

**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2021-00185**

**SECOND PSC DATA REQUEST
DATED JULY 12, 2021**

20. Refer to the Paul R. Moul Testimony (Moul Testimony), page 4, and Attachment PRM-3. The sample size of the Gas Group of proxy companies is very small.

a. Explain what makes NiSource, Inc.'s capital structure atypical for gas distribution utilities, and why it was not included in the Gas Group.

b. Explain why PNG Companies, LLC is not present in the Gas Group.

c. Water utilities have many similar characteristics as gas companies. Explain why it is not reasonable to include water companies as a part of the proxy group of companies.

d. If it is not reasonable to include water utilities in the proxy group, compare and contrast the specific attributes of water utilities with those current Gas group proxies that renders them unsuitable for use as proxies.

Response:

a. The percentage of debt in NiSource, Inc.'s capital structure is relatively high compared to the companies in the Mr. Moul's natural gas proxy group.

b. As stated by Mr. Moul on page 4, lines 5-8, and in Attachment PRM-3, his selection criteria began with companies contained in the "Natural Gas Utility" industry group of The Value Line Investment Survey. PNG Companies, LLC, is neither part of this group nor is a publicly traded company, meaning market-based data would not be available to use in the cost of common equity models.

c. The purpose in selecting a proxy group of companies is to develop a proxy group of companies that are highly representative of the risks and prospects faced by Delta Natural Gas

**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2021-00185**

**SECOND PSC DATA REQUEST
DATED JULY 12, 2021**

Company. While water utilities may share characteristics in common with natural gas utility companies, it would not be appropriate to include them as the operational risks they face are significantly different, some of which are discussed by Mr. Moul on pages 6 – 9.

d. As noted on page 7, line 8 of Mr. Moul’s Direct Testimony, the price of alternative energy sources indicates that natural gas utilities face competitive pressures from other energy sources and suppliers. Water utilities do not face similar risks, because there is no substitute for water. Further, because water is generally directly consumed by customers it must be treated before it is delivered. Lastly, water consumption is generally highest during warmer months, the opposite of natural gas usage.

Sponsoring Witness: Dylan D’Ascendis

**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2021-00185**

**SECOND PSC DATA REQUEST
DATED JULY 12, 2021**

21. Refer to the Moul Testimony, page 6, lines 5–21. Mr. Moul discusses the risk associated with natural gas utilities.

- a. Explain the impact carbon regulation will have with the natural gas industry.
- b. Explain any pending federal legislation that will either increase or decrease the demand and cost of natural gas.

Response:

a. A 2018 ICF study for the American Gas Association notes that as states and local municipalities consider “deep decarbonization” of their economies as the electric grid becomes less carbon-intensive, policy-makers and environmental advocates are considering electrification as an option for further reducing greenhouse gas emissions. If successful, these policies could affect the natural gas utility sector by reducing demand for natural gas, leaving natural gas utilities at risk of holding stranded assets. The movement toward electrification raises the risk profile of natural gas distribution utilities since it not only limits the potential for future growth, but increases the possibility of a reduction to existing natural gas load as well. Please see PSC 2-21 Attachment 1 for the 2018 ICF study.

b. As outlined in a recent FitchRatings report, President Joe Biden’s proposed \$2.2 trillion American Jobs Plan has cemented the government’s intention to move forward with decarbonization. The infrastructure plan calls for a carbon free electricity grid by 2035. Natural gas utilities current incompatibility with new environmental standards causes financial concern in the near term, due to the necessity to invest in new technologies, such as carbon capture and

**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2021-00185**

**SECOND PSC DATA REQUEST
DATED JULY 12, 2021**

disposals systems. In the long term, gas utilities face the capital risk of holding stranded assets should gas plants be required to retire prematurely. In addition to this, government subsidies previously allocated to fossil fuel projects would now be invested in clean energy incentives, creating further financial pressures for gas utilities. Please see PSC 2-21 Attachment 2 for the 2021 FitchRatings report.

