Most Accurate Est 1.21	1 Month 3 Months YTD
Comparison to Industry	Day High 89.19 Current Qtr Est 1.21	EPS Surprise ++
Zacks Experts View	52 Wk Low 75.55 Current Yr Est 4.83	1 Mu
More Research	52 Wk High 109.98 Exp Earnings Date 8/16/18	No. MI
Broker Recommendations Full Company Report	Avg. Volume 7,176,567 Prior Year EPS 4.42	An.M. /V
Earnings Announcements	Market Cap 261.25 B Exp EPS Growth (3-5yr) 6.73%	7 CKCH Y
Key Company Metrics Broker Reports	Dividend 2.08 (2.36%) Forward PE 18.13 Beta 0.52 PEG Ratio 2.69	May Jun Jul
Insiders	Beta 0.52 PEG Ratio 2.69 Retail-Wholesale » Retail - Supermarkets	Interactive Chart Fundamental Chart
Earnings Transcripts		DURA DIRECTION
Charts	Research Reports For WMT	Billion Dollar Secret
Price, Consensus and EPS Surprise	All Zacks' Analyst Reports »	
■ Fundamental Charts Comparative	Name For WMT	Billion Dollar Secret Full Ser
Interactive Charts	• Zacks News for WMT	
Price and Consensus Price & EPS Surprise	• Other News for WMT	
12 Month EPS	Should You Buy Microsoft (MSFT) Stock Ahead of Q4 Earnings? 07/18/18-12:03PM EST Zacks	
Broker Recommendations	Amazon's Sales Figure to Expand With Prime Day Celebration 07/18/18-9:01AM EST Zacks	
Financials	WHT: What are Zacks expents saying now?	
Financial Overview Income Statements	VMMLL: Immax are 2,acits expenses saying now? Zacks Private Portfolio Services	
Balance Sheet	Costco's Impressive Comps Run Likely to Drive Stock Higher 07/18/18-8:56AM EST Zacks	The Zacks Rank has been called the Billion Dollar Secret. Click here to watch the full series. •
Cash flow Statements Options	Company News For Jul 18, 2018	
Option Chain	07/18/18-8:56AM EST Zacks Walmant Likely to Venture Into Subscription-Based Streaming	Company Summary Walmart Inc. is a multinational retail corporation
Options Greek Montage	07/18/18-8:44AM EST Zacks	waimart inc. is a multinational retail corporation which operates a chain of hypermarkets, discount department stores and grocery stores. Walmart Inc.
Access Zacks	More Zacks News for WMT Why Microsoft Stock Is Worth Buying Before Earnings	formerly known as Wal-Mart Stores, Inc., is headquartered in Bentonville, Arkansas.
Data Feed	07/18/18-12:55PM EST InvestorPlace	Full Company Report for WMT =
	Why Microsoft Stock is Worth a Buy Before Carnings 07/18/18-12:50PM EST InvestorPlace	
	Venminder Secures \$5 Million Investment to Accelerate Growth of branding-Third-Rady Rint Management Solution	
	Walmart Can't Hold a Candle to Amazon	
	07/18/18-10:58AM EST InvestorPlace	
	Buy Amazon Stock on This Temporary, Netflor-Induced Dip 07/18/18-10:32AM EST InvestorPlace	
	More Other News for WMT	
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	Zacks Rank Hold 3	
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🔒 William Blair & Co	James D Breen Jr		11/28/16		
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🔒 Deutsche Bank	Brett Feldman		07/17/13		
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🔒 Bolfavil	David W Barden		10/20/15		
🔒 KeyBane Capital Markets	Michael Bowen	÷*	01/29/14		
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BEst Standard		10,243	06/08/18		0.00
🔒 SunTrust Robinson Humphray	Witthm B Chappell.		08/02/13		
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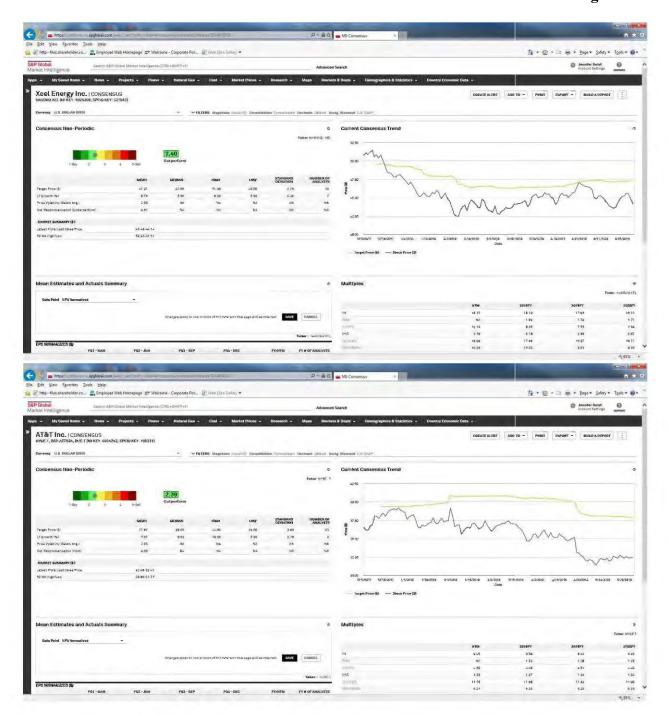
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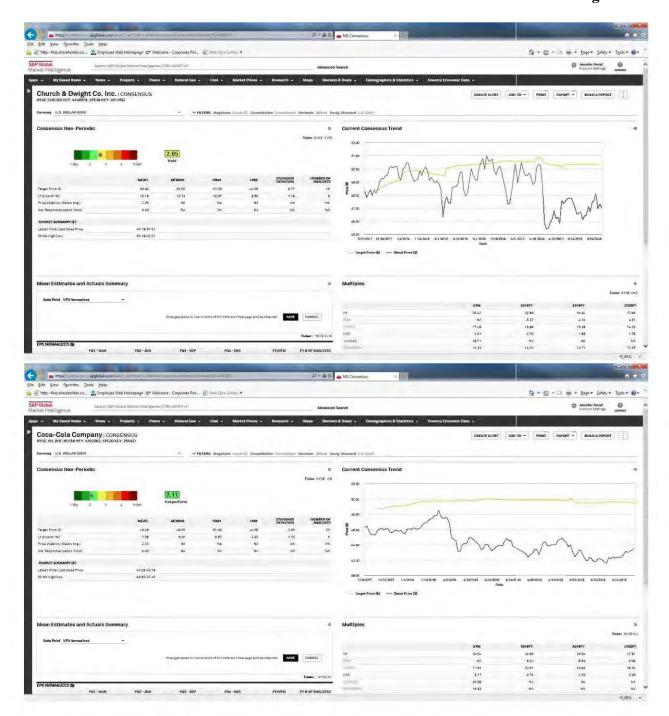
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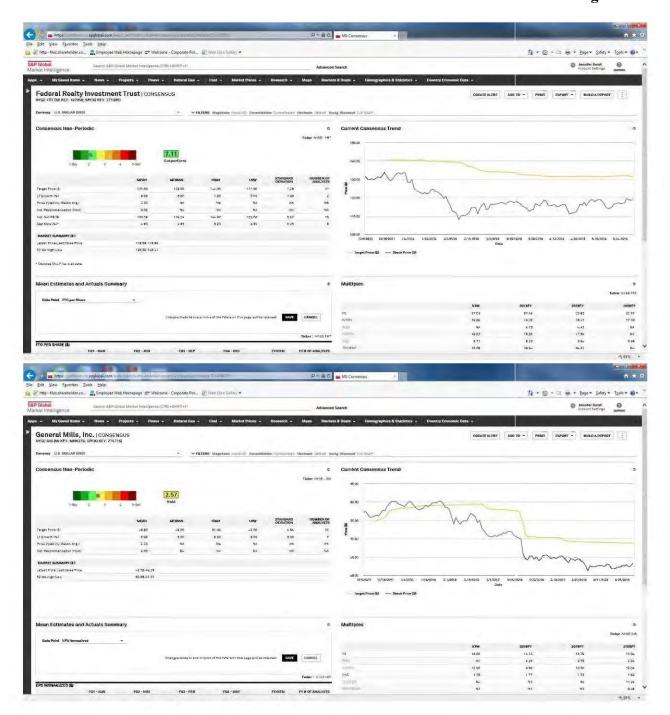
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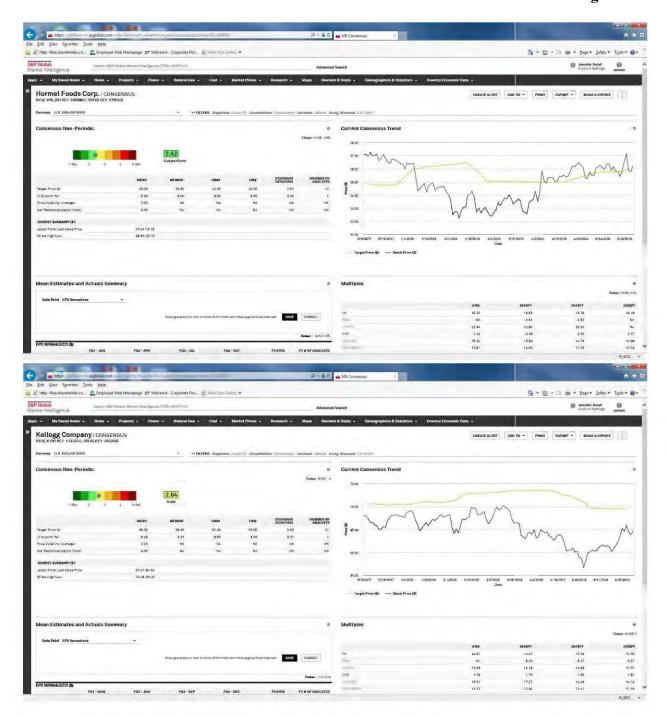
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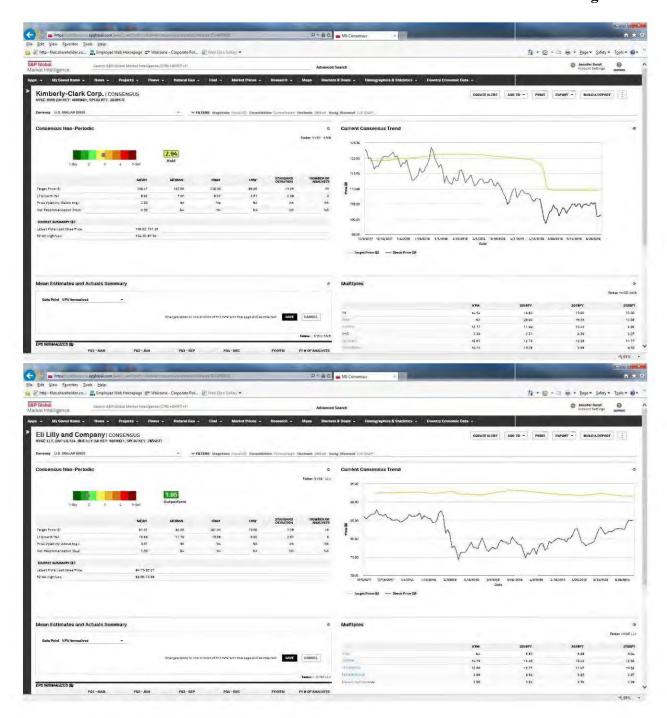
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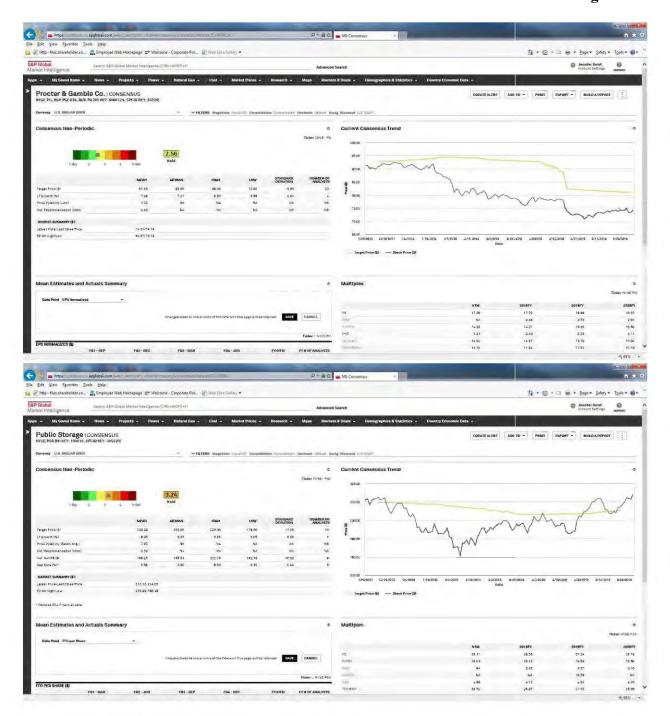
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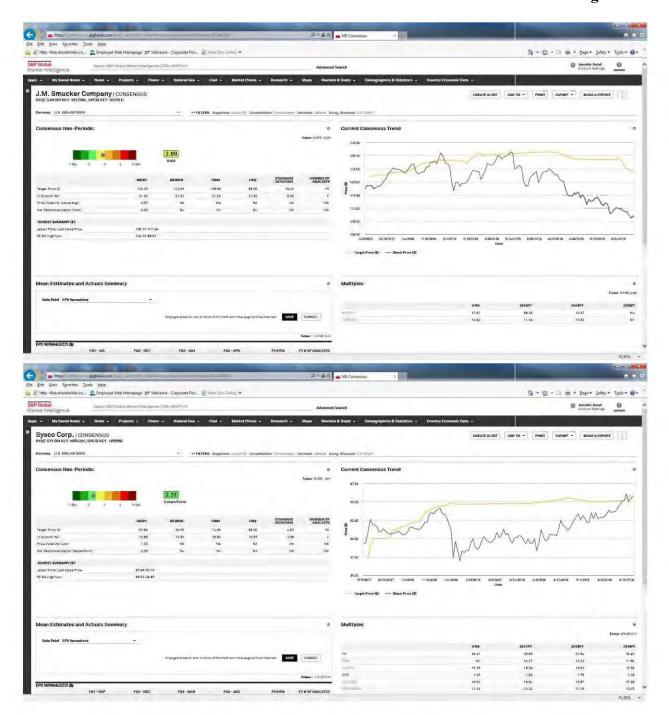
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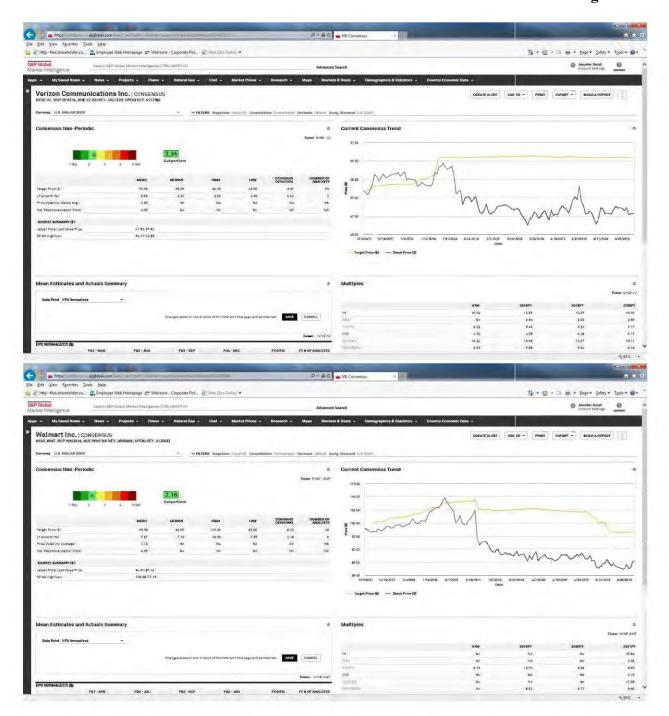
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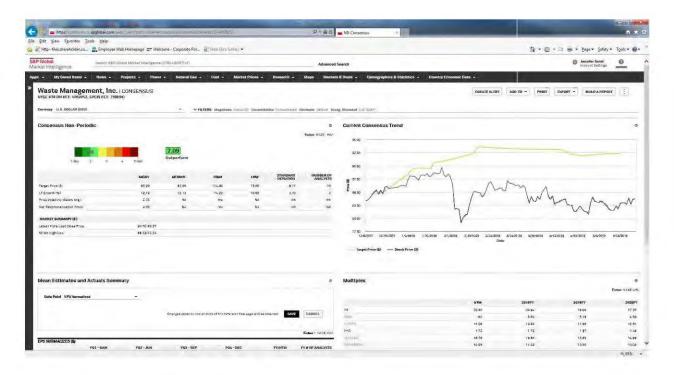
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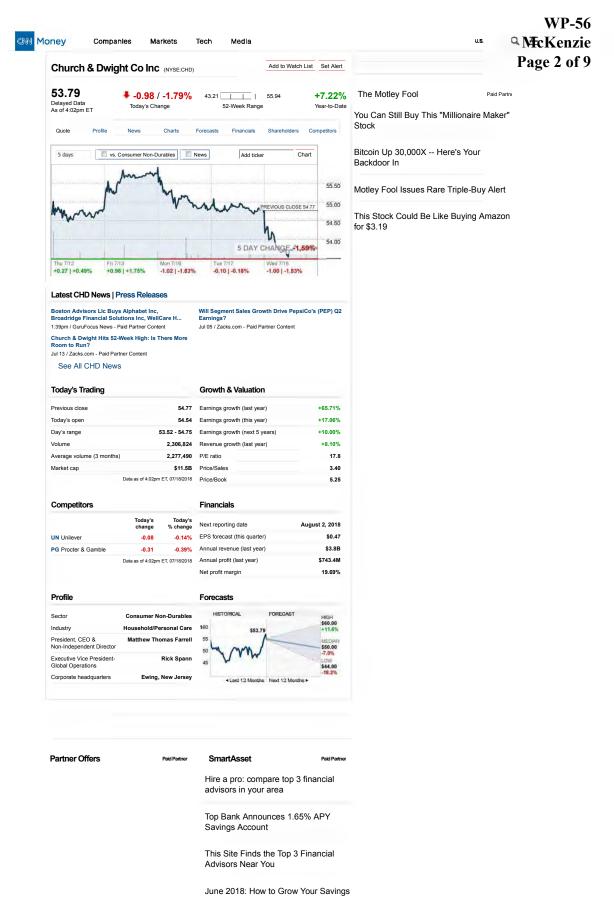
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AT&T Inc (NY E:T)			Ac	d to Watch List Set Al	rt
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Today's Trading			Growth & Valuation		
Previous close oday's open		31.76 31.82	Earnings growth (last year) Earnings growth (this year)	+126.91 ⁴ +11.78 ⁴	
Day's range		31.70 - 31.95	Earnings growth (next 5 years		
Volume		44,545,950	Revenue growth (last year)	-1.98	
Average volume (3 months)		37,169,692 \$197.7B	P/E ratio Price/ ales	6.	
Market cap	Data as of 4:00pn		Price/Book	1.4	
Competitors			Financials		
	Today's change	Today's % change	ext reporting date	July 25, 201	в
VZ Verizon	-0.29	-0.56%	EP forecast (this quarter)	\$0.8	9
TEF elefonica	-0.02	-0.23%	Annual revenue (last year)	\$160.5	
OR N Orange SA	-0.12	-0.72%	Annual profit (last year)	\$29.5	
BCE Bce Inc	-0.13 Data as of 4:02pm	-0.31% E 07/18/2018	et profit margin	18.34	6
Profile			Forecasts		
Sector		munications		RECAST HIGH \$43.00	
Industry Chairman President &	Major Telecom	munications Stephenson	\$50	+35.59 MEDIA	
Chief Executive Officer	Randali L.	Stephenson	40 m \$31.71	\$37.00	
CFO Principal Accounting enior EVP	Officer & John	J. Stephens	30	LOW \$24.00	
Corporate headquarters	[Dallas, Texas	+Last 12 Months Ne	-24.4%	

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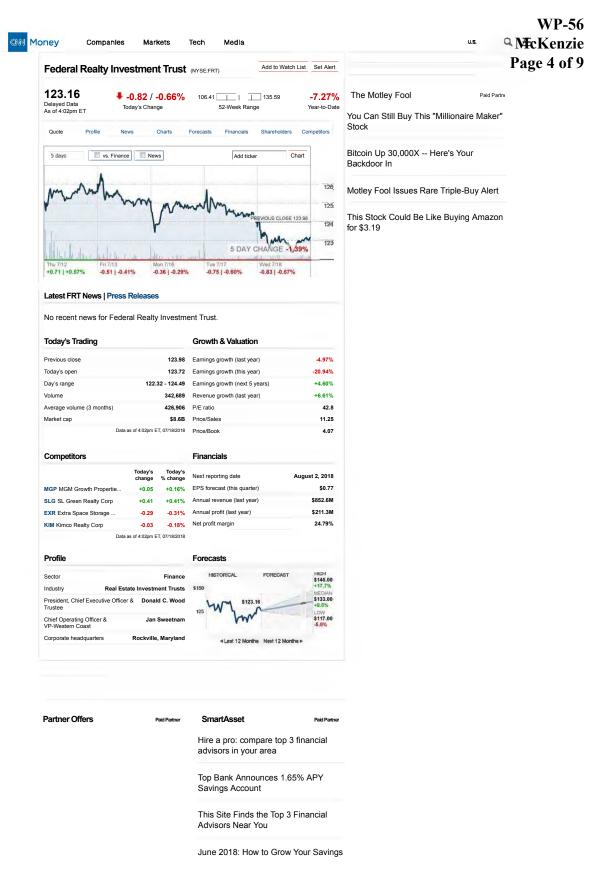


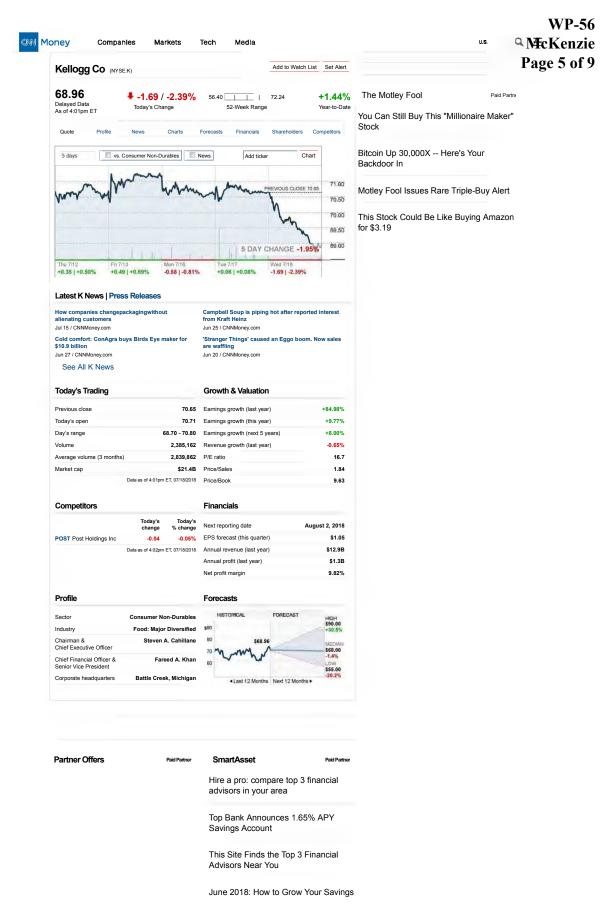
45.12 -0.13 / -0.29% Delayed Data Today's Change			
As of 4:00pm E1 Quote Profile News Charts	52-Week Range	25 45.20 45.00 44.80 44.60	The Motley Fool Paid Partne You Can Still Buy This "Millionaire Maker" Stock Bitcoin Up 30,000X Here's Your Backdoor In Motley Fool Issues Rare Triple-Buy Alert This Stock Could Be Like Buying Amazon for \$3.19
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Previous close 45.2	5 Earnings growth (last year)	-80.54%	
Today's open 45.1 Day's range 44.84 - 45.2	9 Earnings growth (this year)9 Earnings growth (next 5 years)	+9.76% +7.75%	
Volume 7,351,31		-15.38%	
Average volume (3 months) 11,834,84		145.5	
Market cap \$178.9	B Price/Sales	5.67	
Data as of 4:00pm ET, 07/18/20	18 Price/Book	10.49	
Competitors	Financials		
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change % change	e Next reporting date Ju	uly 25, 2018 \$0.61	
PEP Pepsi -0.05 -0.04 MNST Monster Beverage Cor -1.14 -1.83		\$0.61 \$35.0B	
FMX Fomento Economico Me +0.39 +0.41		\$35.0B \$1.2B	
CCE Coca-Cola European P0.12 -0.29		3.37%	
Data as of 4:15pm ET, 07/18/20	18		
Profile	Forecasts		
Sector Consumer Non-Durable	HISTORICAL FORECAST		
Industry Beverages: Non-Alcohol		High \$61.00	
President, Chief Executive Officer & James Quince Director	y 60	+35.2% MEDIAN	
CFO, President-Enabling Services & Kathy N. Walk	9r 50 \$45.12	\$49.00	
Executive VP	mahre	LOW \$44.00	
Corporate headquarters Atlanta, Georg	a ∢Last 12 Months Next 12 Months ►	-2.5%	
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Top Bank Announces 1.65% APY Savings Account

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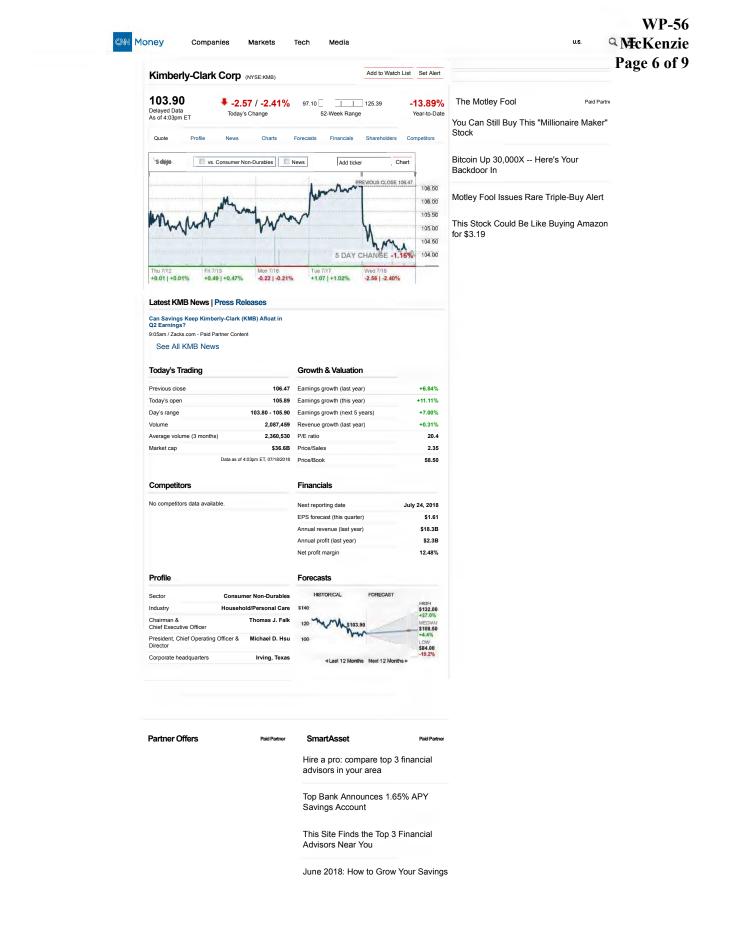
June 2018: How to Grow Your Savings

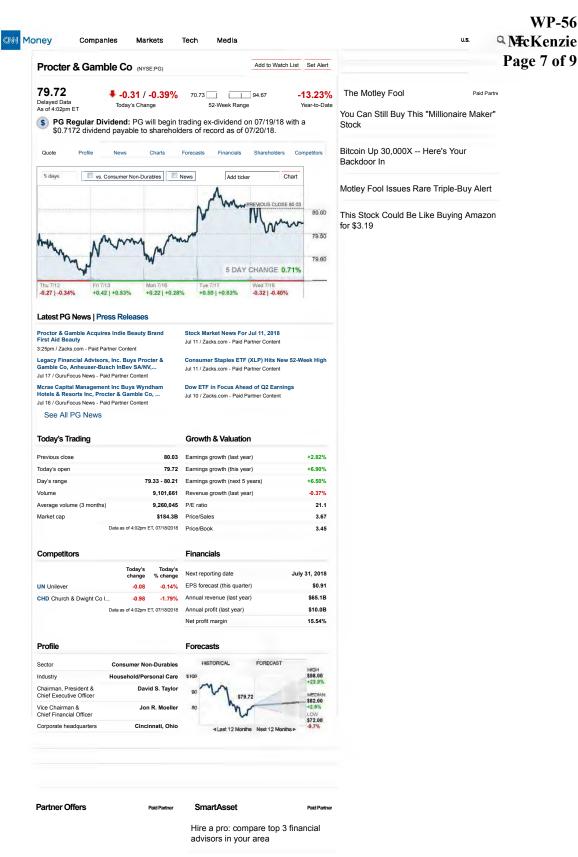




KMB - Kimberly-Clark Corp Stock quote - CNNMoney.com

https://money.cnn.com/quote/quote.html?symb=KMB

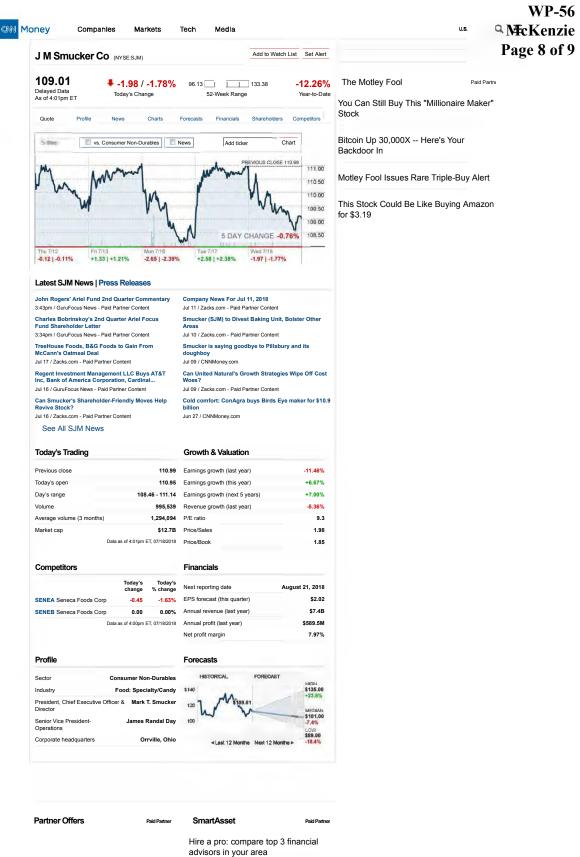




Top Bank Announces 1.65% APY Savings Account

This Site Finds the Top 3 Financial Advisors Near You

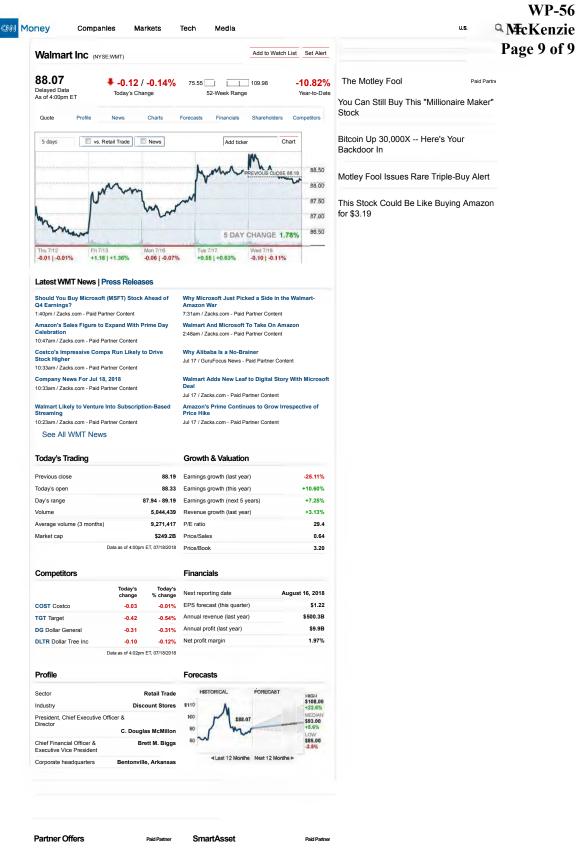
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LOUISVILLE GAS AND ELECTRIC COMPANY

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 22

Responding Witness: Daniel K. Arbough

- Q-22. Please provide complete copies of all credit reports issued by S&P, Moody's and Fitch Ratings that discuss the current regulated utility industry.
- A-22. See attached for copies of the S&P reports discussing the regulated utility industry. The Company does not have a subscription to access any Moody's or Fitch articles.

RatingsDirect®

Can U.S. Utilities Weather The Storm?

November 8, 2018

Key Takeaways

- Climate change is challenging the utility industry's traditional risk management assumptions.
- Many of the most costly natural disasters have occurred over the past decade.
- While there are solutions to address climate change risks, each comes with their own possible risks to the utility industry, including financial, operational, and regulatory.
- S&P Global Ratings expects the utility industry in the U.S. and Canada to manage climate change risks through a combination of insuring a higher percentage of utility assets, system hardening, and improving regulatory mechanisms for cost recovery following a destructive weather event.

Effective enterprise risk management is a key factor for successful management teams. This complex endeavor requires sophisticated leaders with the skills to identify risks before they occur and take effective measures to diminish the impact of their destructive outcomes when they do. As our climate continues to change, effective management of weather-related risks is becoming more complex and ever more important, especially as it relates to the credit quality of regulated utilities in North America. Adverse weather events are forcing utilities to look at ways to protect their assets from natural disasters and maintain their investment-grade credit quality.

The Risks And Costs Of Natural Disasters Are Intensifying

During the past year, the utility industry has unfortunately witnessed the manifestation of climate change risks firsthand. In 2017, the unyielding impacts of wildfires destroyed parts of California, hurricanes ripped through the eastern part of the U.S., and Hurricane Maria devastated Puerto Rico. There was little let up from these severe natural disasters and unpredictable weather patterns in 2018 that included Hurricanes Florence and Michael. Not only does the frequency of these disasters appear to be increasing, but their costs are rising. The natural disasters that have occurred over the past decade have wiped out billions of dollars of assets over a relatively short period. Without the appropriate regulatory compact and other risk mitigation, the financial aftermath of these events could be devastating to any individual utility, adding another layer of unpredictability that utilities must effectively manage.

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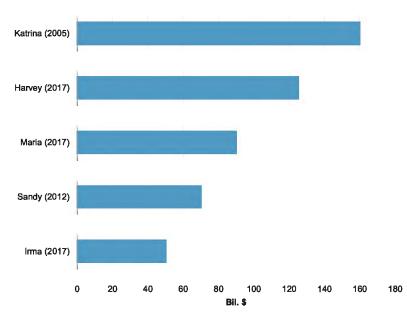
Amrita Lokhande

Mumbai amrita.lokhande @spglobal.com



Chart 1

Hurricane Damage (Bil. \$)

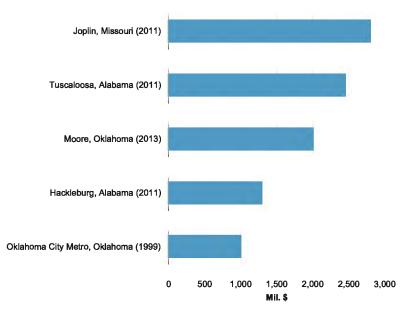


Source: National Hurricane Center (adjusted for inflation); S&P Global Ratings. Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

Chart 2

Tornado Damage (Mil. \$)

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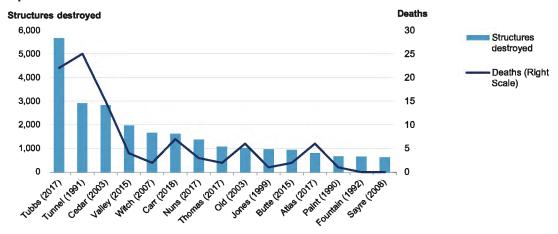


Source: National Hurricane Center; S&P Global Ratings.

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Chart 3

Top 15 Most Destructive California Wildfires



Sources: California Dept. of Forestry and Fire Prevention; S&P Global Ratings. Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

Climate Change May Also Affect Operations

Climate-change related risks not only affects a utility's financial stability but also potentially alters its operational effectiveness. Utilities have a long record of providing a reliable service at a reasonable cost. While reliability has always been the primary concern for the industry, climate change may be reshaping its priorities. For example, because of the California wildfires and the billions of dollars in property damages, utilities are now taking steps to reduce wildfire-related risks and even openly debating the possibility of de-energizing power lines in advance of a fire. In such cases, utilities would proactively turn off electricity to customers, decreasing reliability in an effort to potentially mitigate wildfire risks and related property damages. This demonstrates a major strategy shift for the utility industry, reflective of climate change's challenges.

Financial Solutions To Climate Change Bring Their Own Risks

While regulators generally allow utilities to recover prudently incurred costs from ratepayers, utilities are always cognizant of the effect rising costs have on customers' bills. As these bills increase, customers find it incrementally more difficult to pay, which often hampers a utility's ability to effectively manage regulatory risk. This predicament is a drawback in many of the financial solutions used to reduce weather-related risks, and if not well managed, may lead to unintended consequences. Utilities will have to proactively implement solutions that reduce the financial risks of climate change, which often entails reducing operating costs to negate a sudden rise in customer bills. This strategy, while easier said than done, enables utilities to effectively manage regulatory risk, prevent out-of-the-blue rises in customers' bills, and continue to mitigate unknown risks associated with climate change.

Possible Avenues For Managing Climate Change

We think the industry is adopting a multifaceted approach to climate change risk reduction. Each strategy is not foolproof and has its own risks that could lead to unintended consequences. We also believe that companies may move with varying degrees of urgency, resulting in some companies being more prepared for weather-related calamities than others. We generally expect that the industry will focus its strategies on insurance, infrastructure investments, and managing regulatory risk.

Insurance

When purchasing insurance to protect their assets, utilities must balance the level of insurance against the cost to the ratepayer. The higher level of insurance purchased, the more protected the utility may be from climate change and related natural disasters. Yet that increased cost would eventually be reflected on customers' bills. While the industry has always had to balance these conflicting risks, the pendulum may be swinging toward retaining a higher level of insurance because of more frequent and destructive weather-related events. The "one-in-100-year" storm or wildfire has become a more commonplace occurrence and insurance decisions simply based on past performance may not be indicative of today's environment.

A key risk to this strategy is that a higher level of insurance protection generally lends to higher costs, which would increase customers' bills. Another consideration is that when a natural disaster strikes, insurance premiums materially increase and generally become less available. Thus, when a utility is most desperate to protect its assets, the insurance product becomes most prohibitive or even unavailable. We have seen this recently in California, where some utilities' insurance premiums have exponentially increased and others are limited by the amount of insurance coverage that they can purchase. To offset some of these risks, utilities are assessing other financial products, including catastrophic bonds and weather derivative bonds. These innovative solutions, although generally expensive, may reduce a utility's exposure to climate change risks.

Similar to wildfires, more and more utilities are susceptible to hurricanes. Recent hurricanes wreaked havoc on customers and utilities in the Carolinas, Georgia, and Florida, and other East Coast states remain exposed to rising hurricane risks. As climate change continues to take hold, these states may need to address similar risks, including limits of the insurance protection that can be purchased and the possibility of exponentially higher insurance premiums.

Infrastructure investments

A possible long-term strategy to reducing some of these risks includes technology investments and system hardening. In California, San Diego Gas & Electric Co. has installed multiple weather stations and cameras around its service territory for early detection of wildfires. This technology has already identified wildfires in their early stages, possibly saving billions in property damages. In Florida, for example, utilities have been hardening, or strengthening, their electricity system for years. This was one of the key reasons that following Hurricane Irma in 2017, Florida utilities were able to restore service in days rather than the months of restoration efforts necessary in Puerto Rico.

A risk to this strategy is that system hardening increases the customer bill and utilities would need to identify other cost savings to avoid significant rise in customers' bills. Furthermore, Case No. 2018-00295 Attachment 1 to Response to DOD-1 Question No. 22 Page 6 of 9 Arbough

Can U.S. Utilities Weather The Storm?

system hardening generally requires some degree of consumer education because there is generally some disconnect to the ratepayer between its costs and benefits. A customer's benefit from system hardening is generally not self-evident and could take years to be realized, while the higher costs are immediately seen on the bill. Lastly, system hardening is a long-term strategy that could require much customer patience, which is usually in short supply. As system hardening is implemented, the customer is paying more but a catastrophic event may strike a part of the service territory that has not yet been upgraded. In this instance, the customer would only see higher bills and no benefit from the partially hardened system. Both San Diego Gas & Electric Co. and the Florida utilities had the benefit of implementing their enhanced technologies and system hardening for over a decade prior to the recent weather-related events. Other utilities that are just starting this process may not be as lucky.

Managing regulatory risk

Effectively managing regulatory risk is another key avenue for utilities to reduce climate change-related risks. Many utility management teams have successfully collaborated with their legislators and commissioners to implement various storm recovery mechanisms that can be used in the event of weather damage in the jurisdiction. These mechanisms include securitization, storm recovery riders, and reserve accounts. Other jurisdictions have made use of a general disaster fund that can be used to pay for costs incurred as a result of severe weather.

Many states have a strong record of implementing riders and recovering costs in a timely fashion to protect credit quality. In Florida, the susceptibility to multiple hurricanes in the same hurricane season can place abnormal strains on liquidity and financial performance. Proactively, Florida utilities and policymakers developed strategies over time to manage these unique risks and to protect the utilities' credit quality. More specifically, these utilities can petition for the recovery of storm costs without being subject to an earnings test and the state has allowed for the securitization of these costs, mitigating the rate impact of such costs on the customer. These credit-supportive measures in Florida have reduced credit risk by shielding fixed income investors from the financial risk of unpredictable weather conditions. We've also seen utilities work with regulators to reduce risk by lowering the threshold when recovery mechanisms can take effect. For example, Eversource Energy's utilities continue to work with their regulators to reduce the minimum threshold when storm costs can be deferred. These situations contrast to the regulatory difficulties that we have more recently seen in California stemming from the wildfires. Since the 2017 California wildfires, we have lowered our ratings on PG&E Corp. two notches and now maintain a negative ratings outlook for all of the large investor-owned California utilities.

The risk to this strategy is that any regulatory mechanism used to recover costs from the customer leads to a higher bill. While Florida's utilities recently demonstrated effective management of regulatory risk by offsetting the higher cost from Hurricane Irma with tax reform, we view this creative approach as a one-off that cannot be consistently duplicated. Another risk to this strategy is that effective management of regulatory risk is not something that can just be turned on when there is a natural disaster, but often requires many small steps and years of negotiating to arrive at the desired result. Many utilities have done an outstanding job of effectively managing regulatory risk but those that are lagging will likely need years to catch-up.

Storm Recovery Mechanisms Utilized

	Storm cost			
	Rider recovery	Reserve account	Securitization	
Alabama	Х	Х		

Storm Recovery Mechanisms Utilized (cont.)

	Storm cost			
	Rider recovery	Reserve account	Securitization	
Arkansas		Х	х	
California		Х		
Connecticut	Х			
Florida	х	х	х	
Kentucky	х			
Louisiana		х	х	
New Orleans	х	Х	х	
Maine	х			
Mississippi	х	х	х	
Missouri	х			
New Hampshire	х	х		
North Carolina		х		
Ohio	х			
Oklahoma	х			
Oregon		Х		
Pennsylvania	х			
Rhode Island		Х		
Tennessee	х			
Texas	х	Х	х	

Sources: Company filings; S&P Global Market Intelligence; S&P Global Ratings.

Changing Strategies For A Changing Climate

As a whole, we expect utility industry leaders will take prudent steps to identify climate-related risks in advance of their occurrence and take effective measures to reduce these risks. For climate change, the industry will use various financial, operational, and regulatory means to reduce risk, yet, each strategy is not without its own risks and possible unintended consequences. We also believe that companies will move with various levels of urgency to address these concerns which will continue to have implications for our business risk assessments. While we will continue to monitor climate change developments and company-specific actions to reduce risk, we expect that the industry as a whole will remain vigilant to these rising risks and find an equilibrium that protects credit quality.

Related Research

- Industry Top Trends 2019: North America Regulated Utilities, Nov. 8, 2018
- Untapped Potential: How The Green Economy Is Broadening, Nov. 5,2018
- Next Generation: How California's 100% Renewable Power Mandate Affects Markets, Oct.

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- S&P Global Ratings Publishes Proposal For Environmental, Social, And Governance Evaluations, Sept. 24, 2018
- The Rise Of ESG In Fixed Income, Sept. 10, 2018
- How Our Green Evaluations Align With The Green Bond Principles, April 16, 2018

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Can Nuclear Regain Momentum In The U.S. Without Jeopardizing Credit Quality For Regulated Utilities?

November 6, 2018

Key Takeaways

- In the U.S., new nuclear power generation has shown some signs of a comeback, with the Tennessee Valley Authority (TVA)'s Watts Bar Unit 2 achieving commercial operation in 2016.
- The China experience with nuclear power project Sanmen Unit 1, which achieved first criticality in 2018, suggests that the Vogtle Units 3 and 4 could achieve a similar feat in the future.
- As case studies from SCANA Corp and Southern Co. show, key credit risks related to building nuclear power plants remain, although some are more immediate than others.
- A track record of equity issuance has supported credit quality in the past. Can this track record continue?
- As the U.S. nuclear focus shifts to Vogtle, maintaining credit quality may ultimately depend on several key factors, including financial flexibility, project execution, and strong regulatory support.

In 2018, approximately 8,000 miles away from U.S. shores, China's National Nuclear Corp. (CNNC) announced that Sanmen Unit 1 reached 100% power, having achieved first criticality, or a sustained chain reaction, in June. Sanmen Unit 1 is scheduled to enter commercial operation by the end of 2018. In the U.S, Southern Co. subsidiary Georgia Power Co. (GPC) recently voted with its partners to continue building the Vogtle Units 3 and 4, after announced cost overruns. Both the Vogtle and Sanmen nuclear units employ the same Westinghouse AP1000 nuclear technology. As independent arbiters of credit risk, S&P Global Ratings continues to observe progress on the new-build of nuclear power generation. In the U.S., despite the high-profile setbacks, new nuclear power generation has shown signs of life. First came Watts Bar Unit 2, the Tennessee Valley Authority (TVA) owned nuclear power plant, which achieved commercial operation in 2016. The next nuclear power plant in waiting is the Alvin Vogtle Nuclear Units 3 and 4 about 55% complete, the potential that Vogtle could also attain commercial operation collectively suggests the possibility of some new momentum for nuclear in the U.S. But can such a revival turn into a trend, and can credit quality for the utilities be preserved at the same time? Possibly, but for U.S. regulated

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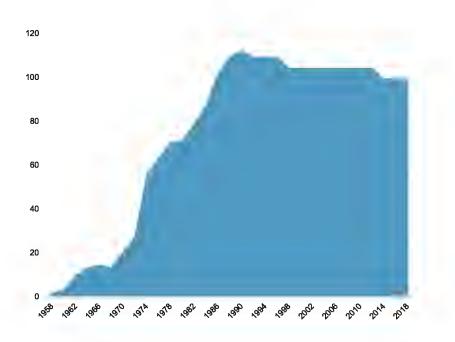
electric utilities, the answer depends on several factors, including financial flexibility, project execution, and strong regulatory support.

The Current State Of U.S Nuclear Power Generation

There are currently 98 nuclear generating power stations across the U.S. Of this total, slightly more than half (53) are utility plants. Meaning, they are either part of a regulated, investor-owned utility's rate base or are operated by a public utility.

Chart 1

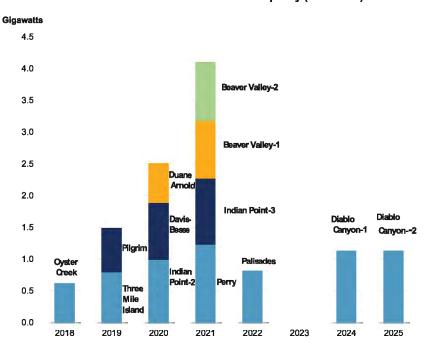
U.S. Nuclear Power Generating Units 1958-2018



Sources: S&P Global Ratings; U.S. Energy Information Administration (EIA). Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

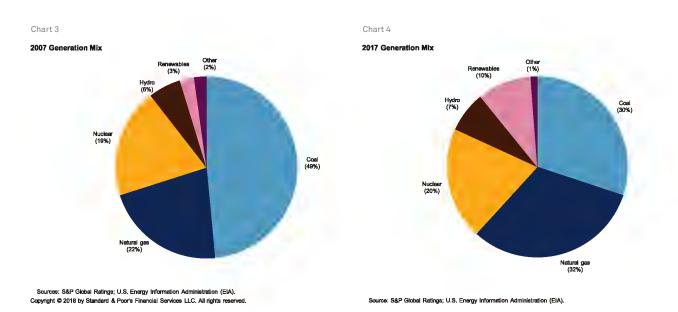
Chart 2

Announced Nuclear Reactor Retirement Generation Capacity (2018-2025)



Oyster Creek closed in Sept. 2018. Sources: S&P Global Ratings; U.S. Energy Information Administration (EIA). Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

U.S. nuclear generation peaked around 1990, and gradually declined, leveling off beginning in 1998 before taking another dip in 2013 (see chart 1). Since then some nuclear plant operators have announced plans to close, largely owing to their exposure to market prices, making them uneconomic. These announced closures are mostly confined to merchant-owned nuclear plants (see chart 2). Diablo Canyon is unique in the sense that its expected closure is indicative of a transformational trend of investor-owned utilities in California becoming more transmission and distribution (T&D)-like, and less vertically integrated. In our view, regulated nuclear plants are unlikely to close prematurely considering the long-lived nature of the assets, and because they are less vulnerable to market prices. In the U.S., nuclear power generation represents about 20% of the overall generation mix, close to where it was about 10 years ago (see charts 3 and 4)



The Fallout For SCANA Persists...