Sponsoring Witness: Dylan D'Ascendis



Implications of **Policy-Driven** **Residential** **Electrification**

An American Gas Association Study
prepared by ICF

July 2018

IMPORTANT NOTICE:

This is an American Gas Association (AGA) Study. The analysis was prepared for AGA by ICF. AGA defined the cases to be evaluated, and vetted the overall methodology and major assumptions. The EIA 2017 AEO Reference Case, including energy prices, energy consumption trends, energy emissions, and power generation capacity and dispatch projections, was used as the starting point for this analysis.

This report and information and statements herein are based in whole or in part on information obtained from various sources. The study is based on public data on energy costs, costs of customer conversions to electricity, and technology cost trends, and ICF modeling and analysis tools to analyze the costs and emissions impacts of policy-driven residential electrification for each study case. Neither ICF nor AGA make any assurances as to the accuracy of any such information or any conclusions based thereon. Neither ICF nor AGA are responsible for typographical, pictorial or other editorial errors. The report is provided AS IS.

NO WARRANTY, WHETHER EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IS GIVEN OR MADE BY ICF OR BY AGA IN CONNECTION WITH THIS REPORT.

You use this report at your own risk. Neither ICF nor AGA are liable for any damages of any kind attributable to your use of this report.

Implications of Policy-Driven Residential Electrification

As states and local municipalities pursue "deep decarbonization" of their economies and as the electric grid becomes less carbon-intensive some policy-makers and environmental advocates are looking at mandated residential electrification as one option for reducing residential greenhouse gas (GHG) emissions. This AGA study sets out to answer several key questions regarding potential costs and benefits of these residential electrification policies.¹ These questions include:

- Will policy-driven residential electrification actually reduce emissions?
- How will policy-driven residential electrification impact natural gas utility customers?
- What will be the impacts on the power sector and on electric transmission infrastructure requirements?
- What will be the overall cost of policy-driven residential electrification?
- How do the costs of policy-driven residential electrification compare to the costs of other approaches to reducing GHG emissions?

This AGA Study of residential electrification is based on a policy case that requires the halt of sales of furnaces and water heaters fueled by natural gas, fuel oil, and propane, starting in 2023. As existing equipment is replaced and new construction built, the analysis assumes the associated space and water heating requirements would be met solely with electric based technologies. The analysis then estimates the impact of such a policy on annual energy costs for residential end-users, as well as the associated impact on emissions generated by the residential end-use and power generation sectors through 2050.

Key Study Conclusions

- The U.S. Energy Information Administration (EIA) projects that by 2035, direct residential natural gas use will account for less than 4 percent of total GHG emissions, and the sum of natural gas, propane, and fuel oil used in the residential sector accounts for less than 6 percent of total GHG emissions. Reductions from policy-driven residential electrification would reduce GHG emissions by 1 to 1.5 percent of U.S. GHG emissions in 2035. The potential reduction in emissions from the residential sector is partially offset by an increase in emissions from the power generation sector, even in a case where all incremental generating capacity is renewable.
- Based on the 2017 EIA AEO, by 2035 direct residential natural gas use will account for about 4 percent of total GHG emissions, and the sum of natural gas, propane, and fuel oil used in the residential sector will account for about 5 percent of total GHG emissions. The EIA 2017 AEO projects emissions from the generation of electricity supplied to the residential sector to account for about 10 percent of total GHG emissions in 2035, or more than twice the GHG emissions from the direct use of natural gas in the residential sector.

¹ The electric grid is becoming cleaner due to a variety of factors, including low cost natural gas displacing coal, penetration of renewable generating capacity, and retirement of existing lower efficiency fossil fuel units due to changes in regulation and market forces.