It's been over a year since SCANA Corp. subsidiary South Carolina Electric & Gas Co. (SCE&G) announced that the construction of the nuclear plants V.C. Summer Units 2 and 3 would be stopped, after its partner, the South Carolina Public Service Authority (Santee Cooper) decided to withdraw from the nuclear project. The fallout that ensued resulted in adverse regulatory developments, which weakened the company's business risk profile, including concerns that the Base Load Review Act (BLRA) would be repealed or amended. On Sept. 29, 2017, we downgraded SCANA and its subsidiaries one notch to 'BBB', and placed these entities on CreditWatch with negative implications. Continuing the ongoing fallout, and after overriding Gov. Henry McMaster's veto, the South Carolina General Assembly enacted House Bill 4375 in the summer of 2018, which required the utility to lower rates by 15% or about \$31 million per month related to the abandoned nuclear construction project. The rate reduction was retroactive to April 2018. SCE&G subsequently filed a lawsuit in the U.S. District Court in South Carolina in Columbia (Court), challenging the constitutionality of the new law, and requesting that the Court issue an injunction prohibiting the South Carolina Public Service Commission (SCPSC) from implementing the new law. However, in August 2018, SCE&G's request for a preliminary injunction to halt an experimental rate reduction was denied. We downgraded SCANA another notch to 'BBB-' and we maintained the ratings on CreditWatch with negative implications as a result pending the conclusion of the Summer abandonment proceeding.

...While Southern Co. Forges Ahead

Southern Co. subsidiary Georgia Power Co. recently voted with its partners to continue building the Vogtle nuclear Units 3 and 4 despite Georgia Power's earlier announcement that its share for the total nuclear construction estimate now exceeds \$2 billion. Georgia Power is a majority owner (45.7%) of the Vogtle nuclear plants, along with Oglethorpe Power Corp. (30%), Municipal Electric

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cost

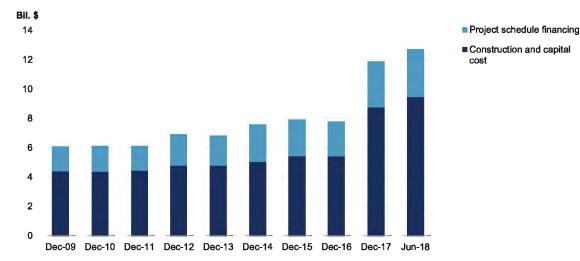
Can Nuclear Regain Momentum In The U.S. Without Jeopardizing Credit Quality For Regulated Utilities?

Authority of Georgia (22.7%), and The City of Dalton, Georgia (1.6%). The decision to continue construction included key amendments to the existing agreements among the co-owners that we viewed as effectively mitigating key risks that otherwise could have derailed the plant's progress. We affirmed our 'A-' ratings on Southern Co. and its subsidiaries and removed the ratings from CreditWatch with negative implications following this development. The outlook on Southern Co. and its subsidiaries (except Gulf Power Co.) is negative. Our affirmation in part reflects broad-based political and regulatory support for the nuclear construction project to continue, including from the Department of Energy (DOE), which recently signaled that an additional \$3.7 billion in federal loan guarantees will be made available for Vogtle Units 3 and 4 if the project moves forward.

Key Credit Risks Remain For Both SCANA And Southern Co.

For both SCANA and Southern Co., key credit risks remain, although how soon they will need to be faced varies. For SCANA, our credit concerns stem from ongoing uncertainty regarding cost recovery of the abandoned V.C. Summer nuclear construction project, which could result in lower ratings if credit metrics weaken further, particularly if the temporary rate cuts become permanent or if other adverse regulatory developments occur. In contrast, our ratings on Southern Co. take into consideration longer-term risks. In particular, the company's cost estimate assumptions, a potential change to the project's scope, missed productivity targets, and the potential that attempts to attract and retain skilled workers may fall short could collectively result in additional material cost overruns (see chart 5).

Chart 5



Georgia Power Co.'s Cost Projections For Vogtle Units 3 And 4

Construction and capital costs exclude Toshiba Parent guarantee of about \$1.5 billion as of December 2017. Sources: S&P Global Ratings; S&P Global Market Intelligence. Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

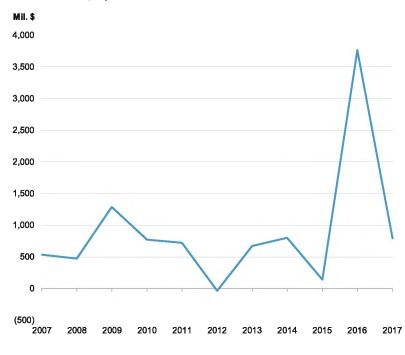
The potential for additional cost overruns heightens the risk of an eventual disallowance when the

projects get placed into service since Georgia Power continues to retain the burden of proof on prudency for all capital costs above \$5.68 billion.

Equity Issuance Has Supported Credit Quality In The Past

Equity issuance has supported credit quality in recent years. In Southern's case, the company has demonstrated its ability to issue equity over the years. With the exception of 2012, and 2015, the company's net equity issuance averaged approximately \$900 million from 2007 through 2017 (chart 6), peaking at close to \$3.8 billion in 2016. In addition, recent transactions, such as the announced sale of Gulf Power Co. to NextEra Energy Inc. for about \$6.5 billion, and the \$1.7 billion sale of Elizabethtown Gas Co. and Elkton Gas Co. to South Jersey Industries, suggest that Southern may also look to sell assets to preserve credit quality going forward.

Chart 6



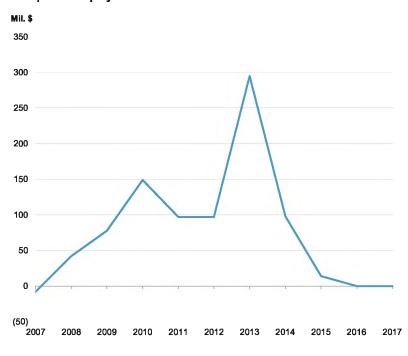
Southern Co.'s Net Equity Issuance 2007-2017

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In contrast, SCANA's net equity issuance for the past 10 years averaged at close to \$80 million annually, peaking in 2013 at approximately \$300 million (chart 7). What additional measures SCANA may take to preserve its credit quality as it navigates the challenging regulatory landscape in South Carolina remains to be seen. SCANA is also currently under a pending merger agreement with Dominion Energy Resources Inc.

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Chart 7



SCANA Corp.'s Net Equity Issuance 2007-2017

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For Some Nuclear Plant Operators, Zero Emission Credits Are Favorable For Credit Quality

In May 2018, New Jersey Gov. Phil Murphy signed legislation that established a Zero Emissions Credit (ZEC) program. This program provides compensation to nuclear plants that meet certain requirements, including demonstrating that they do not emit greenhouse gases, and that their revenues are insufficient to cover their costs and risk. Similar programs are already in effect in Illinois and New York, where legal challenges to the ZEC programs where recently dismissed by Federal Courts of Appeal in both states. We view such programs as favorable for credit quality because of the greater cash flow stability they provide. For U.S. regulated utilities, the biggest beneficiaries of the ZEC programs thus far are Public Service Enterprise Group Inc. and Exelon Corp., utility holding companies that own both pure-play regulated utilities and merchant power plants. While these programs may not usher in a renaissance for nuclear power, they do underscore a public policy commitment to lowering carbon emissions from power generation, and nuclear power is contributing to that objective.

In The End, Financial Flexibility, Project Execution, And Strong Regulatory Support Are Essential

Can a U.S. nuclear power continue to gain momentum without jeopardizing credit quality for the utilities? For the first part to this question, we posit yes, given TVA's experience, nuclear power developments in China, and recent public policy support for existing plants. The second part to this question is trickier, and may take some time to fully assess. For U.S regulated electric utilities, maintaining credit quality may ultimately depend on several key factors, including financial flexibility, project execution, and strong regulatory support. With the abandonment of the V.C. Summer nuclear power project, the focus now shifts to Vogtle Units 3 and 4, expected to come on-line in November 2021, and 2022, respectively. Successful execution on these units may start to diminish the memory of the myriad of challenges faced by recent plant developers.

Related Criteria And Research

Related Research

- Southern Co. And Subsidiaries Ratings Affirmed, Taken Off Watch Negative Following Vogtle Decision; Outlook Negative, Sept. 28, 2018
- Southern Co. And Subsidiaries Ratings Placed On CreditWatch Negative, Aug. 10, 2018
- SCANA Corp. And Subsidiaries Downgraded To 'BBB-' After Court Rejects Company's Request; CreditWatch Negative Maintained, Aug. 9, 2018
- SCANA Corp. And Subsidiaries Downgraded To 'BBB' On Adverse Regulatory Developments And Placed On Watch Negative, Sept. 29, 2017
- Nuclear Power And U.S. Utilities--A Half-Life Of 17 Years? Sept. 22, 2017
- SCANA Corp. And Subsidiaries Outlook To Developing On Plan To Abandon Construction Of Nuclear Plants; Ratings Affirmed, Aug. 3, 2017

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U.S. And Canadian Regulatory Jurisdictions Continue To Bolster Utilities' Credit Quality

October 30, 2018

Key Takeaways

- S&P Global Ratings periodically provides its assessment of each regulatory jurisdiction in the U.S. and Canada that has the presence of a rated utility, or operations of a rated entity.
- These assessments—categories from "credit supportive" to "most credit supportive"—provide information for reference in determining the regulatory risk of a regulated utility or holding company with more than one utility.
- We base our analysis on quantitative and qualitative factors, focusing on regulatory stability, tariff-setting procedures and design, financial stability, and regulatory independence and insulation.
- To one degree or another, utility regulation sustains credit quality when compared with the rest of corporate and infrastructure ratings.

We conduct periodic assessments of each regulatory jurisdiction in the U.S. and Canada that has the presence of a rated utility, or operations of a rated entity to provide analysts with information for reference in determining the regulatory advantage, or regulatory risk of utilities. Regulatory advantage is a heavily weighted factor in our analysis of a regulated utility's business risk profile. Our analysis covers quantitative and qualitative factors, focusing on regulatory stability, tariff-setting procedures and design, financial stability, and regulatory independence and insulation.

Sorting Through Regulatory Jurisdictions In The U.S. And Canada

We've updated our assessments of regulatory jurisdictions since our commentary "U.S. And Canadian Regulatory Jurisdictions Support Utilities' Credit Quality--But Some More So Than Others," published June 25, 2018. We've noted limited change in the U.S. jurisdictions' approaches to regulation over the past months, and our assessments of the Canadian provinces have stayed the same. Below we provide our current snapshot view of each regulatory jurisdiction in the U.S. and Canada (see the table listing the jurisdictions alphabetically within each category, and the maps of the U.S. and Canada indicating our updated assessments of regulatory jurisdictions). We

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group the jurisdictions based on quantitative and qualitative factors, focusing on regulatory stability, tariff-setting procedures and design, financial stability, and regulatory independence and insulation and the collective opinions expressed in the regulatory advantage determinations made in rating committees for approximately 225 U.S. and 30 Canadian utilities we rate.

The category titles indicate one other important point regarding utility regulation and its effect on ratings. For the purposes of this commentary, we denote all categories as "credit supportive". To one degree or another, all utility regulation sustains credit quality when compared with the rest of corporate and infrastructure ratings at S&P Global Ratings. The presence of regulators, no matter where in the spectrum of our assessments, reduces business risk and generally supports utility ratings. For these jurisdictions, we describe all of them in a range from "credit supportive" to "most credit supportive" and these designations vary only in degree rather than in kind. The table and maps below show our current assessments of regulatory jurisdictions.

Assessing U.S. And Canadian Regulatory Jurisdictions

Credit supportive	More credit supportive	Very credit supportive	Highly credit supportive	Most credit supportive
Hawaii	Arizona	Alaska	Arkansas	Alabama
Mississippi	California	Connecticut*	Georgia	Alberta
New Mexico	District of Columbia	Delaware	Indiana	British Columbia
Prince Edward Island	Maryland	Idaho	Kansas	Colorado
	Montana	Illinois	Louisiana	FERC (Electric)
	New Jersey	Missouri	Maine	Florida
	Oklahoma	Nebraska	Massachusetts	lowa
	South Carolina	Nevada§	Minnesota	Kentucky
	Washington	New Orleans	New Hampshire	Michigan
		New York	Newfoundland & Labrador	North Carolina
		Ohio	North Dakota	Nova Scotia
		Rhode Island	Oregon	Ontario
		South Dakota	Pennsylvania	Quebec
		Texas	Tennessee	Wisconsin
		Vermont§	Texas RRC	
		West Virginia	Utah	
			Virginia	
			Wyoming	

Regulatory Jurisdictions For Utilities Among U.S. States And Canadian Provinces

*Assessment raised. §Assessment lowered. Source: S&P Global Ratings.

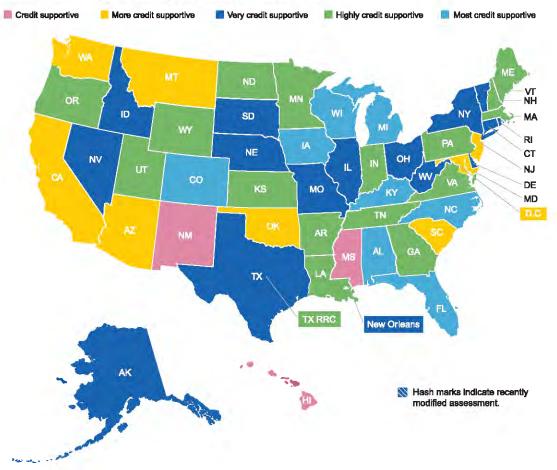
Mapping the regulatory jurisdictions

For jurisdictions assessed in the maps below, we have delineated the degree of credit support using light blue as "most credit supportive" and pink as "credit supportive" with various colors

Case No. 2018-00295 Attachment 3 to Response to DOD-1 Question No. 22 Page 3 of 7 Arbough

U.S. And Canadian Regulatory Jurisdictions Continue To Bolster Utilities' Credit Quality

used to delineate credit supportiveness between these categories. (We currently don't have assessments on some of the Canadian provinces.) The different assessments offer some granularity in our thinking about these jurisdictions' approach to regulation. Sometimes it will be due to developments such as the weakening trends in the regulatory jurisdictions of Nevada and Vermont. Other times it will be from strengthening trends such as the regulatory jurisdiction of Connecticut. Often it simply designates a stable jurisdiction that is slightly better or worse than its closest peers from a credit-quality perspective.





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S&P Global Ratings Canadian Utility Regulatory Assessments





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Recent Regulatory Assessment Revisions

We periodically evaluate regulatory jurisdictions and may determine that there has been a shift in terms of support for credit quality. Based on recent developments, we have determined that the following jurisdictions have experienced shifts around credit supportiveness.

Alabama

Although we have not revised our regulatory jurisdiction assessment on Alabama, which we consider to be "most credit supportive," we believe the jurisdiction has marginally weakened within this category. We've observed some slight modification in in tariff-setting procedures and design in general in the state. For Alabama Power Co., there is a two-year moratorium in 2019 and

2020 that restricts any upward rate adjustments under the company's Rate Stabilization Equalization mechanism, increasing the chance for regulatory lag. If unexpected costs arise, this restriction could limit the company's financial flexibility to recover such costs.

Connecticut

We revised our regulatory jurisdiction assessment on Connecticut to "very credit supportive" from "more credit supportive," reflecting our opinion that there has been improvement in the jurisdiction's tariff-setting procedures. This should provide for strengthened recoverability of operating and capital costs. Recently, Connecticut Light & Power Co. received a rate increase along with a capital tracker for capital expenditures and for capital additions for system resiliency and grid modernization. This should provide for more timely cost recovery of at least a portion of capital spending above that already in the utility's rates.

Nevada

We revised our regulatory jurisdiction assessment on Nevada to "very credit supportive" from "highly credit supportive" because regulatory independence and insulation has weakened in the state where the market framework and energy policies may be less supportive of long-term financing of utilities. Greater visibility of utility issues in the political process is evident since the introduction of a ballot initiative in 2016, the Energy Choice Initiative, for the first of two votes and now again in 2018 for the second and final vote. In addition, a ballot initiative regarding renewable energy of 50% by 2030 further elevates into the political process utility-related issues such as electricity generation. If the majority of Nevada's voters endorse the Energy Choice Initiative in 2018, the legislature would be required to establish a legal framework for electricity choice by July 2023. The heightened politicization of utility policies in the state, including long-term energy generation planning, creates some uncertainty about investing in the state's utilities over the long run.

Vermont

We revised our regulatory jurisdiction assessment on Vermont to "very credit supportive" from "highly credit supportive" reflecting a modest weakening in the consistency of the regulatory framework, which could potentially result in greater "regulatory lag" (i.e., the relationship between approved rates and the age of the costs used to set those rates) related to cost recovery. Green Mountain Power Corp. reverted to a traditional regulatory framework after operating under a comprehensive alternative regulation plan for years. Under the alternative rate plan, the company's authorized return on equity was adjusted annually using a formula tied to U.S. Treasury bond yields. We expect the traditional framework to be more procedural, and negotiated among various parties, signaling the possibility of delayed cost recovery.

Related Criteria And Research

Related Criteria

- Criteria Corporates General: Corporate Methodology, Nov. 19, 2013
- Criteria Corporates Utilities: Key Credit Factors For The Regulated Utilities Industry, Nov. 19,

2013

Related Research

- U.S. And Canadian Regulatory Jurisdictions Support Utilities' Credit Quality--But Some More So Than Others, June 25, 2018
- Assessing U.S. Investor-Owned Utility Regulatory Environments, Aug. 10, 2016

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U.S. And Canadian Regulatory Jurisdictions Support Utilities' Credit Quality–-But Some More So Than Others

June 25, 2018

S&P Global

Ratings

Regulatory risk, what S&P Global Ratings calls "regulatory advantage" is a heavily weighted factor in its analysis of a regulated utility's business risk profile. Some recent developments are influencing our view of regulation in certain jurisdictions and the specific factors that we can use to determine the initial regulatory advantage when we are completing our credit analysis of each U.S. and Canadian regulated utility. In addition, because the U.S. and Canada have so many regulatory jurisdictions and numerous companies may operate in a single jurisdiction, we create assessments of the regulatory jurisdictions in U.S. and Canadian provinces that regulate the electric, gas, and water utilities that we rate. These provide starting points from which an analyst can begin to develop the initial regulatory advantage of a regulated utility or holding company with more than one regulated utility. For both determining the initial regulatory advantage of a rated entity and developing the assessment of a regulatory jurisdiction, we base our analysis on quantitative and qualitative factors, focusing on regulatory stability, tariff-setting procedures and design, financial stability, and regulatory independence and insulation. (See "Assessing U.S. Investor-Owned Utility Regulatory Environments," published Aug. 10, 2016, for more details on each category.)

Key Takeaways

- Regulatory risk is a heavily weighted factor in S&P Global Ratings' analysis of a regulated utility's business risk.
- Our assessments of U.S. and Canadian utility regulatory jurisdictions only differ in degree of credit supportiveness rather than in kind.
- We have reassessed our view of certain U.S. jurisdictions based on recent developments.
- The presence of utility regulation, no matter where in the spectrum of our assessments, strengthens the business risk profile and generally supports utility ratings.

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Sorting Through Regulatory Jurisdictions In The U.S. And Canada

Below we provide our snapshot view of each regulatory jurisdiction in the U.S. and Canada that has the presence of a rated utility, or operations of a rated utility. We group the jurisdictions based on the factors we've discussed above and the collective opinions expressed in the regulatory advantage determinations made in rating committees for approximately 225 U.S. and 30 Canadian utilities we rate. We've updated our assessments of regulatory jurisdictions (see the table listing the jurisdictions alphabetically within each category, and the maps of the U.S. and Canada indicating our updated assessments of regulatory jurisdictions). We designed the category titles to indicate one other important point regarding utility regulation and its effect on ratings. For the purposes of this commentary, we denote all categories as "credit supportive". To one degree or another, all utility regulation sustains credit quality when compared with the rest of corporate and infrastructure ratings at S&P Global Ratings. The presence of regulators, no matter where in the spectrum of our assessments, reduces business risk and generally supports utility ratings.

Assessing Regulatory Jurisdictions For Credit-Quality Supportiveness

Although we consider some jurisdictions "most credit supportive" it does not indicate that we think a commission in this category is a good regulator. Likewise, those jurisdictions we assess as only "credit supportive" does not indicate that we believe a commission is a bad regulator. We describe all jurisdictions as "credit supportive" and the designations only differ in degree rather than in kind. Finally, we designed the assessments to portray utility regulation in terms of its effect on credit quality (see table below).

Assessments Of U.S. And Canadian Regulatory Jurisdictions

Credit supportive	More credit supportive	Very credit supportive	Highly credit supportive	Most credit supportive
Hawaii	Arizona*	Alaska	Arkansas	Alabama
Mississippi	California*	Delaware	Georgia	Alberta
New Mexico*	Connecticut	Idaho	Indiana	British Columbia
Prince Edward Island	District of Columbia	Illinois	Kansas	Colorado
	Maryland	Missouri	Louisiana	Florida
	Montana	Nebraska	Maine	Iowa
	New Jersey	New Orleans	Massachusetts	Kentucky
	Oklahoma*	New York	Minnesota	Michigan
	South Carolina*	Ohio	Nevada	North Carolina
	Washington	Rhode Island	New Hampshire	Nova Scotia§
		South Dakota	Newfoundland & Labrador	Ontario
		Texas	North Dakota	Quebec
		West Virginia	Oregon	Wisconsin
			Pennsylvania	
			Tennessee	
			Texas RRC	
			Utah	

To one degree or another, all utility regulation sustains credit quality when compared with the rest of corporate and infrastructure ratings at S&P Global Ratings.

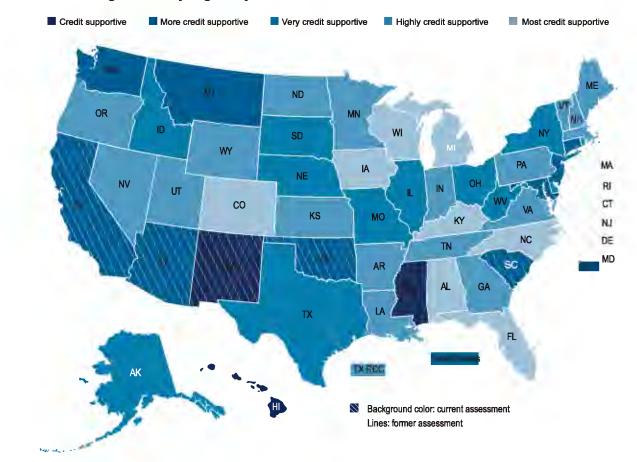
Assessments Of U.S. And Canadian Regulatory Jurisdictions (cont.)

Credit supportive	More credit supportive	Very credit supportive	Highly credit supportive	Most credit supportive
			Vermont	
			Virginia	
			Wyoming	

*Assessment lowered §Assessment raised. Source: S&P Global Ratings.

Mapping the regulatory jurisdictions

For jurisdictions assessed in the maps below, we have delineated the degree of credit support using shades of blue indicating those we consider credit supportive to those we believe are the most credit supportive. (We currently don't have assessments on some of the Canadian provinces.) The different assessments offer some granularity in our thinking about these jurisdictions' approach to regulation. Sometimes it will be due to trends such as the troublesome trends in the regulatory jurisdictions of California and South Carolina. Often it simply designates a stable jurisdiction that is slightly better or worse than its closest peers from a credit-quality perspective. We will be publishing in-depth updates on selected jurisdictions to bring even more focus on how regulatory developments could affect credit quality across the North American regulatory landscape.



S&P Global Ratings U.S. Utility Regulatory Assessments

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U.S. And Canadian Regulatory Jurisdictions Support Utilities' Credit Quality--But Some More So Than Others

S&P Global Ratings Canadian Utility Regulatory Assessments

Credit supportive 📲 Highly credit supportive 🛒 Most credit supportive 👘 Not assessed



As of May 2018. Note: Currently there are no jurisdictions considered in the "more credit supportive" or "very credit supportive" categories. Source: S&P Global Ratings. Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

Recent Regulatory Assessment Revisions

We periodically evaluate regulatory jurisdictions and may determine that there has been a shift in terms of support for credit quality. Based on recent developments, we have determined that the following jurisdictions have experienced shifts around credit supportiveness.

Arizona

We revised our regulatory jurisdiction assessment on Arizona to "more credit supportive" from "very credit supportive," reflecting our opinion that regulatory independence and insulation has weakened lately. The regulatory environment is politicized in part because the commissioners at the Arizona Corporation Commission are elected, diminishing, to some extent, the credit supportiveness. Lately there has been increased leadership turnover at the commission as

recently evidenced when the chairman of the commission left for the U.S. Department of Energy. In addition, in our view outside groups have asserted significant political pressure in regulatory proceedings.

California

We revised our regulatory jurisdiction assessment on California to "more credit supportive" from "highly credit supportive" because financial stability has weakened in the state. Over 20 wildfires in regulated utility Pacific Gas & Electric Co.'s (PG&E) Northern California service territory collectively spread over 245,000 acres. Regarding these wildfires, California's inverse condemnation rule could impose liability on California utilities for wildfire damages involving their equipment even without a determination of negligence. PG&E, and potentially other utilities in the future, could be held responsible for billions of dollars because of inverse condemnation with recovery of these costs not clarified. California regulators ruled in November 2017 in a Sempra Energy subsidiary San Diego Gas & Electric Co. case that it cannot permit rate recovery of costs that were the result of imprudence or negligence by the utility even though in legal proceedings an inverse condemnation determination had been found. The inability to recover through rates the wildfire costs in excess of insurance proceeds is not credit supportive.

New Mexico

We revised our regulatory jurisdiction assessment on New Mexico to "credit supportive" from "more credit supportive" to reflect a reduction in overall regulatory stability because of inconsistency in the regulatory framework in the state. In 2017, the New Mexico Public Regulatory Commission did not approve rate cases based on future test years despite the 2009 state law permitting the use of fully forecast test years in base-rate proceedings. In addition, the tariff-setting procedures that evaluates the ability of utilities to recover costs, including operating costs, and the disallowance of several capital investments weakens the overall credit supportiveness of the jurisdiction.

Oklahoma

We revised our regulatory jurisdiction assessment on Oklahoma to "more credit supportive" from "highly credit supportive," reflecting our opinion that there is reduced regulatory stability and less transparency of the regulatory framework. We've observed increased uncertainty in regulatory actions, which lowers the predictability of cash flow support of higher expenses, including depreciation expense, and a lag in processing rate cases. On the tax reform front, the state has been aggressive, including a request from the Oklahoma Attorney General for utilities to refund changes related to the tax reform.

South Carolina

Finally, we revised our regulatory jurisdiction assessment on South Carolina to "more credit supportive" from "most credit-supportive," reflecting our opinion that the political and regulatory framework is less transparent, less predictable, and has not been consistent with regard to historical actions. The construction cancellation of V.C. Summer nuclear units 2 and 3 resulted in reduced regulatory stability and less consistency. Regulatory independence has been eroded in South Carolina since the state legislature introduced legislation that could jeopardize existing cost recovery around the cancelled Summer units and the governor has publicly supported a rate

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U.S. And Canadian Regulatory Jurisdictions Support Utilities' Credit Quality--But Some More So Than Others

reduction related to current cost recovery of already incurred Summer construction costs.

Related Criteria And Research

Related Criteria

- Criteria Corporates General: Corporate Methodology, Nov. 19, 2013
- Criteria Corporates Utilities: Key Credit Factors For The Regulated Utilities Industry, Nov. 19, 2013

Related Research

- Assessing U.S. Investor-Owned Utility Regulatory Environments, Aug. 10, 2016

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U.S. And Canadian Regulatory Jurisdictions Support Utilities' Credit Quality--But Some More So Than Others

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Grid Modernization: What Will Blockchain Technology Mean For U.S. Regulated Electric Utilities?

June 6, 2018

In this second article in a series that explores issues related to modernizing the electric grid, S&P Global Ratings looks at how a smart grid could affect regulated utilities' credit quality, taking into account the role of technology such as blockchain in the electric grid's future state. Blockchain has the potential to both enhance and disrupt the business model for regulated electric utilities. However, much depends on the decisions electric utilities make regarding the technology's deployment. The positive aspects include increased automation, grid flexibility, and transparency that could potentially result in costs savings, enhanced reliability, and increased access to cleaner energy for retail consumers. The negative aspect is the potential for utilities to use blockchain as a way to generate additional revenue sources from higher-risk nonregulated activities such as energy trading or other market-driven activities, possibly affecting how we view business risk.

Key Takeaways

- Capital spending on smart grid infrastructure is necessary to transition to a modernized grid, and technology will likely play a role in this evolution.
- Blockchain as a concept is new for the regulated electric utility industry, but some utilities are tracking its progress, including for peer-to-peer energy transactions on a microgrid.
- Blockchain has the potential to both enhance and disrupt the business model for regulated electric utilities, but much will depend on the decisions electric utilities make regarding the technology's deployment.
- For U.S. electric utilities, regulation could dictate the pace of blockchain's adoption on the grid.

A Smart Grid And The Potential Role For Technology

A smart grid is a modernized electric grid that we expect will be flexible enough to integrate distributed energy resources onto the grid, maintain service reliability, attain cost efficiencies, and

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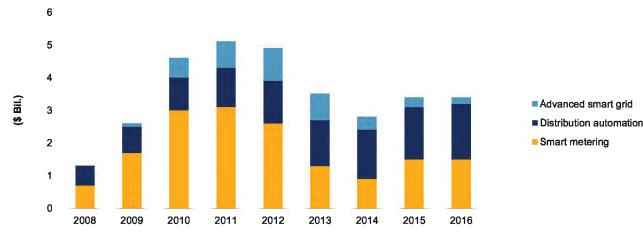
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achieve other policy objectives such as a greener energy future or grid resilience. For some utilities, this kind of grid flexibility, particularly in light of the increasing use of distributed generation (DG), could become a requirement in the not-too-distant future. Utilities thus need to allocate sufficient capital spending toward smart grid infrastructure to adapt to these new realities. In addition, technology has historically functioned as both an enabler and disruptor of other industries. As such, leading-edge technology will likely play a role in the modernization of the electric grid. One potential technology on the horizon is blockchain--which is a digital distributed ledger that enables secure transactions between participants on a network without the need for a third party to verify the integrity of the transaction. Automated smart contracts, which are essentially digital agreements on a blockchain, govern the integrity of transactions among participants, promoting trust.

The Transition To A Modern Electric Grid

Capital spending on smart grid infrastructure is necessary for regulated utilities to transition to a modernized grid. From 2008–2016, smart grid spending for regulated utilities ranged from about \$1 billion to \$5 billion per year, averaging about 5% of total utility capital spending. And while the majority of such spending has been on smart meters, spending on distribution automation has shown steady growth in recent years, marginally exceeding spending on smart meters as of 2016 (see chart 1).

Chart 1



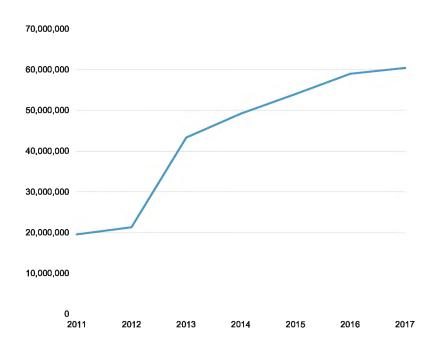
U.S. Smart Grid Spending By Segment (\$ Bil.)

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Smart meters are digital infrastructure assets that enhance two-way communication between the utility and its customers. In a prior article (Will Smart Meters Preserve Or Disrupt The Regulatory Construct For Investor-Owned Utilities?), we observed the significant deployment of smart meters in the U.S., with over 60 million installed smart meters as of 2017 compared to about 20 million smart meters six years earlier (see chart 2).

Chart 2

Growth Of Smart Meters In The U.S.



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Distribution automation focuses on electric grid activities that previously required greater use of utility personnel. One reason for this application is that electric utilities must demonstrate that they can integrate distributed energy onto the grid without affecting service reliability. Service reliability, or utilities' capability to provide uninterrupted electric service, remains key to the fundamental business model for regulated electric utilities. Some examples of distribution automation investments include integrated volt/var control (IVVC), sensors, and automated switches. While IVVCs manage the power quality and voltage on the grid, sensors monitor the condition of key assets like transformers, and automatic switches remotely control electric load. From a credit perspective, we view smart grid investments as low risk for utilities largely because they support rate base growth, enhance reliability, and potentially result in cost savings for customers, all of which are generally favorable for regulated utilities' credit quality.

Microgrids, Blockchain, And Peer-To-Peer Energy Transactions

The U.S. Department of Energy (DOE) defines a microgrid as a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid. A microgrid can either function as part of an existing electric grid, or separate from it, and the DOE considers microgrids a key building block for a smart electric grid. In addition, some states, such as New York, view the development of microgrids as a way to achieve grid resilience, particularly in light of severe weather like hurricanes. Blockchain

technology can enable localized microgrids to exchange energy with the help of blockchain-enabled meters. In April 2016, a start-up company called LO3 Energy completed its first blockchain energy transaction project in New York State, known as the Brooklyn Microgrid. This is a localized microgrid, where users of the network can buy and sell energy with each other. In this example, excess power generated from a consumer's rooftop solar can be sold to others on the same microgrid.

Although blockchain as a concept is new for the utility industry, some regulated utilities are tracking the technology's progress. The Energy Web Foundation (EWF), a not-for-profit entity funded by major energy corporate affiliates globally that counts a few U.S. utilities including Sempra Energy, Duke Energy, Exelon, and PG&E as corporate affiliates, is working on an open-sourced version of the blockchain technology. The EWF hopes to scale this technology globally, enabling more peer-to-peer energy transactions. And far from U.S. shores, the concept of peer-to-peer energy transactions with blockchain is already being put to the test. For example, Japan-based TEPCO (another EWF corporate affiliate) recently established a subsidiary that plans to sell rooftop solar and battery storage and enable customers to conduct peer-to-peer trading of electricity via blockchain.

Blockchain And The Potential For A Greener Electric Grid

According to the U.S. Environmental Policy Agency (EPA), a renewable energy certificate (REC) system establishes the property rights to the environmental social or other non-power attribute of renewable electricity generation. A REC is issued when one megawatt-hour (MWh) of electricity is generated and delivered to the electric grid from a renewable resource. Because electrons delivered to the grid are indistinguishable, a REC serves as a way to assign ownership of electricity generated and used from renewable sources. For some consumers, the process to procure a REC is administratively intensive, and includes third-party verifications, sworn statements, contract receipts, and other processes that possibly stymie consumer preferences for more renewable energy. In addition, double counting and lack of transparency can be a concern for some REC consumers, possibly why the EPA recommends third-party certification and verification when purchasing RECs. Blockchain, through its automated smart contract features, could bypass the need for such administrative processes, improve transparency, and potentially increase retail consumer access to cleaner energy, promoting a greener electric grid.

What Will Blockchain Technology Mean For U.S. Regulated Utilities?

The answer depends on the decisions utilities make regarding the deployment of the technology. When used as an enabler, blockchain can increase automation for utilities, and support demand response activities, potentially leading to more cost savings, and enhancing electric reliability on the grid. Blockchain can also increase transparency on renewable energy sourcing for RECs, potentially expanding access to cleaner energy for retail consumers, resulting in customer satisfaction. Cost savings, enhanced reliability, and customer satisfaction generally support a utility's ability to manage regulatory risk. However, the risk that would arise from blockchain technology for regulated utilities stems from the potential for utilities to use the technology as a catalyst to derive additional revenues from higher-risk nonregulated activities such as energy trading or other market-driven activities, fundamentally shifting the utilities' business model in ways that may affect how we view business risk. This approach to blockchain could be disruptive.

Blockchain could potentially increase retail consumer access to cleaner energy, promoting a greener electric grid.

For U.S. Electric Utilities, Regulation Could Dictate The Pace Of Blockchain's Adoption On The Grid

It is still very early to draw any implications for utilities' credit quality because of blockchain. For one, the current state of the electric grid is aging, and requires capital spending and time to modernize. As an example, Consolidated Edison Inc.'s smart meter plan, which began in 2016, will take approximately six years to complete. Second, it is not yet clear if cost-savings from using the technology will be material enough to justify the added complexity and investment for utilities, potentially hindering the technology's scalability. Moreover, we suspect regulators may be slow to change, given the novelty of the technology, including concerns about its compatibility with existing grid operations, and how to adapt current regulatory practices to accommodate the technology's potential.

Related Criteria And Research

Related Research

- How 'Virtual Power Plants' Are Allowing U.S. Utilities To Embrace Disruptive Technologies, Jan. 11, 2018
- Future Shock: Will Better Batteries Dim Electric Utilities' Prospects? Nov. 3, 2017
- Will Smart Meters Preserve Or Disrupt The Regulatory Construct For Investor-Owned Electric Utilities?, Oct. 31, 2017

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U.S. Tax Reform: For Utilities' Credit Quality, Challenges Abound

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(*Editor's Note:* This article is part of a series addressing the potential credit implications of U.S. tax reform on corporate, infrastructure, financial services, and U.S. public finance entities.)

The recently enacted federal tax package will provide a modest economic uplift according to S&P Global economists (see "A Tax Package For The New Year: Its Impact On U.S. GDP Growth," Jan. 8, 2018), and it will be beneficial for the credit quality of most corporate issuers (see "U.S. Tax Reform: An Overall (But Uneven) Benefit For U.S. Corporate Credit Quality," Dec. 18, 2017). But what does it mean for the S&P Global Ratings' ratings on U.S. utilities and their holding companies?

The main features of the corporate tax package are a lower tax rate, more favorable treatment of earnings repatriated from overseas, a move from a worldwide tax system to a territory-based tax system, immediate expensing of capital investment, and limits on the deductibility of interest expense. For U.S. utilities and for most utility holding companies that have mainly domestic operations, foreign earnings repatriation and the taxation approach to those earnings are a non-issue. However, the tax package has important implications for utilities mostly because of rate regulation, but also since special provisions in the tax legislation for regulated utilities regarding interest deductibility and capex expensing distinguish them from most of corporate America.

Overview

- While most of corporate America is bullish about the new tax regime, we believe the effect on creditworthiness of regulated utilities and their holding companies could be negative.
- The effect will depend on the reaction of utility regulators and, ultimately, the utility companies after the regulators have acted.
- The lower statutory corporate tax rate will eventually benefit ratepayers, not utilities. The degree of benefit or burden to holding companies will depend on each company's tax position and will suffer from the benefit at the utility subsidiaries going to ratepayers.
- The accelerated deductibility of capital expenditures is not available to utilities, and the loss of that kind of stimulus is negative for cash flow.
- Few U.S. utility holding companies will be affected by foreign earnings or the deemed repatriation of previously untaxed foreign earnings.
- Limits on the deductibility of interest expense have little effect, as utilities are exempt and holding companies can participate in that exemption.

Credit Implications Vary For U.S. Utilities

The reality for U.S. utilities and utility holding companies is that they have historically used the tax code as a source of cash flow through the interactions of tax accounting, regulatory accounting, and as opportunities to defer cash taxes from economic stimulus provisions. The attractiveness of tax credits for specific types of investments for companies

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with such reliable earnings profiles has long been apparent. One reason we have relied more on after-tax credit metrics using funds from operations (FFO) as a base instead of pretax measures like EBITDA is that the former captured the true cash flow of a utility better than the latter. As we have noted in the past, utilities are susceptible to weakening FFO-based credit metrics in the absence of bonus depreciation or other economic stimulus built into the tax code.

We will address the three primary areas of tax reform for utilities in turn. Early analysis suggests that utility and holding company credit quality could be marginally and negatively affected by the new tax code, but for most issuers the magnitude will be mild enough to allow them, if so desired, to offset the effect enough to preserve ratings. Much will depend on the regulatory response. For companies skirting the edge of our financial risk profile requirements, the path to ratings stability will be trickier and steeper. Our approach as the impact of the corporate tax package unfolds will be measured:

- Taxes, as accounting and ratemaking matters, are extremely complex and will require some time for issuers and regulators to fully understand the implications, especially at the holding company level. As we observe the decisions made by each company and update our models, we will allow sufficient time for companies to react to the changes.
- To the extent tax reform has some one-time, up-front effect on earnings or prompts write-offs, we are likely to look past that and concentrate on the ongoing, forward-looking impact on credit metrics.
- Each company's tax situation is unique, as is the regulatory environments in which they operate. While we see a general effect of tax reform, ultimately the rating impact will be issuer-specific and will depend on the details of its tax positions at both the utility and holding company, the regulatory response to the new tax code, and how the company responds to those two things in its future financial policy.
- The impact will almost certainly differ between a holding company and its utilities. Holding companies do not directly share the same tax attributes as their utility subsidiaries and are the actual entity that pays taxes on a consolidated basis. Utilities are almost uniformly treated as stand-alone entities by regulators when calculating the revenues needed to cover the cost of service. Changes in things like corporate tax rates can therefore have decidedly different effects on the unregulated parent and the regulated subsidiary. Since our rating methodology is primarily focused on the entire group, the impact of tax reform on the holding companies is going to be the most impactful on the ratings within the group for most issuers. Although there may be no rating implications, we may revise the stand-alone credit profiles (SACP) of a holding company's utility subsidiaries that we do not consider insulated. And the ratings on utilities and other subsidiaries that differ from the parent due to insulation or a lesser group status could also be directly affected.

The Influence Of Key U.S. Tax Reform Provisions On U.S. Regulated Utilities and Holding Companies									
Tax provision	Benefit or burden?	Primary relevance to utilities or holding companies?	Effect						
Lower corporate tax rate	Burden	Both	For utilities, revenue requirement is reduced. The benefit of lower rate is passed onto ratepayers. Holding companies lose the cash flow from the difference between statutory rate and their effective tax rate.						
Loss of accelerated deductibility of capital expenditures	Burden	Both	Utilities are exempted and therefore lose the opportunity to gain cash flow from tax-based stimulus. Effect on holding companies depends on mix of utility and non-utility operations.						
Elimination of tax on foreign earnings and upon repatriation going forward	Benefit	Holding company	Limited to the few that have overseas investments.						
Deemed tax on previously earned profits held overseas	Burden (limited to eight years)	Holding company	Limited to the few that have overseas investments.						

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Utilities not burdened (exempted). Holding companies are not burdened to the extent they can allocate a portion of their debt to utility operations, but the allocation method is unclear.

The Influence Of K	ey U.S. Tax Refo	rm Provisions On U.S.	Regulated Utilities and Holding Companies (cont.)
Tax provision	Benefit or burden?	Primary relevance to utilities or holding companies?	Effect

Source S&P Global Ratings.

Limit on interest deduction

Benefit

Both

Lower tax rates

The central feature of the corporate tax package is a lower tax rate. The current 35% statutory tax rate is now 21%, and that move has various ratemaking consequences for utilities. For most utilities, rates charged to customers reflect the statutory rate. Any unpaid deferred taxes over the years have been accrued for eventual return to ratepayers, and in the mean time are a low-cost source of capital in the mechanics of ratemaking. The new, lower statutory rate means (1) rates must be lowered to reflect the new rate, and (2) the excess deferred tax balance created by the difference in tax rates must be returned to ratepayers. The speed at which it is returned will be determined by the regulator with potentially significant negative cash flow effects. Normalization rules will restrict the regulators, but some of the deferred tax difference will not be protected by the transition rules and could be tapped earlier to reduce rates. Regulators will also be mindful of the higher future costs associated with rapid reversal of deferred taxes, as they have been a low-cost source of capital to the benefit of ratepayers that must be replaced with some combination of debt and equity if erased too quickly.

Both of those tasks will be handled by the regulator, with the timing and result affected by the utility's strategy and relationship with its regulators. That strategy, and the utility's ability to manage the process and outcome, are crucial factors in determining the impact on ratings coming out of tax reform. The challenge is that regulators think about and set rates primarily on earnings, not cash flow. To the extent that tax reform leads to lower cash flows, which we think will be the case in most instances, we will look for the utility to make a case for countervailing steps to offset some or all of the diminished cash flow. A stronger capital structure, using the extra revenues related to the difference between the 21% and 35% tax rates to support greater rate-base investment or rate recovery of other expenses such as unfunded pension obligations or nuclear decommissioning funds, or some combination of these could sustain or lessen the impact on credit metrics.

At the parent companies, which often have a mix of regulated and unregulated companies, the effect of lower tax rates could be more mixed and will depend greatly on each company's particular circumstance. They rarely pay anything close to the statutory rate due to careful tax planning. An important focus is on those holding companies that have significant non-utility operations. How to allocate parent debt between utility and non-utility operations is an unresolved issue (see next section), but overall many investments and activities on the non-utility side have been driven by tax considerations. A holding company's tax characteristics, including such things as net operating loss carryovers and unused tax credits, affect how much in actual taxes they're paying now. Lower tax rates will slow the realization of those and other tax benefits, and that could pressure credit metrics when combined with any negative cash-flow effects at the utility level.

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U.S. Tax Reform: For Utilities' Credit Quality, Challenges Abound

Interest expense deductibility

The second big aspect of tax reform for utilities is interest deductibility. U.S. utilities and utility holding companies are typically more leveraged than their counterparts elsewhere in corporate ratings, so the loss or limit on deducting interest for tax purposes would have been more impactful for utilities. The new tax package offers a special carve-out that allows utilities to fully deduct all interest expense and holding companies to allocate a portion of the interest on parent debt associated with their utilities to qualify for a deduction as well. The manner of that allocation is still somewhat imprecise, and greater clarity is expected when the Treasury Department implements the legislation.

Loss of bonus depreciation or other tax stimulus

The preservation of most interest deductibility for the capital-intensive, more-levered utilities and utility holding companies came at a price. In exchange for this treatment, utilities forego the opportunity to participate in the stimulus feature of tax reform, full expensing of capital spending at least for the next five years. With the absence of any bonus depreciation provisions for utilities, a powerful generator of cash flow will now cease that, in combination with the lower tax rate, will have very real consequences for cash-based credit metrics. Utilities however have been modifying their capital spending plans over the past few years to factor in phasing out of bonus depreciation. We noted in a commentary many years ago (see "How Will Bonus Depreciation Affect The Credit Quality of U.S. Electric Utilities?" May 9, 2011) that the loss of bonus depreciation could result in two to three percentage-point reductions in a typical FFO-to-debt calculation. Now that the time of no tax stimulus in the tax code has come to pass, utilities will have to grapple with this lack of cash flow from tax timing differences. While the lower statutory rate would have diminished the power of this cash-flow source anyway, its absence will make the challenge more acute, especially for those issuers that are already edging toward ratings downgrade FFO-to-debt triggers.

Utilities' Response To The New Tax Laws May Help Preserve Credit Quality

The impact of tax reform on utilities is likely to be negative to varying degrees depending on a company's tax position going into 2018, how its regulators react, and how the company reacts in return. It is negative for credit quality because the combination of a lower tax rate and the loss of stimulus provisions related to bonus depreciation or full expensing of capital spending will create headwinds in operating cash-flow generation capabilities as customer rates are lowered in response to the new tax code. The impact could be sharpened or softened by regulators depending on how much they want to lower utility rates immediately instead of using some of the lower revenue requirement from tax reform to allow the utility to retain the cash for infrastructure investment or other expenses. Regulators must also recognize that tax reform is a strain on utility credit quality, and we expect companies to request stronger capital structures and other means to offset some of the negative impact.

Finally, if the regulatory response does not adequately compensate for the lower cash flows, we will look to the issuers, especially at the holding company level, to take steps to protect credit metrics if necessary. Some deterioration in the ability to deduct interest expense could occur at the parent, making debt there relatively more expensive. More equity may make sense and be necessary to protect ratings if financial metrics are already under pressure and regulators are aggressive in lowering customer rates. It will probably take the remainder of this year to fully assess the financial impact on each issuer from the change in tax liabilities, the regulatory response, and the company's ultimate response.

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We have already witnessed differing responses. We revised our outlook to negative on PNM Resources Inc. and its subsidiaries on Jan. 16 after a Public Service Co. of New Mexico rate case decision incorporated tax savings with no offsetting measures taken to alleviate the weaker cash flows. It remains to be seen whether PNM will eventually do so, especially as it is facing other regulatory headwinds. On the other hand, FirstEnergy Corp. issued \$1.62 billion of mandatory convertible stock and \$850 million of common equity on Jan. 22 and explicitly referenced the need to support its credit metrics in the face of the new tax code in announcing the move. That is exactly the kind of proactive financial management that we will be looking for to fortify credit quality and promote ratings stability.

Related Criteria And Research

Related Research

- FirstEnergy Corp.'s Convertible Preferred Stock Issuance Rated 'BB'; Other Ratings Affirmed, Jan. 22, 2018
- PNM Resources Inc. And Subs Outlooks Revised To Negative On New Mexico Regulatory Order, Effects Of New U.S. Tax Code, Jan. 16, 2018
- A Tax Package For The New Year: Its Impact On U.S. GDP Growth, Jan. 8, 2018
- U.S. Tax Reform: An Overall (But Uneven) Benefit For U.S. Corporate Credit Quality, Dec. 18, 2017
- How Will Bonus Depreciation Affect The Credit Quality of U.S. Electric Utilities? May 9, 2011

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How 'Virtual Power Plants' Are Allowing U.S. Utilities To Embrace Disruptive Technologies

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How 'Virtual Power Plants' Are Allowing U.S. Utilities To Embrace Disruptive Technologies

Distributed generation and other customer-focused technologies that are disrupting utilities have been grabbing the attention of both the industry and S&P Global Ratings for years. Not quite at the forefront of our thoughts during this time (but waiting patiently in the wings) has been battery technology, which could provide value to customers by making their power equipment more cost-effective and allowing them to store power for utilization during power outages or periods of higher priced power on the grid. The combined distributed-generation-and-battery-storage revolution is giving individual homes and businesses the ability to diminish—and in some extreme cases, completely end--their dependence on the established power grid.

However, some electric utilities have turned the tables and responded by investing in a new disruptive idea that works in their favor, called "virtual power plants": collecting and aggregating battery-stored power on customer properties, buying it back, and using it to help supply power to other customers during times of peak demand. Utilities adopting this sort of "behind the meter" approach believe that it's a more efficient and less expensive way of providing power during periods of high demand, especially when compared to the status quo--peaker power plants, which are increasingly beleaguered in nonregulated markets.

Utilities that invest in these innovative virtual power plants benefit from having a new source of regulated assets, better relationships with customers and regulators, and potentially, a more efficient grid. But these new technologies also carry economic, execution, and technology risks and for power producers, this new development could lead to lower net power demand.

Overview

- Some regulated utilities are embracing disruptive technology by developing virtual power plants that allow them to aggregate and control batteries in customer homes and commercial properties and dispatch the consolidated power opportunistically.
- Investing in virtual power plants has multiple benefits for regulated utilities, such as new regulated investments to generate rate base growth that offsets the need to invest in riskier generating assets, enhanced stakeholder relationships, and improved grid efficiency.
- If executed as contemplated, virtual power plants could be a positive for utility credit quality.
- Pilot projects are in development despite near-term economic, execution, and technology hurdles.
- Perhaps predictably, virtual power plants could represent another small blow to the credit profile of power producers in the form of increased competition and reduced demand.

Regulators have taken note of disruptive trends in the industry. In its rationale for a new utility research project, the Illinois Commerce Commission noted that "....the advent of distributed generation and storage, demand response and energy efficiency, interconnected smart devices and appliances, micro-grids, electric vehicles, the use of big data and analytics, environmental objectives, and a host of new technologies, products, services--spurring the development of entirely new energy markets--is challenging existing network design, capability, and regulatory policy."

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How 'Virtual Power Plants' Are Allowing U.S. Utilities To Embrace Disruptive Technologies

While that's quite a mouthful, we agree with the commission's point. The commission's report concluded that these developments are positive on the whole for electricity end users because customers can buy, sell, produce, and store electricity; effectively, they can exert more control over the power production process. But the trend contains risks for utilities and could contribute to mass decentralization and deterioration of a utility's value to its customers.

If this trend continues unabated beyond the next decade, credit quality of regulated utilities could be constrained as the new customer-focused power technology (such as solar panels and batteries) reduces the utility's role and slows load growth, leading to weakening financial performance and declining credit protection measures. Importantly, most transmission-and-distribution-only utilities have mitigated this risk through the use of revenue decoupling mechanisms that separate power demand and sales from revenue generation. However, integrated utilities that do care about energy sales growth remain exposed. Compounding this, customers investing in energy infrastructure reduces integrated utilities' needs for new regulated investments. Those utility investments have historically spurred rate base growth and in turn, earnings growth. Furthermore, when power supply technologies are taken out of the utility's control, the system's operating risks can increase and complicate energy management by making it harder to predict and match supply and demand.

Utilities have responded to this ongoing threat to their business by embracing these technologies, usually by investing in utility-scale assets that are most cost-effective. (See For Slow-Growth U.S. Electric Utilities, Batteries Could Be A Power Booster, published Nov. 2, 2017.) Smaller, behind-the-meter batteries are not as economic as utility-scale investments given the scale and logistics of hooking up one large battery compared to many smaller ones. However, even considering the presently underwhelming economics, some utilities are partnering with customers and energy services companies to turn distributed batteries into utility-run virtual power plants.

Why? For one thing, on-site power storage is useful during power outages. But a more important driver is market inefficiencies related to distributed generation that isn't paired with batteries. In some cases, customers who generate energy on their property have had to pay others to take their produced power, which is a result of producing energy when demand is low. This routinely occurs in California. The problem utilities are concerned with is the opposite: demand for power increases during the evening which drives wholesale prices higher while solar panels aren't producing. In this case, utilities are forced to buy expensive power from less-efficient "peaker plants," which only ramp up when demand is high. Virtual power plants are a relatively new idea, which calls for pairing batteries with distributed generation assets to avoid relying on these comparatively expensive peaking assets.

Designing Virtual Power Plants

Utilities at the forefront of this trend are selling batteries to customers while retaining control of the power stored in the batteries to release at more opportune times. Green Mountain Power Corp. (GMP) has sold about 150 battery systems throughout its territory to both solar-producers and non-producing customers. While the mechanics can be complicated, the simplified process works as follows:

• The utility sells batteries to customers for a lower price than its market value. These customers pay through a monthly charge, similar to a rider. The utility can afford lower prices because the battery is expected to create value for the utility over its useful life.

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How 'Virtual Power Plants' Are Allowing U.S. Utilities To Embrace Disruptive Technologies

- The batteries are rate-based and earn a return, but the associated increase to the regulated revenue requirement is paid for over its useful life solely by the new battery-owners. Other customers are not yet affected financially by the transaction.
- When demand naturally spikes in the evening, the utility remotely pulls power from the new batteries on the customer's property instead of filling the need with expensive power from traditional peaker plants. This is called "load-shaving," because it reduces the need for outside supply, and it results in lower power prices. The savings from power prices will be shared by the utility and its customers, with most of the savings directly benefitting customers. Regulators will decide how this sharing mechanism works but the lower costs benefit both parties.

There are other ways that utilities can use these programs to create economic value. One of which is by charging the batteries during low (or negative) price periods. Down the road, utilities might be able to use these new resources to bid into wholesale markets in the form of wholesale power, demand response, or even ancillary services.

Other U.S. utilities, such as New York's Consolidated Edison Inc., California's Sempra Energy, PG&E Corp., and Edison International, and North Carolina's Duke Energy Corp. are at different stages of experimenting with virtual power plants, although most U.S.-based utilities that are interested are still in the beginning phases. We expect that these programs will contain the same key elements discussed above.

Benefits To Customers

Most importantly, customers interested in increasing their energy independence often seek to own energy infrastructure. To these customers, virtual power plants provide a "best of both worlds" approach. They allow customers to make the most of their solar panels, batteries, and smart technology, thereby reducing carbon footprints and increasing emergency preparedness. At the same time, these customers will have the security of remaining on the grid.

Consolidated Edison currently has an approved \$15 million budget for a small virtual power plant pilot project and a separate \$200 million more robust project that focuses on various demand management technologies. According to the company, the demand management program could postpone more than \$1 billion of investments in conventional power spending for another 20 years. The savings related to this reduction in capital expenditure needs is passed on to customers.

Is the delay in capital investment a negative for integrated utilities, which generally only grow by investing?

The answer is complicated. Generally, anytime a regulator decreases a utility's capital spending budget because it deems a project unnecessary, unimportant, or non-urgent, the utility's earnings growth forecast suffers.

However, we would stress three things. First, the batteries will mostly offset power generation spending and therefore have a more pronounced impact on unregulated power generators than on the utilities, as discussed in "Uncharged: The Possible Market Impact Of Electricity Storage". Independent power producers (IPPs) are more likely to feel the impact of possible weaker pricing than utilities are. Second, virtual power plants transfer some operational and market risks from the utility to the customer. Virtual power plants will give customers more reason to own the riskier generation assets, leaving the less risky transmission and distribution assets as a larger part of the utility's asset base.

Case No. 2018-00295 Attachment 7 to Response to DOD-1 Question No. 22 Page 5 of 8 How 'Virtual Power Plants' Are Allowing U.S. Utilities To Embrace Disruptive Technologies

Finally, the growth of battery technology seems inevitable at this point, with the major question now about timing. Accordingly, our perspective is that utilities participating in battery projects and controlling these assets, whether they are utility-scale or behind-the-meter, are the best way to ensure that they stay relevant.

What Are The Positive Credit Considerations For Utilities?

Virtual power plants can spur rate base growth

Regulators will likely allow the utilities to rate-base batteries and therefore, battery sales will earn a return for investors. While most of the programs we've researched are limited and will have an insignificant effect on rate base growth, we believe utilities will earn a return in line with other regulated assets, probably in the 8%–10% range. If the economics improve as we expect, and there is more customer demand for batteries, this could eventually lead to more pronounced growth prospects. (See "Going With The Flow: How Battery Storage Economics Are Changing Power Consumption".

As discussed above, utilities would also likely share in the cost savings associated with shaving peak load. Before we get too optimistic on how this will affect a utility's bottom line though, we'll have to monitor how regulators approach the sharing mechanisms. Meanwhile, we still are waiting for more data on how much load-shaving value the utilities will realize.

Perhaps more of an aspirational goal for virtual power plants, we think batteries, in general, are likely to provide ancillary services to the grid given their ability to disperse power instantaneously (there is no ramp up time). Whether aggregated behind-the-meter batteries will be eligible to receive credit for ancillary services is uncertain, but it is a possibility.

Lower customer bills

Behind-the-meter battery storage would compete directly with expensive peaker power generators, and batteries would have a competitive advantage because they are closer to load, have no variable costs, and can ramp up instantaneously. Therefore, there is a good reason to believe that power prices would decline during periods that have historically had the highest prices. This benefits regulated utilities in that it helps control the customer bill, which is a key concern for regulators. If customer bills are lower due to lower power prices (or any other reason for that matter), perhaps there's more room for utilities to invest in infrastructure to boost reliability. We've seen this trend play out as gas prices have remained low and gas utilities have been able to fill some of the gap in the customer bills with pipeline replacement programs.

Potential to contribute to smart grids

Green Mountain Power's virtual power plant has important applications to energy efficiency and smart technology. In fact, the Vermont company has taken the customer interaction aspect much farther by collaborating with several energy services companies to set up a larger in-house ecosystem that includes Tesla Powerwall batteries, Nest Learning Thermostats, and an Aquanta smart water heater controller that essentially allows customers to use water heaters as batteries.

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How 'Virtual Power Plants' Are Allowing U.S. Utilities To Embrace Disruptive Technologies

Improved relationships with regulators

Utility-run programs that help regulators achieve their goals is good for business. Given that battery storage is carbon-free, and could contribute to lower pricing and improved grid reliability, virtual power plants would help regulators achieve some of their larger goals.

Risks And Obstacles

Battery technology has been somewhat slow to evolve, hindered by prevailing higher costs that ultimately limit customer interest. As a result, the success of these projects revolves around the still uncertain economics of battery technology. It is possible that the economics never reach the point where customers are interested at adequate levels to justify investment, especially for residential customers. How jurisdictions price power produced from distributed generation customers will also play an important role here. For instance, customers who benefit from net metering rules (selling their energy for the full retail price) are much more likely to invest in solar panels. These rules vary across jurisdictions and are at continued risk of reform.

Given the novelty of these projects, some community stakeholders are apprehensive. For instance, while the Consolidated Edison programs are technically approved by the New York Public Service Commission because they qualify as "innovative projects," the Fire Department of the City of New York (FDNY) and the New York City Department of Buildings (DOB) oppose the use of residential batteries in some situations, citing safety reasons. This has delayed progress on the pilot programs and is a sign that initial projects in some regions might be limited to commercial premises where professional oversight can be implemented.

Technology risks are also a factor. Because these projects are the first wave, the software behind the aggregation of these assets might take time to perfect and prove at acceptable levels as there is an insufficent track record of this method working to shave peak load. For that matter, batteries in general lack a sufficient track record of long-term viability and safety. Providing a new untested service to customers (especially considering the safety concerns) might prove to be a significant headache for first movers in the U.S.

More Troubling News For Power Producers

We believe the emergence of energy storage, both utility scale and customer scale, will be more detrimental and disruptive to nonregulated power generators than it will be for utilities. As seen throughout the U.S., renewable penetration, low gas prices, mild weather in recent years, and energy-efficiency gains have reduced demand for power. Adding batteries to the mix will only intensify the trend of decreasing or stagnating demand. Regardless of whether you're generating power from fossil fuels, renewable energy, or nuclear technology, new competition from batteries will eventually start to reduce the need for additional power generation.

In particular, peakers are at most risk because stored power is most efficiently used when demand rises during peak times. Instead of buying expensive power from a peaker 100 miles away, why not just draw from the batteries in a utility's (literal) backyard?

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How 'Virtual Power Plants' Are Allowing U.S. Utilities To Embrace Disruptive Technologies

Virtual power plants are a great example of some utilities' efforts at disrupting the disruptors--taking advantage of a potentially negative trend and making it work in their favor. While these projects are still relatively new and generally small in the U.S., the sudden interest across the country from Vermont to California could be the first inkling that a new strategy is budding at home. Globally, things are a bit farther along. In Australia, Europe, and Japan, virtual power plants are already functioning in various forms. To meet the global demand, vendors (such as Sunverge Energy and Siemens) have developed early iterations of energy technologies and cloud-based software systems to aggregate and control these resources. While the U.S. is a relative latecomer to the trend, there is reason to believe that this model could work here.

A report from energy consulting firm Navigant Research estimates that total annual revenue for energy storage assets that support renewable generation will exceed \$23 billion globally by 2026. The company also notes that while the economics seem to support utility-scale batteries, other drivers (such as peak-shaving) might accelerate the behind-the-meter market to account for as much as two-thirds of its forecast global capacity by that point.

Over the next few years, battery economics will be a major driver, but utilities will also have to prove that this concept benefits all stakeholders--including themselves, customers, and regulators. If they can do that, virtual power plants could take off on a larger scale and utilities will have a new tool for growth and energy management, while having to contend with new risks. One thing is clear though--once these take hold, there will be no looking back.

Related Criteria And Research

Related Research

- Going With The Flow: How Battery Storage Economics Are Changing Power Consumption, Jan. 11, 2018
- Uncharged: The Possible Market Impact Of Electricity Storage, Jan. 10, 2018
- Future Shock: Will Better Batteries Dim Electric Utilities' Prospects?, Nov. 3, 2017
- For Slow-Growth U.S. Electric Utilities, Batteries Could Be A Power Booster, Nov. 2, 2017
- Storage: The Final Piece In The Global Energy Transition Puzzle, June 10, 2016
- Batteries: A Revolution In Store?, webcast: https://event.on24.com/eventRegistration/EventLobbyServlet?target=reg20.jsp&mkt_tok=eyJpIjoiTkRkaFpUUXdZemxqWWp!

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Will Smart Meters Preserve Or Disrupt The Regulatory Construct For Investor-Owned Electric Utilities?

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Will Smart Meters Preserve Or Disrupt The Regulatory Construct For Investor-Owned Electric Utilities?

We live in an age of big data. Merriam-Webster defines big data as "an accumulation of data that is too large and complex for processing by traditional database management tools". And we expect the volume of data will only continue to grow. For example, social media giant Facebook now has 2 billion monthly active users. But what does this mean for some investor-owned regulated electric utilities? Smart meters, an essential element of a modernized grid, are capable of producing vast quantities of data. Data that will someday be available to three key stakeholders--electric utilities, customers, and regulators.

In this inaugural article in a series that explores key issues related to modernizing the electric grid, S&P Global Ratings looks at how the growing use of smart meters could affect electric utilities. We discuss the implications for growth, cost control, and demand response that together could affect electric utilities' management of regulatory risk, and the regulatory construct under a future modernized grid. We also examine how smart meters can enable a shift in regulatory policies or practices, which if too restrictive could undermine our otherwise favorable view of smart meters for electric utilities. From a credit quality perspective, will smart meters preserve or disrupt the regulatory construct for some investor-owned electric utilities in the future?

By regulatory construct, we mean the relative credit supportiveness of a regulatory framework under a future state that reflects a modernized grid, including the data-rich power of smart meters. The regulatory framework is important because it defines the environment in which a utility operates and can affect a utility's credit quality.

Overview

- In the first of a series of articles exploring key issues related to modernizing the electric grid, we discuss smart meters and how its widespread adoption could affect the regulatory construct for investor-owned electric utilities.
- Smart meters continue to experience significant growth, and the penetration rate of these meters suggests that there is still potential headroom for low-risk rate base growth.
- However, smart meters can also enable a shift in regulatory policies or practices that if too restrictive could change our otherwise favorable view of smart meters for some electric utilities.
- We expect any structural shifts in regulatory policies or practices aided by smart meters will be gradual, giving electric utilities sufficient time to adapt.

Smart Meters Continue To Experience Significant Growth

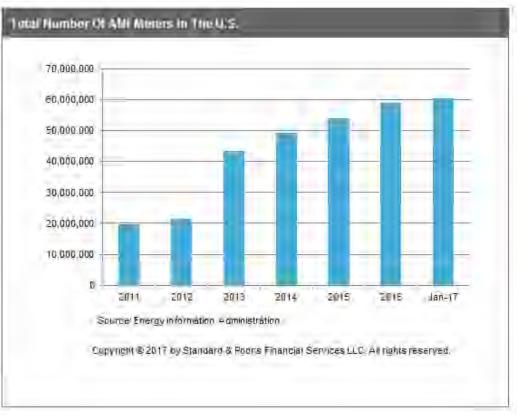
We expect the rollout of smart meters to result in rate base growth for most regulated utilities. By smart meters we mean Advanced Metering Infrastructure or AMI, which differ from meters that have Automated Meter Reading (AMR)

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Will Smart Meters Preserve Or Disrupt The Regulatory Construct For Investor-Owned Electric Utilities?

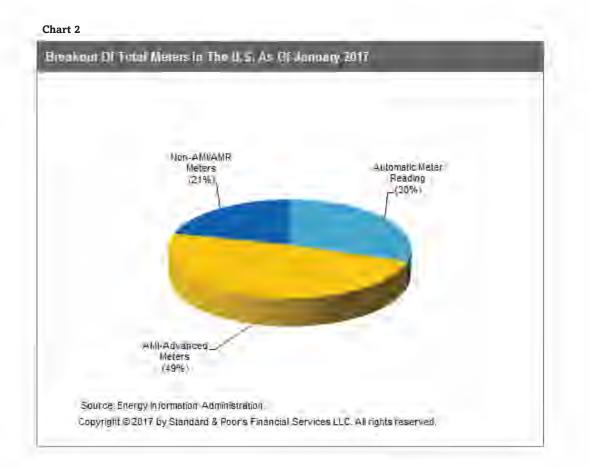
capabilities that primarily automate the collection of usage data. An AMI by contrast also enhances two-way communication between the utility and its customers, making smart meters essential to the proper functioning of a modernized grid. Smart meters continue to experience significant growth with over 60 million installed AMI meters in the U.S. as of January 2017, compared to about 20 million just six years ago (see chart 1). In addition, the penetration rate of smart meters suggests that there is still potential headroom for low-risk rate base growth, because total installed smart meters currently represent close to half of the approximately 125 million installed meters (see chart 2). In general, we view low-risk rate base growth as favorable for regulated utility bondholders because of the strong link between rate base growth and cash flow generation for most regulated utilities.





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For example, Consolidated Edison Co. of New York Inc. (CECONY) has the most rate base growth potential stemming from smart meters, with over 3 million traditional meters as of 2016. In March 2016, the New York Public Service Commission (NYSPSC) issued an order, approving CECONY's AMI plan. CECONY is a subsidiary of Consolidated Edison Inc. The company plans to spend close to \$1.3 billion to deploy AMI meters to its customers over the next five years. Penetration rate reflects AMI meters as a percent of total meters.

Electric utility	Parent holding company	State	Total AMI meters as of 2016	Total meters as Of 2016	Penetration rate
Consolidated Edison Co. of New York Inc.	Consolidated Edison Inc.	NY	0	3,434,895	0%
Public Service Electric & Gas Co.	Public Service Enterprise Group Inc.	NJ	14,676	2,199,607	1%
Niagara Mohawk Power Corp.	National Grid PLC	NY	3,293	1,930,167	0%
Duke Energy Florida LLC	Duke Energy Corp.	FL	77,709	1,746,145	4%
Duke Energy Progress LLC	Duke Energy Corp.	NC	0	1,368,308	0%
Massachusetts Electric Co.	Eversource Energy	MA	15,158	1,363,376	1%
Public Service Co. of Colorado	Xcel Energy Inc.	СО	15,883	1,314,458	1%

Table 1

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Electric utility	Parent holding company	State	Total AMI meters as of 2016	Total meters as Of 2016	Penetration rate
Connecticut Light & Power Co.	Eversource Energy	СТ	0	1,263,831	0%
NSTAR Electric Co.	Eversource Energy	MA	0	1,219,207	0%
Union Electric Co.	Ameren Corp.	МО	0	1,216,759	0%
Puget Sound Energy Inc.	Puget Energy Inc.	WA	4,954	1,149,123	0%
Jersey Central Power & Light Co.	FirstEnergy Corp.	NJ	0	1,133,503	0%
Northern States Power Co.	Xcel Energy Inc.	MN	0	1,112,133	0%
Entergy Louisiana LLC	Entergy Corp.	LA	12,210	1,090,299	1%
Ohio Edison Co.	FirstEnergy Corp.	OH	11	1,052,079	0%

Table 1

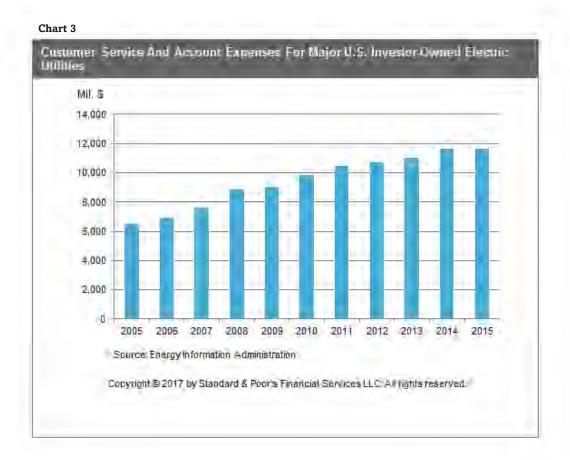
Source: Energy Information Administration.

Smart Meters Can Help Some Electric Utilities Manage Costs...

A utility's ability to manage both fixed and variable costs in line with regulatory expectations is among one of many factors that we evaluate when assessing operating efficiency for regulated utilities, which can affect business risk. It is likely that smart meters could help electric utilities manage costs such as billing, meter reading, and customer call centers traditionally associated with servicing customer accounts. For example, 2015 marked the first time in the past 10 years where major U.S. investor-owned electric utilities saw an actual decrease in customer centric operating expenses (see chart 3).

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Will Smart Meters Preserve Or Disrupt The Regulatory Construct For Investor-Owned Electric Utilities?



We expect the widespread adoption of smart meters to replace the need for utilities to maintain large meter-reading personnel. Smart meters can also help electric utilities realize cost savings through reduced truck rolls, and during mass power outages caused by storms. Truck rolls occur when utilities dispatch service personnel to help troubleshoot a customer's power outage during normal weather conditions. We expect such cost control to marginally enhance the utilities' ability to effectively manage regulatory risk because savings passed on to customers generally foster good relationships with utility regulators and create more headroom for capital investment.

...And Enable Shifts In Regulatory Policies For Other Electric Utilities

New York

Back to New York, it is worth noting that the deployment of CECONY's smart meters or AMI plan is also part of a broader effort for CECONY to implement Gov. Andrew Cuomo's Reforming The Energy Vision (REV) plan. At its core, REV aims to modernize the electricity grid to improve electric system efficiency and reliability, encourage more distributed generation (DG), and empower customer choice. Electric utilities in New York are not permitted to own DG resources except in limited circumstances, which we view as somewhat restrictive. Since its inception in 2014, REV has expanded to include much broader policy goals, including a clean energy standard that mandates that 50% of New York State's electricity come from renewable energy resources, and for reducing carbon emissions by 40% by 2030. In

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Will Smart Meters Preserve Or Disrupt The Regulatory Construct For Investor-Owned Electric Utilities?

March 2017, the NYSPSC issued another related REV order on net energy metering, gradually phasing in a new market-based compensation mechanism for DG by developing Value of Distributed Energy (VDER) tariffs. Although still in its infancy, these developments signal a shift in regulatory policy in New York that is somewhat restrictive, potentially undermining our otherwise favorable view of smart meters for electric utilities operating in the state.

California

The California Public Utilities Commission (CPUC) will require electric utilities to change residential customers' tariffs to reflect time-of-use (TOU) rates by January 2019 (see California's Rate Reforms Underscore The Importance Of Managing Regulatory Risk, Oct. 2, 2015). TOU are rates that vary depending on the time of day electricity is used. One of the guiding principles behind residential rate reform in California is to encourage more demand response from customers, which means encouraging customers to reduce their energy consumption during certain periods of the day, when the energy needs of the electric system is at its highest. We expect most affected electric utilities in California will successfully implement this change in part due to the widespread availability of residential smart meters. For example, almost all residential meters of the big-three investor-owned electric utilities, Pacific Gas & Electric Co., Southern California Edison Co., and San Diego Gas & Electric Co., are smart meters.

Will the proliferation of smart meters prompt other states to follow New York and California? (See "Utility Regulatory Hot Spots In North America: Six U.S. States To Watch," Jan. 24, 2017). We suspect that gradual regulatory shifts could occur in states where electric prices are higher than the national average (see table 2), with smart meters serving as technological enablers of change.

			Average price (cents/kWh)										
	State	1	Ultimate			Residential		Commercial			Industrial		
Rank		2016	2015	2014	2016	2015	2014	2016	2015	2014	2016	2015	2014
1	Hawaii	23.54	25.95	33.15	27.38	29.62	36.96	24.44	26.81	34.01	20.28	22.71	29.82
2	New Hampshire	19.2	18.62	17.65	18.69	18.52	17.76	19.26	18.33	16.92	29.16	21.72	20.96
3	Connecticut	18.84	19.87	17.87	19.75	20.73	18.83	16.1	17.54	16.01	14.37	16.14	14.42
4	Massachusetts	18.33	19.73	17	19.75	20.77	17.81	15.33	17.58	15.65	14.37	17.42	14.98
5	Rhode Island	17.71	18.62	16.31	18.43	19.2	17.06	16.26	17.66	15.38	15.19	17.33	14.89
6	California	16.61	16.84	16.47	18.1	17.63	16.81	16.22	17.2	17.18	14	14.07	13.83
7	New York	16.28	17.52	19.35	17.03	18.19	20.17	15.69	17.18	18.83	6.65	7.58	9.93
8	New Jersey	14.48	14.53	14.49	15.63	15.62	15.37	12.84	13.02	13.32	6.31	7.09	8.56
9	Vermont	14.1	14.01	14.24	17.27	16.91	17.44	14.35	14.33	14.41	9.77	9.81	9.73
10	Maryland	13.66	13.35	12.99	14.16	13.64	13.26	12.05	12.52	12.38	9.87	10.28	10.07
11	Maine	13.63	13.66	12.93	14.62	14.61	15.18	11.49	11.77	12.29			
12	Delaware	13.34	13.33	13.05	13.68	13.7	13.66	12.41	12.43	11.35	9.49	8.84	9.6
13	Pennsylvania	12.88	12.58	12.26	13.58	13.17	12.8	11.12	11.42	11.14	7.79	8.2	9.29
14	District of Columbia	12.22	12.27	12.38	12.21	12.3	12.49	12.24	12.23	12.24			
15	Ohio	11.7	11.57	11.57	12.5	12.94	13.13	10.76	11.34	12.03	6.95	6.4	6.3
16	Michigan	11.67	11.34	11.66	15.41	14.51	14.6	10.93	10.89	11.29	7.16	7.31	8.09
17	Arizona	11.46	11.4	11.14	12.58	12.51	12.28	11.38	11.34	11.1	8.01	8.07	7.82

Ranking Of 2016 Statewide Price To Ultimate Customers (Cents/kWh)

Table 2

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						A) (con			
		Average price (cents/kWh) Ultimate Residential Commercial Industrial											
					·								
	State	2016	2015	2014	2016	2015	2014	2016	2015	2014	2016	2015	2014
18	Montana	10.86	10.9	10.07	11.55	11.58	10.57	11.08	11.15	10.37	7.52	7.69	7.15
19	Wisconsin	10.85	10.93	10.74	14.35	14.44	13.93	10.84	10.97	10.87	7.6	7.68	7.59
20	Alaska	10.75	10.38	10.44	11.84	11.85	11.85	9.82	9.75	9.92	10.42	9.45	9.42
21	Kansas	10.63	10.06	10.01	13.09	12.15	11.93	10.14	9.73	9.72	7.64	7.4	7.49
22	South Dakota	10.57	10.16	9.52	12.09	11.6	10.78	10.6	10.07	9.51	7.39	7.45	6.82
23	Illinois	10.36	10.59	10.01	11.78	12.28	11.38	8.94	9.45	9.52	5.23	5.26	5.88
24	Washington	9.97	9.63	9.16	10.61	10.08	9.46	9.8	9.64	9.29	7.73	7.62	7.31
25	Alabama	9.82	9.39	9.23	12.66	12.2	11.8	11.59	11.13	10.89	6.35	6.14	6.22
26	Florida	9.72	10.33	10.59	10.85	11.45	11.75	8.63	9.26	9.52	7.39	8.07	8.12
27	Missouri	9.7	9.36	8.97	11.4	11.58	10.87	9.16	9.07	8.77	7.04	6.16	6.05
28	Oregon	9.69	9.61	9.55	11.24	11.36	11.24	9.24	9.17	9.1	7.09	6.87	6.85
29	Colorado	9.55	9.74	9.97	11.74	11.86	12.05	9.41	9.82	10.14	6.68	6.68	6.82
30	South Carolina	9.44	9.49	9.52	12.58	12.57	12.35	9.99	9.98	10.05	5.94	6.17	6.3
31	Minnesota	9.29	8.95	9.07	12.58	12.05	12.21	9.65	9.23	9.93	6.66	6.58	6.26
32	Georgia	9.16	9.21	9.86	12.03	12.15	12.37	9.45	9.56	10.22	5.44	5.48	6.48
33	Indiana	9.1	8.9	9.07	11.48	11.17	11.21	9.93	9.68	9.94	7.11	7.01	7.23
34	North Dakota	9.1	8.78	8.36	10.11	9.57	9.01	8.86	8.52	8.49	7.05	7.36	7.06
35	New Mexico	8.97	9.69	9.77	11.7	12.33	12.17	9.55	10.32	10.33	4.89	5.42	5.92
36	Nevada	8.9	10.22	10.45	11.46	12.9	13.09	8.26	9.66	9.95	6.48	7.69	7.98
37	West Virginia	8.87	8.08	7.61	11.18	10.04	9.27	9.33	8.58	7.95	6.57	6.09	5.87
38	Virginia	8.86	8.99	8.92	11.22	11.09	10.93	7.7	7.97	7.92	6.34	6.54	6.59
39	Kentucky	8.73	8.48	8.34	10.24	9.88	9.65	9.36	9.2	9.12	6.38	6.28	6.17
40	Utah	8.73	8.55	8.35	11.59	11.49	11.22	8.81	8.66	8.6	6.29	6.13	5.97
41	North Carolina	8.63	8.75	8.7	10.57	10.78	10.54	8.14	8.18	8.22	6.11	6.31	6.28
42	Iowa	8.21	7.94	7.71	12	11.55	10.98	9.2	8.86	8.53	5.77	5.58	5.38
43	Idaho	8.2	8.2	8.06	10.21	10.2	9.98	7.95	7.96	7.92	6.68	6.73	6.59
44	Arkansas	8.09	8.17	7.64	9.96	9.84	9.14	7.95	8.09	7.63	6.29	6.49	6.07
45	Mississippi	8.01	9.46	9.66	9.38	11.03	11.19	8.51	10.11	10.4	6.03	7.07	7.18
46	Wyoming	7.96	7.87	7.62	12.22	12.1	11.43	10.11	9.87	9.44	6.68	6.61	6.45
47	Tennessee	7.3	7.07	7.48	8.49	8.32	8.61	8.72	8.35	8.75	5.73	5.66	6.1
48	Louisiana	7.27	7.72	8.3	9.34	9.61	10	8.55	8.86	9.48	4.98	5.36	6
49	Oklahoma	7.26	7.33	7.65	9.67	9.59	9.53	6.94	6.99	7.52	4.56	4.94	5.37
50	Texas	7.21	7.27	7.6	10.18	10.05	10.31	7.75	7.91	8.21	4.88	4.96	5.44
													2.1

Source: S&P Global Market Intelligence.

Case No. 2018-00295 Attachment 8 to Response to DOD-1 Question No. 22 Page 9 of 10 Arbough

Will Smart Meters Preserve Or Disrupt The Regulatory Construct For Investor-Owned Electric Utilities?

The Verdict

Overall, we expect U.S. investor-owned electric utilities will ultimately manage to preserve their regulatory constructs under a modernized grid that includes smart meters. For one, electric utilities have historically shown resilience in the face of other seemingly disruptive forces, including deregulation, shifts in commodity prices, and catastrophic weather conditions such as hurricanes. In addition, we view the rate base growth potential, and cost control as generally favorable for credit quality, making smart meters a viable technology that we expect will enable most electric utilities to effectively manage regulatory risk. Furthermore, given the essential nature of the service electric utilities provide, we expect any structural shifts in regulatory policies or practices aided by smart meters will be gradual, giving electric utilities sufficient time to adapt.

Related Criteria And Research

Related Research

- Utility Regulatory Hot Spots In North America: Six U.S. States To Watch, Jan. 24, 2017
- California's Rate Reforms Underscore The Importance Of Managing Regulatory Risk, Oct. 2, 2015

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LOUISVILLE GAS AND ELECTRIC COMPANY

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 23

Responding Witness: Daniel K. Arbough

- Q-23. Please provide the most recent senior secured, unsecured and corporate credit ratings and outlook of LG&E assigned by S&P, Moody's and Fitch. Also, please provide their S&P business and financial risk profiles.
- A-23. The most recent ratings and outlook assigned by S&P and Moody's and the S&P business and financial risk profiles are provided below. In January 2015, Fitch withdrew its ratings for LG&E.

	L	G&E	P	PL
<u>Ratings</u>	<u>S&P</u>	Moody's	<u>S&P</u>	<u>Moody's</u>
Senior Secured	A	A1	N/A	N/A
Unsecured	N/A	N/A	N/A	N/A
Corporate Credit	A-	A3	A-	Baa2
Outlook	Stable	Stable	Stable	Stable
Business Risk	Excellent		Excellent	
Financial Risk	Significant		Significant	

LOUISVILLE GAS AND ELECTRIC COMPANY

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 24

Responding Witness: Daniel K. Arbough

- Q-24. Please provide all copies of all correspondence, presentations and all other materials that LG&E provided to credit and equity analysts over the last two years.
- A-24. See the response to METRO 1-82.

LOUISVILLE GAS AND ELECTRIC COMPANY

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 25

Responding Witness: Daniel K. Arbough

- Q-25. In an electronic spreadsheet with all formulas intact, please provide the monthly average balances for construction work in progress and short-term debt for the most recent 13-month period. Please separate and identify the amounts associated with each jurisdiction and separated by electric and gas operations.
- A-25. See the attachment being provided in Excel format.

The attachment is being provided in a separate file in Excel format.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 26

- Q-26. In an electronic spreadsheet with all formulas intact, please provide the five-year projected and five-year historical capital structure, capital expenditures and capital funding.
- A-26. See the attachment being provided in Excel format. The base period and three years of projections have been provided consistent with the filing requirements Section 16(7)(b), Section 16(7)(h)(2) and Section 16(7)(h)(3).

The attachment is being provided in a separate file in Excel format.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 27

Responding Witness: Daniel K. Arbough / Robert M. Conroy

- Q-27. Please identify the common equity ratio and return on equity approved in LG&E's last fully litigated rate case for its KY retail operations.
- A-27. See the Commission's Order issued June 22, 2017 in Case No. 2016-00371.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 28

- Q-28. Please provide copies of all credit reports published by Standard & Poor's ("S&P"), Moody's and Fitch Ratings for LG&E and their parent company issued over the last two years.
- A-28. See the response to METRO 1-84.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 29

- Q-29. Please provide the amount of capitalized interest estimated to be paid during the test year related to construction projects. Please separate and identify the amounts associated with each jurisdiction and separated by electric and gas operations.
- A-29. LG&E does not capitalize interest related to construction projects.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 30

- Q-30. Please state whether LG&E's regulated electric retail operations has any off balance sheet debt such as purchased power agreements and operating leases. If the answer is "yes," provide the amount of each off-balance sheet debt item and estimate the related imputed interest and amortization expense associated with these off balance sheet debt equivalents specific to LG&E's jurisdictional regulated retail electric operations.
- A-30. Yes, the Company's operating leases and pension are treated as an off-balance sheet debt adjustment. See the response to US DOD 1-20 where the operating leases and pension debt amounts are included in the adjusted debt balance for S&P. The operating lease and pension imputed interest and amortization expense are \$2,672,912 and \$(1,776,814) respectively.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 31

- Q-31. To the extent not already provided, please provide in electronic format with all formulas intact, the calculation of LG&E's credit metric calculations by Standard and Poor's and Moody's.
- A-31. See the response to Question No. 20.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 32

Responding Witness: Daniel K. Arbough

- Q-32. Please provide a detailed explanation of LG&E's dividend payment and debt financing plans through the test period.
- A-32. Dividends are calculated every quarter in the projected portion of the base and test year using a payout assumption of 65% of the previous quarter's net income. To the extent cash from operations is not sufficient to fund capital expenditures and financing cash flows for dividends and debt maturities, the Company funds those needs with short-term debt, typically in the form of commercial paper, until the prescribed maximum has been reached. At that time, the Company issues long-term debt to reduce the amount of outstanding short-term debt.

See Tab 16 Filing Requirement Section 16(7)(c) Item A pages 15 through 16 of 19 which provides an in-depth discussion of the methodology used to calculate dividend payments and the determination of financing.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 33

- Q-33. Do any of LG&E's outstanding long-term debt issues have call provisions? If the answer is "yes," please provide a list of the callable issues with the following:
 - a) outstanding balance
 - b) issuance date
 - c) maturity date
 - d) coupon payment percent
 - e) annual interest expense
 - f) call price (as a percent of par).
- A-33. A listing of LG&E's callable debt is as follows:

Outstanding Balance	lssuance Date	Maturity Date	Coupon Payment Percent	nual Interest Expense	Call Price (As a Percent of Par)	Call Date
а	b	С	d	r	f	
\$ 300,000,000	9/28/2015	10/1/2025	3.300%	\$ 9,900,000	100%	7/1/2025
285,000,000	11/16/2010	11/15/2040	5.125%	14,606,250	100%	5/15/2040
250,000,000	11/14/2013	11/15/2043	4.650%	11,625,000	100%	5/15/2043
250,000,000	9/28/2015	10/1/2045	4.375%	10,937,500	100%	4/1/2045
60,000,000	6/1/2017	6/1/2033	3.750%	2,250,000	100%	6/1/2027

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 34

- Q-34. Has LG&E performed any debt refinancing feasibility studies on its outstanding debt issues? If the answer is "yes," please provide the following:
 - a. A detailed description of the results from the study.
 - b. A detailed description of the conclusions(s) made by LG&E based on the results of the study.
 - c. All debt refinancing feasibility studies in an electronic spreadsheet with all formulas intact.
- A-34. The Company has not performed any debt refinancing feasibility studies. As noted in the response to Question No. 33, there are no bonds currently callable. The Company's large taxable first mortgage bonds may only be redeemed via paying the make-whole premium included in the terms of the bonds or via a tender offer. The discount rates used to determine the make-whole premium are much lower than the current credit spreads thereby making refinancing unattractive. Likewise, we have not seen opportunities to refinance via a tender offer that results in savings.
 - a. Not applicable.
 - b. Not applicable.
 - c. Not applicable.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 35

- Q-35. Please confirm that PPL Corporation or LG&E are not on credit watch, review for downgrade, or have anything other than a "stable" outlook by any of the major ratings agencies. If this cannot be confirmed, please provide all reports in support of your response.
- A-35. See the response to Question No. 23.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 36

Responding Witness: Adrien M. McKenzie

- Q-36. Mr. McKenzie relies on "threshold tests employed by FERC" to establish low-end and high-end outliers. Please state whether or not Mr. McKenzie is familiar with the FERC's proposed methodology for high-end outliers in 165 FERC ¶ 61,030.
- A-36. Mr. McKenzie has reviewed FERC's October 16, 2018 order in Docket No. EL11-66, 165 FERC ¶ 61,030 ("Coakley Remand Order"), including the proposed methodology for evaluating estimates at the upper end of the ranges produced by the discounted cash flow ("DCF") model, the Capital Asset Pricing Model ("CAPM"), and the Expected Earnings method.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 37

Responding Witness: Adrien M. McKenzie

- Q-37. If Mr. McKenzie is familiar with the methodology proposed in 165 FERC ¶ 61,030, please apply FERC's proposed high-end outlier test of 1.5x the median before any outliers are removed, to Mr. McKenzie's DCF results.
- A-37. Mr. McKenzie did not conduct the requested analysis in the course of preparing his testimony in this proceeding. Moreover, the methodology to evaluate upper-end cost of equity estimates proposed in the Coakely Remand Order has not been approved by FERC, which has requested briefing on this issue and all other aspects of FERC's proposed ROE methodology. In addition, the proposed test of upper end values is only one aspect of the ROE methodology presented in the Coakley Remand Order. As a result, application of this test in isolation to the results of a different DCF approach in this proceeding, while ignoring other important aspects of FERC's proposed ROE methodology would not provide a meaningful basis on which to evaluate a fair ROE for LG&E in this proceeding.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 38

- Q-38. Please provide a proof of revenues in a Microsoft Excel format with all formulas and links intact which shows the current and proposed revenue for the Time-of-Day Secondary, Time-of-Day Primary and Retail Transmission Service.
- A-38. The proof of revenues in Excel was provided in the file labeled Att_LGE_PSC_1-53_ElecScheduleM_Forecasted.xlsx provided in the response to PSC 1-53.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 39

- Q-39. Please provide all workpapers in Microsoft Excel format with all formulas and links intact that support LG&E's cost of service and rate design testimony and exhibits.
- A-39. All workpapers that support LG&E's cost of service and rate design were filed as attachments to the responses to PSC 1-53 and AG 1-137.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 40

- Q-40. Regarding the proposed Time-of-Day Primary Service rate ("TODP"), please provide the following:
 - a. All workpapers supporting the development of the proposed energy charge of \$.03193/kWh.
 - b. Identify all costs that are included in the proposed energy charge.
 - c. All workpapers supporting the peak demand charge of \$8.21/kVA.
 - d. Identify the cost that the charge of \$8.21/kVA is expected to recover.
 - e. All workpapers supporting the development of the intermediate demand charge of \$6.16/kVA.
 - f. Identify the cost that the charge of \$6.16/kVA is expected to recover.
 - g. All workpapers supporting the development of the base demand charge of 3.46/kVA.
 - h. Identify the cost that the charge of \$3.46/kVA is expected to recover.
- A-40.
- a. See the Excel attachment to the response to Kroger-Walmart 1-3. The tab labeled "TOD Pri" provides all of the cost information that was used in the development of the rate for TODP.
- b. The proposed energy charge is designed to collect only energy-related costs (variable costs) allocated to the TODP class of customers in the Cost of Service Study.
- c. See the response to part a.

- d. The \$8.21/kVA Maximum Load Charge for the Peak Demand Period and the \$6.16/kVA Maximum Load Charge for the Intermediate Demand Period are designed to recover fixed production demand-related costs.
- e. See the response to part a.
- f. See the response to part d.
- g. See the response to part a.
- h. The \$3.46/kVA Maximum Load Charge for the Base Demand Period is expected to recover fixed transmission and distribution demand-related costs.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 41

- Q-41. Please provide a copy of the cost of service studies in Microsoft Excel format with all formulas intact referenced on page 71, line 12, of William Seelye's direct testimony.
- A-41. See the following Excel attachments to the response to PSC 1-53:
 - 1) Att_LGE_PSC_1-53_Exhibit_WSS-27_WSS-29_LGE_COSS_ Functional_Assgmt_and_Class_Alloc.xlsx and
 - 2) Att_LGE_PSC_1-53_Exhibit_WSS-9_WSS-10_WSS-11_WSS-12_WSS-33_WSS-34_LGE_Gas_COSS.xlsx.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 42

Responding Witness: William Steven Seelye

- Q-42. For LG&E's proposed Substitute Gas Sales Service ("SGSS") rate, please provide the following:
 - a. All workpapers supporting the development of the demand charge of \$6.73/Mcf of monthly billing demand.
 - b. Identify the costs that are included in the demand charge of \$6.73/Mcf of monthly billing demand.
 - c. All workpapers supporting the development of the proposed distribution charge of \$.3603/Mcf.
 - d. Identify the cost that this charge of \$.3603/Mcf is expected to recover.

A-42.

- a. See the Excel attachments to the response to PSC 1-53.
- b. See Exhibit WSS-12 of Mr. Seelye's direct testimony. The Demand Charge is the sum of Storage/Transmission Demand-related Costs, Demand-Related Low-Pressure Mains Costs, and Transmission and Demand-Related High Pressure Mains Costs divided by 12 months, as rounded.
- c. See the Excel attachments to the response to PSC 1-53.
- d. See Exhibit WSS-12 of Mr. Seelye's direct testimony. The proposed distribution charge is the sum of Storage Compressor Costs and Other Procurement Costs.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 43

Responding Witness: William Steven Seelye

- Q-43. The Time-of-Day Primary Service rate is available to customers served at primary voltages that range from 2,400 volts to 34,500 volts.
 - a. Do any of the customers that are served at 2,400/4,160 volts utilize the 34,500 volt system? Please explain your answer.
 - b. How many customers on this rate take service at 34,500 volt?

A-43.

- a. LG&E does not track the service voltage and transformation for customers. LG&E has only one customer known to receive transformation from 34.5kV for service at 2,400/4,160V. There are no customers known to receive service at both 34,500V and 2,400/4,160V.
- b. One customer takes service at 34,500 volts.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 44

- Q-44. Please provide all workpapers showing the development of the production allocators for both fixed and variable costs used in the cost of service study.
- A-44. See the Excel attachments to the response to AG 1-137.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 45

- Q-45. Please explain how purchased power costs were allocated to the various rate classes and provide workpapers showing the development of the allocators used to allocate purchased power expense to the various rate classes.
- A-45. Demand-related purchased power costs are allocated on the basis of each class's load-weighted LOLP, and Energy-related purchased power costs are allocated on the basis of energy sales to each customer class. See the Excel attachment to the response to AG 1-137, part b, for the workpapers developing the LOLP demand allocator. The energy allocator is developed from forecasted energy sales grossed up for energy losses, as shown in the Excel attachment to the response to PSC 1-53 named Att_LGE_PSC_1-53_ElecScheduleM_Forecasted.xlsx, tab Sch M 2.3 (2).

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 46

Responding Witness: William Steven Seelye / David S. Sinclair

- Q-46. Please provide the LOLP and the related hourly demands for each hour used to allocate fixed production costs in the cost of service.
- A-46. See the Excel attachments to the response to AG 1-137.

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 47

Responding Witness: William Steven Seelye / David S. Sinclair

- Q-47. Please provide the hourly load data for LG&E by hour for the cost of service test year.
- A-47. See attached.