- In the policy case, where about 60 percent of the natural gas, fuel oil and propane households are converted to electricity by 2035 in the regions where electrification policy is implemented, the total economy-wide increase in energy-related costs (residential consumer costs plus incremental power generation and transmission costs) from policy-driven residential electrification ranges from \$590 billion to \$1.2 trillion (real 2016 \$), which is equal to \$1,060 to \$1,420 per year for each affected household, depending on the power generation scenario. This reflects three components: i) changes in consumer energy costs between 2023 and 2050, ii) changes in consumer space heating and water heating equipment costs between 2023 and 2035, and iii) incremental power generation and transmission infrastructure costs between 2023 and 2035.
 - Policy-driven electrification would increase the average residential household energy-related costs (amortized appliance and electric system upgrade costs and utility bill payments) of affected households by between \$750 and \$910 per year, or about 38 percent to 46 percent.
 - Widespread policy-driven residential electrification will lead to increases in peak electric demand, and could shift the U.S. electric grid from summer peaking to winter peaking in every region of the country, resulting in the need for new investments in the electric grid including generation capacity, transmission capacity, and distribution capacity.
- The average cost of U.S. GHG emissions reductions achieved by policy-driven residential electrification would range between \$572 and \$806 per metric ton of CO₂ reduced, which is significantly higher than the estimated cost of other GHG reduction options.
- The costs and impacts from the residential electrification policy modelled in the study vary widely by region. based on differences in weather, which impacts both the demand for space heating, and the efficiency of the electric heat pumps. There also can be dramatic differences in costs and emissions benefits within a given region or state based on that local unique circumstances and dynamics. Criteria that can influence the results for a city or local region include differences in natural gas and electricity prices, differences in the housing stock, cleanliness of the electric grid, impacts on the local distribution systems.

Table of Contents

Executive Summary	1
ES-1 Introduction.....	1
ES-2 Potential Impacts of Residential Electrification	2
ES-3 Analysis Approach.....	4
ES-4 Study Results	6
ES-4.1 Cost Effectiveness of Policy-Driven Residential Electrification as a Greenhouse Gas Emissions Reduction Policy	8
ES-4.2 Overall Conclusions on the Effectiveness of Residential Electrification as a Greenhouse Gas Emissions Reduction Policy	9
1 - Policy-Driven Residential Electrification—Introduction and Background	10
1.1 What is Policy-Driven Residential Electrification?.....	11
1.2 Local and Regional Factors.....	14
1.3 Electric Heat Pump Performance	15
2 - Analysis of the Costs and Benefits of Policy-Driven Residential Electrification	17
2.1 Electrification Policy Definition.....	17
2.2 Alternative Electric Grid Scenarios	20
2.3 Household Conversions to Electricity.....	22
2.4 Impacts on Electricity Consumption and Demand Profiles	23
2.5 Consumer Cost of Policy-Driven Residential Electrification	24
2.6 Direct Consumer Cost Impacts from Policy-Driven Residential Electrification	26
3 - Impact of Policy-Driven Residential Electrification on the Electric Sector	30
3.1 Impact on Electric Generation Capacity	30
3.1.1 Impact of Policy-driven Residential Electrification on Peak Period Demand	31
3.1.2 Impact of Policy-driven Residential Electrification on Incremental Power Sector Investments	33
3.1.3 Impact of Policy-driven Residential Electrification on Generation by Source	33
3.1.4 Impact of Policy Driven Residential Electrification on Power Sector CO ₂ Emissions	35
3.2 Impact on Transmission Requirements.....	36
3.2.1 Analytical Approach	36
3.2.2 Impact of Policy-Driven Residential Electrification on Transmission Infrastructure Requirements	37
4 - Overall Impacts of Policy-Driven Residential Electrification	38
4.1 Overall Cost of Policy-Driven Residential Electrification	38
4.2 Cost per Consumer of Policy Driven Residential Electrification.....	39
4.3 Net Impacts on Natural Gas Consumption	40
4.4 Net Environmental Impacts.....	41
4.5 Cost per Ton of CO ₂ Emissions Reduced.....	43
5 - Study Conclusions	44