Case No. 2018-00295 Attachment to Response to US DOD-1 Question No. 47 Page 1 of 210 Seelye/Sinclair

Year	Month	Day	ł	Hour		LGE System kWh
201	9	5	1		0	1136890.147
201	9	5	1		1	1087113.268
201	9	5	1		2	1055638.553
201	9	5	1		3	1052155.909
201	9	5	1		4	1093018.193
201	9	5	1		5	1207788.007
201	9	5	1		6	1266119.346
201	9	5	1		7	1314002.944
201	9	5	1		8	1356045.111
201	9	5	1		9	1426788.272
201	9	5	1		10	1495663.925
201	9	5	1		11	1591700.032
201	9	5	1		12	1650613.374
201	9	5	1		13	1656868.796
201	9	5	1		14	1690782.105
201	9	5	1		15	1699190.041
201	9	5	1		16	1702347.625
201	9	5	1		17	1687480.988
201	9	5	1		18	1644311.145
201	9	5	1		19	1647491.632
201	9	5	1		20	1642349.302
201	9	5	1		21	1506665.968
201	9	5	1		22	1380122.986
201	9	5	1		23	1286185.853
201	9	5	2		0	1221996.702
201	9	5	2		1	1166343.062
201	9	5	2		2	1113413.915
201	9	5	2		3	1094015.455
201	9	5	2		4	1144590.362
201	9	5	2		5	1256177.498
201	9	5	2		6	1300143.228
201	9	5	2		7	1348767.652
201	9	5	2		8	1412391.562
201	9	5	2		9	1469746.097
201	9	5	2		10	1509654.343
201	9	5	2		11	1563801.409
201	9	5	2		12	1621133.572
201	9	5	2		13	1600469.406
201	9	5	2		14	1585502.068
201	9	5	2		15	1598389.761
201	9	5	2		16	1568443.262

Case No. 2018-00295 Attachment to Response to US DOD-1 Question No. 47 Page 2 of 210 Seelye/Sinclair

2019	5	2	17	1508517.981
2019	5	2	18	1467074.714
2019	5	2	19	1479899.477
2019	5	2	20	1526398.776
2019	5	2	21	1438689.266
2019	5	2	22	1331627.852
2019	5	2	23	1234060.002
2019	5	3	0	1169927.895
2019	5	3	1	1121795.041
2019	5	3	2	1083502.636
2019	5	3	3	1068992.473
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2019	5	4	3	1008950.455
2019	5	4	4	1017199.505
2019	5	4	5	1022703.427
2019	5	4	6	1024019.686
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2019	5	4	9	1190329.012
2019	5	4	10	1213383.479

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2019	5	4	11	1207098.789
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2019	5	6	5	1217573.062
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2019	5	7	23	1202296.792
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2019	5	9	17	1575851.967
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2019	5	11	4	1010072.074
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2019	5	11	7	1084553.399
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2019	5	11	10	1198997.514

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2019	5	11	11	1184320.037
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2019	5	12	11	1121340.808
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2019	5	13	3	1027887.125
2019	5	13	4	1049035.381

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2019	5	13	5	1223534.191
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2019	5	14	12	1434674.099
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2019	5	14	17	1584320.005
2019	5	14	18	1579904.951
2019	5	14	19	1595090.056
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2019	5	14	22	1393596.274

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2019	5	14	23	1305009.689
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2019	5	15	10	1687776.349
2019	5	15	11	1741669.887
2019	5	15	12	1795282.134
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2019	5	15	14	1853215.215
2019	5	15	15	1871700.598
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2019	5	16	1	1239546.659
2019	5	16	2	1192308.968
2019	5	16	3	1159239.741
2019	5	16	4	1203870.944
2019	5	16	5	1295559.785
2019	5	16	6	1364866.473
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2019	5	16	8	1439559.500
2019	5	16	9	1512879.769
2019	5	16	10	1513909.663
2019	5	16	11	1557793.592
2019	5	16	12	1593579.263
2019	5	16	13	1561216.757
2019	5	16	14	1559504.486
2019	5	16	15	1544857.016
2019	5	16	16	1548897.788

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2019	5	16	17	1526403.663
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2019	5	16	22	1341615.800
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2019	5	17	16	1552891.993
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2019	5	17	23	1245213.431
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2019	5	18	6	1126747.745
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2019	5	18	8	1280897.027
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2019	5	18	10	1375805.921

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2019	5	18	11	1392778.656
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2019	5	18	14	1492549.543
2019	5	18	15	1537148.531
2019	5	18	16	1595765.883
2019	5	18	17	1605081.467
2019	5	18	18	1545463.530
2019	5	18	19	1494039.763
2019	5	18	20	1488397.371
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2019	5	18	22	1340705.714
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2019	5	19	10	1475832.519
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2019	5	20	5	1359005.217
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2019	5	21	23	1391975.869
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2019	5	23	17	1410772.364
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2019	5	23	22	1231740.908
2019	5	23	23	1144070.987
2019	5	24	0	1088100.360
2019	5	24	1	1068223.018
2019	5	24	2	1046906.641
2019	5	24	3	1047967.794
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2019	5	24	6	1232049.152
2019	5	24	7	1279094.206
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2019	5	24	9	1350295.747
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2019	5	24	11	1387603.794
2019	5	24	12	1388136.393
2019	5	24	13	1365367.790
2019	5	24	14	1374523.408
2019	5	24	15	1380808.579
2019	5	24	16	1384413.333
2019	5	24	17	1368040.606
2019	5	24	18	1335925.735
2019	5	24	19	1313015.278
2019	5	24	20	1328741.539
2019	5	24	21	1274085.285
2019	5	24	22	1204914.593
2019	5	24	23	1119816.443
2019	5	25	0	1062575.469
2019	5	25	1	1029437.838
2019	5	25	2	1011578.847
2019	5	25	3	992769.276
2019	5	25	4	1000452.387
2019	5	25	5	998892.455
2019	5	25	6	1011714.147
2019	5	25	7	1058286.812
2019	5	25	8	1115706.620
2019	5	25	9	1149952.888
2019	5	25	10	1180104.733

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2019	5	25	11	1210167.163
2019	5	25	12	1239503.923
2019	5	25	13	1259154.275
2019	5	25	14	1257446.802
2019	5	25	15	1252928.460
2019	5	25	16	1234301.146
2019	5	25	17	1183641.407
2019	5	25	18	1180391.477
2019	5	25	19	1190667.037
2019	5	25	20	1228092.341
2019	5	25	21	1179590.366
2019	5	25	22	1101290.267
2019	5	25	23	1041671.374
2019	5	26	0	994722.994
2019	5	26	1	977182.378
2019	5	26	2	966118.714
2019	5	26	3	951719.062
2019	5	26	4	958562.031
2019	5	26	5	979065.684
2019	5	26	6	987125.762
2019	5	26	7	1024808.036
2019	5	26	8	1070675.323
2019	5	26	9	1118996.123
2019	5	26	10	1144839.682
2019	5	26	11	1145514.498
2019	5	26	12	1191114.272
2019	5	26	13	1211975.490
2019	5	26	14	1245939.487
2019	5	26	15	1273667.134
2019	5	26	16	1306233.550
2019	5	26	17	1320436.254
2019	5	26	18	1313608.465
2019	5	26	19	1287806.526
2019	5	26	20	1310459.127
2019	5	26	21	1250745.974
2019	5	26	22	1154322.409
2019	5	26	23	1076782.436
2019	5	27	0	1019761.693
2019	5	27	1	984988.456
2019	5	27	2	961682.672
2019	5	27	3	946151.335
2019	5	27	4	968746.268
	-	-	-	

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2019	5	27	5	963543.659
2019	5	27	6	974113.899
2019	5	27	7	1039408.785
2019	5	27	8	1138201.780
2019	5	27	9	1243931.278
2019	5	27	10	1339974.217
2019	5	27	11	1428697.645
2019	5	27	12	1500915.236
2019	5	27	13	1578365.830
2019	5	27	14	1647031.984
2019	5	27	15	1695316.250
2019	5	27	16	1727153.540
2019	5	27	17	1719745.677
2019	5	27	18	1695247.739
2019	5	27	19	1665468.572
2019	5	27	20	1672953.855
2019	5	27	21	1618594.523
2019	5	27	22	1455999.041
2019	5	27	23	1345443.081
2019	5	28	0	1271939.694
2019	5	28	1	1229271.326
2019	5	28	2	1205405.456
2019	5	28	3	1213517.098
2019	5	28	4	1270950.317
2019	5	28	5	1373147.463
2019	5	28	6	1446838.916
2019	5	28	7	1550758.010
2019	5	28	8	1659184.395
2019	5	28	9	1739451.377
2019	5	28	10	1826632.870
2019	5	28	11	1888332.650
2019	5	28	12	1938668.984
2019	5	28	13	1948754.620
2019	5	28	14	2000109.623
2019	5	28	15	2023877.393
2019	5	28	16	1984558.528
2019	5	28	17	1969463.762
2019	5	28	18	1884108.069
2019	5	28	19	1860152.963
2019	5	28	20	1844163.331
2019	5	28	21	1752125.307
2019	5	28	22	1630463.739

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2019	5	28	23	1453200.405
2019	5	29	0	1372356.513
2019	5	29	1	1302799.080
2019	5	29	2	1253119.466
2019	5	29	3	1234117.207
2019	5	29	4	1263851.769
2019	5	29	5	1338069.005
2019	5	29	6	1424339.531
2019	5	29	7	1486809.622
2019	5	29	8	1613681.430
2019	5	29	9	1736100.264
2019	5	29	10	1834631.902
2019	5	29	11	1925579.467
2019	5	29	12	1997091.410
2019	5	29	13	2032372.798
2019	5	29	14	2088031.145
2019	5	29	15	2137876.370
2019	5	29	16	2151260.805
2019	5	29	17	2103344.421
2019	5	29	18	2039174.768
2019	5	29	19	2015302.656
2019	5	29	20	1977772.093
2019	5	29	21	1869939.404
2019	5	29	22	1735486.059
2019	5	29	23	1612787.922
2019	5	30	0	1465670.043
2019	5	30	1	1407774.438
2019	5	30	2	1339134.426
2019	5	30	3	1329137.302
2019	5	30	4	1365519.758
2019	5	30	5	1430341.116
2019	5	30	6	1473355.601
2019	5	30	7	1607916.887
2019	5	30	8	1710072.115
2019	5	30	9	1804682.202
2019	5	30	10	1897835.904
2019	5	30	11	2017770.854
2019	5	30	12	2081216.715
2019	5	30	13	2121845.852
2019	5	30	14	2183591.418
2019	5	30	15	2175301.130
2019	5	30	16	2112824.867

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	_			
2019	5	30	17	2048661.869
2019	5	30	18	2021907.715
2019	5	30	19	1959806.933
2019	5	30	20	1935997.342
2019	5	30	21	1832421.555
2019	5	30	22	1701864.936
2019	5	30	23	1577873.885
2019	5	31	0	1461242.653
2019	5	31	1	1426306.593
2019	5	31	2	1384755.868
2019	5	31	3	1370585.631
2019	5	31	4	1396164.373
2019	5	31	5	1458468.354
2019	5	31	6	1563847.497
2019	5	31	7	1650303.499
2019	5	31	8	1716885.509
2019	5	31	9	1785158.041
2019	5	31	10	1838500.733
2019	5	31	11	1842953.666
2019	5	31	12	1808630.012
2019	5	31	13	1797216.084
2019	5	31	14	1779667.968
2019	5	31	15	1728720.682
2019	5	31	16	1761897.793
2019	5	31	17	1755110.390
2019	5	31	18	1705283.994
2019	5	31	19	1684115.820
2019	5	31	20	1686320.493
2019	5	31	21	1633546.822
2019	5	31	22	1518204.629
2019	5	31	23	1418889.082
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2019	6	1	2	1212258.184
2019	6	1	3	1189103.832
2019	6	1	4	1182854.988
2019	6	1	5	1190404.925
2019	6	1	6	1169537.209
2019	6	1	7	1221355.485
2019	6	1	8	1284861.846
2019	6	1	9	1340694.517
2019	6	1	10	1372500.347

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2019	6	1	11	1384403.839
2019	6	1	12	1410848.673
2019	6	1	13	1458947.770
2019	6	1	14	1521616.762
2019	6	1	15	1517143.049
2019	6	1	16	1507009.486
2019	6	1	17	1478293.670
2019	6	1	18	1461091.816
2019	6	1	19	1440051.279
2019	6	1	20	1451131.497
2019	6	1	21	1407050.672
2019	6	1	22	1314306.833
2019	6	1	23	1217268.402
2019	6	2	0	1127622.126
2019	6	2	1	1056984.089
2019	6	2	2	1042561.530
2019	6	2	3	1009254.144
2019	6	2	4	1005966.991
2019	6	2	5	983141.534
2019	6	2	6	1019735.657
2019	6	2	7	1120607.702
2019	6	2	8	1232749.330
2019	6	2	9	1336143.560
2019	6	2	10	1421025.087
2019	6	2	11	1492871.343
2019	6	2	12	1544164.329
2019	6	2	13	1576548.237
2019	6	2	14	1620634.309
2019	6	2	15	1640876.629
2019	6	2	16	1660785.137
2019	6	2	17	1626112.915
2019	6	2	18	1566239.195
2019	6	2	19	1516290.753
2019	6	2	20	1505365.761
2019	6	2	21	1455927.236
2019	6	2	22	1336963.379
2019	6	2	23	1230346.054
2019	6	3	0	1148419.706
2019	6	3	1	1071507.633
2019	6	3	2	1052073.815
2019	6	3	3	1065955.575
2019	6	3	4	1143098.818

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2019	6	3	5	1241622.001
2019	6	3	6	1297319.769
2019	6	3	7	1363279.340
2019	6	3	8	1400270.799
2019	6	3	9	1447499.646
2019	6	3	10	1481357.717
2019	6	3	11	1533136.989
2019	6	3	12	1573811.238
2019	6	3	13	1570868.342
2019	6	3	14	1595314.741
2019	6	3	15	1603842.046
2019	6	3	16	1615205.369
2019	6	3	17	1580273.737
2019	6	3	18	1551198.200
2019	6	3	19	1510483.290
2019	6	3	20	1489023.282
2019	6	3	21	1419894.769
2019	6	3	22	1297173.777
2019	6	3	23	1199855.337
2019	6	4	0	1116436.722
2019	6	4	1	1072753.890
2019	6	4	2	1044679.045
2019	6	4	3	1033667.064
2019	6	4	4	1085665.965
2019	6	4	5	1168520.415
2019	6	4	6	1258136.024
2019	6	4	7	1328058.719
2019	6	4	8	1377671.333
2019	6	4	9	1453550.924
2019	6	4	10	1497008.289
2019	6	4	11	1562527.606
2019	6	4	12	1618767.082
2019	6	4	13	1636603.803
2019	6	4	14	1687638.085
2019	6	4	15	1713477.941
2019	6	4	16	1728837.973
2019	6	4	17	1721788.526
2019	6	4	18	1652841.282
2019	6	4	19	1593175.577
2019	6	4	20	1599755.135
2019	6	4	21	1514752.575
2019	6	4	22	1374408.760

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2019	6	4	23	1279215.208
2019	6	5	0	1177932.871
2019	6	5	1	1111228.681
2019	6	5	2	1076621.793
2019	6	5	3	1058489.912
2019	6	5	4	1113214.660
2019	6	5	5	1214539.711
2019	6	5	6	1291675.441
2019	6	5	7	1352636.886
2019	6	5	8	1422191.370
2019	6	5	9	1517366.932
2019	6	5	10	1625473.341
2019	6	5	11	1731568.327
2019	6	5	12	1842922.097
2019	6	5	13	1923109.801
2019	6	5	14	1959166.037
2019	6	5	15	1996922.181
2019	6	5	16	2003287.568
2019	6	5	17	1968376.527
2019	6	5	18	1916036.865
2019	6	5	19	1839009.838
2019	6	5	20	1836021.045
2019	6	5	21	1724117.802
2019	6	5	22	1556721.566
2019	6	5	23	1425386.205
2019	6	6	0	1350225.957
2019	6	6	1	1290530.739
2019	6	6	2	1243085.919
2019	6	6	3	1209705.847
2019	6	6	4	1272939.907
2019	6	6	5	1343742.602
2019	6	6	6	1429581.551
2019	6	6	7	1466411.489
2019	6	6	8	1528898.581
2019	6	6	9	1594780.517
2019	6	6	10	1693893.506
2019	6	6	11	1716784.226
2019	6	6	12	1819956.647
2019	6	6	13	1831686.411
2019	6	6	14	1882717.992
2019	6	6	15	1899841.340
2019	6	6	16	1904344.014

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2019	6	6	17	1878809.138
2019	6	6	18	1799795.994
2019	6	6	19	1733375.268
2019	6	6	20	1708184.842
2019	6	6	21	1615112.227
2019	6	6	22	1459241.751
2019	6	6	23	1339880.876
2019	6	7	0	1276202.935
2019	6	7	1	1204769.355
2019	6	7	2	1149616.264
2019	6	7	3	1131675.564
2019	6	7	4	1163307.064
2019	6	7	5	1240185.076
2019	6	7	6	1309001.960
2019	6	7	7	1371288.608
2019	6	7	8	1416380.514
2019	6	7	9	1470901.468
2019	6	7	10	1559765.263
2019	6	7	11	1653802.522
2019	6	7	12	1748997.619
2019	6	7	13	1823302.263
2019	6	7	14	1863939.035
2019	6	7	15	1902520.848
2019	6	7	16	1866681.259
2019	6	7	17	1764178.495
2019	6	7	18	1674900.955
2019	6	7	19	1611200.091
2019	6	7	20	1603857.441
2019	6	7	21	1544079.993
2019	6	7	22	1427626.031
2019	6	7	23	1330770.970
2019	6	8	0	1251441.639
2019	6	8	1	1187674.668
2019	6	8	2	1114193.652
2019	6	8	3	1080361.678
2019	6	8	4	1062350.284
2019	6	8	5	1087409.392
2019	6	8	6	1096996.415
2019	6	8	7	1178896.397
2019	6	8	8	1277913.412
2019	6	8	9	1368790.917
2019	6	8	10	1459845.346

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2019	6	8	11	1539185.898
2019	6	8	12	1592525.798
2019	6	8	13	1630481.738
2019	6	8	14	1697704.103
2019	6	8	15	1751546.393
2019	6	8	16	1773453.315
2019	6	8	17	1769807.108
2019	6	8	18	1710053.468
2019	6	8	19	1621510.762
2019	6	8	20	1602195.350
2019	6	8	21	1503374.367
2019	6	8	22	1384220.649
2019	6	8	23	1268041.027
2019	6	9	0	1157988.583
2019	6	9	1	1074977.269
2019	6	9	2	1023610.689
2019	6	9	3	977605.335
2019	6	9	4	973122.995
2019	6	9	5	961126.251
2019	6	9	6	970032.589
2019	6	9	7	1122455.192
2019	6	9	8	1245349.577
2019	6	9	9	1364814.418
2019	6	9	10	1445555.433
2019	6	9	11	1494218.037
2019	6	9	12	1580731.140
2019	6	9	13	1598397.628
2019	6	9	14	1579897.377
2019	6	9	15	1586891.320
2019	6	9	16	1664432.170
2019	6	9	17	1684507.702
2019	6	9	18	1643561.374
2019	6	9	19	1608767.918
2019	6	9	20	1587136.813
2019	6	9	21	1499427.953
2019	6	9	22	1390386.162
2019	6	9	23	1292951.642
2019	6	10	0	1196347.163
2019	6	10	1	1135471.668
2019	6	10	2	1095141.751
2019	6	10	3	1107667.343
2019	6	10	4	1174066.471

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2019	6	10	5	1284049.686
2019	6	10	6	1347589.354
2019	6	10	7	1407657.221
2019	6	10	8	1469521.489
2019	6	10	9	1553507.700
2019	6	10	10	1637289.983
2019	6	10	11	1729227.479
2019	6	10	12	1791330.201
2019	6	10	13	1735685.022
2019	6	10	14	1754554.539
2019	6	10	15	1777690.597
2019	6	10	16	1760375.024
2019	6	10	17	1747229.963
2019	6	10	18	1705142.155
2019	6	10	19	1667708.859
2019	6	10	20	1630022.432
2019	6	10	21	1559106.910
2019	6	10	22	1426951.473
2019	6	10	23	1316825.985
2019	6	11	0	1232803.195
2019	6	11	1	1154049.729
2019	6	11	2	1105393.783
2019	6	11	3	1084001.136
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2019	6	11	5	1196983.422
2019	6	11	6	1310609.517
2019	6	11	7	1392016.259
2019	6	11	8	1507459.823
2019	6	11	9	1636057.651
2019	6	11	10	1799270.356
2019	6	11	11	1912980.280
2019	6	11	12	1972160.525
2019	6	11	13	2028709.279
2019	6	11	14	2082209.717
2019	6	11	15	2116359.238
2019	6	11	16	2143265.156
2019	6	11	17	2086120.756
2019	6	11	18	2025229.515
2019	6	11	19	1973686.103
2019	6	11	20	1951118.011
2019	6	11	21	1875260.396
2019	6	11	22	1693045.030

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2019	6	11	23	1541553.974
2019	6	12	0	1436247.547
2019	6	12	1	1386954.300
2019	6	12	2	1335130.552
2019	6	12	3	1317006.379
2019	6	12	4	1358537.803
2019	6	12	5	1410381.864
2019	6	12	6	1534379.687
2019	6	12	7	1711593.434
2019	6	12	8	1888655.794
2019	6	12	9	2036254.664
2019	6	12	10	2105115.989
2019	6	12	11	2222045.050
2019	6	12	12	2296279.752
2019	6	12	13	2330950.688
2019	6	12	14	2378574.565
2019	6	12	15	2387026.842
2019	6	12	16	2368359.201
2019	6	12	17	2339934.785
2019	6	12	18	2307839.720
2019	6	12	19	2288316.209
2019	6	12	20	2274157.561
2019	6	12	21	2138375.650
2019	6	12	22	2015757.774
2019	6	12	23	1899757.164
2019	6	13	0	1802607.425
2019	6	13	1	1701365.349
2019	6	13	2	1650237.828
2019	6	13	3	1612636.911
2019	6	13	4	1651308.106
2019	6	13	5	1715291.978
2019	6	13	6	1814329.969
2019	6	13	7	1885985.702
2019	6	13	8	1954200.682
2019	6	13	9	1968687.835
2019	6	13	10	2030839.606
2019	6	13	11	2033809.519
2019	6	13	12	2015063.843
2019	6	13	13	1980519.957
2019	6	13	14	1998161.099
2019	6	13	15	2008493.831
2019	6	13	16	1989511.334

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2019	6	13	17	1959108.674
2019	6	13	18	1893323.205
2019	6	13	19	1797955.367
2019	6	13	20	1746277.502
2019	6	13	21	1641209.792
2019	6	13	22	1475062.469
2019	6	13	23	1358439.703
2019	6	14	0	1257149.601
2019	6	14	1	1170748.135
2019	6	14	2	1125095.673
2019	6	14	3	1092427.516
2019	6	14	4	1116847.966
2019	6	14	5	1165877.627
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2019	6	14	7	1341485.234
2019	6	14	8	1411768.688
2019	6	14	9	1486657.388
2019	6	14	10	1587805.081
2019	6	14	11	1691643.470
2019	6	14	12	1792788.537
2019	6	14	13	1843539.563
2019	6	14	14	1920445.871
2019	6	14	15	1945365.772
2019	6	14	16	1957238.051
2019	6	14	17	1938249.877
2019	6	14	18	1864511.087
2019	6	14	19	1768388.856
2019	6	14	20	1749221.596
2019	6	14	21	1635137.893
2019	6	14	22	1485474.671
2019	6	14	23	1351452.631
2019	6	15	0	1259766.896
2019	6	15	1	1161934.056
2019	6	15	2	1119067.400
2019	6	15	3	1050215.448
2019	6	15	4	1053949.620
2019	6	15	5	1040101.776
2019	6	15	6	1067950.907
2019	6	15	7	1191514.861
2019	6	15	8	1319797.780
2019	6	15	9	1443830.314
2019	6	15	10	1550723.805

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2019	6	15	11	1657339.068
2019	6	15	12	1764521.446
2019	6	15	13	1852890.201
2019	6	15	14	1929900.753
2019	6	15	15	1973950.507
2019	6	15	16	1993648.878
2019	6	15	17	1992368.700
2019	6	15	18	1945855.781
2019	6	15	19	1870235.382
2019	6	15	20	1817128.985
2019	6	15	21	1682292.491
2019	6	15	22	1540617.068
2019	6	15	23	1399164.022
2019	6	16	0	1304190.829
2019	6	16	1	1244426.423
2019	6	16	2	1185405.862
2019	6	16	3	1155690.409
2019	6	16	4	1143879.600
2019	6	16	5	1129666.204
2019	6	16	6	1138294.946
2019	6	16	7	1225317.383
2019	6	16	8	1301823.297
2019	6	16	9	1395443.986
2019	6	16	10	1487906.047
2019	6	16	11	1616656.828
2019	6	16	12	1726494.716
2019	6	16	13	1757901.434
2019	6	16	14	1779183.387
2019	6	16	15	1783121.079
2019	6	16	16	1696108.706
2019	6	16	17	1546861.199
2019	6	16	18	1491279.242
2019	6	16	19	1476057.588
2019	6	16	20	1481174.280
2019	6	16	21	1452674.472
2019	6	16	22	1363511.722
2019	6	16	23	1266968.110
2019	6	17	0	1198087.923
2019	6	17	1	1132897.842
2019	6	17	2	1090067.703
2019	6	17	3	1099524.041
2019	6	17	4	1184091.412

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2019	6	17	5	1282334.905
2019	6	17	6	1345379.079
2019	6	17	7	1456685.005
2019	6	17	8	1559684.108
2019	6	17	9	1740050.048
2019	6	17	10	1908405.630
2019	6	17	11	2011094.277
2019	6	17	12	2102152.423
2019	6	17	13	2154224.945
2019	6	17	14	2225820.459
2019	6	17	15	2186189.063
2019	6	17	16	1966260.327
2019	6	17	17	1803737.457
2019	6	17	18	1725324.167
2019	6	17	19	1687258.598
2019	6	17	20	1610271.347
2019	6	17	21	1545710.540
2019	6	17	22	1429379.698
2019	6	17	23	1334274.410
2019	6	18	0	1271004.663
2019	6	18	1	1211035.785
2019	6	18	2	1167387.016
2019	6	18	3	1156490.791
2019	6	18	4	1219554.394
2019	6	18	5	1293741.332
2019	6	18	6	1355104.910
2019	6	18	7	1430548.516
2019	6	18	8	1535900.126
2019	6	18	9	1660961.162
2019	6	18	10	1811454.807
2019	6	18	11	1909514.520
2019	6	18	12	1994005.607
2019	6	18	13	2040125.721
2019	6	18	14	2097961.003
2019	6	18	15	2144778.718
2019	6	18	16	2158243.882
2019	6	18	17	2124961.205
2019	6	18	18	2058058.555
2019	6	18	19	1918399.893
2019	6	18	20	1830118.946
2019	6	18	21	1690702.245
2019	6	18	22	1521495.785

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2019	6	18	23	1400243.318
2019	6	19	0	1289113.654
2019	6	19	1	1235451.076
2019	6	19	2	1181000.601
2019	6	19	3	1160075.219
2019	6	19	4	1215649.923
2019	6	19	5	1276975.553
2019	6	19	6	1361407.980
2019	6	19	7	1439998.883
2019	6	19	8	1525819.445
2019	6	19	9	1652693.907
2019	6	19	10	1805771.084
2019	6	19	11	1889798.631
2019	6	19	12	1983296.953
2019	6	19	13	2021028.947
2019	6	19	14	2049959.998
2019	6	19	15	2075337.930
2019	6	19	16	2108874.631
2019	6	19	17	2088179.981
2019	6	19	18	2021802.423
2019	6	19	19	1938301.544
2019	6	19	20	1895775.827
2019	6	19	21	1774377.222
2019	6	19	22	1585982.941
2019	6	19	23	1416487.124
2019	6	20	0	1346675.555
2019	6	20	1	1277818.634
2019	6	20	2	1202564.058
2019	6	20	3	1176597.554
2019	6	20	4	1208592.755
2019	6	20	5	1280738.365
2019	6	20	6	1368314.368
2019	6	20	7	1463258.758
2019	6	20	8	1583005.706
2019	6	20	9	1735080.548
2019	6	20	10	1905334.451
2019	6	20	11	2003623.849
2019	6	20	12	2079227.690
2019	6	20	13	2118477.868
2019	6	20	14	2178835.897
2019	6	20	15	2199435.689
2019	6	20	16	2195882.901

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2019	6	20	17	2165510.971
2019	6	20	18	2072339.992
2019	6	20	19	2019406.730
2019	6	20	20	1980327.578
2019	6	20	21	1881688.730
2019	6	20	22	1671575.525
2019	6	20	23	1501990.095
2019	6	21	0	1394074.377
2019	6	21	1	1319376.445
2019	6	21	2	1255502.728
2019	6	21	3	1223772.579
2019	6	21	4	1253579.765
2019	6	21	5	1300322.774
2019	6	21	6	1380558.691
2019	6	21	7	1476270.609
2019	6	21	8	1623466.068
2019	6	21	9	1807891.294
2019	6	21	10	1940255.164
2019	6	21	11	2052031.789
2019	6	21	12	2139746.516
2019	6	21	13	2243382.361
2019	6	21	14	2253997.921
2019	6	21	15	2267874.021
2019	6	21	16	2218448.258
2019	6	21	17	2133722.195
2019	6	21	18	2060122.516
2019	6	21	19	1964857.203
2019	6	21	20	1933777.995
2019	6	21	21	1832955.677
2019	6	21	22	1673351.149
2019	6	21	23	1525004.481
2019	6	22	0	1442149.345
2019	6	22	1	1359415.767
2019	6	22	2	1295431.622
2019	6	22	3	1238746.793
2019	6	22	4	1220032.570
2019	6	22	5	1205249.409
2019	6	22	6	1251914.603
2019	6	22	7	1368754.588
2019	6	22	8	1510021.862
2019	6	22	9	1681989.702
2019	6	22	10	1868795.940

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2019	6	22	11	1960455.312
2019	6	22	12	2042526.375
2019	6	22	13	2090914.159
2019	6	22	14	2120862.854
2019	6	22	15	2161503.984
2019	6	22	16	2148363.345
2019	6	22	17	2089662.333
2019	6	22	18	2039863.318
2019	6	22	19	1929912.093
2019	6	22	20	1843873.139
2019	6	22	21	1735722.590
2019	6	22	22	1567862.306
2019	6	22	23	1434106.908
2019	6	23	0	1332473.607
2019	6	23	1	1274380.776
2019	6	23	2	1218184.548
2019	6	23	3	1151791.794
2019	6	23	4	1145818.610
2019	6	23	5	1102857.924
2019	6	23	6	1136320.051
2019	6	23	7	1286080.457
2019	6	23	8	1413034.735
2019	6	23	9	1585503.183
2019	6	23	10	1769806.392
2019	6	23	11	1888350.321
2019	6	23	12	1870451.244
2019	6	23	13	1847921.341
2019	6	23	14	1846066.661
2019	6	23	15	1880617.761
2019	6	23	16	1858932.886
2019	6	23	17	1860544.302
2019	6	23	18	1852811.467
2019	6	23	19	1785305.452
2019	6	23	20	1762625.562
2019	6	23	21	1676808.068
2019	6	23	22	1532905.244
2019	6	23	23	1400744.866
2019	6	24	0	1323243.899
2019	6	24	1	1260926.147
2019	6	24	2	1236169.784
2019	6	24	3	1230892.149
2019	6	24	4	1287759.315

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2019	6	24	5	1364756.915
2019	6	24	6	1442882.387
2019	6	24	7	1527624.647
2019	6	24	8	1592390.851
2019	6	24	9	1634147.037
2019	6	24	10	1700155.369
2019	6	24	11	1809798.885
2019	6	24	12	1883727.090
2019	6	24	13	1855242.063
2019	6	24	14	1873491.013
2019	6	24	15	1894966.136
2019	6	24	16	1875632.265
2019	6	24	17	1839719.334
2019	6	24	18	1791007.997
2019	6	24	19	1743711.474
2019	6	24	20	1720772.743
2019	6	24	21	1628763.105
2019	6	24	22	1487893.705
2019	6	24	23	1375352.610
2019	6	25	0	1312769.485
2019	6	25	1	1245470.827
2019	6	25	2	1207160.451
2019	6	25	3	1171603.996
2019	6	25	4	1248051.686
2019	6	25	5	1308509.285
2019	6	25	6	1391160.077
2019	6	25	7	1485102.753
2019	6	25	8	1659387.865
2019	6	25	9	1860426.435
2019	6	25	10	2032671.338
2019	6	25	11	2112466.079
2019	6	25	12	2263432.726
2019	6	25	13	2299968.223
2019	6	25	14	2324973.336
2019	6	25	15	2350019.306
2019	6	25	16	2356730.261
2019	6	25	17	2315916.830
2019	6	25	18	2282321.014
2019	6	25	19	2232682.022
2019	6	25	20	2191359.567
2019	6	25	21	2069288.826
2019	6	25	22	1936521.557

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2019	6	25	23	1783119.432
2019	6	26	0	1655388.770
2019	6	26	1	1569161.677
2019	6	26	2	1479866.945
2019	6	26	3	1405337.213
2019	6	26	4	1395804.849
2019	6	26	5	1437040.702
2019	6	26	6	1481363.639
2019	6	26	7	1573553.191
2019	6	26	8	1696881.484
2019	6	26	9	1839442.322
2019	6	26	10	1949643.605
2019	6	26	11	2062935.629
2019	6	26	12	2167399.926
2019	6	26	13	2203963.758
2019	6	26	14	2248718.375
2019	6	26	15	2173687.368
2019	6	26	16	1938679.061
2019	6	26	17	1822960.726
2019	6	26	18	1739031.678
2019	6	26	19	1727254.584
2019	6	26	20	1675073.548
2019	6	26	21	1577363.726
2019	6	26	22	1466448.564
2019	6	26	23	1380732.678
2019	6	27	0	1307799.965
2019	6	27	1	1269203.622
2019	6	27	2	1237612.498
2019	6	27	3	1228691.229
2019	6	27	4	1271676.152
2019	6	27	5	1356649.231
2019	6	27	6	1434256.384
2019	6	27	7	1509552.777
2019	6	27	8	1577954.588
2019	6	27	9	1676029.370
2019	6	27	10	1792518.976
2019	6	27	11	1900184.179
2019	6	27	12	2026083.023
2019	6	27	13	2075273.035
2019	6	27	14	2181729.237
2019	6	27	15	2238809.206
2019	6	27	16	2258475.754

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2019	6	27	17	2216359.520
2019	6	27	18	2130197.998
2019	6	27	19	2096968.262
2019	6	27	20	2049140.294
2019	6	27	21	1945338.792
2019	6	27	22	1776297.147
2019	6	27	23	1607393.270
2019	6	28	0	1492798.542
2019	6	28	1	1432600.810
2019	6	28	2	1379705.892
2019	6	28	3	1360681.003
2019	6	28	4	1388658.113
2019	6	28	5	1423678.307
2019	6	28	6	1516223.523
2019	6	28	7	1668270.749
2019	6	28	8	1762052.329
2019	6	28	9	1918882.452
2019	6	28	10	2006072.756
2019	6	28	11	2072551.321
2019	6	28	12	2137539.353
2019	6	28	13	2149007.149
2019	6	28	14	2211262.083
2019	6	28	15	2209594.010
2019	6	28	16	2235029.406
2019	6	28	17	2127517.100
2019	6	28	18	2063249.460
2019	6	28	19	1987984.249
2019	6	28	20	1927616.869
2019	6	28	21	1818899.720
2019	6	28	22	1649252.436
2019	6	28	23	1500489.980
2019	6	29	0	1404152.595
2019	6	29	1	1325024.551
2019	6	29	2	1281634.063
2019	6	29	3	1213276.072
2019	6	29	4	1194168.520
2019	6	29	5	1158613.736
2019	6	29	6	1193091.234
2019	6	29	7	1304727.279
2019	6	29	8	1420068.163
2019	6	29	9	1537193.584
2019	6	29	10	1620746.778

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2019	6	29	11	1677002.110
2019	6	29	12	1714398.918
2019	6	29	13	1785428.873
2019	6	29	14	1834139.863
2019	6	29	15	1787488.254
2019	6	29	16	1826413.754
2019	6	29	17	1830081.766
2019	6	29	18	1657247.658
2019	6	29	19	1571133.508
2019	6	29	20	1506443.792
2019	6	29	21	1420838.694
2019	6	29	22	1327181.721
2019	6	29	23	1227487.725
2019	6	30	0	1134130.885
2019	6	30	1	1037395.986
2019	6	30	2	1027463.841
2019	6	30	3	996815.039
2019	6	30	4	1001571.028
2019	6	30	5	993166.410
2019	6	30	6	1015706.350
2019	6	30	7	1124967.749
2019	6	30	8	1199596.506
2019	6	30	9	1292348.461
2019	6	30	10	1374625.702
2019	6	30	11	1450772.590
2019	6	30	12	1546727.939
2019	6	30	13	1627980.445
2019	6	30	14	1715494.133
2019	6	30	15	1767991.104
2019	6	30	16	1818744.022
2019	6	30	17	1757478.058
2019	6	30	18	1646195.288
2019	6	30	19	1553935.896
2019	6	30	20	1526157.731
2019	6	30	21	1469732.176
2019	6	30	22	1352882.394
2019	6	30	23	1250226.720
2019	7	1	0	1307172.393
2019	7	1	1	1205783.201
2019	7	1	2	1195320.237
2019	7	1	3	1199452.827
2019	7	1	4	1301121.432

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2019	7	1	5	1368705.711
2019	7	1	6	1446068.934
2019	7	1	7	1529690.621
2019	7	1	8	1548125.483
2019	7	1	9	1605361.398
2019	7	1	10	1642900.033
2019	7	1	11	1721174.029
2019	7	1	12	1795265.716
2019	7	1	13	1858594.437
2019	7	1	14	1945452.327
2019	7	1	15	1985991.418
2019	7	1	16	1922998.126
2019	7	1	17	1839551.538
2019	7	1	18	1754794.359
2019	7	1	19	1693340.449
2019	7	1	20	1677114.824
2019	7	1	21	1594438.546
2019	7	1	22	1471988.480
2019	7	1	23	1370086.074
2019	7	2	0	1297508.212
2019	7	2	1	1253113.477
2019	7	2	2	1225379.884
2019	7	2	3	1186650.354
2019	7	2	4	1248720.351
2019	7	2	5	1324508.562
2019	7	2	6	1391457.105
2019	7	2	7	1452333.830
2019	7	2	8	1527141.144
2019	7	2	9	1596905.999
2019	7	2	10	1714586.232
2019	7	2	11	1813437.239
2019	7	2	12	1870190.828
2019	7	2	13	1888735.160
2019	7	2	14	1967016.466
2019	7	2	15	2021892.035
2019	7	2	16	2062516.732
2019	7	2	17	2036940.365
2019	7	2	18	2003912.107
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2019	, 7	2	22	1636050.203
2015	,	~	~~	1030030.203

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2019	7	2	23	1496657.211
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2019	7	3	1	1325921.696
2019	7	3	2	1284749.998
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2019	7	3	4	1298526.506
2019	7	3	5	1354390.495
2019	7	3	6	1421170.844
2019	7	3	7	1511445.812
2019	7	3	8	1616280.333
2019	7	3	9	1714420.279
2019	7	3	10	1837212.938
2019	7	3	11	1969945.732
2019	7	3	12	2079206.193
2019	7	3	13	2087243.953
2019	7	3	14	2075771.053
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2019	7	3	16	2006054.829
2019	7	3	17	1915825.759
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2019	7	3	19	1797578.487
2019	7	3	20	1769417.122
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2019	7	3	22	1590464.882
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2019	7	4	0	1418918.245
2019	7	4	1	1348933.473
2019	7	4	2	1303178.165
2019	7	4	3	1251425.167
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2019	7	4	5	1227929.955
2019	7	4	6	1208474.500
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2019	7	4	8	1326743.382
2019	7	4	9	1382045.423
2019	7	4	10	1437236.475
2019	7	4	11	1473600.095
2019	7	4	12	1485718.441
2019	7	4	13	1467410.679
2019	7	4	14	1471600.214
2019	7	4	15	1470422.178
2019	7	4	16	1457476.045

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2019	7	4	17	1434350.705
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2019	7	4	20	1420720.664
2019	7	4	21	1379673.028
2019	7	4	22	1335758.458
2019	7	4	23	1282029.348
2019	7	5	0	1166618.273
2019	7	5	1	1132645.590
2019	7	5	2	1091130.691
2019	7	5	3	1086425.107
2019	7	5	4	1131415.275
2019	7	5	5	1173256.431
2019	7	5	6	1275946.316
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2019	7	5	8	1421569.118
2019	7	5	9	1493371.856
2019	7	5	10	1532922.040
2019	7	5	11	1581392.867
2019	7	5	12	1625136.546
2019	7	5	13	1663122.599
2019	7	5	14	1752382.219
2019	7	5	15	1761476.932
2019	7	5	16	1763278.117
2019	7	5	17	1743423.390
2019	7	5	18	1677790.208
2019	7	5	19	1663780.401
2019	7	5	20	1651086.870
2019	7	5	21	1602104.423
2019	7	5	22	1517004.522
2019	7	5	23	1428580.683
2019	7	6	0	1364177.401
2019	7	6	1	1311369.546
2019	7	6	2	1247048.678
2019	7	6	3	1203165.732
2019	7	6	4	1169505.920
2019	7	6	5	1182631.640
2019	7	6	6	1197481.605
2019	7	6	7	1277733.492
2019	7	6	8	1339954.897
2019	7	6	9	1391357.217
2019	7	6	10	1429956.239

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2019	7	6	11	1452946.210
2019	7	6	12	1472259.538
2019	7	6	13	1466616.475
2019	7	6	14	1488357.255
2019	7	6	15	1533891.242
2019	7	6	16	1538720.943
2019	7	6	17	1523652.934
2019	7	6	18	1498789.888
2019	7	6	19	1490406.019
2019	7	6	20	1520448.543
2019	7	6	21	1478160.462
2019	7	6	22	1388902.988
2019	7	6	23	1321724.498
2019	7	7	0	1234981.563
2019	7	7	1	1153973.337
2019	7	7	2	1144117.605
2019	7	7	3	1122530.197
2019	7	7	4	1110857.145
2019	7	7	5	1137187.998
2019	7	7	6	1134607.963
2019	7	7	7	1212658.357
2019	7	7	8	1345971.648
2019	7	7	9	1460789.133
2019	7	7	10	1581387.788
2019	7	7	11	1695967.517
2019	7	7	12	1811726.989
2019	7	7	13	1899190.645
2019	7	7	14	1965249.329
2019	7	7	15	2048716.863
2019	7	7	16	2098748.519
2019	7	7	17	2097631.037
2019	7	7	18	2064893.096
2019	7	7	19	1983586.995
2019	7	7	20	1931346.269
2019	7	7	21	1829323.003
2019	7	7	22	1667865.605
2019	7	7	23	1532161.477
2019	7	8	0	1434258.352
2019	7	8	1	1352189.846
2019	7	8	2	1323002.694
2019	7	8	3	1314904.180
2019	7	8	4	1357968.940

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2019	7	8	5	1413148.081
2019	, 7	8	6	1500640.366
2019	, 7	8	7	1615644.016
2019	, 7	8	8	1790593.189
2019	, 7	8	9	1951849.122
2019	7	8	10	2101944.631
2019	7	8	11	2172510.104
2019	7	8	12	2231860.526
2019	7	8	13	2264458.760
2019	7	8	14	2296259.417
2019	7	8	15	2313787.695
2019	7	8	16	2305498.093
2019	7	8	17	2273113.545
2019	7	8	18	2255879.537
2019	7	8	19	2211679.785
2019	7	8	20	2183054.733
2019	7	8	21	2119493.136
2019	7	8	22	1950761.204
2019	7	8	23	1801188.399
2019	7	9	0	1680361.581
2019	7	9	1	1611195.671
2019	7	9	2	1557116.946
2019	7	9	3	1525737.296
2019	7	9	4	1572558.081
2019	7	9	5	1639629.655
2019	7	9	6	1729206.979
2019	7	9	7	1823362.969
2019	7	9	8	1959375.817
2019	7	9	9	2133846.741
2019	7	9	10	2228276.096
2019	7	9	11	2316402.287
2019	7	9	12	2370019.393
2019	7	9	13	2386315.413
2019	7	9	14	2431493.246
2019	7	9	15	2437331.893
2019	7	9	16	2454978.681
2019	7	9	17	2384481.929
2019	7	9	18	2344609.213
2019	7	9	19	2312376.766
2019	7	9	20	2276165.912
2019	7	9	21	2215527.490
2019	7	9	22	2125204.228

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2019	7	9	23	1980957.660
2019	, 7	10	0	1868213.913
2019	7	10	1	1787882.572
2019	7	10	2	1710013.194
2019	7	10	3	1660497.720
2019	7	10	4	1704134.407
2019	7	10	5	1765148.266
2019	7	10	6	1846519.717
2019	7	10	7	1984393.393
2019	7	10	8	2113294.008
2019	7	10	9	2203779.721
2019	7	10	10	2289901.892
2019	7	10	11	2391417.873
2019	7	10	12	2432527.234
2019	7	10	13	2279481.240
2019	7	10	14	2059056.446
2019	7	10	15	1943489.122
2019	7	10	16	1897475.472
2019	7	10	17	1880838.232
2019	7	10	18	1869192.983
2019	7	10	19	1851099.907
2019	7	10	20	1851953.115
2019	7	10	21	1808269.936
2019	7	10	22	1670902.348
2019	7	10	23	1566087.360
2019	7	11	0	1464807.920
2019	7	11	1	1416549.030
2019	7	11	2	1365770.044
2019	7	11	3	1353424.304
2019	7	11	4	1399257.643
2019	7	11	5	1459930.102
2019	7	11	6	1561578.734
2019	7	11	7	1630151.703
2019	7	11	8	1707417.182
2019	7	11	9	1818527.895
2019	7	11	10	1943714.488
2019	7	11	11	2072863.154
2019	7	11	12	2141402.308
2019	7	11	13	2155656.520
2019	7	11	14	2186608.804
2019	7	11	15	2198022.783
2019	7	11	16	2196239.763

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2019	7	11	17	2167198.180
2019	7	11	18	2138924.023
2019	7	11	19	2057726.717
2019	7	11	20	1979478.732
2019	7	11	21	1883322.764
2019	7	11	22	1711835.460
2019	7	11	23	1565425.194
2019	7	12	0	1449027.597
2019	7	12	1	1373870.316
2019	7	12	2	1317988.078
2019	7	12	3	1291397.800
2019	7	12	4	1308431.043
2019	7	12	5	1359727.810
2019	7	12	6	1423546.750
2019	7	12	7	1532470.840
2019	7	12	8	1624636.286
2019	7	12	9	1725105.272
2019	7	12	10	1840164.387
2019	7	12	11	1916545.300
2019	7	12	12	1991197.960
2019	7	12	13	2021348.476
2019	7	12	14	2083945.751
2019	7	12	15	2108734.919
2019	7	12	16	2107132.806
2019	7	12	17	2068211.853
2019	7	12	18	1986895.331
2019	7	12	19	1894884.033
2019	7	12	20	1823711.866
2019	7	12	21	1728631.386
2019	7	12	22	1619551.833
2019	7	12	23	1498694.197
2019	7	13	0	1409105.333
2019	7	13	1	1331732.126
2019	7	13	2	1263657.612
2019	7	13	3	1192565.729
2019	7	13	4	1179254.377
2019	7	13	5	1189752.886
2019	7	13	6	1211669.702
2019	7	13	7	1328501.947
2019	7	13	8	1429929.991
2019	7	13	9	1568259.372
2019	7	13	10	1670536.718

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2019	7	13	11	1771111.967
2019	7	13	12	1825988.737
2019	7	13	13	1909135.946
2019	7	13	14	1980557.185
2019	7	13	15	1973506.958
2019	7	13	16	1927102.059
2019	7	13	17	1973062.648
2019	7	13	18	1943157.157
2019	7	13	19	1845893.810
2019	7	13	20	1821948.572
2019	7	13	21	1739038.866
2019	7	13	22	1608424.414
2019	7	13	23	1506851.629
2019	7	14	0	1412025.005
2019	7	14	1	1334746.400
2019	7	14	2	1290015.105
2019	7	14	3	1221219.239
2019	7	14	4	1201142.898
2019	7	14	5	1176521.640
2019	7	14	6	1230074.805
2019	7	14	7	1370899.731
2019	7	14	8	1537579.600
2019	7	14	9	1719410.796
2019	7	14	10	1876464.836
2019	7	14	11	2016073.905
2019	7	14	12	2139027.120
2019	7	14	13	2170653.961
2019	7	14	14	2219857.797
2019	7	14	15	2226413.381
2019	7	14	16	2248017.006
2019	7	14	17	2240278.189
2019	7	14	18	2209686.018
2019	7	14	19	2151800.376
2019	7	14	20	2113648.923
2019	7	14	21	2020976.258
2019	7	14	22	1875860.277
2019	7	14	23	1736533.140
2019	7	15	0	1628739.673
2019	7	15	1	1541565.485
2019	7	15	2	1493616.755
2019	7	15	3	1453990.246
2019	7	15	4	1520867.197

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2019	7	15	5	1570452.587
2019	7	15	6	1656343.445
2019	7	15	7	1817519.664
2019	7	15	8	1951725.717
2019	7	15	9	2115254.328
2019	7	15	10	2191191.004
2019	7	15	11	2269230.440
2019	7	15	12	2334951.800
2019	7	15	13	2364499.465
2019	7	15	14	2379675.190
2019	7	15	15	2412119.801
2019	7	15	16	2405800.202
2019	7	15	17	2374892.843
2019	7	15	18	2334388.211
2019	7	15	19	2277991.654
2019	7	15	20	2246865.665
2019	7	15	21	2184672.631
2019	7	15	22	2056564.876
2019	7	15	23	1909948.043
2019	7	16	0	1779025.215
2019	7	16	1	1659435.557
2019	7	16	2	1597752.340
2019	7	16	3	1554206.491
2019	7	16	4	1575415.445
2019	7	16	5	1633078.266
2019	7	16	6	1732743.200
2019	7	16	7	1864152.462
2019	7	16	8	2037843.038
2019	7	16	9	2167857.613
2019	7	16	10	2262925.830
2019	7	16	11	2338248.466
2019	7	16	12	2394069.855
2019	7	16	13	2422082.166
2019	7	16	14	2450012.314
2019	7	16	15	2425975.713
2019	7	16	16	2410149.029
2019	7	16	17	2416777.707
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2019	7	16	19	2331920.698
2019	7	16	20	2285079.169
2019	7	16	21	2219526.799
2019	7	16	22	2123104.017

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2019	7	16	23	1957913.732
2019	7	17	0	1830772.427
2019	7	17	1	1745418.298
2019	7	17	2	1652646.625
2019	7	17	3	1615094.159
2019	7	17	4	1640918.218
2019	7	17	5	1719272.800
2019	7	17	6	1802223.648
2019	7	17	7	1886973.085
2019	7	17	8	2009490.068
2019	7	17	9	2164476.040
2019	7	17	10	2276949.033
2019	7	17	11	2375490.760
2019	7	17	12	2468786.522
2019	7	17	13	2510399.914
2019	7	17	14	2475810.224
2019	7	17	15	2495403.797
2019	7	17	16	2502202.186
2019	7	17	17	2458541.464
2019	7	17	18	2358482.906
2019	7	17	19	2322027.718
2019	7	17	20	2296025.966
2019	7	17	21	2236532.939
2019	7	17	22	2138153.706
2019	7	17	23	1997078.145
2019	7	18	0	1871496.058
2019	7	18	1	1786617.212
2019	7	18	2	1713867.016
2019	7	18	3	1662051.682
2019	7	18	4	1702682.958
2019	7	18	5	1780123.744
2019	7	18	6	1835637.408
2019	7	18	7	1931530.154
2019	7	18	8	2071544.092
2019	7	18	9	2193609.660
2019	7	18	10	2301714.243
2019	7	18	11	2397778.232
2019	7	18	12	2532371.509
2019	7	18	13	2537945.881
2019	7	18	14	2523084.772
2019	7	18	15	2446496.727
2019	7	18	16	2351883.981
-		-	-	

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2019	7	18	17	2368639.892
2019	7	18	18	2355666.515
2019	7	18	19	2329575.987
2019	7	18	20	2313918.852
2019	7	18	21	2238897.132
2019	7	18	22	2155816.089
2019	7	18	23	2029659.933
2019	7	19	0	1895648.663
2019	7	19	1	1793033.563
2019	7	19	2	1718269.257
2019	7	19	3	1654782.177
2019	7	19	4	1674578.753
2019	7	19	5	1730494.588
2019	7	19	6	1794613.877
2019	7	19	7	1912440.395
2019	7	19	8	2051518.512
2019	7	19	9	2161706.499
2019	7	19	10	2256623.359
2019	7	19	11	2340266.956
2019	7	19	12	2388294.282
2019	7	19	13	2440289.785
2019	7	19	14	2480690.227
2019	7	19	15	2488715.384
2019	7	19	16	2464250.634
2019	7	19	17	2404597.868
2019	7	19	18	2347501.266
2019	7	19	19	2287761.609
2019	7	19	20	2252807.257
2019	7	19	21	2178322.832
2019	7	19	22	2083695.293
2019	7	19	23	1922069.607
2019	7	20	0	1810086.803
2019	7	20	1	1691061.505
2019	7	20	2	1609482.214
2019	7	20	3	1548574.279
2019	7	20	4	1526937.530
2019	7	20	5	1522313.877
2019	7	20	6	1557788.227
2019	7	20	7	1686241.679
2019	7	20	8	1857966.696
2019	7	20	9	2026586.336
2019	7	20	10	2140844.628

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2019	7	20	11	2189526.290
2019	7	20	12	2235799.938
2019	7	20	13	2257809.729
2019	7	20	14	2289514.564
2019	7	20	15	2299694.155
2019	7	20	16	2268265.074
2019	7	20	17	2231159.405
2019	7	20	18	2180840.132
2019	7	20	19	2148654.643
2019	7	20	20	2128720.835
2019	7	20	21	2009556.202
2019	7	20	22	1866856.962
2019	7	20	23	1741860.660
2019	7	21	0	1623564.073
2019	7	21	1	1537531.799
2019	7	21	2	1460936.415
2019	7	21	3	1424612.690
2019	7	21	4	1410100.843
2019	7	21	5	1404789.943
2019	7	21	6	1394003.601
2019	7	21	7	1490995.669
2019	7	21	8	1611694.462
2019	7	21	9	1732877.756
2019	7	21	10	1824111.413
2019	7	21	11	1920860.028
2019	7	21	12	2040394.496
2019	7	21	13	2129321.766
2019	7	21	14	2162899.007
2019	7	21	15	2206450.384
2019	7	21	16	2222490.442
2019	7	21	17	2216791.612
2019	7	21	18	2161851.779
2019	7	21	19	2093637.728
2019	7	21	20	2026811.170
2019	7	21	21	1915816.713
2019	7	21	22	1766554.100
2019	7	21	23	1635083.223
2019	7	22	0	1547477.599
2019	7	22	1	1483912.512
2019	7	22	2	1437984.822
2019	7	22	3	1443552.622
2019	7	22	4	1493916.084