5.1 Study Results 44

5.2 Impact of Policy-Driven Residential Electrification on the Power Grid 46

5.3 Cost-Effectiveness of Residential Electrification as a Greenhouse Gas Emissions Reduction Policy 47

5.4 Applicability of Study Conclusions to Specific Policy Proposals at the State and Local Level 48

5.5 Other Impacts of Policy Driven Residential Electrification 49

5.6 Implications for the Policy Debate on Residential Electrification 50

Appendix A: Study Methodology and Assumptions 51

Appendix B: Regional Results 59

Appendix C: IPM Model Description 81

List of Figures

Figure ES-1: Comparison of Cost Ranges for GHG Emissions by Reduction Mechanism 8

Figure 1-1: U.S. GHG Emissions by Source and Sector 2016 12

Figure 1-2: Diagram of Residential Electrification Theory 13

Figure 1-3: Emissions Reduction For Electric Heat Pumps Based on Weather and Electric Grid Emissions 14

Figure 1-4: Illustration of Energy Delivery of an Electric Heat Pump and Natural Gas Furnace 16

Figure 2-1: Total U.S. GHG Emissions (2023 to 2035) in the EIA AEO 2017 Base Case 21

Figure 2-2: Average U.S. Residential Prices from EIA's 2017 AEO Base Case (Real 2016 \$) 21

Figure 2-3: Renewables-Only Case Household Conversions 22

Figure 2-4: Market-Based Generation Case Household Conversions 22

Figure 2-5: 2035 Monthly Electric Consumption by Case 23

Figure 2-6: Peak-Day Power Demand From 100% Electrification of Residential Natural Gas 24

Figure 2-7: Annual Energy Costs from Electrification Based on Different Residential Rates 27

Figure 2-8: Annualized Direct Consumer Costs by Case 28

Figure 3-1: Impact of Residential Electrification on Peak Electric Generation Requirements 31

Figure 3-2: Changes in U.S. Generating Capacity Due to Residential Electrification 32

Figure 3-3: Investment in Generating Capacity by 2035 33

Figure 3-4: U.S. Electric Generation by Fuel - 2035 (TWh) 34

Figure 3-5: Power Sector Natural Gas Consumption for 2023 to 2035 34

Figure 3-6: 2035 U.S. and Canada Power Sector CO₂ Emissions by Case 35

Figure 4-1: Total Cost of Renewables-Only Case by Sector 39

Figure 4-2: Total Cost of Market-Based Generation Case by Sector 39

Figure 4-3: Change in Cumulative Gas Consumption From - 2023 to 2050 40

Figure 4-4: Cumulative GHG Emissions Reductions by Electrification Case From - 2023 to 2050 41

Figure 5-1: Comparison of Cost Ranges For GHG Emissions by Reduction Mechanism 47

List of Tables

Table ES-1: Summary of Results	6
Table 2-1: National Installation Costs and Annual Fuel Costs (2035) by Household Heating & Cooling System Type (Real 2016 \$)	25
Table 2-2: Annualized Direct Consumer Cost Impacts by Region (Real 2016 \$ Per Year Per Household)	29
Table 3-1: Total Costs by 2035 of Transmission Investments (Real 2016 \$ Billions)	37
Table 4-1: Annual Per Household Total Costs of Electrification Policies (Real 2016 \$)	40
Table 4-2: Change in 2035 GHG Emissions by Case (Million Metric Tons of CO2)	42
Table 4-3: Cost of Emission Reductions (Real 2016 \$ Per Metric Ton of CO2)	43
Table 5-1: Summary of Results	44



100 YEARS

Executive Summary

ES-1 Introduction

In recent years there has been a shift in the types of policies that are being proposed to reduce greenhouse gas (GHG) emissions. The first wave of GHG policy initiatives focused primarily on regulation of GHG emissions in the power sector, as well as direct fuel efficiency targets in the transportation sector and appliance efficiency standards in the residential and commercial sectors. However, reducing GHG emissions by 80 percent by 2050, relative to 1990 levels, consistent with the Paris Agreement, has become a stated environmental goal in many states and localities. The initial set of environmental policies is expected to be insufficient to meet these deep decarbonization goals.

As states and local municipalities consider deep decarbonization of their economies and as the electric grid becomes less carbon-intensive policy-makers and environmental advocates are looking at mandated residential electrification as one option for additional reductions in residential GHG emissions.