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2019	7	22	5	1585867.246
2019	7	22	6	1646829.192
2019	7	22	7	1730273.334
2019	7	22	8	1769118.732
2019	7	22	9	1809334.270
2019	7	22	10	1853328.572
2019	7	22	11	1936470.960
2019	7	22	12	1997438.524
2019	7	22	13	1961652.170
2019	7	22	14	1987060.254
2019	7	22	15	2057090.376
2019	7	22	16	2088878.637
2019	7	22	17	2121115.451
2019	7	22	18	2096937.852
2019	7	22	19	2046190.914
2019	7	22	20	2013645.440
2019	7	22	21	1921019.538
2019	7	22	22	1761764.660
2019	7	22	23	1621619.488
2019	7	23	0	1529862.313
2019	7	23	1	1451505.777
2019	7	23	2	1407908.146
2019	7	23	3	1389625.593
2019	7	23	4	1427217.548
2019	7	23	5	1543708.904
2019	7	23	6	1629151.926
2019	7	23	7	1721052.217
2019	7	23	8	1804030.596
2019	7	23	9	1883908.108
2019	7	23	10	2013839.512
2019	7	23	11	2143773.522
2019	7	23	12	2209580.795
2019	7	23	13	2259705.691
2019	7	23	14	2324314.360
2019	7	23	15	2349199.901
2019	7	23	16	2361725.057
2019	7	23	17	2308763.784
2019	7	23	18	2241935.501
2019	7	23	19	2203565.144
2019	7	23	20	2186248.090
2019	7	23	21	2126970.565
2019	7	23	22	1949736.163

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2019	7	23	23	1804799.631
2019	7	24	0	1669387.570
2019	7	24	1	1563752.010
2019	7	24	2	1487018.282
2019	7	24	3	1414949.627
2019	7	24	4	1428829.636
2019	7	24	5	1466999.523
2019	7	24	6	1512988.349
2019	7	24	7	1554496.003
2019	7	24	8	1587579.256
2019	7	24	9	1676819.355
2019	7	24	10	1788727.512
2019	7	24	11	1877992.841
2019	7	24	12	1939362.129
2019	7	24	13	2003940.550
2019	7	24	14	2029627.182
2019	7	24	15	2077288.790
2019	7	24	16	2070080.723
2019	7	24	17	2033746.455
2019	7	24	18	1977287.801
2019	7	24	19	1905038.903
2019	7	24	20	1858002.696
2019	7	24	21	1767970.507
2019	7	24	22	1603215.366
2019	7	24	23	1482108.748
2019	7	25	0	1377078.982
2019	7	25	1	1320047.022
2019	7	25	2	1256830.547
2019	7	25	3	1218112.461
2019	7	25	4	1270721.354
2019	7	25	5	1342845.640
2019	7	25	6	1385701.736
2019	7	25	7	1478073.006
2019	7	25	8	1570088.610
2019	7	25	9	1681737.348
2019	7	25	10	1775252.685
2019	7	25	11	1852154.240
2019	7	25	12	1937527.843
2019	7	25	13	1988642.586
2019	7	25	14	2033550.592
2019	7	25	15	2064573.587
2019	7	25	16	2086110.234

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2019	7	25	17	2044313.886
2019	7	25	18	1965852.631
2019	7	25	19	1893294.089
2019	7	25	20	1848348.963
2019	7	25	21	1757163.240
2019	7	25	22	1592447.672
2019	7	25	23	1450376.736
2019	7	26	0	1362055.969
2019	7	26	1	1316602.047
2019	7	26	2	1254189.345
2019	7	26	3	1223581.235
2019	7	26	4	1268847.234
2019	7	26	5	1336770.952
2019	7	26	6	1402511.656
2019	7	26	7	1484522.634
2019	7	26	8	1575705.791
2019	7	26	9	1686289.582
2019	7	26	10	1806642.421
2019	7	26	11	1904751.428
2019	7	26	12	1993002.841
2019	7	26	13	2045704.622
2019	7	26	14	2090068.734
2019	7	26	15	2103485.659
2019	7	26	16	2100508.343
2019	7	26	17	2054509.151
2019	7	26	18	1955674.113
2019	7	26	19	1890721.106
2019	7	26	20	1864518.666
2019	7	26	21	1774383.609
2019	7	26	22	1644744.876
2019	7	26	23	1546084.928
2019	7	27	0	1457672.654
2019	7	27	1	1378645.185
2019	7	27	2	1330854.853
2019	7	27	3	1262454.224
2019	7	27	4	1264483.163
2019	7	27	5	1283450.457
2019	7	27	6	1288674.060
2019	7	27	7	1337238.885
2019	7	27	8	1389262.982
2019	7	27	9	1441029.855
2019	7	27	10	1466080.943

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2019	7	27	11	1516455.605
2019	7	27	12	1501743.772
2019	7	27	13	1477981.398
2019	7	27	14	1549493.104
2019	7	27	15	1640759.231
2019	7	27	16	1700508.017
2019	7	27	17	1698877.653
2019	7	27	18	1666204.007
2019	7	27	19	1595290.137
2019	7	27	20	1561040.883
2019	7	27	21	1493102.815
2019	7	27	22	1382655.705
2019	7	27	23	1274006.984
2019	7	28	0	1149378.309
2019	7	28	1	1094508.393
2019	7	28	2	1074168.685
2019	7	28	3	1062484.771
2019	7	28	4	1056323.692
2019	7	28	5	1044577.545
2019	7	28	6	1051180.322
2019	7	28	7	1097842.455
2019	7	28	8	1150683.662
2019	7	28	9	1285173.378
2019	7	28	10	1342609.760
2019	7	28	11	1399071.183
2019	7	28	12	1442045.516
2019	7	28	13	1512576.242
2019	7	28	14	1566142.526
2019	7	28	15	1635786.073
2019	7	28	16	1688167.533
2019	7	28	17	1694910.135
2019	7	28	18	1657754.534
2019	7	28	19	1604734.976
2019	7	28	20	1585571.034
2019	7	28	21	1502345.473
2019	7	28	22	1375819.242
2019	7	28	23	1260952.368
2019	7	29	0	1161881.434
2019	7	29	1	1126975.233
2019	7	29	2	1104760.321
2019	7	29	3	1115754.732
2019	7	29	4	1157345.692

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2019	7	29	5	1267086.050
2019	7	29	6	1338817.741
2019	7	29	7	1424815.321
2019	7	29	8	1509348.811
2019	7	29	9	1598458.340
2019	7	29	10	1691745.481
2019	7	29	11	1781435.717
2019	7	29	12	1860058.715
2019	7	29	13	1894971.926
2019	7	29	14	1959950.533
2019	7	29	15	2012770.396
2019	7	29	16	2001653.281
2019	7	29	17	1997507.215
2019	7	29	18	1937049.729
2019	7	29	19	1861253.517
2019	7	29	20	1834778.341
2019	7	29	21	1723682.595
2019	7	29	22	1567795.027
2019	7	29	23	1441833.418
2019	7	30	0	1356932.363
2019	7	30	1	1313356.298
2019	7	30	2	1258160.493
2019	7	30	3	1215434.063
2019	7	30	4	1292340.518
2019	7	30	5	1366848.562
2019	7	30	6	1436403.502
2019	7	30	7	1502207.689
2019	7	30	8	1541596.889
2019	7	30	9	1594600.566
2019	7	30	10	1646503.661
2019	7	30	11	1747709.092
2019	7	30	12	1835388.319
2019	7	30	13	1909654.700
2019	7	30	14	1927020.419
2019	7	30	15	1898546.954
2019	7	30	16	1842163.769
2019	7	30	17	1781186.936
2019	7	30	18	1707628.834
2019	7	30	19	1685698.306
2019	7	30	20	1673621.589
2019	7	30	21	1606609.682
2019	7	30	22	1509658.010

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2019	7	30	23	1396864.624
2019	7	31	0	1333435.166
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2019	7	31	2	1236882.781
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2019	7	31	5	1381222.730
2019	7	31	6	1445229.667
2019	7	31	7	1504012.148
2019	7	31	8	1578877.922
2019	7	31	9	1630301.678
2019	7	31	10	1679633.804
2019	7	31	11	1723023.815
2019	7	31	12	1755905.826
2019	7	31	13	1749042.084
2019	7	31	14	1744734.135
2019	7	31	15	1774305.520
2019	7	31	16	1783609.881
2019	7	31	17	1758763.385
2019	7	31	18	1739890.527
2019	7	31	19	1752596.813
2019	7	31	20	1758821.375
2019	7	31	21	1697826.195
2019	7	31	22	1579877.970
2019	7	31	23	1465644.341
2019	8	1	0	1325991.621
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2019	8	1	2	1223778.397
2019	8	1	3	1213481.569
2019	8	1	4	1258344.029
2019	8	1	5	1379264.357
2019	8	1	6	1439385.783
2019	8	1	7	1505053.630
2019	8	1	8	1568887.413
2019	8	1	9	1664038.604
2019	8	1	10	1815668.456
2019	8	1	11	1927115.085
2019	8	1	12	2016562.885
2019	8	1	13	2058315.393
2019	8	1	14	2110741.031
2019	8	1	15	2169311.632
2019	8	1	16	2170916.520

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2019	8	1	17	2114671.716
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2019	8	1	19	1944711.444
2019	8	1	20	1905296.722
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2019	8	1	23	1439130.569
2019	8	2	0	1365746.356
2019	8	2	1	1267689.849
2019	8	2	2	1228117.555
2019	8	2	3	1210272.247
2019	8	2	4	1233595.507
2019	8	2	5	1294775.775
2019	8	2	6	1333538.860
2019	8	2	7	1449314.604
2019	8	2	8	1556568.034
2019	8	2	9	1678593.009
2019	8	2	10	1911779.729
2019	8	2	11	1914596.651
2019	8	2	12	2001499.234
2019	8	2	13	2072408.409
2019	8	2	14	2119635.229
2019	8	2	15	2135378.075
2019	8	2	16	2099042.390
2019	8	2	17	2047560.462
2019	8	2	18	1972374.734
2019	8	2	19	1899239.061
2019	8	2	20	1882077.402
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2019	8	2	22	1676605.422
2019	8	2	23	1564796.504
2019	8	3	0	1464579.524
2019	8	3	1	1395716.487
2019	8	3	2	1341668.629
2019	8	3	3	1287617.881
2019	8	3	4	1277587.137
2019	8	3	5	1284367.829
2019	8	3	6	1304486.623
2019	8	3	7	1373948.606
2019	8	3	8	1435191.032
2019	8	3	9	1511610.671
2015	8	3	10	1649280.529
2013	U	5	TO	10-9200.929

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2019	8	3	11	1779752.586
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2019	8	3	20	1896553.772
2019	8	3	21	1792703.625
2019	8	3	22	1626738.077
2019	8	3	23	1475307.682
2019	8	4	0	1373855.255
2019	8	4	1	1291410.122
2019	8	4	2	1215203.522
2019	8	4	3	1191741.596
2019	8	4	4	1151329.848
2019	8	4	5	1115480.774
2019	8	4	6	1092602.062
2019	8	4	7	1206366.580
2019	8	4	8	1305458.691
2019	8	4	9	1413155.518
2019	8	4	10	1514145.380
2019	8	4	11	1620954.299
2019	8	4	12	1681536.132
2019	8	4	13	1755898.374
2019	8	4	14	1791707.309
2019	8	4	15	1827329.736
2019	8	4	16	1835098.392
2019	8	4	17	1790172.032
2019	8	4	18	1749490.912
2019	8	4	19	1672323.106
2019	8	4	20	1643196.628
2019	8	4	21	1552180.601
2019	8	4	22	1417999.188
2019	8	4	23	1300065.669
2019	8	5	0	1216510.335
2019	8	5	1	1176571.158
2019	8	5	2	1156179.308
2019	8	5	3	1123791.169
2019	8	5	4	1199835.208
	-	-	-	

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2019	8	5	5	1263685.480
2019	8	5	6	1332572.149
2019	8	5	7	1407942.092
2019	8	5	8	1506768.519
2019	8	5	9	1622824.848
2019	8	5	10	1733445.276
2019	8	5	11	1834390.808
2019	8	5	12	1926608.926
2019	8	5	13	1985511.646
2019	8	5	14	2043509.340
2019	8	5	15	2122264.978
2019	8	5	16	2135119.951
2019	8	5	17	2098545.099
2019	8	5	18	2032913.193
2019	8	5	19	1970914.282
2019	8	5	20	1925704.915
2019	8	5	21	1803848.355
2019	8	5	22	1653404.793
2019	8	5	23	1522239.465
2019	8	6	0	1429631.222
2019	8	6	1	1381186.735
2019	8	6	2	1343951.806
2019	8	6	3	1324547.531
2019	8	6	4	1367775.817
2019	8	6	5	1452373.127
2019	8	6	6	1520391.049
2019	8	6	7	1578036.641
2019	8	6	8	1662002.995
2019	8	6	9	1768666.895
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2019	8	6	11	2007834.715
2019	8	6	12	2142956.120
2019	8	6	13	2195474.105
2019	8	6	14	2224816.549
2019	8	6	15	2231731.858
2019	8	6	16	2223758.654
2019	8	6	17	2169008.120
2019	8	6	18	2119522.440
2019	8	6	19	2082616.472
2019	8	6	20	2073841.239
2019	8	6	21	1962409.571
2019	8	6	22	1807925.470

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2010	0	C	22	
2019	8	6	23	1647456.508
2019	8	7	0	1553602.344
2019	8	7	1	1477838.611
2019	8	7	2	1419924.226
2019	8	7	3	1397861.717
2019	8	7	4	1440159.334
2019	8	7	5	1541188.855
2019	8	7	6	1628343.780
2019	8	7	7	1714879.554
2019	8	7	8	1836921.278
2019	8	7	9	1917595.774
2019	8	7	10	1994060.312
2019	8	7	11	2038396.466
2019	8	7	12	2113468.296
2019	8	7	13	2205240.210
2019	8	7	14	2245122.215
2019	8	7	15	2278516.157
2019	8	7	16	2229899.632
2019	8	7	17	2191154.714
2019	8	7	18	2156790.322
2019	8	7	19	2103550.078
2019	8	7	20	2085588.235
2019	8	7	21	1975488.173
2019	8	7	22	1846388.184
2019	8	7	23	1694866.456
2019	8	8	0	1607624.978
2019	8	8	1	1546047.211
2019	8	8	2	1491490.836
2019	8	8	3	1459657.175
2019	8	8	4	1506042.019
2019	8	8	5	1602408.412
2019	8	8	6	1657673.227
2019	8	8	7	1759809.003
2019	8	8	8	1858935.447
2019	8	8	9	1972180.969
2019	8	8	10	2108649.523
2019	8	8	11	2244156.736
2019	8	8	12	2339468.738
2019	8	8	13	2404037.799
2019	8	8	14	2433169.441
2019	8	8	15	2428966.430
2019	8	8	16	2362538.866

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2019	8	8	17	2328410.934
2019	8	8	18	2275657.408
2019	8	8	19	2230098.473
2019	8	8	20	2235238.771
2019	8	8	21	2087047.963
2019	8	8	22	1933036.499
2019	8	8	23	1787186.248
2019	8	9	0	1670774.755
2019	8	9	1	1592778.540
2019	8	9	2	1535791.804
2019	8	9	3	1487558.356
2019	8	9	4	1539071.243
2019	8	9	5	1640924.206
2019	8	9	6	1718598.202
2019	8	9	7	1776407.189
2019	8	9	8	1828615.446
2019	8	9	9	1893464.701
2019	8	9	10	1984095.033
2019	8	9	11	2077933.461
2019	8	9	12	2181872.161
2019	8	9	13	2180640.485
2019	8	9	14	2140758.877
2019	8	9	15	2103080.850
2019	8	9	16	2078239.115
2019	8	9	17	1991023.861
2019	8	9	18	1916895.534
2019	8	9	19	1912682.714
2019	8	9	20	1903701.275
2019	8	9	21	1810760.505
2019	8	9	22	1711965.475
2019	8	9	23	1589969.628
2019	8	10	0	1505134.769
2019	8	10	1	1422367.946
2019	8	10	2	1384491.071
2019	8	10	3	1326954.524
2019	8	10	4	1331910.858
2019	8	10	5	1357834.629
2019	8	10	6	1387136.295
2019	8	10	7	1424780.992
2019	8	10	8	1528144.382
2019	8	10	9	1608605.295
2019	8	10	10	1679597.950

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2019	8	10	11	1736535.535
2019	8	10	12	1824060.694
2019	8	10	13	1865996.692
2019	8	10	14	1870696.209
2019	8	10	15	1842255.552
2019	8	10	16	1858273.467
2019	8	10	17	1870394.750
2019	8	10	18	1832523.898
2019	8	10	19	1809233.742
2019	8	10	20	1796636.684
2019	8	10	21	1723900.356
2019	8	10	22	1606652.706
2019	8	10	23	1496618.754
2019	8	11	0	1413370.988
2019	8	11	1	1371307.447
2019	8	11	2	1316404.885
2019	8	11	3	1280909.000
2019	8	11	4	1265267.760
2019	8	11	5	1285952.377
2019	8	11	6	1269691.229
2019	8	11	7	1381598.868
2019	8	11	8	1482677.769
2019	8	11	9	1696239.856
2019	8	11	10	1861356.050
2019	8	11	11	1979762.241
2019	8	11	12	2057381.914
2019	8	11	13	2161078.249
2019	8	11	14	2211007.580
2019	8	11	15	2259502.410
2019	8	11	16	2263195.334
2019	8	11	17	2227513.007
2019	8	11	18	2162110.149
2019	8	11	19	2065829.679
2019	8	11	20	2005824.694
2019	8	11	21	1877635.174
2019	8	11	22	1709229.427
2019	8	11	23	1542003.309
2019	8	12	0	1424412.560
2019	8	12	1	1361585.262
2019	8	12	2	1322183.197
2019	8	12	3	1300744.716
2019	8	12	4	1350481.380

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2019	8	12	5	1437720.031
2019	8	12	6	1502457.222
2019	8	12	7	1615136.390
2019	8	12	8	1730020.957
2019	8	12	9	1854305.790
2019	8	12	10	1975684.398
2019	8	12	11	2013784.094
2019	8	12	12	2092595.032
2019	8	12	13	2176187.233
2019	8	12	14	2103193.181
2019	8	12	15	1998481.305
2019	8	12	16	1955986.780
2019	8	12	17	1889711.398
2019	8	12	18	1848432.099
2019	8	12	19	1840598.418
2019	8	12	20	1801163.155
2019	8	12	21	1687105.918
2019	8	12	22	1564338.872
2019	8	12	23	1447179.038
2019	8	13	0	1392697.662
2019	8	13	1	1335825.021
2019	8	13	2	1310556.764
2019	8	13	3	1296413.501
2019	8	13	4	1345438.841
2019	8	13	5	1447394.872
2019	8	13	6	1524403.608
2019	8	13	7	1586941.300
2019	8	13	8	1675409.988
2019	8	13	9	1773911.847
2019	8	13	10	1859585.080
2019	8	13	11	1943843.487
2019	8	13	12	2027443.660
2019	8	13	13	2030021.422
2019	8	13	14	2079767.348
2019	8	13	15	2087132.170
2019	8	13	16	2037578.966
2019	8	13	17	1965814.072
2019	8	13	18	1862266.664
2019	8	13	19	1784544.779
2019	8	13	20	1760873.005
2019	8	13	21	1616630.222
2019	8	13	22	1435474.680

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2019	8	13	23	1330921.263
2019	8	14	0	1230020.956
2019	8	14	1	1197558.495
2019	8	14	2	1125882.066
2019	8	14	3	1105849.926
2019	8	14	4	1175013.383
2019	8	14	5	1240180.193
2019	8	14	6	1307918.594
2019	8	14	7	1366309.124
2019	8	14	8	1404117.430
2019	8	14	9	1479417.772
2019	8	14	10	1531632.586
2019	8	14	11	1554573.720
2019	8	14	12	1611361.916
2019	8	14	13	1653674.769
2019	8	14	14	1680959.287
2019	8	14	15	1727693.953
2019	8	14	16	1736193.245
2019	8	14	17	1720640.324
2019	8	14	18	1652926.832
2019	8	14	19	1594437.070
2019	8	14	20	1575590.607
2019	8	14	21	1457407.215
2019	8	14	22	1347677.245
2019	8	14	23	1246412.037
2019	8	15	0	1193132.044
2019	8	15	1	1149050.479
2019	8	15	2	1086772.032
2019	8	15	3	1079151.142
2019	8	15	4	1138989.779
2019	8	15	5	1221223.099
2019	8	15	6	1273700.148
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2019	8	15	8	1383948.621
2019	8	15	9	1440258.483
2019	8	15	10	1473428.473
2019	8	15	11	1546217.535
2019	8	15	12	1595939.469
2019	8	15	13	1632706.960
2019	8	15	14	1671460.353
2019	8	15	15	1722989.241
2019	8	15	16	1767154.350

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2019	8	15	17	1747573.012
2019	8	15	18	1699037.829
2019	8	15	19	1663003.372
2019	8	15	20	1643483.478
2019	8	15	20	1540944.428
2019	8	15	22	1395098.489
2019	8	15	23	1290672.436
2019	8	16	0	1220149.950
2019	8	16	1	1177642.211
2019	8	16	2	1128814.463
2019	8	16	3	1095544.724
2019	8	16	4	1163414.681
2019	8	16	5	1249227.321
2019	8	16	6	1319149.089
2019	8	16	7	1372019.198
2019	8	16	8	1429889.524
2019	8	16	9	1529924.927
2019	8	16	10	1616143.765
2019	8	16	11	1688888.061
2019	8	16	12	1768794.558
2019	8	16	13	1820394.650
2019	8	16	14	1881486.377
2019	8	16	15	1946058.507
2019	8	16	16	1934628.607
2019	8	16	17	1884960.055
2019	8	16	18	1779870.690
2019	8	16	19	1747674.133
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2019	8	16	21	1621274.499
2019	8	16	22	1495179.757
2019	8	16	23	1393908.005
2019	8	17	0	1313182.279
2019	8	17	1	1236741.367
2019	8	17	2	1203516.449
2019	8	17	3	1159098.373
2019	8	17	4	1129746.596
2019	8	17	5	1180188.521
2019	8	17	6	1184811.959
2019	8	17	7	1228599.864
2019	8	17	8	1313806.168
2019	8	17	9	1389520.863
2019	8	17	10	1479930.209

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2019	8	17	11	1576251.440
2019	8	17	12	1690775.807
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2019	8	17	14	1871645.749
2019	8	17	15	1920317.071
2019	8	17	16	1930598.686
2019	8	17	17	1865847.626
2019	8	17	18	1778225.088
2019	8	17	19	1728118.144
2019	8	17	20	1701959.705
2019	8	17	21	1589680.086
2019	8	17	22	1471599.191
2019	8	17	23	1360779.587
2019	8	18	0	1261137.852
2019	8	18	1	1202265.025
2019	8	18	2	1145996.159
2019	8	18	3	1083547.523
2019	8	18	4	1063291.147
2019	8	18	5	1072206.399
2019	8	18	6	1068614.322
2019	8	18	7	1181747.886
2019	8	18	8	1280937.439
2019	8	18	9	1398880.743
2019	8	18	10	1525000.111
2019	8	18	11	1658176.986
2019	8	18	12	1764801.957
2019	8	18	13	1847766.960
2019	8	18	14	1906296.015
2019	8	18	15	1981605.934
2019	8	18	16	2013380.269
2019	8	18	17	2001929.442
2019	8	18	18	1962857.762
2019	8	18	19	1913691.263
2019	8	18	20	1879633.219
2019	8	18	21	1747331.103
2019	8	18	22	1579124.057
2019	8	18	23	1448433.490
2019	8	19	0	1371989.694
2019	8	19	1	1301916.944
2019	8	19	2	1243270.986
2019	8	19	3	1253615.361
2019	8	19	4	1311770.584

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2019	8	19	5	1409588.865
2019	8	19	6	1458049.956
2019	8	19	7	1567827.509
2019	8	19	8	1683622.964
2019	8	19	9	1848822.496
2019	8	19	10	1956359.601
2019	8	19	10	2054362.384
2019	8	19	12	2158326.859
2019	8	19	13	2199708.326
2019	8	19	14	2240340.446
2019	8	19	15	2265677.773
2019	8	19	16	2238165.092
2019	8	19	17	2209204.939
2019	8	19	18	2139296.390
2019	8	19	19	2113090.338
2019	8	19	20	2035314.465
2019	8	19	21	1875167.669
2019	8	19	22	1688276.059
2019	8	19	23	1520043.000
2019	8	20	0	1422055.500
2019	8	20	1	1349751.099
2019	8	20	2	1303128.909
2019	8	20	3	1270719.655
2019	8	20	4	1326354.739
2019	8	20	5	1444366.163
2019	8	20	6	1489210.165
2019	8	20	7	1565097.669
2019	8	20	8	1694895.179
2019	8	20	9	1852484.030
2019	8	20	10	2007163.401
2019	8	20	11	2171804.820
2019	8	20	12	2252450.060
2019	8	20	13	2293053.548
2019	8	20	14	2286219.821
2019	8	20	15	2214904.114
2019	8	20	16	2152682.825
2019	8	20	17	2067131.951
2019	8	20	18	2001432.860
2019	8	20	19	1994359.866
2019	8	20	20	1956677.669
2019	8	20	21	1805935.747
2019	8	20	22	1626637.848

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2019	8	20	23	1502723.215
2019	8	20	0	1411095.086
2019	8	21	1	1370475.375
2019	8	21	2	1316917.338
2019	8	21	3	1297526.250
2019	8	21	4	1337928.605
2019	8	21	5	1465742.914
2019	8	21	6	1537417.070
2019	8	21	7	1628776.838
2019	8	21	8	1752223.073
2019	8	21	9	1889910.456
2019	8	21	10	2019832.582
2019	8	21	11	2095636.371
2019	8	21	12	2276673.556
2019	8	21	13	2319931.786
2019	8	21	14	2360668.745
2019	8	21	15	2414617.086
2019	8	21	16	2411413.804
2019	8	21	17	2345814.847
2019	8	21	18	2271866.911
2019	8	21	19	2206537.753
2019	8	21	20	2153184.793
2019	8	21	21	1980824.950
2019	8	21	22	1783754.523
2019	8	21	23	1637311.276
2019	8	22	0	1529125.823
2019	8	22	1	1456071.665
2019	8	22	2	1401490.093
2019	8	22	3	1383599.508
2019	8	22	4	1421639.006
2019	8	22	5	1549842.601
2019	8	22	6	1631602.865
2019	8	22	7	1706444.339
2019	8	22	8	1852499.920
2019	8	22	9	2001251.884
2019	8	22	10	2155976.033
2019	8	22	11	2265619.954
2019	8	22	12	2330550.150
2019	8	22	13	2358649.765
2019	8	22	14	2453755.859
2019	8	22	15	2471382.361
2019	8	22	16	2444258.540

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2019	8	22	17	2355597.365
2019	8	22	18	2300729.648
2019	8	22	19	2260164.864
2019	8	22	20	2181961.001
2019	8	22	21	1986890.316
2019	8	22	22	1813783.037
2019	8	22	23	1660257.405
2019	8	23	0	1554369.293
2019	8	23	1	1461949.379
2019	8	23	2	1430170.066
2019	8	23	3	1402481.253
2019	8	23	4	1449031.093
2019	8	23	5	1573837.872
2019	8	23	6	1649548.931
2019	8	23	7	1689339.481
2019	8	23	8	1774799.336
2019	8	23	9	1910472.210
2019	8	23	10	2043334.251
2019	8	23	11	2182060.965
2019	8	23	12	2303117.601
2019	8	23	13	2329059.195
2019	8	23	14	2376583.078
2019	8	23	15	2391613.314
2019	8	23	16	2368762.404
2019	8	23	17	2318807.927
2019	8	23	18	2237536.434
2019	8	23	19	2177681.058
2019	8	23	20	2071179.820
2019	8	23	21	1908322.241
2019	8	23	22	1756761.623
2019	8	23	23	1597386.738
2019	8	24	0	1469898.144
2019	8	24	1	1389926.069
2019	8	24	2	1321127.960
2019	8	24	3	1255528.620
2019	8	24	4	1235157.257
2019	8	24	5	1261533.105
2019	8	24	6	1239475.264
2019	8	24	7	1354655.017
2019	8	24	8	1467762.639
2019	8	24	9	1636026.540
2019	8	24	10	1799319.466

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2019	8	24	11	1931002.592
2019	8	24	12	2015788.093
2019	8	24	13	2098921.481
2019	8	24	14	2184193.684
2019	8	24	15	2217882.125
2019	8	24	16	2226237.672
2019	8	24	17	2192396.006
2019	8	24	18	2089856.516
2019	8	24	19	1998136.465
2019	8	24	20	1901852.689
2019	8	24	21	1757432.528
2019	8	24	22	1577269.812
2019	8	24	23	1437438.107
2019	8	25	0	1337526.024
2019	8	25	1	1251670.568
2019	8	25	2	1208823.122
2019	8	25	3	1168532.318
2019	8	25	4	1133522.173
2019	8	25	5	1134572.435
2019	8	25	6	1109036.367
2019	8	25	7	1225069.752
2019	8	25	8	1358614.932
2019	8	25	9	1483486.584
2019	8	25	10	1654437.993
2019	8	25	11	1810161.655
2019	8	25	12	1949216.414
2019	8	25	13	2036963.482
2019	8	25	14	2139359.388
2019	8	25	15	2219465.946
2019	8	25	16	2247967.545
2019	8	25	17	2243411.923
2019	8	25	18	2194893.005
2019	8	25	19	2149928.542
2019	8	25	20	2064465.383
2019	8	25	21	1902602.016
2019	8	25	22	1745662.194
2019	8	25	23	1583089.264
2019	8	26	0	1479578.948
2019	8	26	1	1406710.084
2019	8	26	2	1376393.915
2019	8	26	3	1357183.760
2019	8	26	4	1408866.172

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2019	8	26	5	1536136.351
2019	8	26	6	1611581.849
2019	8	26	7	1678904.641
2019	8	26	8	1813324.191
2019	8	26	9	1964787.735
2019	8	26	10	2088831.669
2019	8	26	11	2238580.344
2019	8	26	12	2334464.246
2019	8	26	13	2400888.975
2019	8	26	14	2447718.983
2019	8	26	15	2461407.495
2019	8	26	16	2419674.384
2019	8	26	17	2353548.003
2019	8	26	18	2325661.763
2019	8	26	19	2315965.646
2019	8	26	20	2253630.694
2019	8	26	21	2059261.778
2019	8	26	22	1892882.385
2019	8	26	23	1741668.620
2019	8	27	0	1630676.333
2019	8	27	1	1547041.905
2019	8	27	2	1493366.825
2019	8	27	3	1473868.350
2019	8	27	4	1522689.184
2019	8	27	5	1644669.086
2019	8	27	6	1732192.009
2019	8	27	7	1788498.554
2019	8	27	8	1940610.617
2019	8	27	9	2052240.459
2019	8	27	10	2184986.473
2019	8	27	11	2301575.203
2019	8	27	12	2386834.995
2019	8	27	13	2436293.147
2019	8	27	14	2484238.556
2019	8	27	15	2515333.053
2019	8	27	16	2493942.532
2019	8	27	17	2460093.323
2019	8	27	18	2381395.777
2019	8	27	19	2348759.960
2019	8	27	20	2318060.110
2019	8	27	21	2160621.539
2019	8	27	22	1961226.360

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2019	8	27	23	1819853.044
2019	8	28	0	1665394.782
2019	8	28	1	1621273.988
2019	8	28	2	1542958.978
2019	8	28	3	1509298.379
2019	8	28	4	1561237.337
2019	8	28	5	1706291.220
2019	8	28	6	1769643.376
2019	8	28	7	1846723.158
2019	8	28	8	1936238.948
2019	8	28	9	2085375.104
2019	8	28	10	2238294.531
2019	8	28	11	2372549.173
2019	8	28	12	2475990.807
2019	8	28	13	2523260.050
2019	8	28	14	2645432.970
2019	8	28	15	2667716.805
2019	8	28	16	2679865.834
2019	8	28	17	2584396.648
2019	8	28	18	2502404.973
2019	8	28	19	2467347.766
2019	8	28	20	2386256.545
2019	8	28	21	2251718.561
2019	8	28	22	2051994.981
2019	8	28	23	1924063.214
2019	8	29	0	1821699.433
2019	8	29	1	1728556.207
2019	8	29	2	1638452.326
2019	8	29	3	1583952.505
2019	8	29	4	1634212.383
2019	8	29	5	1763590.633
2019	8	29	6	1824313.448
2019	8	29	7	1874831.179
2019	8	29	8	1983349.275
2019	8	29	9	2130419.682
2019	8	29	10	2291056.262
2019	8	29	11	2395732.761
2019	8	29	12	2485537.335
2019	8	29	13	2531660.996
2019	8	29	14	2549163.421
2019	8	29	15	2627841.291
2019	8	29	16	2575366.821

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2019	8	29	17	2510142.855
2019	8	29	18	2442170.749
2019	8	29	19	2408110.770
2019	8	29	20	2325573.113
2019	8	29	21	2167303.241
2019	8	29	22	1964665.282
2019	8	29	23	1799071.380
2019	8	30	0	1677891.151
2019	8	30	1	1573580.157
2019	8	30	2	1500159.355
2019	8	30	3	1454622.641
2019	8	30	4	1485584.551
2019	8	30	5	1600672.222
2019	8	30	6	1633764.726
2019	8	30	7	1711967.346
2019	8	30	8	1840867.351
2019	8	30	9	2004853.516
2019	8	30	10	2201118.529
2019	8	30	11	2328040.955
2019	8	30	12	2419893.701
2019	8	30	13	2473594.803
2019	8	30	14	2543817.239
2019	8	30	15	2561265.235
2019	8	30	16	2565637.814
2019	8	30	17	2504807.069
2019	8	30	18	2433383.961
2019	8	30	19	2358787.319
2019	8	30	20	2303745.159
2019	8	30	21	2151452.187
2019	8	30	22	1999804.882
2019	8	30	23	1865265.536
2019	8	31	0	1750927.882
2019	8	31	1	1639649.881
2019	8	31	2	1568024.424
2019	8	31	3	1513061.355
2019	8	31	4	1497135.235
2019	8	31	5	1514554.267
2019	8	31	6	1498618.507
2019	8	31	7	1568721.376
2019	8	31	8	1749605.490
2019	8	31	9	1948773.758
2019	8	31	10	2119410.157

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2019	8	31	11	2274994.847
2019	8	31	12	2348518.763
2019	8	31	13	2409344.776
2019	8	31	14	2280205.253
2019	8	31	15	2282883.885
2019	8	31	16	2313090.029
2019	8	31	17	2307123.288
2019	8	31	18	2218390.903
2019	8	31	19	2024367.494
2019	8	31	20	1870282.638
2019	8	31	21	1744099.958
2019	8	31	22	1585482.585
2019	8	31	23	1468118.446
2019	9	1	0	1331795.899
2019	9	1	1	1281410.770
2019	9	1	2	1224611.687
2019	9	1	3	1188309.573
2019	9	1	4	1185041.997
2019	9	1	5	1194204.701
2019	9	1	6	1216901.334
2019	9	1	7	1253051.906
2019	9	1	8	1331526.049
2019	9	1	9	1427479.952
2019	9	1	10	1559936.943
2019	9	1	11	1675524.916
2019	9	1	12	1758321.142
2019	9	1	13	1864469.836
2019	9	1	14	1955631.130
2019	9	1	15	2030701.631
2019	9	1	16	2045658.163
2019	9	1	17	2000784.068
2019	9	1	18	1896329.670
2019	9	1	19	1873530.095
2019	9	1	20	1832540.850
2019	9	1	21	1712521.738
2019	9	1	22	1608182.353
2019	9	1	23	1484298.561
2019	9	2	0	1399863.721
2019	9	2	1	1335602.151
2019	9	2	2	1285154.067
2019	9	2	3	1231253.177
2019	9	2	4	1241836.287

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2019	9	2	5	1259020.850
2019	9	2	6	1223204.108
2019	9	2	7	1293175.742
2019	9	2	8	1378770.757
2019	9	2	9	1531943.696
2019	9	2	10	1706761.735
2019	9	2	11	1821446.059
2019	9	2	12	1984640.153
2019	9	2	13	1959370.639
2019	9	2	14	1790460.094
2019	9	2	15	1742596.885
2019	9	2	16	1825151.281
2019	9	2	17	1842565.897
2019	9	2	18	1810113.965
2019	9	2	19	1804084.639
2019	9	2	20	1740034.342
2019	9	2	21	1636244.891
2019	9	2	22	1476073.967
2019	9	2	23	1364285.539
2019	9	3	0	1302755.503
2019	9	3	1	1221498.385
2019	9	3	2	1169365.904
2019	9	3	3	1163797.289
2019	9	3	4	1226560.302
2019	9	3	5	1350356.309
2019	9	3	6	1387934.471
2019	9	3	7	1437376.295
2019	9	3	8	1497516.877
2019	9	3	9	1558252.227
2019	9	3	10	1626277.223
2019	9	3	11	1692735.628
2019	9	3	12	1741115.598
2019	9	3	13	1798348.240
2019	9	3	14	1876397.877
2019	9	3	15	1915059.847
2019	9	3	16	1940231.488
2019	9	3	17	1853603.040
2019	9	3	18	1747352.741
2019	9	3	19	1724473.104
2019	9	3	20	1648963.673
2019	9	3	21	1497951.655
2019	9	3	22	1375072.453

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2019	9	3	23	1287022.930
2019	9	4	0	1205575.917
2019	9	4	1	1139689.879
2019	9	4	2	1115600.878
2019	9	4	3	1102484.116
2019	9	4	4	1142810.611
2019	9	4	5	1275283.982
2019	9	4	6	1336432.336
2019	9	4	7	1370772.513
2019	9	4	8	1406123.717
2019	9	4	9	1502740.100
2019	9	4	10	1593504.675
2019	9	4	11	1659747.598
2019	9	4	12	1723610.347
2019	9	4	13	1766024.735
2019	9	4	14	1853655.281
2019	9	4	15	1942272.016
2019	9	4	16	1975346.483
2019	9	4	17	1919225.021
2019	9	4	18	1840921.108
2019	9	4	19	1788730.849
2019	9	4	20	1732322.182
2019	9	4	21	1607150.727
2019	9	4	22	1444896.358
2019	9	4	23	1347151.694
2019	9	5	0	1273757.903
2019	9	5	1	1208809.511
2019	9	5	2	1155081.093
2019	9	5	3	1135551.840
2019	9	5	4	1182357.766
2019	9	5	5	1320911.205
2019	9	5	6	1359548.501
2019	9	5	7	1397262.157
2019	9	5	8	1463679.641
2019	9	5	9	1584570.158
2019	9	5	10	1670783.474
2019	9	5	11	1747283.792
2019	9	5	12	1858187.349
2019	9	5	13	1952100.493
2019	9	5	14	2040358.778
2019	9	5	15	2091228.749
2019	9	5	16	2106158.062

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2010	0	_	47	
2019	9	5	17	2065632.887
2019	9	5	18	1963914.733
2019	9	5	19	1930411.462
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2019	9	5	21	1704667.692
2019	9	5	22	1546927.652
2019	9	5	23	1415674.409
2019	9	6	0	1350419.838
2019	9	6	1	1291837.842
2019	9	6	2	1249213.473
2019	9	6	3	1207428.044
2019	9	6	4	1259919.604
2019	9	6	5	1357689.088
2019	9	6	6	1400187.393
2019	9	6	7	1442676.453
2019	9	6	8	1518251.079
2019	9	6	9	1591032.910
2019	9	6	10	1681315.212
2019	9	6	11	1753985.549
2019	9	6	12	1877341.739
2019	9	6	13	2010239.871
2019	9	6	14	2075619.848
2019	9	6	15	2134936.807
2019	9	6	16	2119420.351
2019	9	6	17	2049847.600
2019	9	6	18	1902038.187
2019	9	6	19	1858563.631
2019	9	6	20	1753034.043
2019	9	6	21	1658334.373
2019	9	6	22	1511252.706
2019	9	6	23	1397121.377
2019	9	7	0	1320395.466
2019	9	7	1	1247015.040
2019	9	7	2	1176798.101
2019	9	7	3	1132235.475
2019	9	7	4	1119693.750
2019	9	7	5	1151724.725
2019	9	7	6	1158462.825
2019	9	, 7	7	1245350.226
2019	9	, 7	8	1346722.702
2019	9	, 7	9	1444870.459
2019	9	, 7	10	1591857.261
2013	3	/	10	1001.201

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2019	9	7	11	1697188.335
2019	9	7	12	1786688.357
2019	9	7	13	1887304.898
2019	9	7	14	2001207.795
2019	9	7	15	2057959.171
2019	9	7	16	2082823.408
2019	9	7	17	2038365.392
2019	9	7	18	1911306.800
2019	9	7	19	1870534.290
2019	9	7	20	1766419.110
2019	9	7	21	1666273.238
2019	9	7	22	1527769.799
2019	9	7	23	1406723.822
2019	9	8	0	1330719.411
2019	9	8	1	1276498.524
2019	9	8	2	1228224.974
2019	9	8	3	1204638.601
2019	9	8	4	1195272.980
2019	9	8	5	1211821.975
2019	9	8	6	1219779.972
2019	9	8	7	1297276.991
2019	9	8	8	1418478.353
2019	9	8	9	1590444.298
2019	9	8	10	1717186.349
2019	9	8	11	1849219.280
2019	9	8	12	1988551.594
2019	9	8	13	2067382.586
2019	9	8	14	2122887.485
2019	9	8	15	2128924.249
2019	9	8	16	2099267.865
2019	9	8	17	2017223.463
2019	9	8	18	1938072.512
2019	9	8	19	1921829.805
2019	9	8	20	1836148.561
2019	9	8	21	1710697.448
2019	9	8	22	1584357.903
2019	9	8	23	1448823.372
2019	9	9	0	1378923.344
2019	9	9	1	1329302.913
2019	9	9	2	1303170.153
2019	9	9	3	1292513.575
2019	9	9	4	1339940.645

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2019	9	9	5	1442263.860
2019	9	9	6	1516660.916
2019	9	9	7	1577461.710
2019	9	9	8	1663653.919
2019	9	9	9	1811400.695
2019	9	9	10	2020808.906
2019	9	9	11	2171751.381
2019	9	9	12	2232335.186
2019	9	9	13	2275902.434
2019	9	9	14	2332875.121
2019	9	9	15	2359394.630
2019	9	9	16	2347996.113
2019	9	9	17	2314206.171
2019	9	9	18	2266781.146
2019	9	9	19	2259688.646
2019	9	9	20	2190470.258
2019	9	9	21	2035797.446
2019	9	9	22	1807440.408
2019	9	9	23	1696743.616
2019	9	10	0	1612012.469
2019	9	10	1	1534975.549
2019	9	10	2	1463793.075
2019	9	10	3	1454169.443
2019	9	10	4	1478134.936
2019	9	10	5	1628931.029
2019	9	10	6	1674382.670
2019	9	10	7	1700528.300
2019	9	10	8	1772731.080
2019	9	10	9	1931181.757
2019	9	10	10	2155007.713
2019	9	10	11	2224418.400
2019	9	10	12	2327348.352
2019	9	10	13	2367721.202
2019	9	10	14	2390456.378
2019	9	10	15	2404578.838
2019	9	10	16	2385113.154
2019	9	10	17	2322734.116
2019	9	10	18	2243462.505
2019	9	10	19	2219570.208
2019	9	10	20	2165341.967
2019	9	10	21	1969114.717
2019	9	10	22	1754830.582

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2019	9	10	23	1660644.846
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2019	9	11	3	1376315.869
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2019	9	11	5	1539754.177
2019	9	11	6	1604665.081
2019	9	11	7	1640136.212
2019	9	11	8	1720605.106
2019	9	11	9	1817453.239
2019	9	11	10	1948132.346
2019	9	11	11	2052356.362
2019	9	11	12	2110486.663
2019	9	11	13	2177728.646
2019	9	11	14	2244526.325
2019	9	11	15	2287922.819
2019	9	11	16	2307040.374
2019	9	11	17	2273068.775
2019	9	11	18	2211496.663
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2019	9	11	20	2141063.221
2019	9	11	21	1907393.033
2019	9	11	22	1728392.401
2019	9	11	23	1620889.394
2019	9	12	0	1490732.110
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2019	9	12	2	1380560.961
2019	9	12	3	1351405.505
2019	9	12	4	1389111.175
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2019	9	12	6	1578954.179
2019	9	12	7	1601102.571
2019	9	12	8	1678599.886
2019	9	12	9	1779557.448
2019	9	12	10	1885598.459
2019	9	12	11	1977964.393
2019	9	12	12	1943964.598
2019	9	12	13	1845613.535
2019	9	12	14	1896653.373
2019	9	12	15	1924818.289
2019	9	12	16	1971573.579

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2019	9	12	17	1883301.791
2019	9	12	18	1797772.191
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2019	9	12	20	1734597.674
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2019	9	13	4	1213988.201
2019	9	13	5	1322508.195
2019	9	13	6	1361742.605
2019	9	13	7	1393404.654
2019	9	13	8	1425938.263
2019	9	13	9	1456153.916
2019	9	13	10	1473069.088
2019	9	13	11	1503186.024
2019	9	13	12	1526478.777
2019	9	13	13	1492602.374
2019	9	13	14	1507343.998
2019	9	13	15	1485846.748
2019	9	13	16	1456233.433
2019	9	13	17	1412844.032
2019	9	13	18	1356002.392
2019	9	13	19	1373183.439
2019	9	13	20	1324800.118
2019	9	13	21	1256402.748
2019	9	13	22	1145905.449
2019	9	13	23	1086948.280
2019	9	14	0	1050902.577
2019	9	14	1	1032004.744
2019	9	14	2	1003175.031
2019	9	14	3	962803.676
2019	9	14	4	981391.823
2019	9	14	5	1016781.485
2019	9	14	6	1029458.078
2019	9	14	7	1051230.680
2019	9	14	8	1087946.929
2019	9	14	9	1121004.485
2019	9	14	10	1145091.242

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2019	9	14	11	1145873.707
2019	9	14	12	1177979.263
2019	9	14	13	1194591.001
2019	9	14	14	1214114.296
2019	9	14	15	1243424.581
2019	9	14	16	1281329.407
2019	9	14	17	1266293.573
2019	9	14	18	1241033.788
2019	9	14	19	1261682.088
2019	9	14	20	1200309.454
2019	9	14	21	1124898.210
2019	9	14	22	1072039.604
2019	9	14	23	1023959.763
2019	9	15	0	973915.276
2019	9	15	1	923788.197
2019	9	15	2	913268.341
2019	9	15	3	907395.686
2019	9	15	4	909443.176
2019	9	15	5	928579.443
2019	9	15	6	949498.723
2019	9	15	7	994657.799
2019	9	15	8	1048430.568
2019	9	15	9	1091996.084
2019	9	15	10	1134546.747
2019	9	15	11	1201025.668
2019	9	15	12	1260681.406
2019	9	15	13	1310168.346
2019	9	15	14	1367205.636
2019	9	15	15	1420236.838
2019	9	15	16	1471266.339
2019	9	15	17	1485943.696
2019	9	15	18	1461801.766
2019	9	15	19	1523875.111
2019	9	15	20	1452404.061
2019	9	15	21	1370223.037
2019	9	15	22	1271057.236
2019	9	15	23	1177952.659
2019	9	16	0	1121764.612
2019	9	16	1	1098361.023
2019	9	16	2	1096072.613
2019	9	16	3	1101171.163
2019	9	16	4	1159594.221

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2019	9	16	5	1314857.071
2019	9	16	6	1394419.140
2019	9	16	7	1414050.814
2019	9	16	8	1432537.663
2019	9	16	9	1461112.543
2019	9	16	10	1486982.062
2019	9	16	11	1528599.529
2019	9	16	12	1569009.385
2019	9	16	13	1546669.033
2019	9	16	14	1550924.319
2019	9	16	15	1539975.677
2019	9	16	16	1521731.378
2019	9	16	17	1481717.036
2019	9	16	18	1460826.275
2019	9	16	19	1519011.309
2019	9	16	20	1453679.902
2019	9	16	21	1378312.945
2019	9	16	22	1288254.030
2019	9	16	23	1176036.639
2019	9	17	0	1112018.971
2019	9	17	1	1081163.365
2019	9	17	2	1062392.075
2019	9	17	3	1055052.981
2019	9	17	4	1097276.802
2019	9	17	5	1215016.988
2019	9	17	6	1283589.738
2019	9	17	7	1298283.776
2019	9	17	8	1343884.029
2019	9	17	9	1383128.485
2019	9	17	10	1425795.245
2019	9	17	11	1468573.749
2019	9	17	12	1524269.914
2019	9	17	13	1544947.835
2019	9	17	14	1589631.372
2019	9	17	15	1603138.586
2019	9	17	16	1599833.834
2019	9	17	17	1557092.124
2019	9	17	18	1496832.629
2019	9	17	19	1556573.228
2019	9	17	20	1478606.216
2019	9	17	21	1383509.859
2019	9	17	22	1280489.454

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2019	9	17	23	1178544.848
2019	9	18	0	1116688.782
2019	9	18	1	1095444.573
2019	9	18	2	1079996.677
2019	9	18	3	1069611.252
2019	9	18	4	1109448.322
2019	9	18	5	1250230.906
2019	9	18	6	1336750.479
2019	9	18	7	1341727.678
2019	9	18	8	1374670.677
2019	9	18	9	1431701.634
2019	9	18	10	1469355.164
2019	9	18	11	1505473.974
2019	9	18	12	1537183.461
2019	9	18	13	1541538.734
2019	9	18	14	1579732.607
2019	9	18	15	1597078.940
2019	9	18	16	1613094.788
2019	9	18	17	1615129.017
2019	9	18	18	1627099.141
2019	9	18	19	1668117.345
2019	9	18	20	1623420.028
2019	9	18	21	1515940.962
2019	9	18	22	1395842.636
2019	9	18	23	1311626.100
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2019	9	19	1	1209613.990
2019	9	19	2	1154226.484
2019	9	19	3	1163105.256
2019	9	19	4	1218445.105
2019	9	19	5	1352643.869
2019	9	19	6	1411702.382
2019	9	19	7	1429607.441
2019	9	19	8	1475610.646
2019	9	19	9	1519129.908
2019	9	19	10	1542311.706
2019	9	19	11	1570001.970
2019	9	19	12	1628210.686
2019	9	19	13	1640258.740
2019	9	19	14	1703703.168
2019	9	19	15	1769888.518
2019	9	19	16	1826643.705