Underlying these residential electrification proposals is the assumption that once the electric grid becomes sufficiently low-carbon emitting, conversion of fossil-fuel based residential heating loads and other appliances to electricity can further reduce CO₂ emissions.

Proponents have also suggested that this policy would provide a benefit to the electric grid by taking advantage of under-utilized power generation capacity during winter months and would allow for new electric load growth profiles to match with expected renewable generation profiles.

Some stakeholders also view residential electrification as a means of reversing the impact of declining power usage trends on electric utilities and electric utility rates by increasing the number of appliances that run on electricity in residential households.

ES-2 Potential Impacts of Residential Electrification

While policy-driven residential electrification has been discussed in multiple venues, there has been little or no analysis of the overall costs, benefits, and implications of such policies. The AGA engaged ICF to assess the costs and benefits of alternative policy-driven residential electrification cases developed by AGA.

The study addresses a series of fundamental questions including:

- Will policy-driven residential electrification actually reduce emissions and if so, by how much?
- How will policy-driven residential electrification impact natural gas utility customers?
- What will be the impacts on the power sector and on electric transmission infrastructure requirements?
- What will be the overall cost of policy-driven residential electrification?
- How do the costs of policy-driven residential electrification compare to the costs of other approaches to reducing GHG emissions?

The primary rationale for policies requiring electrification of residential space heating and other loads is the potential for reducing overall GHG emissions. However, the resulting increase in electricity demand can lead to increases in GHG emissions from the power sector. Hence, to be successful, the decrease in residential sector GHG emissions resulting from policy-driven residential electrification must be greater than any potential increase in GHG emissions from the incremental electricity generation required to meet the resulting growth in electric loads. This requires both a high efficiency alternative to natural gas and other fuels used in the residential sector, and a low-emitting electric grid.

Emissions from direct-use of fossil fuels that would be displaced by residential electrification are already small relative to total GHG emissions. In 2016, natural gas use in the residential sector contributed less than 4 percent of total U.S. GHG emissions, and total direct fuel consumption by the residential sector contributed less than 5 percent of total U.S. GHG emissions. This limits the total GHG benefit that could theoretically be realized from reducing residential use of fossil fuel technologies.

At the same time, emissions from electric generation needed to meet electric load in the residential sector are already nearly twice as large as direct end use sources in this sector. In 2016 emissions from the electric grid attributable to residential sector demands contributed 10.5 percent of the total U.S. GHG emissions. And while the electric grid is expected to become less CO₂ intensive overtime, much of the country will continue to rely on coal and natural gas generation to some degree.

The EIA 2017 AEO Reference Case (which was used as the baseline for this analysis) projects renewable power generation to increase from 14 percent of total power generation in 2016 to 23 percent by 2035, and for coal power generation to decrease from 32 percent of total power generation in 2016 to 23 percent by 2035. Based on the EIA forecast, the power grid will continue to become less CO₂ intensive over time.

However, the EIA 2017 AEO also projects that the power grid in much of the country will continue to rely on coal and natural gas generation. As a result, in most regions, increased electricity demand due to policy-driven residential electrification through 2035 would lead to an increase in emissions from the electric sector. This highlights the need to consider the trade-off between reduced GHG emissions from direct residential end-uses of fossil fuels and increased emissions from replacement power sources.

Finally, meeting the incremental electric demand resulting from policy-driven residential electrification will potentially require incremental investment in the power generation infrastructure throughout the U.S. On an annual basis, natural gas delivers almost as much energy as electricity to the residential sector, while accounting for fewer GHG emissions. Electrifying the entire residential sector by 2035 would increase peak electric system demand and could require the size of the entire U.S. power generation sector to almost double by 2035.

Insight: Impact of Location

The costs and impacts from the residential electrification policy modelled in the study differ based on location and there can be dramatic differences in costs and emissions benefits within a given region or state based on that local unique circumstances and dynamics. Criteria that can influence the results for a city or local region include differences in weather and climate, natural gas and electricity prices, differences in the housing stock, cleanliness of the electric grid, and the local impacts to the distribution systems or other factors.

The costs and impacts of residential electrification would also differ based on the specifics of the implemented residential electrification policy. Policies that would result in a slower rate of electrification, or include measures designed to reduce the impacts of electrification on peak demand could have smaller impacts on the electric grid and lower overall costs, while more aggressive policies that would force early retirement of non-electric furnaces and water heaters would increase the impacts of electrification on peak demand and increase overall costs.

ES-3 Analysis Approach

The residential electrification policy scenarios evaluated in this study impact both new construction and appliance replacement. Overall, the policy case evaluated would result in the conversion of roughly 60 percent of fossil-fueled housing stock to electricity by 2035 in the regions where the policy is implemented. Although focused on natural gas, the analysis also includes conversion of oil and propane-fueled households, which are assumed to be included in any future policy.

For each new and existing household converted from one of the fossil fuels to electricity, the analysis includes a projection of the life-cycle differences in equipment costs, the costs of electrical upgrades in existing homes, the changes in annual fossil fuel and electricity consumption and energy costs, and the changes in annual and peak period electricity required. The analysis does not include the impact to natural gas or electric rates, nor the cost of local electricity distribution system upgrades that might be necessary to meet the growth in electricity demand, due to the very site-specific nature of such upgrades.

Energy prices, equipment conversion costs, and energy consumption are based on regional data from the EIA AEO 2017 and other public sources.

The heat pump efficiency used in this study is well above what is currently considered a high-efficiency system and assumes a further progression in electric heat pump technology over the life of the study period. The space heating conversions are based on high efficiency air source heat pumps (ASHP) with an average heating seasonal performance factor (HSPF) of 11.5 over the conversion time period (2023-2035). The HSPF rating for the heat pump reflects a design efficiency. Actual space heating efficiency varies based on winter temperatures, with efficiency declining as the temperature becomes colder. For the study, temperature data from 220 different points is used to estimate effective heat pump efficiency at different locations across the country on both an annual and peak period basis.

The water heater conversions from natural gas to electric demand are based on a heat pump water heater with an average efficiency of 200 percent.

The impact on CO₂ emissions at the household level was estimated based on changes in energy consumption and standard emissions factors. However, the increase in electricity demand due to the electrification policy also leads to potential increases in emissions from the electric generation sector. The impact of the growth in electricity demand on the power grid depends on how the electric grid responds to the increase in electric load. This study evaluated the impacts on electric grid costs and emissions for two different residential electrification cases:

- **Renewables-Only Case:** In this case, the electric system was constrained from adding new fossil fuel capacity to meet the incremental electricity demand from electrification. The requirement for additional generating capacity was met by a combination of renewable generation and battery storage.
- **Market-Based Generation Case:** The Market- Based Generation Case was developed in order to evaluate a lower-cost residential electrification case, compared to the Renewables-Only Case. In this case the electric system was allowed to meet the incremental electricity requirements in the most cost-effective way, without limits on fuel choice.

In the Renewables-Only Case, the residential electrification policy was implemented throughout the lower-48 states. In the Market-Based Generation Case, emissions in the Rocky Mountain, Midwest, and Plains states would have increased as the result of policy-driven electrification, hence the residential electrification policy was not implemented in the states in these regions. In both cases, the annual dispatch of the available power capacity was based on the economics of the dispatch, consistent with current regulatory structures.

The analysis of increased electric generation capacity was conducted using an industry recognized power model, ICF's Integrated Planning Model (IPM[®]), using AGA specified assumptions. The Reference Case reflects the Energy Information Administration (EIA) Annual Energy Outlook (AEO) 2017 forecast.

ES-4 Study Results

Overall, the residential electrification policy assessed in this study would result in the conversion of between 37.3 and 56.3 million households from natural gas, propane, and fuel oil space and water heating to electricity between 2023 and 2035. This represents about 60 percent of the total non-electric households in each region where the policy is implemented. Table ES-1 summarizes the results of the residential electrification cases relative to the Reference Case.