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2019	9	19	17	1786070.750
2019	9	19	18	1764241.989
2019	9	19	10	1796105.712
2019	9	19	20	1736899.631
2019	9	19	20	1639016.334
2019	9	19	22	1493894.970
2019	9	19	23	1391247.956
2019	9	20	0	1333335.374
2019	9	20	1	1278108.048
2019	9	20	2	1239771.509
2019	9	20	3	1213384.703
2019	9	20	4	1267834.796
2019	9	20	5	1381256.194
2019	9	20	6	1434102.191
2019	9	20	7	1465246.250
2019	9	20	8	1572960.673
2019	9	20	9	1668634.001
2019	9	20	10	1756194.192
2019	9	20	11	1861974.638
2019	9	20	12	2023999.767
2019	9	20	13	2005178.811
2019	9	20	14	1992908.872
2019	9	20	15	1903364.339
2019	9	20	16	1778470.412
2019	9	20	17	1714989.140
2019	9	20	18	1691631.635
2019	9	20	19	1703084.985
2019	9	20	20	1647154.292
2019	9	20	21	1530635.644
2019	9	20	22	1423501.689
2019	9	20	23	1341596.395
2019	9	21	0	1278897.241
2019	9	21	1	1222598.129
2019	9	21	2	1157425.709
2019	9	21	3	1129713.464
2019	9	21	4	1125794.747
2019	9	21	5	1137522.995
2019	9	21	6	1164560.698
2019	9	21	7	1198247.542
2019	9	21	8	1244142.390
2019	9	21	9	1309082.989
2019	9	21	10	1325625.245

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2019	9	21	11	1351778.367
2019	9	21	12	1385602.398
2019	9	21	13	1401491.941
2019	9	21	14	1414938.988
2019	9	21	15	1430080.455
2019	9	21	16	1421809.974
2019	9	21	17	1386619.094
2019	9	21	18	1349187.877
2019	9	21	19	1355228.781
2019	9	21	20	1300353.861
2019	9	21	21	1230719.928
2019	9	21	22	1124443.763
2019	9	21	23	1071434.223
2019	9	22	0	1026437.782
2019	9	22	1	990234.022
2019	9	22	2	955508.729
2019	9	22	3	940986.821
2019	9	22	4	935685.670
2019	9	22	5	969090.036
2019	9	22	6	952080.320
2019	9	22	7	1010763.074
2019	9	22	8	1067337.930
2019	9	22	9	1107131.189
2019	9	22	10	1136417.916
2019	9	22	11	1176759.935
2019	9	22	12	1208249.678
2019	9	22	13	1234101.782
2019	9	22	14	1262991.852
2019	9	22	15	1294878.344
2019	9	22	16	1342046.436
2019	9	22	17	1337985.304
2019	9	22	18	1318963.324
2019	9	22	19	1357352.472
2019	9	22	20	1307194.152
2019	9	22	21	1213559.569
2019	9	22	22	1099901.826
2019	9	22	23	1060078.613
2019	9	23	0	1021173.630
2019	9	23	1	993648.765
2019	9	23	2	987568.090
2019	9	23	3	1004653.272
2019	9	23	4	1053613.689

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2019	9	23	5	1140634.096
2019	9	23	6	1238282.496
2019	9	23	7	1256384.281
2019	9	23	8	1300026.967
2019	9	23	9	1332801.480
2019	9	23	10	1356817.787
2019	9	23	11	1382105.370
2019	9	23	12	1399207.680
2019	9	23	13	1389456.362
2019	9	23	14	1406622.761
2019	9	23	15	1423099.925
2019	9	23	16	1438735.398
2019	9	23	17	1435955.534
2019	9	23	18	1410760.476
2019	9	23	19	1448275.774
2019	9	23	20	1385968.784
2019	9	23	21	1308555.256
2019	9	23	22	1190868.185
2019	9	23	23	1118350.032
2019	9	24	0	1082263.478
2019	9	24	1	1063780.918
2019	9	24	2	1039813.214
2019	9	24	3	1038044.465
2019	9	24	4	1073613.091
2019	9	24	5	1174364.283
2019	9	24	6	1252475.433
2019	9	24	7	1247928.671
2019	9	24	8	1288900.695
2019	9	24	9	1314935.482
2019	9	24	10	1359341.192
2019	9	24	11	1402317.682
2019	9	24	12	1456584.501
2019	9	24	13	1513829.852
2019	9	24	14	1567440.356
2019	9	24	15	1580367.691
2019	9	24	16	1596072.436
2019	9	24	17	1566536.353
2019	9	24	18	1563162.545
2019	9	24	19	1589938.076
2019	9	24	20	1492841.379
2019	9	24	21	1386702.720
2019	9	24	22	1294827.972

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2010	•		~~	
2019	9	24	23	1202089.586
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2019	9	25	1	1087989.442
2019	9	25	2	1075920.418
2019	9	25	3	1074943.387
2019	9	25	4	1107583.496
2019	9	25	5	1234925.175
2019	9	25	6	1325420.961
2019	9	25	7	1322861.322
2019	9	25	8	1365870.797
2019	9	25	9	1416348.381
2019	9	25	10	1466138.567
2019	9	25	11	1513655.324
2019	9	25	12	1586895.436
2019	9	25	13	1643089.067
2019	9	25	14	1668779.009
2019	9	25	15	1680878.245
2019	9	25	16	1686325.160
2019	9	25	17	1650433.657
2019	9	25	18	1616940.685
2019	9	25	19	1619262.396
2019	9	25	20	1508623.462
2019	9	25	21	1406049.864
2019	9	25	22	1297251.323
2019	9	25	23	1181876.645
2019	9	26	0	1113739.016
2019	9	26	1	1083273.729
2019	9	26	2	1056864.561
2019	9	26	3	1043620.678
2019	9	26	4	1076401.598
2019	9	26	5	1183719.639
2019	9	26	6	1269241.522
2019	9	26	7	1282126.790
2019	9	26	8	1309141.629
2019	9	26	9	1363935.362
2019	9	26	10	1402171.451
2019	9	26	11	1447693.460
2019	9	26	12	1509975.532
2019	9	26	13	1573985.271
2019	9	26	14	1622464.708
2019	9	26	15	1651991.641
2019	9	26	16	1662782.252

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2019	9	26	17	1625152.360
2019	9	26	18	1568357.065
2019	9	26	19	1558519.250
2019	9	26	20	1446216.115
2019	9	26	21	1346118.274
2019	9	26	22	1234060.506
2019	9	26	23	1131180.271
2019	9	27	0	1084821.013
2019	9	27	1	1061610.348
2019	9	27	2	1035215.493
2019	9	27	3	1025332.351
2019	9	27	4	1065512.050
2019	9	27	5	1141421.225
2019	9	27	6	1243174.411
2019	9	27	7	1271476.065
2019	9	27	8	1305127.695
2019	9	27	9	1359603.017
2019	9	27	10	1408379.364
2019	9	27	11	1481422.024
2019	9	27	12	1546084.896
2019	9	27	13	1608193.103
2019	9	27	14	1654029.122
2019	9	27	15	1691704.427
2019	9	27	16	1688477.827
2019	9	27	17	1632729.197
2019	9	27	18	1555335.573
2019	9	27	19	1513915.564
2019	9	27	20	1419021.739
2019	9	27	21	1327141.072
2019	9	27	22	1230107.985
2019	9	27	23	1115136.147
2019	9	28	0	1079200.386
2019	9	28	1	1040940.342
2019	9	28	2	1005770.335
2019	9	28	3	978022.292
2019	9	28	4	965312.501
2019	9	28	5	1009355.190
2019	9	28	6	1036213.664
2019	9	28	7	1058179.432
2019	9	28	8	1104139.888
2019	9	28	9	1170058.219
2019	9	28	10	1250577.204

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2019	9	28	11	1313074.898
2019	9	28	12	1371892.702
2019	9	28	13	1424017.889
2019	9	28	14	1479262.301
2019	9	28	15	1531075.551
2019	9	28	16	1551333.685
2019	9	28	17	1502714.513
2019	9	28	18	1455704.181
2019	9	28	19	1441465.067
2019	9	28	20	1368390.089
2019	9	28	21	1295582.873
2019	9	28	22	1173688.928
2019	9	28	23	1090692.059
2019	9	29	0	1047838.869
2019	9	29	1	1000929.761
2019	9	29	2	966915.843
2019	9	29	3	947218.676
2019	9	29	4	919813.378
2019	9	29	5	958304.798
2019	9	29	6	983079.506
2019	9	29	7	1027161.905
2019	9	29	8	1066425.268
2019	9	29	9	1105039.248
2019	9	29	10	1132171.585
2019	9	29	11	1148415.415
2019	9	29	12	1165723.224
2019	9	29	13	1159781.173
2019	9	29	14	1151609.503
2019	9	29	15	1159427.987
2019	9	29	16	1185909.301
2019	9	29	17	1205968.061
2019	9	29	18	1254840.849
2019	9	29	19	1286682.150
2019	9	29	20	1233152.039
2019	9	29	21	1144789.849
2019	9	29	22	1092265.197
2019	9	29	23	1046079.069
2019	9	30	0	1018978.420
2019	9	30	1	1001868.844
2019	9	30	2	997517.493
2019	9	30	3	1013285.199
2019	9	30	4	1072806.826

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2019	9	30	5	1196830.268
2019	9	30	6	1304831.660
2019	9	30	7	1317329.972
2019	9	30	8	1327175.252
2019	9	30	9	1361838.628
2019	9	30	10	1391053.543
2019	9	30	11	1435144.509
2019	9	30	12	1466101.743
2019	9	30	13	1471156.639
2019	9	30	14	1498169.882
2019	9	30	15	1535781.425
2019	9	30	16	1549884.278
2019	9	30	17	1526138.478
2019	9	30	18	1534322.597
2019	9	30	19	1564935.057
2019	9	30	20	1456760.208
2019	9	30	21	1367719.973
2019	9	30	22	1264378.224
2019	9	30	23	1149491.563
2019	10	1	0	1047239.038
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2019	10	1	2	986011.982
2019	10	1	3	982426.204
2019	10	1	4	1020071.144
2019	10	1	5	1133070.160
2019	10	1	6	1238656.600
2019	10	1	7	1247209.965
2019	10	1	8	1299364.902
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2019	10	1	10	1440315.246
2019	10	1	11	1455869.149
2019	10	1	12	1472435.667
2019	10	1	13	1490221.571
2019	10	1	14	1511857.569
2019	10	1	15	1538157.204
2019	10	1	16	1550171.265
2019	10	1	17	1518795.372
2019	10	1	18	1507069.628
2019	10	1	19	1498822.295
2019	10	1	20	1465580.040
2019	10	1	21	1408569.331
2019	10	1	22	1257015.024

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2019	10	1	23	1136506.778
2019	10	2	0	1089904.457
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2019	10	2	2	1019490.102
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2019	10	2	4	1058756.086
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2019	10	2	6	1318699.835
2019	10	2	7	1342457.080
2019	10	2	8	1381430.445
2019	10	2	9	1443907.129
2019	10	2	10	1465661.435
2019	10	2	11	1491966.021
2019	10	2	12	1559079.384
2019	10	2	13	1576895.168
2019	10	2	14	1566419.129
2019	10	2	15	1546221.413
2019	10	2	16	1514780.117
2019	10	2	17	1500677.770
2019	10	2	18	1523612.465
2019	10	2	19	1528333.857
2019	10	2	20	1486722.870
2019	10	2	21	1452400.760
2019	10	2	22	1345662.553
2019	10	2	23	1241672.547
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2019	10	3	6	1418469.392
2019	10	3	7	1427063.424
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2019	10	3	9	1457679.225
2019	10	3	10	1477439.795
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2019	10	3	12	1585732.876
2019	10	3	13	1627063.045
2019	10	3	14	1652515.580
2019	10	3	15	1670059.606
2019	10	3	16	1662371.012

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2019	10	3	17	1622403.091
2019	10	3	18	1608522.685
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2019	10	4	2	1091903.415
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2019	10	4	4	1112141.355
2019	10	4	5	1232709.865
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2019	10	4	7	1345597.792
2019	10	4	8	1429287.021
2019	10	4	9	1475255.395
2019	10	4	10	1529361.231
2019	10	4	11	1597453.262
2019	10	4	12	1642910.072
2019	10	4	13	1691410.265
2019	10	4	14	1709002.050
2019	10	4	15	1725807.090
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2019	10	4	17	1638570.642
2019	10	4	18	1614922.973
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2019	10	4	20	1503253.746
2019	10	4	21	1463757.021
2019	10	4	22	1389824.444
2019	10	4	23	1291201.614
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2019	10	5	2	1111720.774
2019	10	5	3	1077177.755
2019	10	5	4	1081780.431
2019	10	5	5	1105202.207
2019	10	5	6	1120332.874
2019	10	5	7	1165374.957
2019	10	5	8	1271968.704
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2019	10	5	10	1359923.734

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2019	10	5	11	1367161.333
2019	10	5	12	1368619.840
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2019	10	5	21	1261187.250
2019	10	5	22	1167955.943
2019	10	5	23	1104149.568
2019	10	6	0	1044085.083
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2019	10	6	3	977138.981
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2019	10	6	5	993419.617
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2019	10	6	7	1051010.303
2019	10	6	8	1092787.329
2019	10	6	9	1139143.199
2019	10	6	10	1198183.069
2019	10	6	11	1261029.957
2019	10	6	12	1223502.688
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2019	10	6	14	1144463.940
2019	10	6	15	1132436.002
2019	10	6	16	1120836.781
2019	10	6	17	1126005.135
2019	10	6	18	1144037.073
2019	10	6	19	1160820.709
2019	10	6	20	1108577.722
2019	10	6	21	1053755.202
2019	10	6	22	1002142.986
2019	10	6	23	943621.080
2019	10	7	0	898155.983
2019	10	7	1	876204.925
2019	10	7	2	871958.408
2019	10	7	3	887383.307
2019	10	7	4	944054.206

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2019	10	7	5	1036866.617
2019	10	7	6	1105469.677
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2019	10	7	8	1146760.146
2019	10	7	9	1202798.354
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2019	10	7	11	1243221.874
2019	10	7	12	1253423.766
2019	10	7	13	1248457.626
2019	10	7	14	1242377.226
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2019	10	7	16	1217525.954
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2019	10	7	18	1243825.205
2019	10	7	19	1259629.801
2019	10	7	20	1177175.801
2019	10	7	21	1130519.675
2019	10	7	22	1046747.168
2019	10	7	23	1009814.696
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2019	10	8	1	955923.870
2019	10	8	2	930465.982
2019	10	8	3	923438.018
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2019	10	8	5	1063653.908
2019	10	8	6	1152001.954
2019	10	8	7	1152745.273
2019	10	8	8	1196079.692
2019	10	8	9	1238706.214
2019	10	8	10	1259075.729
2019	10	8	11	1274295.133
2019	10	8	12	1282585.914
2019	10	8	13	1287623.800
2019	10	8	14	1275389.513
2019	10	8	15	1259386.040
2019	10	8	16	1253856.226
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2019	10	8	19	1288631.544
2019	10	8	20	1203613.000
2019	10	8	21	1118950.488
2019	10	8	22	1042496.134

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2019	10	8	23	999886.323
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2019	10	9	1	936702.040
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2019	10	9	6	1153856.138
2019	10	9	7	1157166.426
2019	10	9	8	1167329.576
2019	10	9	9	1225350.136
2019	10	9	10	1249805.867
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2019	10	9	19	1355922.524
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2019	10	9	21	1163118.006
2019	10	9	22	1070418.263
2019	10	9	23	1012574.192
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2019	10	10	1	945258.627
2019	10	10	2	921234.434
2019	10	10	3	909985.748
2019	10	10	4	963435.177
2019	10	10	5	1078384.849
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2019	10	10	7	1145129.523
2019	10	10	8	1183515.057
2019	10	10	9	1248302.852
2019	10	10	10	1284498.793
2019	10	10	11	1312823.582
2019	10	10	12	1349791.373
2019	10	10	13	1370400.540
2019	10	10	14	1390267.533
2019	10	10	15	1409069.655
2019	10	10	16	1390088.345

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2019	10	10	17	1352967.407
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2019	10	10	10	1357515.189
2019	10	10	20	1278814.438
2019	10	10	20	1175859.346
2019	10	10	22	1090575.981
2019	10	10	23	1038492.792
2019	10	11	0	1001398.717
2019	10	11	1	970493.080
2019	10	11	2	951756.325
2019	10	11	3	947550.938
2019	10	11	4	986574.088
2019	10	11	5	1082203.372
2019	10	11	6	1164894.230
2019	10	11	7	1161449.019
2019	10	11	8	1206561.327
2019	10	11	9	1264127.441
2019	10	11	10	1298936.796
2019	10	11	11	1328405.546
2019	10	11	12	1358827.332
2019	10	11	13	1383543.103
2019	10	11	14	1419974.550
2019	10	11	15	1437149.716
2019	10	11	16	1432966.455
2019	10	11	17	1383865.386
2019	10	11	18	1379062.246
2019	10	11	19	1347605.587
2019	10	11	20	1270539.155
2019	10	11	21	1175310.440
2019	10	11	22	1100712.336
2019	10	11	23	1040608.331
2019	10	12	0	1005359.566
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2019	10	12	2	928534.996
2019	10	12	3	902449.518
2019	10	12	4	918383.229
2019	10	12	5	950571.969
2019	10	12	6	989683.482
2019	10	12	7	1005488.952
2019	10	12	8	1043940.239
2019	10	12	9	1082802.507
2019	10	12	10	1114106.997

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2019	10	12	11	1136479.152
2019	10	12	12	1196173.100
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2019	10	12	14	1290629.414
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2019	10	12	16	1293419.052
2019	10	12	17	1259275.569
2019	10	12	18	1283699.012
2019	10	12	19	1283011.146
2019	10	12	20	1226916.850
2019	10	12	21	1132832.941
2019	10	12	22	1056107.668
2019	10	12	23	994752.520
2019	10	13	0	932666.701
2019	10	13	1	906760.188
2019	10	13	2	881680.202
2019	10	13	3	888685.581
2019	10	13	4	892421.541
2019	10	13	5	908521.962
2019	10	13	6	956958.342
2019	10	13	7	979294.968
2019	10	13	8	1023198.474
2019	10	13	9	1070547.148
2019	10	13	10	1122177.267
2019	10	13	11	1181271.419
2019	10	13	12	1222868.600
2019	10	13	13	1266543.773
2019	10	13	14	1288885.527
2019	10	13	15	1330663.149
2019	10	13	16	1349645.800
2019	10	13	17	1323950.955
2019	10	13	18	1364657.125
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2019	10	13	20	1258378.712
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2019	10	13	22	1056983.908
2019	10	13	23	992761.641
2019	10	14	0	954998.829
2019	10	14	1	924967.073
2019	10	14	2	916466.481
2019	10	14	3	933825.065
2019	10	14	4	976284.038

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2019	10	14	5	1084906.697
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2019	10	14	8	1169401.088
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2019	10	14	10	1263384.705
2019	10	14	11	1292169.453
2019	10	14	12	1321020.355
2019	10	14	13	1375290.140
2019	10	14	14	1386352.820
2019	10	14	15	1399639.909
2019	10	14	16	1373120.590
2019	10	14	17	1347493.789
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2019	10	14	19	1404367.851
2019	10	14	20	1301818.105
2019	10	14	21	1192693.241
2019	10	14	22	1101969.131
2019	10	14	23	1041433.981
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2019	10	15	1	995237.962
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2019	10	15	3	963173.189
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2019	10	15	7	1191070.189
2019	10	15	8	1216337.600
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2019	10	15	14	1340204.232
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2019	10	15	19	1396650.769
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2019	10	15	22	1122529.728

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2019	10	15	23	1066974.594
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2019	10	16	4	1043122.383
2019	10	16	5	1154784.207
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2019	10	16	8	1285808.146
2019	10	16	9	1305395.410
2019	10	16	10	1298439.508
2019	10	16	11	1307966.433
2019	10	16	12	1331217.492
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2019	10	16	22	1063439.133
2019	10	16	23	1016525.197
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2019	10	17	4	977944.765
2019	10	17	5	1088746.934
2019	10	17	6	1158979.282
2019	10	17	7	1163026.993
2019	10	17	8	1185006.302
2019	10	17	9	1227586.502
2019	10	17	10	1219843.638
2019	10	17	11	1227894.110
2019	10	17	12	1254500.850
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2019	10	17	15	1217300.914
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-	-		-	

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2019	10	17	17	1206123.965
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2019	10	17	20	1196534.953
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2019	10	17	22	1060546.269
2019	10	17	23	1014686.744
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2019	10	18	1	974152.483
2019	10	18	2	967166.258
2019	10	18	3	965013.872
2019	10	18	4	1016873.422
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2019	10	18	6	1183637.371
2019	10	18	7	1180002.551
2019	10	18	8	1188809.875
2019	10	18	9	1208367.473
2019	10	18	10	1235040.680
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2019	10	18	12	1251451.141
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2019	10	18	16	1181949.100
2019	10	18	17	1158591.167
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2019	10	18	20	1160387.639
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2019	10	18	22	1058528.647
2019	10	18	23	1013942.485
2019	10	19	0	966456.158
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2019	10	19	2	912492.823
2019	10	19	3	900644.826
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2019	10	19	5	937891.574
2019	10	19	6	998533.126
2019	10	19	7	1028103.520
2019	10	19	8	1054113.148
2019	10	19	9	1106658.413
2019	10	19	10	1113403.491

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2019	10	19	11	1105630.797
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2019	10	19	16	1060958.805
2019	10	19	17	1062760.070
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2019	10	19	19	1140507.583
2019	10	19	20	1113246.447
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2019	10	19	22	1024788.730
2019	10	19	23	980847.980
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2019	10	20	1	926086.053
2019	10	20	2	865556.546
2019	10	20	3	984311.142
2019	10	20	4	933189.160
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2019	10	20	8	1049271.990
2019	10	20	9	1068689.527
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2019	10	20	11	1065076.338
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2019	10	20	13	1044904.117
2019	10	20	14	1033836.283
2019	10	20	15	1042633.839
2019	10	20	16	1050669.227
2019	10	20	17	1078567.283
2019	10	20	18	1156696.154
2019	10	20	19	1169683.386
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2019	10	20	21	1075078.656
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2019	10	21	0	949670.239
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2019	10	21	2	941169.723
2019	10	21	3	968430.036
2019	10	21	4	1024705.904

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2019	10	21	5	1137303.487
2019	10	21	6	1241722.162
2019	10	21	7	1245850.576
2019	10	21	8	1241740.467
2019	10	21	9	1256869.729
2019	10	21	10	1248784.262
2019	10	21	11	1250143.636
2019	10	21	12	1262944.628
2019	10	21	13	1262056.542
2019	10	21	14	1242756.962
2019	10	21	15	1221771.489
2019	10	21	16	1223094.137
2019	10	21	17	1257015.776
2019	10	21	18	1321174.095
2019	10	21	19	1308960.322
2019	10	21	20	1239320.854
2019	10	21	21	1145104.264
2019	10	21	22	1081147.860
2019	10	21	23	1026181.897
2019	10	22	0	1007594.019
2019	10	22	1	992884.629
2019	10	22	2	975970.222
2019	10	22	3	983735.215
2019	10	22	4	1036128.879
2019	10	22	5	1153448.556
2019	10	22	6	1249155.264
2019	10	22	7	1227971.275
2019	10	22	8	1236582.573
2019	10	22	9	1215662.622
2019	10	22	10	1238965.132
2019	10	22	11	1231214.914
2019	10	22	12	1240735.623
2019	10	22	13	1234203.237
2019	10	22	14	1200263.109
2019	10	22	15	1182465.600
2019	10	22	16	1172085.534
2019	10	22	17	1213620.397
2019	10	22	18	1307897.276
2019	10	22	19	1281855.682
2019	10	22	20	1221604.997
2019	10	22	21	1131947.772
2019	10	22	22	1071721.632

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2019	10	22	23	1028528.945
2019	10	23	0	1011628.698
2019	10	23	1	990855.076
2019	10	23	2	978179.794
2019	10	23	3	988474.224
2019	10	23	4	1033121.709
2019	10	23	5	1150723.167
2019	10	23	6	1252428.393
2019	10	23	7	1271420.813
2019	10	23	8	1285137.321
2019	10	23	9	1300549.794
2019	10	23	10	1285839.878
2019	10	23	11	1293639.741
2019	10	23	12	1312434.731
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2019	10	23	14	1277312.405
2019	10	23	15	1260589.241
2019	10	23	16	1259434.459
2019	10	23	17	1294348.198
2019	10	23	18	1381388.330
2019	10	23	19	1365950.951
2019	10	23	20	1304645.182
2019	10	23	21	1228092.305
2019	10	23	22	1124756.519
2019	10	23	23	1088843.003
2019	10	24	0	1048117.809
2019	10	24	1	1038565.074
2019	10	24	2	1026831.814
2019	10	24	3	1031255.158
2019	10	24	4	1085772.491
2019	10	24	5	1201838.174
2019	10	24	6	1294781.875
2019	10	24	7	1296507.904
2019	10	24	8	1297826.427
2019	10	24	9	1312381.810
2019	10	24	10	1309923.480
2019	10	24	11	1311260.705
2019	10	24	12	1323023.275
2019	10	24	13	1319288.027
2019	10	24	14	1336394.872
2019	10	24	15	1310981.173
2019	10	24	16	1317963.447

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2010	10	24	47	4250740.000
2019	10	24	17	1358740.990
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2019	10	24	19	1424180.032
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2019	10	24	21	1271478.604
2019	10	24	22	1189056.737
2019	10	24	23	1135096.037
2019	10	25	0	1109916.693
2019	10	25	1	1096737.521
2019	10	25	2	1095879.686
2019	10	25	3	1108807.279
2019	10	25	4	1178012.203
2019	10	25	5	1321336.015
2019	10	25	6	1411658.457
2019	10	25	7	1397847.302
2019	10	25	8	1374402.382
2019	10	25	9	1354807.991
2019	10	25	10	1314548.028
2019	10	25	11	1287763.571
2019	10	25	12	1267750.936
2019	10	25	13	1242983.463
2019	10	25	14	1213262.821
2019	10	25	15	1180274.561
2019	10	25	16	1156446.768
2019	10	25	17	1173882.455
2019	10	25	18	1274828.908
2019	10	25	19	1286280.700
2019	10	25	20	1256022.782
2019	10	25	21	1187385.842
2019	10	25	22	1136918.505
2019	10	25	23	1095038.624
2019	10	26	0	1079949.327
2019	10	26	1	1065460.443
2019	10	26	2	1055111.904
2019	10	26	3	1052465.674
2019	10	26	4	1073692.205
2019	10	26	5	1113755.752
2019	10	26	6	1166312.701
2019	10	26	7	1192654.066
2019	10	26	8	1215015.279
2019	10	26	9	1235630.677
2019	10	26	10	1247145.585
-010	10		10	12171101000

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2019	10	26	11	1218936.884
2019	10	26	12	1173182.834
2019	10	26	13	1126022.589
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2019	10	26	17	1101449.794
2019	10	26	18	1161853.418
2019	10	26	19	1163391.929
2019	10	26	20	1125607.149
2019	10	26	21	1087400.569
2019	10	26	22	1033122.096
2019	10	26	23	998020.744
2019	10	27	0	970945.270
2019	10	27	1	956404.285
2019	10	27	2	948400.826
2019	10	27	3	975437.481
2019	10	27	4	1010557.562
2019	10	27	5	1029085.021
2019	10	27	6	1079072.504
2019	10	27	7	1103903.941
2019	10	27	8	1116108.462
2019	10	27	9	1109822.661
2019	10	27	10	1107907.665
2019	10	27	11	1101760.854
2019	10	27	12	1102365.455
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2019	10	27	17	1099698.106
2019	10	27	18	1177436.509
2019	10	27	19	1191209.167
2019	10	27	20	1143370.909
2019	10	27	21	1083539.914
2019	10	27	22	1034013.704
2019	10	27	23	1002668.237
2019	10	28	0	974652.046
2019	10	28	1	967966.583
2019	10	28	2	969438.939
2019	10	28	3	1000351.804
2019	10	28	4	1053763.461

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2019	10	28	5	1197451.325
2019	10	28	6	1268075.093
2019	10	28	7	1276094.571
2019	10	28	8	1284423.397
2019	10	28	9	1293699.046
2019	10	28	10	1265477.111
2019	10	28	10	1247790.840
2019	10	28	12	1246020.797
2019	10	28	13	1231570.364
2019	10	28	14	1206514.960
2019	10	28	15	1194731.271
2019	10	28	16	1187745.028
2019	10	28	17	1208929.315
2019	10	28	18	1297142.287
2019	10	28	19	1283555.885
2019	10	28	20	1210947.893
2019	10	28	21	1135818.256
2019	10	28	22	1067653.245
2019	10	28	23	1030901.712
2019	10	29	0	1015823.590
2019	10	29	1	1003951.900
2019	10	29	2	995928.720
2019	10	29	3	1004406.964
2019	10	29	4	1051972.695
2019	10	29	5	1179199.801
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2019	10	29	7	1266704.418
2019	10	29	8	1274427.515
2019	10	29	9	1271385.203
2019	10	29	10	1287022.130
2019	10	29	11	1272403.094
2019	10	29	12	1280914.974
2019	10	29	13	1278856.366
2019	10	29	14	1262702.483
2019	10	29	15	1250822.668
2019	10	29	16	1252900.247
2019	10	29	17	1289000.159
2019	10	29	18	1327541.570
2019	10	29	19	1311780.262
2019	10	29	20	1235276.477
2019	10	29	21	1152162.272
2019	10	29	22	1067956.239

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2019	10	29	23	1022767.592
2019	10	30	0	997157.663
2019	10	30	1	987608.829
2019	10	30	2	971477.063
2019	10	30	3	964140.536
2019	10	30	4	1018296.098
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2019	10	30	6	1214133.993
2019	10	30	7	1235851.942
2019	10	30	8	1261546.576
2019	10	30	9	1270788.109
2019	10	30	10	1280756.782
2019	10	30	11	1290462.240
2019	10	30	12	1308346.120
2019	10	30	13	1302393.132
2019	10	30	14	1283565.399
2019	10	30	15	1267413.410
2019	10	30	16	1245702.345
2019	10	30	17	1273850.833
2019	10	30	18	1349543.942
2019	10	30	19	1323638.214
2019	10	30	20	1256611.974
2019	10	30	21	1171940.505
2019	10	30	22	1091606.552
2019	10	30	23	1039782.052
2019	10	31	0	1008081.225
2019	10	31	1	982278.665
2019	10	31	2	952718.726
2019	10	31	3	958812.628
2019	10	31	4	1008512.006
2019	10	31	5	1114933.705
2019	10	31	6	1199056.633
2019	10	31	7	1229666.775
2019	10	31	8	1246540.953
2019	10	31	9	1261417.053
2019	10	31	10	1276149.927
2019	10	31	11	1268928.187
2019	10	31	12	1290175.330
2019	10	31	13	1296282.416
2019	10	31	14	1277865.804
2019	10	31	15	1265921.514
2019	10	31	16	1261127.072

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2010	10	24	47	1205102 721
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2019	10	31	18	1332862.539
2019	10	31	19	1305236.297
2019	10	31	20	1257932.764
2019	10	31	21	1171241.322
2019	10	31	22	1076580.361
2019	10	31	23	1010715.422
2019	11	1	0	1044441.007
2019	11	1	1	1019257.129
2019	11	1	2	1010274.923
2019	11	1	3	1005583.781
2019	11	1	4	1049455.422
2019	11	1	5	1155523.282
2019	11	1	6	1214920.230
2019	11	1	7	1217617.572
2019	11	1	8	1218712.354
2019	11	1	9	1241407.541
2019	11	1	10	1251943.912
2019	11	1	11	1250070.279
2019	11	1	12	1288568.329
2019	11	1	13	1278977.938
2019	11	1	14	1265256.378
2019	11	1	15	1244546.330
2019	11	1	16	1216566.952
2019	11	1	17	1227918.716
2019	11	1	18	1261671.316
2019	11	1	19	1248492.258
2019	11	1	20	1208912.761
2019	11	1	21	1157875.512
2019	11	1	22	1108368.500
2019	11	1	23	1059034.425
2019	11	2	0	1028057.957
2019	11	2	1	1007260.611
2019	11	2	2	986588.334
2019	11	2	3	956020.252
2019	11	2	4	994724.648
2019	11	2	5	1033008.258
2019	11	2	6	1078467.987
2019	11	2	7	1097987.121
2019	11	2	8	1124463.035
2019	11	2	9	1152710.492
2019	11	2	10	1143082.965
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2019	11	2	11	1130714.317
2019	11	2	12	1127984.362
2019	11	2	13	1108431.844
2019	11	2	14	1112566.307
2019	11	2	15	1094990.740
2019	11	2	16	1104477.754
2019	11	2	17	1153320.383
2019	11	2	18	1193453.842
2019	11	2	19	1179171.711
2019	11	2	20	1160925.717
2019	11	2	21	1124640.958
2019	11	2	22	1075686.485
2019	11	2	23	1026447.865
2019	11	3	0	1003229.798
2019	11	3	1	990605.311
2019	11	3	2	976813.306
2019	11	3	3	980488.139
2019	11	3	4	1000240.974
2019	11	3	5	1031872.955
2019	11	3	6	1062293.134
2019	11	3	7	1083969.953
2019	11	3	8	1121604.470
2019	11	3	9	1143833.817
2019	11	3	10	1126535.092
2019	11	3	11	1135899.128
2019	11	3	12	1128395.223
2019	11	3	13	1112531.509
2019	11	3	14	1101424.855
2019	11	3	15	1106725.840
2019	11	3	16	1128539.361
2019	11	3	17	1170409.519
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2019	11	3	19	1287396.053
2019	11	3	20	1250062.257
2019	11	3	21	1194669.011
2019	11	3	22	1151970.252
2019	11	3	23	1085275.096
2019	11	4	0	1061903.601
2019	11	4	1	1038564.717
2019	11	4	2	1024783.403
2019	11	4	3	1035550.224
2019	11	4	4	1071889.792

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2019	11	4	5	1127598.768
2019	11	4	6	1230931.729
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2019	11	4	8	1318026.825
2019	11	4	9	1309354.221
2019	11	4	10	1327788.586
2019	11	4	11	1343786.689
2019	11	4	12	1334096.503
2019	11	4	13	1326202.891
2019	11	4	14	1306168.269
2019	11	4	15	1291869.801
2019	11	4	16	1320896.343
2019	11	4	17	1389260.686
2019	11	4	18	1426061.120
2019	11	4	19	1422610.492
2019	11	4	20	1389025.837
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2019	11	4	22	1219351.924
2019	11	4	23	1132013.991
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2019	11	5	1	1071123.790
2019	11	5	2	1060363.779
2019	11	5	3	1047138.246
2019	11	5	4	1054703.359
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2019	11	5	8	1280670.785
2019	11	5	9	1299938.992
2019	11	5	10	1313307.473
2019	11	5	11	1316027.111
2019	11	5	12	1335580.906
2019	11	5	13	1345237.421
2019	11	5	14	1332946.735
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2019	11	5	17	1324045.732
2019	11	5	18	1406424.555
2019	11	5	19	1393184.648
2019	 11	5	20	1363304.436
2019	11	5	21	1276008.239
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		-		

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2019	11	5	23	1137822.103
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2019	11	6	2	1074013.444
2019	11	6	3	1056431.428
2019	11	6	4	1063802.169
2019	11	6	5	1118836.864
2019	11	6	6	1213762.291
2019	11	6	7	1292963.115
2019	11	6	8	1303843.927
2019	11	6	9	1298622.170
2019	11	6	10	1318308.852
2019	11	6	11	1336974.482
2019	11	6	12	1366266.767
2019	11	6	13	1382654.627
2019	11	6	14	1370437.349
2019	11	6	15	1358022.888
2019	11	6	16	1372381.632
2019	11	6	17	1412660.128
2019	11	6	18	1420000.281
2019	11	6	19	1403907.173
2019	11	6	20	1369087.513
2019	11	6	21	1266124.445
2019	11	6	22	1190109.390
2019	11	6	23	1122902.843
2019	11	7	0	1087863.539
2019	11	7	1	1070470.401
2019	11	7	2	1050675.432
2019	11	7	3	1039461.130
2019	11	7	4	1057451.889
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2019	11	7	6	1241504.934
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2019	11	7	9	1326263.394
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2019	11	7	13	1322423.805
2019	11	7	14	1328205.722
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2019	11	7	16	1282095.555

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2019	11	7	17	1324873.885
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2019	11	7	23	1221927.392
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2019	11	9	0	1155378.358
2019	11	9	1	1131302.032
2019	11	9	2	1116773.063
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2019	11	9	7	1163512.949
2019	11	9	8	1195951.906
2019	11	9	9	1199873.007
2019	11	9	10	1187822.779

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2019	11	9	11	1174371.795
2019	11	9	12	1157923.084
2019	11	9	13	1132185.120
2019	11	9	14	1116278.038
2019	11	9	15	1108799.222
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2019	11	9	17	1158363.693
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2019	11	9	19	1217732.727
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2019	11	9	23	1069739.871
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2019	11	10	2	984401.060
2019	11	10	3	967192.219
2019	11	10	4	973128.500
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2019	11	10	7	1051461.742
2019	11	10	8	1087707.018
2019	11	10	9	1109963.723
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2019	11	10	13	1116602.109
2019	11	10	14	1113548.985
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2019	11	10	16	1115112.713
2019	11	10	17	1180886.258
2019	11	10	18	1277709.970
2019	11	10	19	1288708.839
2019	11	10	20	1263803.462
2019	11	10	21	1224283.189
2019	11	10	22	1168314.425
2019	11	10	23	1126259.873
2019	11	11	0	1086817.399
2019	11	11	1	1074957.413
2019	11	11	2	1067504.829
2019	11	11	3	1077013.537
2019	11	11	4	1096685.611

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2019	11	11	5	1167012.579
2019	11	11	6	1263978.362
2019	11	11	7	1361542.148
2019	11	11	8	1370986.644
2019	11	11	9	1379459.935
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2019	11	12	11	1426021.925
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2019	11	12	14	1423163.632
2019	11	12	15	1405615.009
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2019	11	12	17	1459443.553
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2019	11	12	22	1420539.631

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2019	11	12	23	1355983.468
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2019	11	13	8	1484897.069
2019	11	13	9	1468370.121
2019	11	13	10	1434859.312
2019	11	13	11	1465288.698
2019	11	13	12	1415661.702
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2019	11	13	17	1447045.332
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2019	11	14	8	1452042.755
2019	11	14	9	1441245.060
2019	11	14	10	1421701.480
2019	11	14	11	1405731.409
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2019	11	14	13	1390672.720
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2019	11	14	16	1338196.151

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2019	11	14	17	1397432.442
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2019	11	15	8	1386296.458
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2019	11	16	10	1236933.230

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2019	11	16	11	1235758.569
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2019	11	17	10	1157290.293
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2019	11	17	22	1140703.290
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2019	11	18	3	1014682.697
2019	11	18	4	1048316.218

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2019	11	18	5	1107432.218
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2019	11	18	15	1341469.681
2019	11	18	16	1345942.278
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2019	11	19	22	1413281.924

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2019	11	19	23	1341843.189
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2019	11	21	9	1380074.116
2019	11	21	10	1367494.697
2019	11	21	11	1349511.055
2019	11	21	12	1351190.779
2019	11	21	13	1347710.820
2019	11	21	14	1329182.014
2019	11	21	15	1307869.458
2019	11	21	16	1319101.391

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2019	11	21	17	1391210.638
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2019	11	22	22	1264311.849
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2019	11	23	3	1103893.309
2019	11	23	4	1092852.801
2019	11	23	5	1121167.245
2019	11	23	6	1166492.954
2019	11	23	7	1212531.638
2019	11	23	8	1264678.726
2019	11	23	9	1308308.246
2019	11	23	10	1324406.258

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2019	11	23	11	1289034.448
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2019	11	23	14	1197064.570
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2019	11	23	16	1235824.394
2019	11	23	17	1359961.988
2019	11	23	18	1428985.683
2019	11	23	19	1438499.354
2019	11	23	20	1428415.926
2019	11	23	21	1406639.673
2019	11	23	22	1360328.749
2019	11	23	23	1289587.530
2019	11	24	0	1224719.676
2019	11	24	1	1188753.748
2019	11	24	2	1175075.886
2019	11	24	3	1170480.434
2019	11	24	4	1182753.625
2019	11	24	5	1205322.225
2019	11	24	6	1243550.264
2019	11	24	7	1306211.973
2019	11	24	8	1338918.741
2019	11	24	9	1378278.349
2019	11	24	10	1363095.338
2019	11	24	11	1380860.888
2019	11	24	12	1364404.102
2019	11	24	13	1335278.802
2019	11	24	14	1321647.109
2019	11	24	15	1334263.493
2019	11	24	16	1355125.538
2019	11	24	17	1450243.813
2019	11	24	18	1520812.411
2019	11	24	19	1507660.486
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2019	11	24	21	1462900.670
2019	11	24	22	1421099.967
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2019	11	25	1	1261913.110
2019	11	25	2	1247153.646
2019	11	25	3	1244730.600
2019	11	25	4	1285334.920

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2019	11	25	5	1367456.230
2019	11	25	6	1456230.154
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2019	11	25	8	1521456.457
2019	11	25	9	1527128.013
2019	11	25	10	1491908.936
2019	11	25	11	1480602.505
2019	11	25	12	1486479.945
2019	11	25	13	1492963.314
2019	11	25	14	1480150.019
2019	11	25	15	1471147.579
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2019	11	25	17	1553503.063
2019	11	25	18	1574440.996
2019	11	25	19	1566252.381
2019	11	25	20	1533324.164
2019	11	25	21	1479449.871
2019	11	25	22	1419409.055
2019	11	25	23	1354355.550
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2019	11	26	1	1233327.606
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2019	11	26	4	1219918.486
2019	11	26	5	1284487.234
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2019	11	26	8	1465418.789
2019	11	26	9	1475825.215
2019	11	26	10	1496551.341
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2019	11	26	15	1502239.614
2019	11	26	16	1504543.423
2019	11	26	17	1571060.054
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2019	11	26	22	1443166.270

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2019	11	26	23	1382938.436
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2019	11	27	7	1460817.796
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2019	11	27	9	1563167.701
2019	11	27	10	1591384.551
2019	11	27	11	1558243.261
2019	11	27	12	1555288.618
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2019	11	27	18	1634640.146
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2019	11	28	16	1148997.506

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2019	11	28	17	1191224.418
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2019	11	30	10	1308657.712

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2019	11	30	11	1261807.448
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2019	12	1	23	1110907.303
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2019	12	2	4	1067825.654

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2019	12	2	5	1136437.312
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2019	12	2	10	1292715.426
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2019	12	2	12	1240807.169
2019	12	2	13	1245115.715
2019	12	2	14	1224462.073
2019	12	2	15	1232452.571
2019	12	2	16	1246733.184
2019	12	2	17	1350658.182
2019	12	2	18	1400898.782
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		_		
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2019	12	10	22	1500734.891

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2019	12	10	23	1438291.643
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2019	12	12	12	1523150.956
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2019	12	12	16	1483251.650

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2019	12	12	17	1571054.041
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2019	12	14	9	1385232.471
2019	12	14	10	1404322.157

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2019	12	15	14	1418697.980
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2019	12	16	4	1253159.997

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2019	12	17	22	1462008.875

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2019	12	21	11	1215473.817
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2019	12	24	4	1206713.188
2019	12	24	5	1236096.715
2019	12	24	6	1291762.590
2019	12	24	7	1352912.829
2019	12	24	8	1390133.650
2019	12	24	9	1423154.378
2019	12	24	10	1424448.254
2019	12	24	11	1406592.556
2019	12	24	12	1384949.693
2019	12	24	13	1359938.007
2019	12	24	14	1331992.293
2019	12	24	15	1299096.052
2019	12	24	16	1291478.191
2019	12	24	17	1366545.392
2019	12	24	18	1413166.065
2019	12	24	19	1407255.133
2019	12	24	20	1402338.524
2019	12	24	21	1402837.629
2019	12	24	22	1352410.981

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2019	12	24	23	1295164.600
2019	12	25	0	1239264.758
2019	12	25	1	1198842.615
2019	12	25	2	1167156.994
2019	12	25	3	1157913.774
2019	12	25	4	1171531.681
2019	12	25	5	1199333.642
2019	12	25	6	1224268.222
2019	12	25	7	1277548.868
2019	12	25	8	1290134.990
2019	12	25	9	1300946.664
2019	12	25	10	1315313.215
2019	12	25	11	1279575.676
2019	12	25	12	1213986.125
2019	12	25	13	1154056.974
2019	12	25	14	1128585.475
2019	12	25	15	1116847.125
2019	12	25	16	1130543.717
2019	12	25	17	1183450.466
2019	12	25	18	1222818.535
2019	12	25	19	1226715.431
2019	12	25	20	1227637.943
2019	12	25	21	1223980.385
2019	12	25	22	1189294.876
2019	12	25	23	1138911.658
2019	12	26	0	1099904.226
2019	12	26	1	1078093.906
2019	12	26	2	1060637.700
2019	12	26	3	1054466.331
2019	12	26	4	1085801.510
2019	12	26	5	1117845.004
2019	12	26	6	1177312.766
2019	12	26	7	1264783.974
2019	12	26	8	1283120.984
2019	12	26	9	1311699.332
2019	12	26	10	1328591.021
2019	12	26	11	1305829.739
2019	12	26	12	1299877.773
2019	12	26	13	1281838.225
2019	12	26	14	1254148.044
2019	12	26	15	1219539.446
2019	12	26	16	1231182.379

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2019	12	26	17	1322934.859
2019	12	26	18	1403462.841
2019	12	26	19	1394618.550
2019	12	26	20	1391718.839
2019	12	26	21	1380246.722
2019	12	26	22	1327638.735
2019	12	26	23	1258608.487
2019	12	27	0	1196160.786
2019	12	27	1	1164107.505
2019	12	27	2	1159942.235
2019	12	27	3	1160650.812
2019	12	27	4	1162679.347
2019	12	27	5	1210383.363
2019	12	27	6	1274886.593
2019	12	27	7	1361467.752
2019	12	27	8	1369728.094
2019	12	27	9	1363835.591
2019	12	27	10	1344290.194
2019	12	27	11	1309564.210
2019	12	27	12	1285647.335
2019	12	27	13	1248762.761
2019	12	27	14	1201555.132
2019	12	27	15	1165052.807
2019	12	27	16	1150479.932
2019	12	27	17	1233834.896
2019	12	27	18	1336187.487
2019	12	27	19	1326183.985
2019	12	27	20	1318626.700
2019	12	27	21	1302224.742
2019	12	27	22	1256853.018
2019	12	27	23	1196793.021
2019	12	28	0	1146689.223
2019	12	28	1	1142180.710
2019	12	28	2	1115737.353
2019	12	28	3	1106211.178
2019	12	28	4	1111972.119
2019	12	28	5	1124535.330
2019	12	28	6	1156586.537
2019	12	28	7	1212331.378
2019	12	28	8	1222644.635
2019	12	28	9	1247276.763
2019	12	28	10	1262172.310

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2019	12	28	11	1233270.763
2019	12	28	12	1212879.052
2019	12	28	13	1192247.734
2019	12	28	14	1183474.481
2019	12	28	15	1170190.730
2019	12	28	16	1162429.153
2019	12	28	17	1224490.612
2019	12	28	18	1269346.214
2019	12	28	19	1264989.071
2019	12	28	20	1255250.676
2019	12	28	21	1226163.069
2019	12	28	22	1175222.449
2019	12	28	23	1111532.191
2019	12	29	0	1074559.363
2019	12	29	1	1040722.485
2019	12	29	2	1012842.238
2019	12	29	3	1000358.415
2019	12	29	4	1005496.017
2019	12	29	5	1042575.754
2019	12	29	6	1073458.873
2019	12	29	7	1105142.019
2019	12	29	8	1121416.393
2019	12	29	9	1148952.730
2019	12	29	10	1185392.607
2019	12	29	11	1182057.806
2019	12	29	12	1158864.221
2019	12	29	13	1142363.107
2019	12	29	14	1123910.035
2019	12	29	15	1133687.768
2019	12	29	16	1170382.745
2019	12	29	17	1262607.114
2019	12	29	18	1324578.665
2019	12	29	19	1341282.263
2019	12	29	20	1308085.411
2019	12	29	21	1275995.470
2019	12	29	22	1244616.672
2019	12	29	23	1178882.512
2019	12	30	0	1125674.392
2019	12	30	1	1101898.771
2019	12	30	2	1091062.588
2019	12	30	3	1095195.367
2019	12	30	4	1119237.119

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2019	12	30	5	1175296.287
2019	12	30	6	1282658.957
2019	12	30	7	1366031.374
2019	12	30	8	1403699.894
2019	12	30	9	1417136.810
2019	12	30	10	1442879.241
2019	12	30	11	1437531.956
2019	12	30	12	1448045.483
2019	12	30	13	1432244.568
2019	12	30	14	1402289.249
2019	12	30	15	1370889.360
2019	12	30	16	1360067.189
2019	12	30	17	1434252.015
2019	12	30	18	1494863.277
2019	12	30	19	1486255.338
2019	12	30	20	1483144.811
2019	12	30	21	1444820.491
2019	12	30	22	1389808.979
2019	12	30	23	1336523.762
2019	12	31	0	1261437.972
2019	12	31	1	1220165.300
2019	12	31	2	1205244.788
2019	12	31	3	1193213.892
2019	12	31	4	1202271.823
2019	12	31	5	1235238.676
2019	12	31	6	1314216.926
2019	12	31	7	1379810.252
2019	12	31	8	1392966.331
2019	12	31	9	1391955.524
2019	12	31	10	1381085.883
2019	12	31	11	1358728.535
2019	12	31	12	1346958.203
2019	12	31	13	1323944.927
2019	12	31	14	1273568.505
2019	12	31	15	1259282.569
2019	12	31	16	1242528.711
2019	12	31	17	1322371.834
2019	12	31	18	1398285.644
2019	12	31	19	1375803.922
2019	12	31	20	1344719.099
2019	12	31	21	1300041.015
2019	12	31	22	1221117.413

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2019	12	31	23	1176451.158
2020	1	1	0	1152085.026
2020	1	1	1	1124179.062
2020	1	1	2	1078761.621
2020	1	1	3	1047668.822
2020	1	1	4	1051041.151
2020	1	1	5	1086927.840
2020	1	1	6	1113817.633
2020	1	1	7	1150504.900
2020	1	1	8	1139939.458
2020	1	1	9	1138145.617
2020	1	1	10	1147374.039
2020	1	1	11	1140599.893
2020	-	-	12	1126097.180
2020	1	1	13	1096806.264
2020	1	1	14	1060094.687
2020	1	1	15	1067455.401
2020	- 1	- 1	16	1116998.292
2020	-	-	17	1177656.202
2020	1	1	18	1254044.543
2020	1	1	19	1250393.784
2020	1	1	20	1251562.004
2020	1	1	21	1226931.019
2020	1	1	22	1181101.701
2020	1	1	23	1138375.849
2020	1	2	0	1080570.130
2020	1	2	1	1024089.690
2020	1	2	2	996116.143
2020	1	2	3	991016.888
2020	1	2	4	1032649.832
2020	1	2	5	1131710.369
2020	1	2	6	1189644.454
2020	1	2	7	1267906.888
2020	1	2	8	1308674.857
2020	1	2	9	1331934.511
2020	1	2	10	1381211.856
2020	1	2	11	1407472.855
2020	1	2	12	1443296.388
2020	1	2	13	1465859.098
2020	1	2	14	1471607.911
2020	1	2	15	1485390.126
2020	1	2	16	1488318.050

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2020	1	2	17	1536806.527
2020	1	2	18	1583942.473
2020	1	2	19	1581792.267
2020	1	2	20	1569145.475
2020	1	2	21	1535788.259
2020	1	2	22	1476939.434
2020	1	2	23	1437572.778
2020	1	3	0	1399730.904
2020	1	3	1	1383340.837
2020	1	3	2	1371697.694
2020	1	3	3	1371102.923
2020	1	3	4	1388030.012
2020	1	3	5	1410202.213
2020	1	3	6	1457429.602
2020	1	3	7	1531894.155
2020	1	3	8	1546495.866
2020	1	3	9	1533790.058
2020	1	3	10	1518343.433
2020	1	3	11	1488742.362
2020	1	3	12	1476820.858
2020	1	3	13	1461378.556
2020	1	3	14	1435838.337
2020	1	3	15	1413388.633
2020	1	3	16	1403895.280
2020	1	3	17	1455482.730
2020	1	3	18	1530985.919
2020	1	3	19	1530065.646
2020	1	3	20	1507769.015
2020	1	3	21	1484067.022
2020	1	3	22	1456508.715
2020	1	3	23	1417981.754
2020	1	4	0	1379448.347
2020	1	4	1	1353737.496
2020	1	4	2	1319724.934
2020	1	4	3	1296392.620
2020	1	4	4	1298061.281
2020	1	4	5	1305365.477
2020	1	4	6	1338506.513
2020	1	4	7	1376450.324
2020	1	4	8	1369460.636
2020	1	4	9	1383623.292
2020	1	4	10	1380939.496

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2020	1	4	11	1348084.903
2020	1	4	12	1313687.556
2020	1	4	13	1263613.847
2020	1	4	14	1243354.368
2020	1	4	15	1231001.748
2020	1	4	16	1224573.139
2020	1	4	17	1274707.751
2020	1	4	18	1366674.310
2020	1	4	19	1365803.751
2020	1	4	20	1355664.823
2020	1	4	21	1322113.925
2020	1	4	22	1267515.683
2020	1	4	23	1207424.002
2020	1	5	0	1160102.816
2020	1	5	1	1115455.466
2020	1	5	2	1085789.517
2020	1	5	3	1038473.844
2020	1	5	4	1030182.392
2020	1	5	5	1055186.174
2020	1	5	6	1125627.713
2020	1	5	7	1157331.307
2020	1	5	8	1182431.733
2020	1	5	9	1198969.828
2020	1	5	10	1217134.367
2020	1	5	11	1226608.348
2020	1	5	12	1213593.380
2020	1	5	13	1205261.456
2020	1	5	14	1215675.437
2020	1	5	15	1236077.401
2020	1	5	16	1264471.231
2020	1	5	17	1332077.518
2020	1	5	18	1353612.840
2020	1	5	19	1346321.730
2020	1	5	20	1358109.221
2020	1	5	21	1342606.163
2020	1	5	22	1330862.323
2020	1	5	23	1321547.344
2020	1	6	0	1301654.016
2020	1	6	1	1312780.559
2020	1	6	2	1312937.609
2020	1	6	3	1339688.693
2020	1	6	4	1395210.912

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2020	1	6	5	1440002.362
2020	1	6	6	1525220.999
2020	1	6	7	1600208.376
2020	1	6	8	1626897.641
2020	1	6	9	1655657.712
2020	1	6	10	1668150.368
2020	1	6	11	1695507.176
2020	1	6	12	1756960.525
2020	1	6	13	1750568.615
2020	1	6	14	1729174.661
2020	1	6	15	1710063.975
2020	1	6	16	1742988.726
2020	1	6	17	1779119.072
2020	1	6	18	1816534.068
2020	1	6	19	1794680.106
2020	1	6	20	1808082.506
2020	1	6	21	1784419.526
2020	1	6	22	1717692.486
2020	1	6	23	1642584.549
2020	1	7	0	1594287.503
2020	1	7	1	1566198.969
2020	1	7	2	1556489.113
2020	1	7	3	1554936.285
2020	1	7	4	1563008.536
2020	1	7	5	1576045.281
2020	1	7	6	1648144.654
2020	1	7	7	1734884.184
2020	1	7	8	1764080.095
2020	1	7	9	1737272.801
2020	1	7	10	1705855.937
2020	1	7	11	1680065.122
2020	1	7	12	1657217.684
2020	1	7	13	1644160.622
2020	1	7	14	1609005.625
2020	1	7	15	1569957.612
2020	1	7	16	1574054.876
2020	1	7	17	1620944.278
2020	1	7	18	1699635.465
2020	1	7	19	1702909.244
2020	1	7	20	1672195.420
2020	1	7	21	1633601.914
2020	1	7	22	1568476.949

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2020	1	7	23	1505849.267
2020	1	8	0	1468538.911
2020	1	8	1	1449471.189
2020	1	8	2	1446329.792
2020	1	8	3	1429406.857
2020	1	8	4	1426951.455
2020	1	8	5	1452018.992
2020	1	8	6	1519455.100
2020	1	8	7	1563698.850
2020	1	8	8	1552586.594
2020	1	8	9	1539892.288
2020	1	8	10	1522529.572
2020	1	8	11	1523214.178
2020	1	8	12	1489479.450
2020	1	8	13	1482185.843
2020	1	8	14	1462592.220
2020	1	8	15	1449928.575
2020	1	8	16	1440848.471
2020	1	8	17	1465309.132
2020	1	8	18	1522997.051
2020	1	8	19	1513538.094
2020	1	8	20	1498724.464
2020	1	8	21	1456108.955
2020	1	8	22	1397977.701
2020	1	8	23	1336555.295
2020	1	9	0	1266062.287
2020	1	9	1	1248740.734
2020	1	9	2	1240618.465
2020	1	9	3	1236907.020
2020	1	9	4	1233831.506
2020	1	9	5	1283531.745
2020	1	9	6	1380920.921
2020	1	9	7	1433195.835
2020	1	9	8	1428433.884
2020	1	9	9	1435516.468
2020	1	9	10	1433435.697
2020	1	9	11	1414525.825
2020	1	9	12	1427765.575
2020	1	9	13	1411433.829
2020	1	9	14	1400206.929
2020	1	9	15	1396320.717
2020	1	9	16	1401314.190

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2020	1	9	17	1432717.966
2020	1	9	18	1465893.846
2020	1	9	19	1459320.104
2020	1	9	20	1445489.497
2020	1	9	21	1410386.087
2020	1	9	22	1352537.933
2020	1	9	23	1276393.044
2020	1	10	0	1228697.609
2020	1	10	1	1198869.008
2020	1	10	2	1185526.300
2020	1	10	3	1169053.990
2020	1	10	4	1174500.082
2020	1	10	5	1210253.905
2020	1	10	6	1291934.098
2020	1	10	7	1375909.130
2020	1	10	8	1358290.468
2020	1	10	9	1356474.940
2020	1	10	10	1353944.607
2020	1	10	11	1342933.335
2020	1	10	12	1330815.708
2020	1	10	13	1329028.964
2020	1	10	14	1298966.936
2020	1	10	15	1274953.150
2020	1	10	16	1282830.705
2020	1	10	17	1312313.802
2020	1	10	18	1337712.916
2020	1	10	19	1309114.922
2020	1	10	20	1273524.913
2020	1	10	21	1248217.523
2020	1	10	22	1192816.734
2020	1	10	23	1134194.090
2020	1	11	0	1058793.893
2020	1	11	1	1000242.436
2020	1	11	2	965057.925
2020	1	11	3	948530.846
2020	1	11	4	941222.707
2020	1	11	5	935703.374
2020	1	11	6	953262.539
2020	1	11	7	1043897.324
2020	1	11	8	1095380.446
2020	1	11	9	1130475.987
2020	1	11	10	1160165.975

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2020	1	11	11	1167872.704
2020	1	11	12	1183735.912
2020	1	11	13	1200035.397
2020	1	11	14	1193318.043
2020	1	11	15	1204181.413
2020	1	11	16	1217149.184
2020	1	11	17	1254927.288
2020	1	11	18	1306577.463
2020	1	11	19	1286771.222
2020	1	11	20	1285053.146
2020	1	11	21	1263873.710
2020	1	11	22	1239857.188
2020	1	11	23	1183997.051
2020	1	12	0	1137257.822
2020	1	12	1	1102501.951
2020	1	12	2	1070882.240
2020	1	12	3	1063459.409
2020	1	12	4	1082505.183
2020	1	12	5	1106353.779
2020	1	12	6	1149089.397
2020	1	12	7	1181680.652
2020	1	12	8	1186206.371
2020	1	12	9	1189859.590
2020	1	12	10	1187676.355
2020	1	12	11	1171713.004
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2020	1	12	13	1157140.769
2020	1	12	14	1133765.525
2020	1	12	15	1098508.729
2020	1	12	16	1132242.046
2020	1	12	17	1171715.007
2020	1	12	18	1267044.758
2020	1	12	19	1274170.351
2020	1	12	20	1277989.546
2020	1	12	21	1243761.867
2020	1	12	22	1195237.126
2020	1	12	23	1147675.732
2020	1	13	0	1077242.694
2020	1	13	1	1012959.196
2020	1	13	2	983683.312
2020	1	13	3	973049.181
2020	1	13	4	1020108.465

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2020	1	13	5	1104095.617
2020	1	13	6	1197349.063
2020	1	13	7	1289591.139
2020	1	13	8	1285085.295
2020	1	13	9	1293892.515
2020	1	13	10	1299508.622
2020	1	13	11	1302168.607
2020	1	13	12	1313512.896
2020	1	13	13	1334402.939
2020	1	13	14	1324557.408
2020	1	13	15	1318620.384
2020	1	13	16	1323401.155
2020	1	13	17	1362420.837
2020	1	13	18	1388464.365
2020	1	13	19	1373268.721
2020	1	13	20	1347714.411
2020	1	13	21	1294166.535
2020	1	13	22	1224563.935
2020	1	13	23	1164684.341
2020	1	14	0	1122860.671
2020	1	14	1	1091116.361
2020	1	14	2	1089397.500
2020	1	14	3	1065484.049
2020	1	14	4	1100636.162
2020	1	14	5	1170720.219
2020	1	14	6	1269419.644
2020	1	14	7	1374096.704
2020	1	14	8	1369019.935
2020	1	14	9	1345346.299
2020	1	14	10	1343808.120
2020	1	14	11	1327192.899
2020	1	14	12	1325934.258
2020	1	14	13	1308275.256
2020	1	14	14	1270842.656
2020	1	14	15	1254995.914
2020	1	14	16	1257403.849
2020	1	14	17	1326730.865
2020	1	14	18	1391344.216
2020	1	14	19	1390865.046
2020	1	14	20	1376027.753
2020	1	14	21	1338134.137
2020	1	14	22	1282489.830

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2020	1	14	23	1229481.231
2020	1	15	0	1191727.271
2020	1	15	1	1176919.018
2020	1	15	2	1180149.679
2020	1	15	3	1171938.080
2020	1	15	4	1188369.015
2020	1	15	5	1251812.963
2020	1	15	6	1352314.885
2020	1	15	7	1418709.371
2020	1	15	8	1425880.833
2020	1	15	9	1429776.544
2020	1	15	10	1442614.821
2020	1	15	11	1437645.913
2020	1	15	12	1431999.020
2020	1	15	13	1438692.964
2020	1	15	14	1434621.985
2020	1	15	15	1412701.470
2020	1	15	16	1421610.896
2020	1	15	17	1454125.515
2020	1	15	18	1511935.472
2020	1	15	19	1505252.527
2020	1	15	20	1489468.654
2020	1	15	21	1453769.875
2020	1	15	22	1405983.944
2020	1	15	23	1360430.581
2020	1	16	0	1316304.889
2020	1	16	1	1304902.408
2020	1	16	2	1295519.061
2020	1	16	3	1296984.680
2020	1	16	4	1310325.237
2020	1	16	5	1366922.239
2020	1	16	6	1444131.490
2020	1	16	7	1508673.073
2020	1	16	8	1487331.462
2020	1	16	9	1480682.123
2020	1	16	10	1486288.035
2020	1	16	11	1492382.616
2020	1	16	12	1510244.312
2020	1	16	13	1495076.632
2020	1	16	14	1469866.140
2020	1	16	15	1451303.933
2020	1	16	16	1456900.535

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2020	1	16	17	1474525.452
2020	1	16	18	1516132.868
2020	1	16	19	1504102.297
2020	1	16	20	1473242.096
2020	1	16	21	1440504.069
2020	1	16	22	1393824.380
2020	1	16	23	1324348.423
2020	1	17	0	1257058.931
2020	1	17	1	1235422.615
2020	1	17	2	1214893.018
2020	1	17	3	1211702.443
2020	1	17	4	1220801.140
2020	1	17	5	1262624.502
2020	1	17	6	1354696.529
2020	1	17	7	1420901.616
2020	1	17	8	1423989.362
2020	1	17	9	1447555.252
2020	1	17	10	1467070.401
2020	1	17	11	1474526.038
2020	1	17	12	1483381.673
2020	1	17	13	1490712.093
2020	1	17	14	1491747.673
2020	1	17	15	1484556.773
2020	1	17	16	1478937.590
2020	1	17	17	1513592.901
2020	1	17	18	1569895.483
2020	1	17	19	1561708.838
2020	1	17	20	1543907.913
2020	1	17	21	1498181.442
2020	1	17	22	1454716.199
2020	1	17	23	1414762.030
2020	1	18	0	1380920.928
2020	1	18	1	1360686.494
2020	1	18	2	1329859.286
2020	1	18	3	1319957.118
2020	1	18	4	1300273.202
2020	1	18	5	1303246.541
2020	1	18	6	1341331.579
2020	1	18	7	1386155.599
2020	1	18	8	1398543.077
2020	1	18	9	1402732.735
2020	1	18	10	1395256.224

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2020	1	18	11	1390942.465
2020	1	18	12	1384173.159
2020	1	18	13	1363822.404
2020	1	18	14	1355188.998
2020	1	18	15	1348111.620
2020	1	18	16	1361145.231
2020	1	18	17	1394282.059
2020	1	18	18	1411716.979
2020	1	18	19	1403073.643
2020	1	18	20	1386414.760
2020	1	18	21	1335839.572
2020	1	18	22	1278701.378
2020	1	18	23	1230358.767
2020	1	19	0	1179407.868
2020	1	19	1	1154564.038
2020	1	19	2	1129547.447
2020	1	19	3	1120905.442
2020	1	19	4	1108880.723
2020	1	19	5	1143573.168
2020	1	19	6	1169525.864
2020	1	19	7	1212577.380
2020	1	19	8	1245447.924
2020	1	19	9	1279355.364
2020	1	19	10	1296960.633
2020	1	19	11	1275699.584
2020	1	19	12	1260988.344
2020	1	19	13	1249231.173
2020	1	19	14	1229727.511
2020	1	19	15	1210498.014
2020	1	19	16	1218607.363
2020	1	19	17	1255764.646
2020	1	19	18	1363547.775
2020	1	19	19	1364018.695
2020	1	19	20	1351807.832
2020	1	19	21	1307522.052
2020	1	19	22	1259673.832
2020	1	19	23	1202969.117
2020	1	20	0	1163129.102
2020	1	20	1	1144939.353
2020	1	20	2	1111631.252
2020	1	20	3	1112324.022
2020	1	20	4	1136074.936

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2020	1	20	5	1175111.279
2020	1	20	6	1219103.035
2020	1	20	7	1291181.835
2020	1	20	8	1303534.867
2020	1	20	9	1306858.082
2020	1	20	10	1293676.948
2020	1	20	11	1284169.420
2020	1	20	12	1266166.671
2020	1	20	13	1259489.582
2020	1	20	14	1232395.434
2020	1	20	15	1201266.656
2020	1	20	16	1196277.352
2020	1	20	17	1233031.240
2020	1	20	18	1333913.650
2020	1	20	19	1345119.447
2020	1	20	20	1340946.582
2020	1	20	21	1302502.125
2020	1	20	22	1247410.552
2020	1	20	23	1203612.981
2020	1	21	0	1167760.455
2020	1	21	1	1155869.338
2020	1	21	2	1145926.236
2020	1	21	3	1152990.740
2020	1	21	4	1161865.226
2020	1	21	5	1216527.248
2020	1	21	6	1288602.508
2020	1	21	7	1383860.210
2020	1	21	8	1416887.876
2020	1	21	9	1461526.659
2020	1	21	10	1493381.312
2020	1	21	11	1515760.094
2020	1	21	12	1535111.277
2020	1	21	13	1524086.057
2020	1	21	14	1499657.955
2020	1	21	15	1477238.824
2020	1	21	16	1473045.365
2020	1	21	17	1512638.260
2020	1	21	18	1599658.200
2020	1	21	19	1606661.620
2020	1	21	20	1587258.495
2020	1	21	21	1548385.066
2020	1	21	22	1506889.576

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2020	1	21	22	1457022 017
2020	1 1	21	23	1457822.017 1437978.176
2020		22	0	
2020	1	22	1	1420599.664
2020	1	22	2	1422777.995 1423336.985
2020	1	22	3 4	
2020	1	22	-	1445600.271
2020	1	22	5	1481780.074
2020	1	22	6 7	1562016.025
2020	1	22		1653618.843
2020	1	22	8	1650869.780
2020	1	22	9	1634967.840
2020	1	22	10	1611763.243
2020	1	22	11	1601093.007
2020	1	22	12	1603934.520
2020	1	22	13	1595792.041
2020	1	22	14	1571347.596
2020	1	22	15	1555575.062
2020	1	22	16	1554508.731
2020	1	22	17	1591371.556
2020	1	22	18	1637230.813
2020	1	22	19	1623625.031
2020	1	22	20	1593057.311
2020	1	22	21	1544875.272
2020	1	22	22	1477679.122
2020	1	22	23	1420183.040
2020	1	23	0	1405019.810
2020	1	23	1	1395019.452
2020	1	23	2	1391149.525
2020	1	23	3	1388805.124
2020	1	23	4	1408529.744
2020	1	23	5	1454482.056
2020	1	23	6	1551883.471
2020	1	23	7	1634042.475
2020	1	23	8	1652260.516
2020	1	23	9	1638276.535
2020	1	23	10	1624154.806
2020	1	23	11	1601145.727
2020	1	23	12	1595501.990
2020	1	23	13	1586039.674
2020	1	23	14	1575954.984
2020	1	23	15	1557009.556
2020	1	23	16	1558450.428

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2020	1	23	17	1587657.156
2020	1	23	18	1684083.034
2020	1	23	19	1705996.142
2020	1	23	20	1693981.365
2020	1	23	21	1662237.823
2020	1	23	22	1617022.738
2020	1	23	23	1560447.405
2020	1	24	0	1533718.930
2020	1	24	1	1518035.036
2020	1	24	2	1509861.654
2020	1	24	3	1509592.135
2020	1	24	4	1520293.950
2020	1	24	5	1553343.145
2020	1	24	6	1623928.992
2020	1	24	7	1721954.674
2020	1	24	8	1724517.546
2020	1	24	9	1674164.613
2020	1	24	10	1648007.482
2020	1	24	11	1617637.949
2020	1	24	12	1588523.590
2020	1	24	13	1563694.664
2020	1	24	14	1544670.355
2020	1	24	15	1527726.674
2020	1	24	16	1516910.762
2020	1	24	17	1541557.432
2020	1	24	18	1596063.842
2020	1	24	19	1594372.877
2020	1	24	20	1583271.316
2020	1	24	21	1545807.642
2020	1	24	22	1483232.812
2020	1	24	23	1439045.502
2020	1	25	0	1392844.792
2020	1	25	1	1368590.941
2020	1	25	2	1348834.868
2020	1	25	3	1335129.495
2020	1	25	4	1325210.203
2020	1	25	5	1338003.513
2020	1	25	6	1379547.596
2020	1	25	7	1401865.678
2020	1	25	8	1407049.395
2020	1	25	9	1421600.230
2020	1	25	10	1405385.740

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2020	1	25	11	1392687.172
2020	1	25	12	1372346.960
2020	1	25	13	1372767.860
2020	1	25	14	1349772.484
2020	1	25	15	1332442.373
2020	1	25	16	1337910.563
2020	1	25	17	1370821.271
2020	1	25	18	1447334.687
2020	1	25	19	1459876.503
2020	1	25	20	1451336.020
2020	1	25	21	1428074.999
2020	1	25	22	1403685.210
2020	1	25	23	1375962.475
2020	1	26	0	1334121.322
2020	1	26	1	1305383.229
2020	1	26	2	1297642.922
2020	1	26	3	1271193.308
2020	1	26	4	1280623.921
2020	1	26	5	1287747.960
2020	1	26	6	1314108.981
2020	1	26	7	1349675.200
2020	1	26	8	1366253.156
2020	1	26	9	1388875.661
2020	1	26	10	1376919.924
2020	1	26	11	1316096.973
2020	1	26	12	1287778.814
2020	1	26	13	1241350.893
2020	1	26	14	1208201.359
2020	1	26	15	1186747.910
2020	1	26	16	1177444.355
2020	1	26	17	1208708.097
2020	1	26	18	1323235.105
2020	1	26	19	1343465.698
2020	1	26	20	1318462.739
2020	1	26	21	1281835.083
2020	1	26	22	1222839.953
2020	1	26	23	1165551.442
2020	1	27	0	1119414.740
2020	1	27	1	1073852.423
2020	1	27	2	1093882.040
2020	1	27	3	1156668.607
2020	1	27	4	1195578.829

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2020	1	27	5	1279058.936
2020	1	27	6	1418002.714
2020	1	27	7	1496488.216
2020	1	27	8	1527561.871
2020	1	27	9	1538743.475
2020	1	27	10	1541365.391
2020	1	27	11	1519732.162
2020	1	27	12	1525394.074
2020	1	27	13	1507025.647
2020	1	27	14	1488425.694
2020	1	27	15	1468961.499
2020	1	27	16	1485870.614
2020	1	27	17	1537832.597
2020	1	27	18	1629576.295
2020	1	27	19	1648059.302
2020	1	27	20	1644289.098
2020	1	27	21	1614012.772
2020	1	27	22	1570596.662
2020	1	27	23	1518981.895
2020	1	28	0	1480107.676
2020	1	28	1	1473507.529
2020	1	28	2	1460198.834
2020	1	28	3	1464224.871
2020	1	28	4	1480261.801
2020	1	28	5	1536691.707
2020	1	28	6	1618159.628
2020	1	28	7	1686447.637
2020	1	28	8	1676870.615
2020	1	28	9	1680085.255
2020	1	28	10	1662947.677
2020	1	28	11	1630713.837
2020	1	28	12	1613665.416
2020	1	28	13	1607587.937
2020	1	28	14	1583698.239
2020	1	28	15	1579717.561
2020	1	28	16	1574954.468
2020	1	28	17	1589263.335
2020	1	28	18	1666892.368
2020	1	28	19	1690967.711
2020	1	28	20	1715447.633
2020	1	28	21	1650699.133
2020	1	28	22	1608593.012

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2020	1	20	22	1550040.051
2020	1	28	23	1559940.951
2020	1	29	0	1521441.506
2020	1	29	1	1498972.553
2020	1	29	2	1502004.627
2020	1	29	3	1495981.382
2020	1	29	4	1514642.840
2020	1	29	5	1551048.106
2020	1	29	6	1629964.407
2020	1	29	7	1711203.627
2020	1	29	8	1671909.129
2020	1	29	9	1639659.103
2020	1	29	10	1612629.570
2020	1	29	11	1571265.939
2020	1	29	12	1555478.936
2020	1	29	13	1529670.258
2020	1	29	14	1492910.095
2020	1	29	15	1465943.479
2020	1	29	16	1458627.142
2020	1	29	17	1476433.925
2020	1	29	18	1568438.738
2020	1	29	19	1586458.190
2020	1	29	20	1578901.725
2020	1	29	21	1549447.930
2020	1	29	22	1494141.937
2020	1	29	23	1449433.202
2020	1	30	0	1425689.965
2020	1	30	1	1412639.035
2020	1	30	2	1409154.484
2020	1	30	3	1420574.495
2020	1	30	4	1416344.682
2020	1	30	5	1461086.793
2020	1	30	6	1550062.067
2020	1	30	7	1610633.992
2020	1	30	8	1578947.937
2020	1	30	9	1548988.776
2020	1	30	10	1537521.831
2020	1	30	11	1512625.998
2020	1	30	12	1497908.510
2020	1	30	13	1469443.061
2020	1	30	14	1446938.568
2020	1	30	15	1434343.667
2020	1	30	16	1430897.894

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2020	1	30	17	1442201.360
2020	1	30	18	1503368.832
2020	1	30	19	1501800.617
2020	1	30	20	1480000.002
2020	1	30	21	1443205.641
2020	1	30	22	1400520.088
2020	1	30	23	1319375.030
2020	1	31	0	1270835.468
2020	1	31	1	1249347.058
2020	1	31	2	1241711.797
2020	1	31	3	1238978.629
2020	1	31	4	1237986.748
2020	1	31	5	1268682.222
2020	1	31	6	1367297.097
2020	1	31	7	1415969.356
2020	1	31	8	1406075.683
2020	1	31	9	1397798.148
2020	1	31	10	1386487.525
2020	1	31	11	1378027.341
2020	1	31	12	1363640.325
2020	1	31	13	1358662.129
2020	1	31	14	1316390.649
2020	1	31	15	1300771.845
2020	1	31	16	1286925.836
2020	1	31	17	1321008.399
2020	1	31	18	1381076.351
2020	1	31	19	1378134.169
2020	1	31	20	1357395.331
2020	1	31	21	1311884.136
2020	1	31	22	1253193.189
2020	1	31	23	1208232.102
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2020	2	1	2	1077062.255
2020	2	1	3	1042469.784
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2020	2	1	5	1038582.689
2020	2	1	6	1071824.155
2020	2	1	7	1102299.508
2020	2	1	8	1130089.924
2020	2	1	9	1160020.765
2020	2	1	10	1172068.512

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2020	2	1	11	1164055.515
2020	2	1	12	1107839.105
2020	2	1	13	1081954.708
2020	2	1	14	1063342.137
2020	2	1	15	1035907.509
2020	2	1	16	1049276.393
2020	2	1	17	1096690.516
2020	2	1	18	1159619.485
2020	2	1	19	1162511.364
2020	2	1	20	1135812.013
2020	2	1	21	1104973.061
2020	2	1	22	1079809.009
2020	2	1	23	1019163.725
2020	2	2	0	977320.220
2020	2	2	1	948388.745
2020	2	2	2	913821.073
2020	2	2	3	908355.615
2020	2	2	4	942248.114
2020	2	2	5	966847.180
2020	2	2	6	1011314.898
2020	2	2	7	1055972.207
2020	2	2	8	1102780.268
2020	2	2	9	1156621.983
2020	2	2	10	1221600.750
2020	2	2	11	1244895.438
2020	2	2	12	1267247.738
2020	2	2	13	1273437.736
2020	2	2	14	1269936.813
2020	2	2	15	1281243.263
2020	2	2	16	1311945.712
2020	2	2	17	1345107.410
2020	2	2	18	1372886.330
2020	2	2	19	1348643.796
2020	2	2	20	1343688.634
2020	2	2	21	1312480.849
2020	2	2	22	1277703.495
2020	2	2	23	1231270.317
2020	2	3	0	1186077.380
2020	2	3	1	1158718.576
2020	2	3	2	1149166.242
2020	2	3	3	1153473.926
2020	2	3	4	1175153.053
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2020	2	3	5	1234805.468
2020	2	3	6	1284320.296
2020	2	3	7	1346641.951
2020	2	3	8	1376184.490
2020	2	3	9	1382065.246
2020	2	3	10	1380254.026
2020	2	3	11	1349505.284
2020	2	3	12	1362471.027
2020	2	3	13	1346812.251
2020	2	3	14	1325331.566
2020	2	3	15	1312488.032
2020	2	3	16	1288507.684
2020	2	3	17	1317565.179
2020	2	3	18	1431202.768
2020	2	3	19	1464042.940
2020	2	3	20	1457755.057
2020	2	3	21	1404388.299
2020	2	3	22	1342948.758
2020	2	3	23	1295301.686
2020	2	4	0	1258599.293
2020	2	4	1	1234015.238
2020	2	4	2	1220828.358
2020	2	4	3	1217163.279
2020	2	4	4	1218839.746
2020	2	4	5	1272921.465
2020	2	4	6	1358985.692
2020	2	4	7	1445501.609
2020	2	4	8	1451918.083
2020	2	4	9	1431962.872
2020	2	4	10	1447367.919
2020	2	4	11	1423339.632
2020	2	4	12	1433234.971
2020	2	4	13	1448861.341
2020	2	4	14	1442500.587
2020	2	4	15	1414164.270
2020	2	4	16	1435767.209
2020	2	4	17	1501133.710
2020	2	4	18	1562802.099
2020	2	4	19	1547076.392
2020	2	4	20	1481913.436
2020	2	4	21	1390622.397
2020	2	4	22	1327436.318
				-

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2020	2	4	23	1266887.077
2020	2	5	0	1216486.543
2020	2	5	1	1173385.165
2020	2	5	2	1166796.138
2020	2	5	3	1146768.950
2020	2	5	4	1152233.746
2020	2	5	5	1186771.507
2020	2	5	6	1252698.569
2020	2	5	7	1309460.553
2020	2	5	8	1356402.769
2020	2	5	9	1405142.656
2020	2	5	10	1440060.429
2020	2	5	11	1466285.512
2020	2	5	12	1502618.966
2020	2	5	13	1521562.005
2020	2	5	14	1501708.423
2020	2	5	15	1472059.047
2020	2	5	16	1459989.089
2020	2	5	17	1479846.488
2020	2	5	18	1549350.701
2020	2	5	19	1551431.557
2020	2	5	20	1531028.953
2020	2	5	21	1471516.609
2020	2	5	22	1409590.630
2020	2	5	23	1334671.272
2020	2	6	0	1292944.496
2020	2	6	1	1275625.520
2020	2	6	2	1267925.765
2020	2	6	3	1255720.122
2020	2	6	4	1268242.444
2020	2	6	5	1316294.806
2020	2	6	6	1405879.981
2020	2	6	7	1484032.807
2020	2	6	8	1485048.506
2020	2	6	9	1489276.917
2020	2	6	10	1497732.987
2020	2	6	11	1491455.519
2020	2	6	12	1515089.999
2020	2	6	13	1504426.432
2020	2	6	14	1486127.985
2020	2	6	15	1490959.092
2020	2	6	16	1477140.040

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2020	2	6	17	1514614.405
2020	2	6	18	1586570.003
2020	2	6	19	1605773.712
2020	2	6	20	1600219.936
2020	2	6	21	1560883.775
2020	2	6	22	1507874.410
2020	2	6	23	1440293.906
2020	2	7	0	1413920.232
2020	2	7	1	1395374.765
2020	2	7	2	1394753.970
2020	2	7	3	1404451.846
2020	2	7	4	1421406.720
2020	2	7	5	1481916.006
2020	2	7	6	1582317.438
2020	2	7	7	1667953.967
2020	2	7	8	1643609.058
2020	2	7	9	1618164.124
2020	2	7	10	1612134.474
2020	2	7	11	1586642.365
2020	2	7	12	1551213.488
2020	2	7	13	1511647.503
2020	2	7	14	1473879.079
2020	2	7	15	1433928.781
2020	2	7	16	1415226.728
2020	2	7	17	1455062.261
2020	2	7	18	1539420.012
2020	2	7	19	1567789.561
2020	2	7	20	1558818.256
2020	2	7	21	1526335.340
2020	2	7	22	1470770.163
2020	2	7	23	1412995.884
2020	2	8	0	1349917.850
2020	2	8	1	1322532.460
2020	2	8	2	1305372.843
2020	2	8	3	1308222.007
2020	2	8	4	1302545.703
2020	2	8	5	1313140.704
2020	2	8	6	1344787.484
2020	2	8	7	1387427.318
2020	2	8	8	1409453.036
2020	2	8	9	1435925.213
2020	2	8	10	1461355.640

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2020	2	8	11	1427418.742
2020	2	8	12	1381741.252
2020	2	8	13	1359822.795
2020	2	8	14	1334305.715
2020	2	8	15	1332724.919
2020	2	8	16	1335421.152
2020	2	8	17	1357606.546
2020	2	8	18	1412162.928
2020	2	8	19	1416758.037
2020	2	8	20	1391607.743
2020	2	8	21	1354163.916
2020	2	8	22	1306681.162
2020	2	8	23	1260836.515
2020	2	9	0	1195578.554
2020	2	9	1	1166167.010
2020	2	9	2	1133557.480
2020	2	9	3	1129262.880
2020	2	9	4	1126875.296
2020	2	9	5	1146146.728
2020	2	9	6	1170734.794
2020	2	9	7	1215199.996
2020	2	9	8	1236444.961
2020	2	9	9	1277598.047
2020	2	9	10	1281810.606
2020	2	9	11	1283292.919
2020	2	9	12	1272040.103
2020	2	9	13	1249905.113
2020	2	9	14	1256263.851
2020	2	9	15	1238509.034
2020	2	9	16	1262522.408
2020	2	9	17	1302091.657
2020	2	9	18	1403468.090
2020	2	9	19	1424919.091
2020	2	9	20	1417195.867
2020	2	9	21	1375000.496
2020	2	9	22	1318059.001
2020	2	9	23	1276895.952
2020	2	10	0	1229113.623
2020	2	10	1	1209066.044
2020	2	10	2	1206199.745
2020	2	10	3	1227301.802
2020	2	10	4	1263069.992

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2020	2	10	5	1327505.712
2020	2	10	6	1426395.988
2020	2	10	7	1508616.504
2020	2	10	8	1528367.698
2020	2	10	9	1534716.685
2020	2	10	10	1523505.435
2020	2	10	11	1502615.662
2020	2	10	12	1495483.525
2020	2	10	13	1468221.978
2020	2	10	14	1442903.368
2020	2	10	15	1393267.693
2020	2	10	16	1371671.434
2020	2	10	17	1401987.816
2020	2	10	18	1533283.439
2020	2	10	19	1576043.463
2020	2	10	20	1573931.076
2020	2	10	21	1542317.087
2020	2	10	22	1496094.943
2020	2	10	23	1427483.747
2020	2	11	0	1399665.395
2020	2	11	1	1379982.639
2020	2	11	2	1378277.116
2020	2	11	3	1385008.151
2020	2	11	4	1419687.464
2020	2	11	5	1472746.608
2020	2	11	6	1591350.444
2020	2	11	7	1657711.341
2020	2	11	8	1634285.758
2020	2	11	9	1626934.859
2020	2	11	10	1593771.580
2020	2	11	11	1541636.324
2020	2	11	12	1516665.509
2020	2	11	13	1478766.837
2020	2	11	14	1448459.683
2020	2	11	15	1421552.860
2020	2	11	16	1396836.841
2020	2	11	17	1420738.589
2020	2	11	18	1524256.792
2020	2	11	19	1579485.810
2020	2	11	20	1571577.869
2020	2	11	21	1541091.464
2020	2	11	22	1493141.002

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2020	2	11	23	1423796.657
2020	2	12	0	1384781.832
2020	2	12	1	1368735.930
2020	2	12	2	1365065.431
2020	2	12	3	1375930.919
2020	2	12	4	1383751.994
2020	2	12	5	1446365.547
2020	2	12	6	1554361.685
2020	2	12	7	1622329.957
2020	2	12	8	1607798.887
2020	2	12	9	1564065.160
2020	2	12	10	1535576.079
2020	2	12	11	1498633.657
2020	2	12	12	1451429.227
2020	2	12	13	1423406.397
2020	2	12	14	1377950.193
2020	2	12	15	1344786.819
2020	2	12	16	1321618.044
2020	2	12	17	1358476.175
2020	2	12	18	1431526.400
2020	2	12	19	1488508.654
2020	2	12	20	1479202.893
2020	2	12	21	1459020.876
2020	2	12	22	1396424.754
2020	2	12	23	1305045.703
2020	2	13	0	1277192.055
2020	2	13	1	1271996.729
2020	2	13	2	1269415.708
2020	2	13	3	1264418.200
2020	2	13	4	1290728.249
2020	2	13	5	1322785.520
2020	2	13	6	1437399.515
2020	2	13	7	1519675.958
2020	2	13	8	1493543.991
2020	2	13	9	1456515.551
2020	2	13	10	1416591.302
2020	2	13	11	1368498.611
2020	2	13	12	1345507.426
2020	2	13	13	1322201.708
2020	2	13	14	1296870.678
2020	2	13	15	1274005.735
2020	2	13	15	1262931.442
2020	2	10	10	1202331.442

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2020	2	13	17	1271683.267
2020	2	13	18	1347054.667
2020	2	13	19	1404132.605
2020	2	13	20	1392824.790
2020	2	13	21	1378314.001
2020	2	13	22	1318832.087
2020	2	13	23	1262146.246
2020	2	14	0	1214224.814
2020	2	14	1	1181648.006
2020	2	14	2	1177259.820
2020	2	14	3	1187860.570
2020	2	14	4	1182883.943
2020	2	14	5	1233231.983
2020	2	14	6	1303324.016
2020	2	14	7	1366248.029
2020	2	14	8	1352027.145
2020	2	14	9	1347924.006
2020	2	14	10	1340976.812
2020	2	14	11	1335182.251
2020	2	14	12	1329442.687
2020	2	14	13	1335832.746
2020	2	14	14	1324195.328
2020	2	14	15	1320757.771
2020	2	14	16	1350892.021
2020	2	14	17	1374337.911
2020	2	14	18	1411622.398
2020	2	14	19	1409436.379
2020	2	14	20	1380434.778
2020	2	14	21	1360734.914
2020	2	14	22	1315268.006
2020	2	14	23	1295011.951
2020	2	15	0	1355509.063
2020	2	15	1	1261079.720
2020	2	15	2	1243611.316
2020	2	15	3	1228273.949
2020	2	15	4	1229385.042
2020	2	15	5	1242511.048
2020	2	15	6	1278683.941
2020	2	15	7	1304781.331
2020	2	15	8	1323107.486
2020	2	15	9	1343572.334
2020	2	15	10	1337154.423

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2020	2	15	11	1306685.997
2020	2	15	12	1284780.928
2020	2	15	13	1264205.359
2020	2	15	14	1243217.699
2020	2	15	15	1231998.848
2020	2	15	16	1256662.220
2020	2	15	17	1285594.525
2020	2	15	18	1331924.660
2020	2	15	19	1359158.200
2020	2	15	20	1340406.042
2020	2	15	21	1309784.076
2020	2	15	22	1278820.538
2020	2	15	23	1232002.067
2020	2	16	0	1176474.428
2020	2	16	1	1147623.944
2020	2	16	2	1123831.023
2020	2	16	3	1119109.337
2020	2	16	4	1112422.390
2020	2	16	5	1128538.058
2020	2	16	6	1144052.433
2020	2	16	7	1172316.546
2020	2	16	8	1198450.429
2020	2	16	9	1235549.394
2020	2	16	10	1254664.091
2020	2	16	11	1251119.899
2020	2	16	12	1251841.126
2020	2	16	13	1244801.008
2020	2	16	14	1225142.936
2020	2	16	15	1192336.186
2020	2	16	16	1189328.440
2020	2	16	17	1230516.587
2020	2	16	18	1301252.113
2020	2	16	19	1344402.879
2020	2	16	20	1355323.586
2020	2	16	21	1318407.641
2020	2	16	22	1282007.667
2020	2	16	23	1247394.972
2020	2	17	0	1200021.707
2020	2	17	1	1182667.049
2020	2	17	2	1174704.651
2020	2	17	3	1198416.333
2020	2	17	4	1219813.065

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2020	2	17	5	1274237.639
2020	2	17	6	1355836.016
2020	2	17	7	1429266.841
2020	2	17	8	1438529.468
2020	2	17	9	1444619.301
2020	2	17	10	1418499.273
2020	2	17	11	1388490.448
2020	2	17	12	1351091.147
2020	2	17	13	1363919.776
2020	2	17	14	1370256.133
2020	2	17	15	1363780.884
2020	2	17	16	1365888.358
2020	2	17	17	1380782.903
2020	2	17	18	1392983.948
2020	2	17	19	1415109.927
2020	2	17	20	1397370.774
2020	2	17	21	1361650.715
2020	2	17	22	1297986.011
2020	2	17	23	1239889.671
2020	2	18	0	1208338.485
2020	2	18	1	1164725.066
2020	2	18	2	1127867.745
2020	2	18	3	1136436.248
2020	2	18	4	1155429.259
2020	2	18	5	1210938.783
2020	2	18	6	1298628.333
2020	2	18	7	1362528.807
2020	2	18	8	1331630.910
2020	2	18	9	1304772.959
2020	2	18	10	1288297.419
2020	2	18	11	1269008.518
2020	2	18	12	1264996.570
2020	2	18	13	1255851.006
2020	2	18	14	1217794.954
2020	2	18	15	1192282.671
2020	2	18	16	1177807.085
2020	2	18	17	1191583.007
2020	2	18	18	1255788.082
2020	2	18	19	1297286.863
2020	2	18	20	1285308.166
2020	2	18	21	1251204.920
2020	2	18	22	1205314.542

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2020	2	18	23	1112387.743
2020	2	19	0	1085151.328
2020	2	19	1	1033619.237
2020	2	19	2	1009964.141
2020	2	19	3	995041.592
2020	2	19	4	990686.086
2020	2	19	5	1054544.530
2020	2	19	6	1141717.314
2020	2	19	7	1214331.988
2020	2	19	8	1197195.729
2020	2	19	9	1188201.947
2020	2	19	10	1192668.695
2020	2	19	11	1188813.722
2020	2	19	12	1200796.938
2020	2	19	13	1195382.807
2020	2	19	14	1179214.680
2020	2	19	15	1155242.709
2020	2	19	16	1137418.504
2020	2	19	17	1151591.299
2020	2	19	18	1223049.087
2020	2	19	19	1264822.887
2020	2	19	20	1254653.692
2020	2	19	21	1221918.530
2020	2	19	22	1161953.546
2020	2	19	23	1101059.139
2020	2	20	0	1067433.426
2020	2	20	1	1028396.569
2020	2	20	2	1019498.693
2020	2	20	3	1001159.464
2020	2	20	4	1004494.671
2020	2	20	5	1061126.621
2020	2	20	6	1135493.094
2020	2	20	7	1220219.274
2020	2	20	8	1205287.948
2020	2	20	9	1210094.866
2020	2	20	10	1195736.813
2020	2	20	11	1195012.272
2020	2	20	12	1202413.698
2020	2	20	13	1217874.173
2020	2	20	14	1201269.162
2020	2	20	15	1184994.106
2020	2	20	16	1178811.392

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2020	2	20	17	1192569.183
2020	2	20	18	1255127.562
2020	2	20	19	1266033.200
2020	2	20	20	1213395.016
2020	2	20	21	1172561.533
2020	2	20	22	1108775.428
2020	2	20	23	1043810.351
2020	2	21	0	1014473.401
2020	2	21	1	982367.083
2020	2	21	2	986087.505
2020	2	21	3	987156.383
2020	2	21	4	998398.965
2020	2	21	5	1068220.049
2020	2	21	6	1173683.794
2020	2	21	7	1248409.133
2020	2	21	8	1247229.383
2020	2	21	9	1241000.175
2020	2	21	10	1244670.399
2020	2	21	11	1238604.190
2020	2	21	12	1230130.534
2020	2	21	13	1239897.906
2020	2	21	14	1199034.423
2020	2	21	15	1167159.074
2020	2	21	16	1151293.176
2020	2	21	17	1143854.986
2020	2	21	18	1212388.774
2020	2	21	19	1260647.581
2020	2	21	20	1252061.024
2020	2	21	21	1235395.341
2020	2	21	22	1184985.158
2020	2	21	23	1145439.527
2020	2	22	0	1097865.468
2020	2	22	1	1087879.252
2020	2	22	2	1069498.730
2020	2	22	3	1047750.054
2020	2	22	4	1034846.655
2020	2	22	5	1044837.016
2020	2	22	6	1095084.975
2020	2	22	7	1115500.234
2020	2	22	8	1131171.707
2020	2	22	9	1139415.337
2020	2	22	10	1139614.538

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2020	2	22	11	1122947.425
2020	2	22	12	1097685.541
2020	2	22	13	1073042.369
2020	2	22	14	1038895.810
2020	2	22	15	1024245.128
2020	2	22	16	1029321.485
2020	2	22	17	1032308.837
2020	2	22	18	1081450.611
2020	2	22	19	1117847.433
2020	2	22	20	1107825.679
2020	2	22	21	1093338.842
2020	2	22	22	1060034.266
2020	2	22	23	1007651.892
2020	2	23	0	965334.117
2020	2	23	1	958717.772
2020	2	23	2	928149.565
2020	2	23	3	922710.533
2020	2	23	4	953611.731
2020	2	23	5	971918.488
2020	2	23	6	1016778.662
2020	2	23	7	1052586.290
2020	2	23	8	1086518.136
2020	2	23	9	1104651.818
2020	2	23	10	1118486.908
2020	2	23	11	1124532.443
2020	2	23	12	1135699.406
2020	2	23	13	1136694.682
2020	2	23	14	1147698.813
2020	2	23	15	1168845.609
2020	2	23	16	1204014.100
2020	2	23	17	1225124.263
2020	2	23	18	1274767.801
2020	2	23	19	1316332.805
2020	2	23	20	1315789.164
2020	2	23	21	1294135.731
2020	2	23	22	1241819.913
2020	2	23	23	1182361.462
2020	2	24	0	1139032.496
2020	2	24	1	1113573.214
2020	2	24	2	1120406.091
2020	2	24	3	1131313.489
2020	2	24	4	1162620.801

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2020	2	24	5	1249118.983
2020	2	24	6	1329049.671
2020	2	24	7	1394142.640
2020	2	24	8	1400061.967
2020	2	24	9	1377609.764
2020	2	24	10	1366083.366
2020	2	24	11	1338515.025
2020	2	24	12	1337272.795
2020	2	24	13	1308736.984
2020	2	24	14	1291427.807
2020	2	24	15	1260013.585
2020	2	24	16	1258507.145
2020	2	24	17	1268852.736
2020	2	24	18	1328895.357
2020	2	24	19	1410312.683
2020	2	24	20	1402094.654
2020	2	24	21	1362830.266
2020	2	24	22	1301897.820
2020	2	24	23	1253788.563
2020	2	25	0	1213821.543
2020	2	25	1	1179530.629
2020	2	25	2	1163722.472
2020	2	25	3	1154299.394
2020	2	25	4	1167419.254
2020	2	25	5	1223895.880
2020	2	25	6	1311876.894
2020	2	25	7	1385509.329
2020	2	25	8	1385975.529
2020	2	25	9	1389614.422
2020	2	25	10	1372204.005
2020	2	25	11	1332732.595
2020	2	25	12	1331451.303
2020	2	25	13	1317968.095
2020	2	25	14	1298939.415
2020	2	25	15	1275184.315
2020	2	25	16	1288538.258
2020	2	25	17	1320637.023
2020	2	25	18	1394070.306
2020	2	25	19	1442386.313
2020	2	25	20	1418771.979
2020	2	25	21	1367773.192
2020	2	25	22	1314782.546

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2020	2	25	23	1260410.355
2020	2	26	0	1238287.166
2020	2	26	1	1217802.855
2020	2	26	2	1207251.163
2020	2	26	3	1209473.079
2020	2	26	4	1222818.932
2020	2	26	5	1290892.292
2020	2	26	6	1386030.366
2020	2	26	7	1451341.354
2020	2	26	8	1463557.265
2020	2	26	9	1449815.849
2020	2	26	10	1452098.916
2020	2	26	11	1423383.146
2020	2	26	12	1429087.247
2020	2	26	13	1405747.514
2020	2	26	14	1367377.798
2020	2	26	15	1339423.955
2020	2	26	16	1319241.858
2020	2	26	17	1331169.723
2020	2	26	18	1417983.420
2020	2	26	19	1518471.549
2020	2	26	20	1511430.823
2020	2	26	21	1466151.042
2020	2	26	22	1413700.873
2020	2	26	23	1338195.314
2020	2	27	0	1307378.175
2020	2	27	1	1295613.757
2020	2	27	2	1287003.722
2020	2	27	3	1287886.841
2020	2	27	4	1289665.977
2020	2	27	5	1336978.314
2020	2	27	6	1435748.558
2020	2	27	7	1482769.577
2020	2	27	8	1455000.443
2020	2	27	9	1426363.610
2020	2	27	10	1436672.197
2020	2	27	11	1395653.184
2020	2	27	12	1405232.642
2020	2	27	13	1386399.730
2020	2	27	14	1350893.689
2020	2	27	15	1312306.466
2020	2	27	16	1303352.645

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2020	2	27	17	1306718.844
2020	2	27	18	1382756.169
2020	2	27	19	1468395.353
2020	2	27	20	1469297.878
2020	2	27	21	1433575.092
2020	2	27	22	1388632.816
2020	2	27	23	1329213.878
2020	2	28	0	1299659.285
2020	2	28	1	1280743.810
2020	2	28	2	1279920.844
2020	2	28	3	1283415.609
2020	2	28	4	1296978.468
2020	2	28	5	1348693.449
2020	2	28	6	1444361.686
2020	2	28	7	1410129.888
2020	2	28	8	1488024.466
2020	2	28	9	1459770.893
2020	2	28	10	1447189.554
2020	2	28	11	1405512.248
2020	2	28	12	1373328.851
2020	2	28	13	1328139.461
2020	2	28	14	1290375.882
2020	2	28	15	1281870.436
2020	2	28	16	1226021.974
2020	2	28	17	1226961.516
2020	2	28	18	1267790.625
2020	2	28	19	1321697.971
2020	2	28	20	1319682.648
2020	2	28	21	1291065.282
2020	2	28	22	1245050.433
2020	2	28	23	1184212.036
2020	2	29	0	1148535.152
2020	2	29	1	1121719.988
2020	2	29	2	1098755.504
2020	2	29	3	1085410.528
2020	2	29	4	1065963.443
2020	2	29	5	1070080.926
2020	2	29	6	1094788.852
2020	2	29	7	1122630.192
2020	2	29	8	1138853.634
2020	2	29	9	1185540.204
2020	2	29	10	1193189.713

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2020	2	29	11	1158904.610
2020	2	29	12	1109772.694
2020	2	29	13	1089546.714
2020	2	29	14	1074945.103
2020	2	29	15	1061778.271
2020	2	29	16	1057539.108
2020	2	29	17	1089321.151
2020	2	29	18	1115149.347
2020	2	29	19	1158536.069
2020	2	29	20	1133270.310
2020	2	29	21	1110756.177
2020	2	29	22	1073700.680
2020	2	29	23	1023322.470
2020	3	1	0	1281661.004
2020	3	1	1	1245290.234
2020	3	1	2	1236234.499
2020	3	1	3	1223431.082
2020	3	1	4	1232488.411
2020	3	1	5	1241887.026
2020	3	1	6	1280254.848
2020	3	1	7	1304404.000
2020	3	1	8	1360281.479
2020	3	1	9	1408483.118
2020	3	1	10	1427172.846
2020	3	1	11	1427694.721
2020	3	1	12	1407702.953
2020	3	1	13	1391196.064
2020	3	1	14	1386187.822
2020	3	1	15	1393761.460
2020	3	1	16	1415116.833
2020	3	1	17	1451508.111
2020	3	1	18	1506426.804
2020	3	1	19	1531813.463
2020	3	1	20	1523853.582
2020	3	1	21	1484921.122
2020	3	1	22	1402015.167
2020	3	1	23	1348565.116
2020	3	2	0	1296321.797
2020	3	2	1	1267667.763
2020	3	2	2	1264432.057
2020	3	2	3	1287317.410
2020	3	2	4	1330007.977

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2020	3	2	5	1394510.826
2020	3	2	6	1549711.947
2020	3	2	7	1611441.416
2020	3	2	8	1608951.256
2020	3	2	9	1589858.111
2020	3	2	10	1576766.885
2020	3	2	11	1536274.207
2020	3	2	12	1509518.063
2020	3	2	13	1498936.189
2020	3	2	14	1463248.359
2020	3	2	15	1418532.556
2020	3	2	16	1414151.172
2020	3	2	17	1431316.195
2020	3	2	18	1538769.195
2020	3	2	19	1594400.905
2020	3	2	20	1582288.708
2020	3	2	21	1535942.184
2020	3	2	22	1474073.515
2020	3	2	23	1390886.603
2020	3	3	0	1356951.288
2020	3	3	1	1326012.047
2020	3	3	2	1282379.767
2020	3	3	3	1275114.466
2020	3	3	4	1282966.815
2020	3	3	5	1342464.616
2020	3	3	6	1488411.140
2020	3	3	7	1517181.944
2020	3	3	8	1515572.855
2020	3	3	9	1520781.840
2020	3	3	10	1532856.837
2020	3	3	11	1517981.073
2020	3	3	12	1493448.820
2020	3	3	13	1502348.294
2020	3	3	14	1482724.711
2020	3	3	15	1439178.665
2020	3	3	16	1401156.923
2020	3	3	17	1413012.219
2020	3	3	18	1457869.075
2020	3	3	19	1477786.307
2020	3	3	20	1437665.239
2020	3	3	21	1374265.368
2020	3	3	22	1320317.401

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2020	3	3	23	1243390.012
2020	3	4	0	1181023.225
2020	3	4	1	1160999.718
2020	3	4	2	1158621.701
2020	3	4	3	1167942.792
2020	3	4	4	1178605.958
2020	3	4	5	1226596.335
2020	3	4	6	1353733.481
2020	3	4	7	1433651.683
2020	3	4	8	1447003.266
2020	3	4	9	1490943.393
2020	3	4	10	1524705.595
2020	3	4	11	1543132.095
2020	3	4	12	1545764.974
2020	3	4	13	1549928.600
2020	3	4	14	1561842.965
2020	3	4	15	1566631.652
2020	3	4	16	1587807.194
2020	3	4	17	1616046.170
2020	3	4	18	1653954.335
2020	3	4	19	1647935.844
2020	3	4	20	1621577.183
2020	3	4	21	1586354.902
2020	3	4	22	1516214.671
2020	3	4	23	1447822.223
2020	3	5	0	1411629.958
2020	3	5	1	1384766.562
2020	3	5	2	1371080.354
2020	3	5	3	1380402.320
2020	3	5	4	1392527.173
2020	3	5	5	1420106.133
2020	3	5	6	1482042.854
2020	3	5	7	1508088.220
2020	3	5	8	1538733.007
2020	3	5	9	1578546.429
2020	3	5	10	1559332.680
2020	3	5	11	1564012.303
2020	3	5	12	1572242.625
2020	3	5	13	1541656.297
2020	3	5	14	1495534.444
2020	3	5	15	1469265.558
2020	3	5	16	1449487.076

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	_	_	. –	
2020	3	5	17	1501215.717
2020	3	5	18	1559480.298
2020	3	5	19	1644346.671
2020	3	5	20	1629139.788
2020	3	5	21	1602849.821
2020	3	5	22	1542440.045
2020	3	5	23	1504911.724
2020	3	6	0	1468897.671
2020	3	6	1	1474861.544
2020	3	6	2	1486815.705
2020	3	6	3	1498291.127
2020	3	6	4	1527518.286
2020	3	6	5	1583751.350
2020	3	6	6	1662644.531
2020	3	6	7	1694259.687
2020	3	6	8	1710686.830
2020	3	6	9	1686321.544
2020	3	6	10	1675326.882
2020	3	6	11	1664972.924
2020	3	6	12	1632861.433
2020	3	6	13	1604836.643
2020	3	6	14	1568406.967
2020	3	6	15	1528600.361
2020	3	6	16	1512975.304
2020	3	6	17	1506894.511
2020	3	6	18	1557632.335
2020	3	6	19	1631652.750
2020	3	6	20	1624643.014
2020	3	6	21	1597969.454
2020	3	6	22	1554179.196
2020	3	6	23	1495885.289
2020	3	7	0	1430698.710
2020	3	7	1	1411123.519
2020	3	7	2	1391410.008
2020	3	7	3	1378549.835
2020	3	7	4	1378879.689
2020	3	7	5	1385072.758
2020	3	7	6	1424199.592
2020	3	7	7	1439984.359
2020	3	7	8	1479582.207
2020	3	, 7	9	1471219.345
2020	3	, 7	10	1459581.194
2020	5	,	10	1.00001.104

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2020	3	7	11	1417199.228
2020	3	7	12	1383712.255
2020	3	7	13	1351319.987
2020	3	7	14	1308617.775
2020	3	7	15	1290914.868
2020	3	7	16	1273682.710
2020	3	7	17	1278438.223
2020	3	7	18	1314203.743
2020	3	7	19	1404707.462
2020	3	7	20	1408028.619
2020	3	7	21	1383538.909
2020	3	7	22	1342362.206
2020	3	7	23	1263350.731
2020	3	8	0	1219193.032
2020	3	8	1	1198114.054
2020	3	8	2	1163183.523
2020	3	8	3	1178164.559
2020	3	8	4	1189731.428
2020	3	8	5	1222227.849
2020	3	8	6	1284442.860
2020	3	8	7	1288735.177
2020	3	8	8	1297402.551
2020	3	8	9	1296494.787
2020	3	8	10	1268393.150
2020	3	8	11	1247221.000
2020	3	8	12	1231906.387
2020	3	8	13	1215921.660
2020	3	8	14	1197804.167
2020	3	8	15	1193466.351
2020	3	8	16	1196187.446
2020	3	8	17	1225454.839
2020	3	8	18	1291781.550
2020	3	8	19	1358489.908
2020	3	8	20	1307532.119
2020	3	8	21	1251165.745
2020	3	8	22	1203978.501
2020	3	8	23	1145450.940
2020	3	9	0	1113977.335
2020	3	9	1	1100870.165
2020	3	9	2	1097202.749
2020	3	9	3	1122727.276
2020	3	9	4	1211164.477

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2020	3	9	5	1382032.788
2020	3	9	6	1460647.425
2020	3	9	7	1457519.455
2020	3	9	8	1437903.588
2020	3	9	9	1458724.194
2020	3	9	10	1454765.934
2020	3	9	11	1423222.634
2020	3	9	12	1395829.457
2020	3	9	13	1367700.652
2020	3	9	14	1361640.596
2020	3	9	15	1325941.953
2020	3	9	16	1308871.969
2020	3	9	17	1341224.107
2020	3	9	18	1385068.882
2020	3	9	19	1428040.356
2020	3	9	20	1394091.101
2020	3	9	21	1317335.364
2020	3	9	22	1245219.600
2020	3	9	23	1194140.020
2020	3	10	0	1156657.468
2020	3	10	1	1126325.358
2020	3	10	2	1114881.629
2020	3	10	3	1118318.886
2020	3	10	4	1190702.824
2020	3	10	5	1312785.398
2020	3	10	6	1403112.082
2020	3	10	7	1404568.800
2020	3	10	8	1408695.772
2020	3	10	9	1418178.158
2020	3	10	10	1463064.649
2020	3	10	11	1487764.259
2020	3	10	12	1490750.774
2020	3	10	13	1476065.262
2020	3	10	14	1453210.317
2020	3	10	15	1416571.334
2020	3	10	16	1402422.856
2020	3	10	17	1412575.375
2020	3	10	18	1435193.962
2020	3	10	19	1446728.159
2020	3	10	20	1400931.904
2020	3	10	21	1320794.477
2020	3	10	22	1226702.504

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	-			
2020	3	10	23	1180700.416
2020	3	11	0	1136835.700
2020	3	11	1	1117151.111
2020	3	11	2	1101581.271
2020	3	11	3	1103805.032
2020	3	11	4	1172218.766
2020	3	11	5	1294325.563
2020	3	11	6	1400241.707
2020	3	11	7	1393066.853
2020	3	11	8	1399019.071
2020	3	11	9	1414633.884
2020	3	11	10	1387953.608
2020	3	11	11	1358666.157
2020	3	11	12	1359977.204
2020	3	11	13	1319967.576
2020	3	11	14	1304616.011
2020	3	11	15	1278994.570
2020	3	11	16	1255928.788
2020	3	11	17	1255998.067
2020	3	11	18	1278547.008
2020	3	11	19	1366795.992
2020	3	11	20	1325661.833
2020	3	11	21	1250661.744
2020	3	11	22	1185614.637
2020	3	11	23	1112639.883
2020	3	12	0	1084091.275
2020	3	12	1	1079350.381
2020	3	12	2	1066224.720
2020	3	12	3	1073407.861
2020	3	12	4	1136990.648
2020	3	12	5	1295155.570
2020	3	12	6	1387101.542
2020	3	12	7	1390469.232
2020	3	12	8	1381114.508
2020	3	12	9	1420755.008
2020	3	12	10	1370179.684
2020	3	12	11	1372977.827
2020	3	12	12	1363405.333
2020	3	12	12	1328893.854
2020	3	12	13 14	1305514.917
2020	3	12	14	1267725.009
2020	3	12	15 16	1252449.253
2020	5	Τζ	10	1232449.233

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2020	3	12	17	1270668.016
2020	3	12	18	1301519.915
2020	3	12	19	1377008.235
2020	3	12	20	1341610.778
2020	3	12	21	1262320.534
2020	3	12	22	1175335.986
2020	3	12	23	1096029.762
2020	3	13	0	1071107.205
2020	3	13	1	1052500.090
2020	3	13	2	1046135.049
2020	3	13	3	1040829.992
2020	3	13	4	1098203.480
2020	3	13	5	1223822.284
2020	3	13	6	1327457.284
2020	3	13	7	1350323.142
2020	3	13	8	1356334.837
2020	3	13	9	1365307.599
2020	3	13	10	1368209.146
2020	3	13	11	1373623.992
2020	3	13	12	1386918.220
2020	3	13	13	1373030.717
2020	3	13	14	1366702.472
2020	3	13	15	1358125.763
2020	3	13	16	1347606.246
2020	3	13	17	1323576.698
2020	3	13	18	1355727.695
2020	3	13	19	1373915.260
2020	3	13	20	1336670.147
2020	3	13	21	1261751.973
2020	3	13	22	1212868.471
2020	3	13	23	1149880.235
2020	3	14	0	1103490.156
2020	3	14	1	1084780.585
2020	3	14	2	1072109.719
2020	3	14	3	1057446.341
2020	3	14	4	1065267.432
2020	3	14	5	1098917.836
2020	3	14	6	1164338.634
2020	3	14	7	1194854.199
2020	3	14	8	1231157.387
2020	3	14	9	1262987.541
2020	3	14	10	1271678.577
2020	5	± ·	10	12,10,0.0,7

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2020	3	14	11	1263457.560
2020	3	14	12	1258760.462
2020	3	14	13	1228087.741
2020	3	14	14	1204029.973
2020	3	14	15	1200400.274
2020	3	14	16	1175984.030
2020	3	14	17	1163739.434
2020	3	14	18	1152376.378
2020	3	14	19	1210456.244
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2020	3	14	21	1181804.825
2020	3	14	22	1107782.584
2020	3	14	23	1058552.613
2020	3	15	0	1022819.197
2020	3	15	1	1007293.539
2020	3	15	2	991387.527
2020	3	15	3	994348.678
2020	3	15	4	1028671.269
2020	3	15	5	1050928.802
2020	3	15	6	1109045.670
2020	3	15	7	1131890.808
2020	3	15	8	1168537.372
2020	3	15	9	1175710.034
2020	3	15	10	1169218.906
2020	3	15	11	1167795.534
2020	3	15	12	1152323.473
2020	3	15	13	1133797.506
2020	3	15	14	1117561.488
2020	3	15	15	1130460.525
2020	3	15	16	1140399.060
2020	3	15	17	1146397.884
2020	3	15	18	1184580.691
2020	3	15	19	1271548.369
2020	3	15	20	1244120.159
2020	3	15	21	1184216.559
2020	3	15	22	1094545.409
2020	3	15	23	1036342.375
2020	3	16	0	1011994.188
2020	3	16	1	985807.247
2020	3	16	2	987244.316
2020	3	16	3	1002612.230
2020	3	16	4	1064111.313

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2020	2	10	F	1210011 702
2020	3	16 16	5	1219811.793
2020	3	16	6	1333037.983
2020	3	16	7	1333618.308
2020	3	16	8	1334769.552
2020	3	16	9	1339823.475
2020	3	16	10	1344258.379
2020	3	16	11	1348821.437
2020	3	16	12	1352378.070
2020	3	16	13	1354314.208
2020	3	16	14	1336551.719
2020	3	16	15	1323151.756
2020	3	16	16	1299769.871
2020	3	16	17	1293488.184
2020	3	16	18	1297805.033
2020	3	16	19	1371537.430
2020	3	16	20	1329315.797
2020	3	16	21	1258330.923
2020	3	16	22	1160317.710
2020	3	16	23	1093246.060
2020	3	17	0	1056249.590
2020	3	17	1	1033159.821
2020	3	17	2	1015385.196
2020	3	17	3	997920.593
2020	3	17	4	1067565.621
2020	3	17	5	1201740.212
2020	3	17	6	1301657.543
2020	3	17	7	1302261.175
2020	3	17	8	1331762.713
2020	3	17	9	1329513.738
2020	3	17	10	1334776.100
2020	3	17	11	1344441.384
2020	3	17	12	1337438.796
2020	3	17	13	1321645.402
2020	3	17	14	1276042.150
2020	3	17	15	1278823.323
2020	3	17	16	1271899.995
2020	3	17	17	1251958.972
2020	3	17	18	1267605.772
2020	3	17	19	1359825.977
2020	3	17	20	1335296.728
2020	3	17	21	1255692.878
2020	3	17	22	1199103.471
2020	5	±/	~~	1133103.7/1

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2020	3	17	23	1153110.684
2020	3	18	0	1122367.211
2020	3	18	1	1106824.816
2020	3	18	2	1116410.921
2020	3	18	3	1121420.237
2020	3	18	4	1200558.955
2020	3	18	5	1366015.388
2020	3	18	6	1485468.467
2020	3	18	7	1478945.731
2020	3	18	8	1471587.072
2020	3	18	9	1490135.175
2020	3	18	10	1451269.892
2020	3	18	11	1451559.352
2020	3	18	12	1428691.612
2020	3	18	13	1401702.241
2020	3	18	14	1373948.321
2020	3	18	15	1351890.524
2020	3	18	16	1337180.380
2020	3	18	17	1360613.684
2020	3	18	18	1381377.797
2020	3	18	19	1442217.417
2020	3	18	20	1399718.575
2020	3	18	21	1327696.893
2020	3	18	22	1239596.690
2020	3	18	23	1186514.662
2020	3	19	0	1170881.351
2020	3	19	1	1142992.009
2020	3	19	2	1134302.048
2020	3	19	3	1148088.769
2020	3	19	4	1208009.503
2020	3	19	5	1344183.332
2020	3	19	6	1444933.212
2020	3	19	7	1467251.263
2020	3	19	8	1448582.261
2020	3	19	9	1465165.036
2020	3	19	10	1424253.035
2020	3	19	11	1443029.920
2020	3	19	12	1443734.234
2020	3	19	13	1414279.202
2020	3	19	14	1393153.536
2020	3	19	15	1377413.192
2020	3	19	16	1374244.900
	-		-*	

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2020	3	19	17	1399585.375
2020	3	19	18	1433419.042
2020	3	19	19	1471796.528
2020	3	19	20	1411561.734
2020	3	19	21	1337303.527
2020	3	19	22	1225253.381
2020	3	19	23	1167288.437
2020	3	20	0	1120603.845
2020	3	20	1	1092133.505
2020	3	20	2	1080043.852
2020	3	20	3	1081325.160
2020	3	20	4	1137842.107
2020	3	20	5	1290512.536
2020	3	20	6	1386343.466
2020	3	20	7	1397012.283
2020	3	20	8	1409100.915
2020	3	20	9	1415933.122
2020	3	20	10	1394277.576
2020	3	20	11	1357083.660
2020	3	20	12	1370204.031
2020	3	20	13	1362689.380
2020	3	20	14	1352922.953
2020	3	20	15	1348555.450
2020	3	20	16	1332260.379
2020	3	20	17	1316846.450
2020	3	20	18	1363339.722
2020	3	20	19	1384619.741
2020	3	20	20	1347828.974
2020	3	20	21	1270138.688
2020	3	20	22	1205655.417
2020	3	20	23	1150827.651
2020	3	21	0	1113505.310
2020	3	21	1	1082694.594
2020	3	21	2	1069728.898
2020	3	21	3	1066800.672
2020	3	21	4	1087342.402
2020	3	21	5	1133155.110
2020	3	21	6	1192984.087
2020	3	21	7	1216411.061
2020	3	21	8	1234129.214
2020	3	21	9	1229509.470
2020	3	21	10	1220133.808
-	-		-	

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2020	3	21	11	1185999.015
2020	3	21	12	1169448.810
2020	3	21	13	1148912.965
2020	3	21	14	1121679.204
2020	3	21	15	1122797.694
2020	3	21	16	1117052.020
2020	3	21	17	1124918.103
2020	3	21	18	1130065.343
2020	3	21	19	1211209.672
2020	3	21	20	1196627.661
2020	3	21	21	1127626.347
2020	3	21	22	1075158.475
2020	3	21	23	1021247.056
2020	3	22	0	968234.688
2020	3	22	1	949349.644
2020	3	22	2	954593.677
2020	3	22	3	960370.331
2020	3	22	4	978218.150
2020	3	22	5	1024729.920
2020	3	22	6	1076352.706
2020	3	22	7	1110528.478
2020	3	22	8	1164741.124
2020	3	22	9	1152655.965
2020	3	22	10	1140586.604
2020	3	22	11	1180189.733
2020	3	22	12	1163986.383
2020	3	22	13	1145710.034
2020	3	22	14	1127339.282
2020	3	22	15	1138889.775
2020	3	22	16	1161276.701
2020	3	22	17	1186713.583
2020	3	22	18	1209130.521
2020	3	22	19	1308190.065
2020	3	22	20	1282613.767
2020	3	22	21	1229170.885
2020	3	22	22	1158424.250
2020	3	22	23	1087133.563
2020	3	23	0	1055197.856
2020	3	23	1	1042434.544
2020	3	23	2	1050464.384
2020	3	23	3	1089912.649
2020	3	23	4	1189101.038

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2020	3	23	5	1337431.345
2020	3	23	6	1446100.609
2020	3	23	7	1457975.709
2020	3	23	8	1431725.171
2020	3	23	9	1421786.527
2020	3	23	10	1404832.259
2020	3	23	11	1395106.917
2020	3	23	12	1378393.289
2020	3	23	13	1331145.983
2020	3	23	14	1295279.919
2020	3	23	15	1282975.798
2020	3	23	16	1263175.055
2020	3	23	17	1258385.184
2020	3	23	18	1266720.618
2020	3	23	19	1362533.682
2020	3	23	20	1322609.342
2020	3	23	21	1260915.928
2020	3	23	22	1192626.924
2020	3	23	23	1153860.490
2020	3	24	0	1126058.505
2020	3	24	1	1110070.169
2020	3	24	2	1105539.122
2020	3	24	3	1127885.206
2020	3	24	4	1212832.081
2020	3	24	5	1367165.678
2020	3	24	6	1462969.151
2020	3	24	7	1435239.810
2020	3	24	8	1432338.327
2020	3	24	9	1411875.867
2020	3	24	10	1457042.284
2020	3	24	11	1435207.282
2020	3	24	12	1435610.125
2020	3	24	13	1429674.185
2020	3	24	14	1399971.745
2020	3	24	15	1376735.763
2020	3	24	16	1391277.720
2020	3	24	17	1406756.820
2020	3	24	18	1424407.427
2020	3	24	19	1454162.618
2020	3	24	20	1398168.820
2020	3	24	21	1315836.502
2020	3	24	22	1228450.387

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2020	3	24	23	1174527.046
2020	3	25	0	1139340.593
2020	3	25	1	1108569.634
2020	3	25	2	1096470.437
2020	3	25	3	1100143.336
2020	3	25	4	1156919.001
2020	3	25	5	1289243.199
2020	3	25	6	1346492.238
2020	3	25	7	1304961.748
2020	3	25	8	1303127.587
2020	3	25	9	1307737.461
2020	3	25	10	1315323.391
2020	3	25	11	1313545.192
2020	3	25	12	1318316.682
2020	3	25	13	1311416.510
2020	3	25	14	1303251.999
2020	3	25	15	1302287.254
2020	3	25	16	1290121.117
2020	3	25	17	1288191.847
2020	3	25	18	1285995.325
2020	3	25	19	1352340.728
2020	3	25	20	1322092.677
2020	3	25	21	1241562.773
2020	3	25	22	1146135.036
2020	3	25	23	1091693.887
2020	3	26	0	1049530.895
2020	3	26	1	1004850.007
2020	3	26	2	983375.627
2020	3	26	3	1001743.866
2020	3	26	4	1077981.481
2020	3	26	5	1214949.148
2020	3	26	6	1317137.715
2020	3	26	7	1324545.604
2020	3	26	8	1356248.490
2020	3	26	9	1377892.293
2020	3	26	10	1384084.732
2020	3	26	11	1386116.644
2020	3	26	12	1385676.025
2020	3	26	13	1381621.563
2020	3	26	14	1375129.480
2020	3	26	15	1366664.489
2020	3	26	16	1371098.211

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2020	3	26	17	1376460.135
2020	3	26	18	1381682.074
2020	3	26	19	1435815.335
2020	3	26	20	1396240.921
2020	3	26	21	1348334.550
2020	3	26	22	1260242.202
2020	3	26	23	1214309.494
2020	3	27	0	1180000.904
2020	3	27	1	1161623.251
2020	3	27	2	1162762.165
2020	3	27	3	1175566.654
2020	3	27	4	1215892.094
2020	3	27	5	1369115.585
2020	3	27	6	1475572.985
2020	3	27	7	1442829.546
2020	3	27	8	1449224.987
2020	3	27	9	1455077.983
2020	3	27	10	1440717.498
2020	3	27	11	1394874.655
2020	3	27	12	1438898.750
2020	3	27	13	1425125.755
2020	3	27	14	1419960.204
2020	3	27	15	1404631.022
2020	3	27	16	1402042.980
2020	3	27	17	1395879.640
2020	3	27	18	1417347.015
2020	3	27	19	1469930.375
2020	3	27	20	1424298.164
2020	3	27	21	1383393.297
2020	3	27	22	1331907.886
2020	3	27	23	1286282.583
2020	3	28	0	1259054.108
2020	3	28	1	1246901.990
2020	3	28	2	1247964.043
2020	3	28	3	1284075.684
2020	3	28	4	1303189.780
2020	3	28	5	1364569.665
2020	3	28	6	1407582.556
2020	3	28	7	1441681.910
2020	3	28	8	1446282.166
2020	3	28	9	1426853.001
2020	3	28	10	1406908.545

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2020	3	28	11	1360979.375
2020	3	28	12	1317894.183
2020	3	28	13	1272726.995
2020	3	28	14	1240575.173
2020	3	28	15	1229766.303
2020	3	28	16	1217971.290
2020	3	28	17	1219495.302
2020	3	28	18	1240298.978
2020	3	28	19	1345968.419
2020	3	28	20	1359151.830
2020	3	28	21	1311555.963
2020	3	28	22	1276648.037
2020	3	28	23	1227634.847
2020	3	29	0	1197788.755
2020	3	29	1	1183159.366
2020	3	29	2	1187703.038
2020	3	29	3	1186780.356
2020	3	29	4	1207602.793
2020	3	29	5	1245650.516
2020	3	29	6	1286174.201
2020	3	29	7	1317781.541
2020	3	29	8	1323964.260
2020	3	29	9	1315009.227
2020	3	29	10	1292034.761
2020	3	29	11	1257566.073
2020	3	29	12	1236342.174
2020	3	29	13	1203946.217
2020	3	29	14	1155350.885
2020	3	29	15	1143638.045
2020	3	29	16	1173401.255
2020	3	29	17	1182882.116
2020	3	29	18	1206472.872
2020	3	29	19	1299517.921
2020	3	29	20	1262883.043
2020	3	29	21	1203024.984
2020	3	29	22	1115909.954
2020	3	29	23	1062373.921
2020	3	30	0	1027766.622
2020	3	30	1	1018475.840
2020	3	30	2	1008987.139
2020	3	30	3	1039704.212
2020	3	30	4	1102112.140

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2020	3	30	5	1252932.504
2020	3	30	6	1355639.758
2020	3	30	7	1346711.628
2020	3	30	8	1344898.935
2020	3	30	9	1354331.618
2020	3	30	10	1349845.682
2020	3	30	11	1335436.159
2020	3	30	12	1315939.431
2020	3	30	13	1297708.054
2020	3	30	14	1269821.649
2020	3	30	15	1236846.021
2020	3	30	16	1233317.031
2020	3	30	17	1235407.089
2020	3	30	18	1238224.033
2020	3	30	19	1312450.568
2020	3	30	20	1292760.407
2020	3	30	21	1229882.105
2020	3	30	22	1131276.760
2020	3	30	23	1089526.022
2020	3	31	0	1060161.484
2020	3	31	1	1043814.560
2020	3	31	2	1037880.554
2020	3	31	3	1047479.188
2020	3	31	4	1104781.654
2020	3	31	5	1253163.653
2020	3	31	6	1349530.223
2020	3	31	7	1325918.370
2020	3	31	8	1342734.462
2020	3	31	9	1341621.095
2020	3	31	10	1337382.902
2020	3	31	11	1335927.558
2020	3	31	12	1337183.829
2020	3	31	13	1329340.634
2020	3	31	14	1318653.974
2020	3	31	15	1292234.958
2020	3	31	16	1270563.438
2020	3	31	17	1253547.017
2020	3	31	18	1248057.637
2020	3	31	19	1313661.798
2020	3	31	20	1309889.826
2020	3	31	21	1215053.711
2020	3	31	22	1121330.527

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	_			
2020	3	31	23	1053814.896
2020	4	1	0	1013009.581
2020	4	1	1	990174.235
2020	4	1	2	985049.359
2020	4	1	3	1003390.112
2020	4	1	4	1067845.125
2020	4	1	5	1217717.822
2020	4	1	6	1312067.647
2020	4	1	7	1301683.015
2020	4	1	8	1257344.040
2020	4	1	9	1306590.631
2020	4	1	10	1264449.716
2020	4	1	11	1254730.690
2020	4	1	12	1267125.251
2020	4	1	13	1270485.031
2020	4	1	14	1264118.447
2020	4	1	15	1246077.210
2020	4	1	16	1225287.484
2020	4	1	17	1226600.202
2020	4	1	18	1225661.613
2020	4	1	19	1310973.854
2020	4	1	20	1280324.013
2020	4	1	21	1190884.653
2020	4	1	22	1116028.443
2020	4	1	23	1063749.072
2020	4	2	0	1027017.890
2020	4	2	1	998074.514
2020	4	2	2	982793.902
2020	4	2	3	985829.964
2020	4	2	4	1036646.802
2020	4	2	5	1169745.134
2020	4	2	6	1263906.672
2020	4	2	7	1277139.643
2020	4	2	8	1288034.550
2020	4	2	9	1387993.160
2020	4	2	10	1403702.962
2020	4	2	11	1375234.641
2020	4	2	12	1384955.809
2020	4	2	13	1383841.044
2020	4	2	14	1396247.679
2020	4	2	15	1354029.691
2020	4	2	16	1284263.177

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2020	4	2	17	1275658.343
2020	4	2	18	1262747.586
2020	4	2	19	1358590.148
2020	4	2	20	1278096.254
2020	4	2	21	1206185.643
2020	4	2	22	1129797.987
2020	4	2	23	1085311.780
2020	4	3	0	1007130.855
2020	4	3	1	977852.439
2020	4	3	2	961808.873
2020	4	3	3	968090.933
2020	4	3	4	970392.435
2020	4	3	5	1067483.486
2020	4	3	6	1154413.958
2020	4	3	7	1163099.373
2020	4	3	8	1208574.730
2020	4	3	9	1241807.138
2020	4	3	10	1263845.466
2020	4	3	11	1260456.678
2020	4	3	12	1242084.946
2020	4	3	13	1235853.585
2020	4	3	14	1240860.265
2020	4	3	15	1230223.841
2020	4	3	16	1189408.649
2020	4	3	17	1163023.578
2020	4	3	18	1167478.339
2020	4	3	19	1197480.104
2020	4	3	20	1178196.648
2020	4	3	21	1133027.491
2020	4	3	22	1059514.820
2020	4	3	23	1006330.211
2020	4	4	0	955832.514
2020	4	4	1	931550.398
2020	4	4	2	923987.329
2020	4	4	3	943138.215
2020	4	4	4	967228.983
2020	4	4	5	1034199.071
2020	4	4	6	1084027.777
2020	4	4	7	1116134.949
2020	4	4	8	1158510.815
2020	4	4	9	1163215.108
2020	4	4	10	1154643.558

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2020	4	4	11	1134993.473
2020	4	4	12	1113293.643
2020	4	4	13	1100902.692
2020	4	4	14	1088545.737
2020	4	4	15	1078980.581
2020	4	4	16	1078627.782
2020	4	4	17	1069657.709
2020	4	4	18	1087151.178
2020	4	4	19	1148359.882
2020	4	4	20	1145690.441
2020	4	4	21	1113266.749
2020	4	4	22	1075085.108
2020	4	4	23	1028197.726
2020	4	5	0	977393.468
2020	4	5	1	950613.577
2020	4	5	2	949269.240
2020	4	5	3	952722.285
2020	4	5	4	997052.745
2020	4	5	5	1054069.318
2020	4	5	6	1077609.989
2020	4	5	7	1109133.581
2020	4	5	8	1116203.292
2020	4	5	9	1107737.283
2020	4	5	10	1089042.812
2020	4	5	11	1089146.367
2020	4	5	12	1059751.627
2020	4	5	13	1039890.026
2020	4	5	14	1009225.806
2020	4	5	15	998203.754
2020	4	5	16	1003454.002
2020	4	5	17	1026872.796
2020	4	5	18	1055237.918
2020	4	5	19	1119990.752
2020	4	5	20	1129152.276
2020	4	5	21	1091003.047
2020	4	5	22	1032849.575
2020	4	5	23	966151.456
2020	4	6	0	930392.183
2020	4	6	1	919876.264
2020	4	6	2	917887.832
2020	4	6	3	935942.443
2020	4	6	4	1014872.508

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2020	4	6	5	1132802.883
2020	4	6	6	1193131.322
2020	4	6	7	1220790.068
2020	4	6	8	1244841.597
2020	4	6	9	1267940.949
2020	4	6	10	1248199.798
2020	4	6	11	1298842.567
2020	4	6	12	1296987.365
2020	4	6	13	1284039.286
2020	4	6	14	1253516.678
2020	4	6	15	1234779.519
2020	4	6	16	1223484.627
2020	4	6	17	1220503.188
2020	4	6	18	1208654.217
2020	4	6	19	1292384.025
2020	4	6	20	1275583.435
2020	4	6	21	1193490.316
2020	4	6	22	1119171.723
2020	4	6	23	1075876.289
2020	4	7	0	1028700.382
2020	4	7	1	1000357.843
2020	4	7	2	961164.884
2020	4	7	3	962330.434
2020	4	7	4	1038154.682
2020	4	7	5	1122237.653
2020	4	7	6	1198635.141
2020	4	7	7	1250996.773
2020	4	7	8	1293772.306
2020	4	7	9	1298098.734
2020	4	7	10	1335045.801
2020	4	7	11	1334018.742
2020	4	7	12	1368594.502
2020	4	7	13	1386706.611
2020	4	7	14	1352678.334
2020	4	7	15	1303335.147
2020	4	7	16	1334133.577
2020	4	7	17	1288023.678
2020	4	7	18	1274439.098
2020	4	7	19	1298799.776
2020	4	7	20	1277258.873
2020	4	7	21	1179863.966
2020	4	7	22	1107157.477

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2020	4	7	23	1066419.291
2020	4	8	0	1046847.647
2020	4	8	1	1021905.766
2020	4	8	2	973486.347
2020	4	8	3	976360.960
2020	4	8	4	1040873.000
2020	4	8	5	1148092.949
2020	4	8	6	1175661.886
2020	4	8	7	1199498.253
2020	4	8	8	1245457.862
2020	4	8	9	1305243.098
2020	4	8	10	1352483.886
2020	4	8	11	1471468.456
2020	4	8	12	1491521.218
2020	4	8	13	1509576.086
2020	4	8	14	1518598.626
2020	4	8	15	1499946.092
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2020	4	15	11	1392363.229
2020	4	15	12	1378590.866
2020	4	15	13	1351330.350
2020	4	15	14	1304219.681
2020	4	15	15	1284099.653
2020	4	15	16	1254195.919
2020	4	15	17	1268268.240
2020	4	15	18	1270884.377
2020	4	15	19	1337822.065
2020	4	15	20	1296536.706
2020	4	15	21	1207729.623
2020	4	15	22	1134499.264
2020	4	15	23	1077416.570
2020	4	16	0	1036494.448
2020	4	16	1	1019486.512
2020	4	16	2	988153.599
2020	4	16	3	990879.221
2020	4	16	4	1056772.296
2020	4	16	5	1148611.931
2020	4	16	6	1211173.596
2020	4	16	7	1231692.338
2020	4	16	8	1286648.483
2020	4	16	9	1348830.174
2020	4	16	10	1379840.620
2020	4	16	11	1408871.561
2020	4	16	12	1424678.871
2020	4	16	13	1439246.764
2020	4	16	14	1441567.546
2020	4	16	15	1433762.081
2020	4	16	16	1430054.669

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2020	4	16	17	1420119.105
2020	4	16	18	1409972.269
2020	4	16	19	1455239.692
2020	4	16	20	1427056.158
2020	4	16	21	1319000.915
2020	4	16	22	1201448.201
2020	4	16	23	1141216.334
2020	4	17	0	1086477.106
2020	4	17	1	1050279.243
2020	4	17	2	1033763.483
2020	4	17	3	1031618.371
2020	4	17	4	1080661.845
2020	4	17	5	1186003.990
2020	4	17	6	1280470.123
2020	4	17	7	1320206.179
2020	4	17	8	1372783.505
2020	4	17	9	1413552.669
2020	4	17	10	1457724.470
2020	4	17	11	1511690.534
2020	4	17	12	1562119.728
2020	4	17	13	1611648.477
2020	4	17	14	1603060.113
2020	4	17	15	1617900.104
2020	4	17	16	1527904.886
2020	4	17	17	1489168.579
2020	4	17	18	1448929.789
2020	4	17	19	1451473.850
2020	4	17	20	1453254.415
2020	4	17	21	1349133.395
2020	4	17	22	1234780.468
2020	4	17	23	1144736.531
2020	4	18	0	1092934.045
2020	4	18	1	1046026.906
2020	4	18	2	995407.312
2020	4	18	3	954393.946
2020	4	18	4	959590.534
2020	4	18	5	1009690.220
2020	4	18	6	1011839.998
2020	4	18	7	1084716.105
2020	4	18	8	1124763.336
2020	4	18	9	1174989.601
2020	4	18	10	1218783.507

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2020	4	18	11	1252276.155
2020	4	18	12	1300767.161
2020	4	18	13	1353624.197
2020	4	18	14	1406322.908
2020	4	18	15	1444643.746
2020	4	18	16	1457699.373
2020	4	18	17	1438902.333
2020	4	18	18	1403722.149
2020	4	18	19	1399421.143
2020	4	18	20	1369109.231
2020	4	18	21	1241771.444
2020	4	18	22	1169209.447
2020	4	18	23	1100295.143
2020	4	19	0	1048999.737
2020	4	19	1	988994.762
2020	4	19	2	957222.682
2020	4	19	3	937900.934
2020	4	19	4	941357.906
2020	4	19	5	968527.984
2020	4	19	6	993824.593
2020	4	19	7	1048837.655
2020	4	19	8	1099298.203
2020	4	19	9	1150618.095
2020	4	19	10	1165275.280
2020	4	19	11	1198371.234
2020	4	19	12	1211503.715
2020	4	19	13	1213500.858
2020	4	19	14	1211412.382
2020	4	19	15	1242766.222
2020	4	19	16	1266111.760
2020	4	19	17	1284700.493
2020	4	19	18	1282829.493
2020	4	19	19	1332139.946
2020	4	19	20	1330283.845
2020	4	19	21	1235918.065
2020	4	19	22	1143512.494
2020	4	19	23	1073183.705
2020	4	20	0	1014084.247
2020	4	20	1	981568.812
2020	4	20	2	987022.930
2020	4	20	3	1000885.890
2020	4	20	4	1072029.871

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2020	4	20	5	1195114.099
2020	4	20	6	1345277.688
2020	4	20	7	1331927.380
2020	4	20	8	1365760.488
2020	4	20	9	1410924.461
2020	4	20	10	1388908.191
2020	4	20	11	1367599.655
2020	4	20	12	1356362.861
2020	4	20	13	1369397.866
2020	4	20	14	1344867.258
2020	4	20	15	1297289.020
2020	4	20	16	1277417.040
2020	4	20	17	1280814.051
2020	4	20	18	1268223.317
2020	4	20	19	1350553.540
2020	4	20	20	1291536.422
2020	4	20	21	1230273.405
2020	4	20	22	1152745.905
2020	4	20	23	1100951.447
2020	4	21	0	1053408.909
2020	4	21	1	1013685.853
2020	4	21	2	994742.728
2020	4	21	3	951618.961
2020	4	21	4	1034942.691
2020	4	21	5	1164821.675
2020	4	21	6	1228125.412
2020	4	21	7	1243132.065
2020	4	21	8	1255364.775
2020	4	21	9	1269728.388
2020	4	21	10	1289291.898
2020	4	21	11	1300026.714
2020	4	21	12	1324686.419
2020	4	21	13	1328883.855
2020	4	21	14	1290462.771
2020	4	21	15	1238528.658
2020	4	21	16	1229364.025
2020	4	21	17	1228807.514
2020	4	21	18	1233703.341
2020	4	21	19	1301311.151
2020	4	21	20	1290200.942
2020	4	21	21	1216380.971
2020	4	21	22	1135304.975

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2020	4	21	23	1072180.031
2020	4	22	0	1048342.220
2020	4	22	1	1023629.534
2020	4	22	2	993144.472
2020	4	22	3	998733.154
2020	4	22	4	1061397.805
2020	4	22	5	1183618.013
2020	4	22	6	1264167.675
2020	4	22	7	1278443.799
2020	4	22	8	1278575.523
2020	4	22	9	1318446.613
2020	4	22	10	1327341.318
2020	4	22	11	1313609.013
2020	4	22	12	1314997.727
2020	4	22	13	1304145.964
2020	4	22	14	1270430.765
2020	4	22	15	1234797.421
2020	4	22	16	1218790.074
2020	4	22	17	1217023.288
2020	4	22	18	1211649.247
2020	4	22	19	1263903.983
2020	4	22	20	1293454.918
2020	4	22	21	1211115.913
2020	4	22	22	1127793.932
2020	4	22	23	1052540.338
2020	4	23	0	1025265.186
2020	4	23	1	1031167.523
2020	4	23	2	1039343.086
2020	4	23	3	1043717.010
2020	4	23	4	1104831.548
2020	4	23	5	1246901.284
2020	4	23	6	1314434.402
2020	4	23	7	1338700.012
2020	4	23	8	1322561.041
2020	4	23	9	1359969.567
2020	4	23	10	1338136.304
2020	4	23	11	1334857.669
2020	4	23	12	1340783.344
2020	4	23	13	1298132.045
2020	4	23	14	1281133.769
2020	4	23	15	1233004.737
2020	4	23	16	1224383.160

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2020	4	23	17	1212637.702
2020	4	23	18	1195121.993
2020	4	23	19	1248912.650
2020	4	23	20	1276818.172
2020	4	23	21	1208135.459
2020	4	23	22	1117392.379
2020	4	23	23	1060066.988
2020	4	24	0	1052856.781
2020	4	24	1	1040119.739
2020	4	24	2	1044700.923
2020	4	24	3	1042815.552
2020	4	24	4	1114358.007
2020	4	24	5	1224545.711
2020	4	24	6	1307806.974
2020	4	24	7	1327169.853
2020	4	24	8	1318432.794
2020	4	24	9	1320672.076
2020	4	24	10	1307361.655
2020	4	24	11	1266628.457
2020	4	24	12	1238196.003
2020	4	24	13	1236209.547
2020	4	24	14	1229744.749
2020	4	24	15	1218674.323
2020	4	24	16	1203936.889
2020	4	24	17	1184218.713
2020	4	24	18	1188255.214
2020	4	24	19	1228841.192
2020	4	24	20	1228193.281
2020	4	24	21	1159155.008
2020	4	24	22	1108452.424
2020	4	24	23	1038361.491
2020	4	25	0	1009212.698
2020	4	25	1	948412.014
2020	4	25	2	940161.078
2020	4	25	3	916228.873
2020	4	25	4	932152.799
2020	4	25	5	984270.995
2020	4	25	6	1022103.699
2020	4	25	7	1077562.918
2020	4	25	8	1119348.065
2020	4	25	9	1164623.992
2020	4	25	10	1184268.246

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2020	4	25	11	1181250.449
2020	4	25	12	1173906.790
2020	4	25	13	1155923.873
2020	4	25	14	1148908.608
2020	4	25	15	1146276.554
2020	4	25	16	1143911.485
2020	4	25	17	1141380.692
2020	4	25	18	1142640.404
2020	4	25	19	1172378.883
2020	4	25	20	1161285.029
2020	4	25	21	1116633.047
2020	4	25	22	1058919.301
2020	4	25	23	980503.672
2020	4	26	0	934615.763
2020	4	26	1	904900.489
2020	4	26	2	898091.971
2020	4	26	3	892036.258
2020	4	26	4	894927.052
2020	4	26	5	907005.070
2020	4	26	6	944052.140
2020	4	26	7	1037862.027
2020	4	26	8	1095035.363
2020	4	26	9	1102350.805
2020	4	26	10	1104833.929
2020	4	26	11	1095433.562
2020	4	26	12	1101021.964
2020	4	26	13	1079897.383
2020	4	26	14	1071687.326
2020	4	26	15	1079775.057
2020	4	26	16	1092158.436
2020	4	26	17	1108316.938
2020	4	26	18	1113766.292
2020	4	26	19	1160986.649
2020	4	26	20	1192367.078
2020	4	26	21	1138593.307
2020	4	26	22	1051191.220
2020	4	26	23	973182.251
2020	4	27	0	933815.990
2020	4	27	1	928556.756
2020	4	27	2	925484.666
2020	4	27	3	971759.879
2020	4	27	4	1053687.376

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2020	4	27	5	1172591.139
2020	4	27	6	1242007.612
2020	4	27	7	1285271.018
2020	4	27	8	1289173.301
2020	4	27	9	1303835.319
2020	4	27	10	1305735.696
2020	4	27	11	1318248.699
2020	4	27	12	1316492.952
2020	4	27	13	1304916.446
2020	4	27	14	1266646.173
2020	4	27	15	1262264.277
2020	4	27	16	1251205.082
2020	4	27	17	1245627.868
2020	4	27	18	1240735.263
2020	4	27	19	1261049.290
2020	4	27	20	1283211.613
2020	4	27	21	1194940.509
2020	4	27	22	1118464.650
2020	4	27	23	1067840.406
2020	4	28	0	1026670.947
2020	4	28	1	1002253.891
2020	4	28	2	992148.119
2020	4	28	3	989272.645
2020	4	28	4	1077091.258
2020	4	28	5	1191016.988
2020	4	28	6	1253494.111
2020	4	28	7	1272352.330
2020	4	28	8	1296296.213
2020	4	28	9	1313555.686
2020	4	28	10	1312384.065
2020	4	28	11	1312696.255
2020	4	28	12	1316706.743
2020	4	28	13	1310507.644
2020	4	28	14	1293197.637
2020	4	28	15	1266623.362
2020	4	28	16	1252766.606
2020	4	28	17	1247793.527
2020	4	28	18	1244479.310
2020	4	28	19	1258540.414
2020	4	28	20	1294292.649
2020	4	28	21	1204761.369
2020	4	28	22	1094561.254

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2020	4	28	23	1047646.095
2020	4	29	0	1018674.680
2020	4	29	1	986618.265
2020	4	29	2	980901.010
2020	4	29	3	975668.301
2020	4	29	4	1056262.740
2020	4	29	5	1069931.613
2020	4	29	6	1060540.108
2020	4	29	7	1085193.082
2020	4	29	8	1088879.719
2020	4	29	9	1109530.934
2020	4	29	10	1279675.565
2020	4	29	11	1354208.607
2020	4	29	12	1373623.453
2020	4	29	13	1363938.847
2020	4	29	14	1358922.851
2020	4	29	15	1331461.288
2020	4	29	16	1296642.438
2020	4	29	17	1254869.678
2020	4	29	18	1233956.540
2020	4	29	19	1271828.414
2020	4	29	20	1285024.932
2020	4	29	21	1217244.724
2020	4	29	22	1137920.857
2020	4	29	23	1071452.059
2020	4	30	0	1036099.522
2020	4	30	1	993528.767
2020	4	30	2	969992.113
2020	4	30	3	956010.322
2020	4	30	4	1017662.185
2020	4	30	5	1127483.453
2020	4	30	6	1186405.174
2020	4	30	7	1222771.911
2020	4	30	8	1237021.561
2020	4	30	9	1252205.873
2020	4	30	10	1275500.782
2020	4	30	11	1310600.161
2020	4	30	12	1321528.243
2020	4	30	13	1304816.209
2020	4	30	14	1264253.296
2020	4	30	15	1248375.877
2020	4	30	16	1211757.270

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2020	4	30	17	1196940.720
2020	4	30	18	1198124.685
2020	4	30	19	1210490.108
2020	4	30	20	1238330.514
2020	4	30	21	1196611.756
2020	4	30	22	1136016.183
2020	4	30	23	1083760.984

LOUISVILLE GAS AND ELECTRIC COMPANY

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 48

Responding Witness: William Steven Seelye

- Q-48. Please explain how the LOLP methodology was applied to the production demands for the base period, winter peak and summer peak.
- A-48. The hourly Loss of Load Probabilities are multiplied by the hourly loads of each class for each hour of the test year and then summed in total to calculate the LOLP allocation in the Cost of Service Study.

LOUISVILLE GAS AND ELECTRIC COMPANY

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 49

Responding Witness: William Steven Seelye / David S. Sinclair

- Q-49. Please provide for each calendar month in the cost of service test year, the highest hourly peak demand.
- A-49. See attached.

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Year	Month	LGE System Max Hourly kWh
2019	5	2,183,591
2019	6	2,387,027
2019	7	2,537,946
2019	8	2,679,866
2019	9	2,404,579
2019	10	1,725,807
2019	11	1,634,640
2019	12	1,661,413
2020	1	1,816,534
2020	2	1,667,954
2020	3	1,710,687
2020	4	1,646,218

LOUISVILLE GAS AND ELECTRIC COMPANY

Response to First Request for Information of the U. S. Department of Defense Dated November 13, 2018

Case No. 2018-00295

Question No. 50

Responding Witness: William Steven Seelye

- Q-50. For the peak demand data provided in Question DOD 1-50, please provide the portion of the peak demand used by each rate class in the cost of service study.
- A-50. The information required to determine the portion of peak demand used by each rate class is provided in the Excel attachment to the response to AG 1-137.