**Table ES-1:
Summary of Results²**

	Renewables-Only Case	Market-Based Generation Case
U.S. Greenhouse Gas Emissions	Annual U.S. GHG emissions reduced by 93 million metric tons of CO ₂ by 2035 (1.5 percent)	Annual U.S. GHG emissions reduced by 65 million metric tons of CO ₂ by 2035 (1 percent)
Residential Households	56.3 million households converted to electricity	37.3 million households converted to electricity
	\$760 billion in energy & equipment costs	\$415 billion in energy & equipment costs
	Direct consumer annual cost increase of \$910 per household	Direct consumer annual cost increase of \$750 per household
Power Sector	320 GW of incremental generation capacity required at a cost of \$319 billion	132 GW of incremental generation capacity required at a cost of \$102 billion
	\$107 Billion of associated transmission system upgrades	\$53 Billion of associated transmission system upgrades
Total Cost of Policy-Driven Residential Electrification	Total energy costs increase by \$1.19 trillion	Total energy costs increase by \$590 billion
	\$21,140 average per converted household	\$15,830 average per converted household
	\$1,420 per year per converted household increase in energy costs	\$1,060 per year per converted household increase in energy costs
Cost of Emission Reductions	\$806 per metric ton of CO ₂ reduction	\$572 per metric ton of CO ₂ reduction

²These cost numbers do not include all costs associated with these policies. These costs do not include the cost of local electric distribution system upgrades, do not consider potential natural gas distribution company rate increases on remaining gas customers as the number of natural gas customers declines, or the decrease in natural gas commodity prices that would be expected if total natural gas demand decreases.

At the national level, the analysis of the residential policy-driven electrification cases in this study leads to several important conclusions:

- Policy-driven residential electrification would reduce total U.S. GHG emissions by 1 percent to 1.5 percent in 2035. The potential net reductions in emissions from the residential sector are partially offset by increases in emissions from the power generation sector, even in the case where all incremental generating capacity is renewable.
- Policy-driven residential electrification could increase the national average residential household energy-related costs (amortized appliance and electric system upgrade costs and utility bill payments) by between \$750 and \$910 per year, or between 38 percent and 46 percent per year.
- Growth in peak winter period electricity demand resulting from policy-driven residential electrification would shift the U.S. electric grid from summer peaking to winter peaking in every region of the country, and would increase the overall electric system peak period requirements, resulting in the need for new investments in the electric grid including generation capacity, transmission capacity, and distribution capacity. Incremental investment in the electric grid could range from \$155 billion to \$456 billion between 2023 and 2035.
- The total economy-wide increase in energy-related costs (residential consumer costs plus incremental power generation and transmission costs) from policy-driven residential electrification ranges from \$590 billion to \$1.2 trillion (real 2016 \$), which is equal to from \$1,060 to \$1,420 per year for each affected household, depending on the power generation scenario. This includes changes in consumer energy costs between 2023 and 2050, as well as changes in consumer space heating and water heating equipment costs, and incremental power generation and transmission infrastructure costs between 2023 and 2035.
- The average cost of U.S. GHG emissions reductions achieved by policy-driven residential electrification would range between \$572 and \$806 per metric ton of CO₂ reduced.

The analysis conducted for this study indicates that significant policy-driven residential electrification efforts would change the overall pattern of electricity demand, and would require major investments in new generating and transmission capacity. Currently, most of the U.S. electric grid is summer peaking, with higher peak demand during the summer than in the winter. As a result, the primary driver of electric grid capacity requirements is peak summer load. The residential electrification policies evaluated in this study do increase summer demand due to conversion of water heaters to electricity. However, natural gas and other fossil fuel space heating load is heavily focused over the winter season, and electrification of space heating would significantly increase electricity demand during the winter, particularly on the coldest winter days when electric heat pump efficiency is lowest, and space heating requirements are the highest.

The increase in peak winter load associated with the electrification of residential space heating cases would convert nearly every region of the U.S. power grid from summer peaking to winter peaking—the incremental generation requirements from electrification policies are typically more pronounced in regions that are already winter peaking.

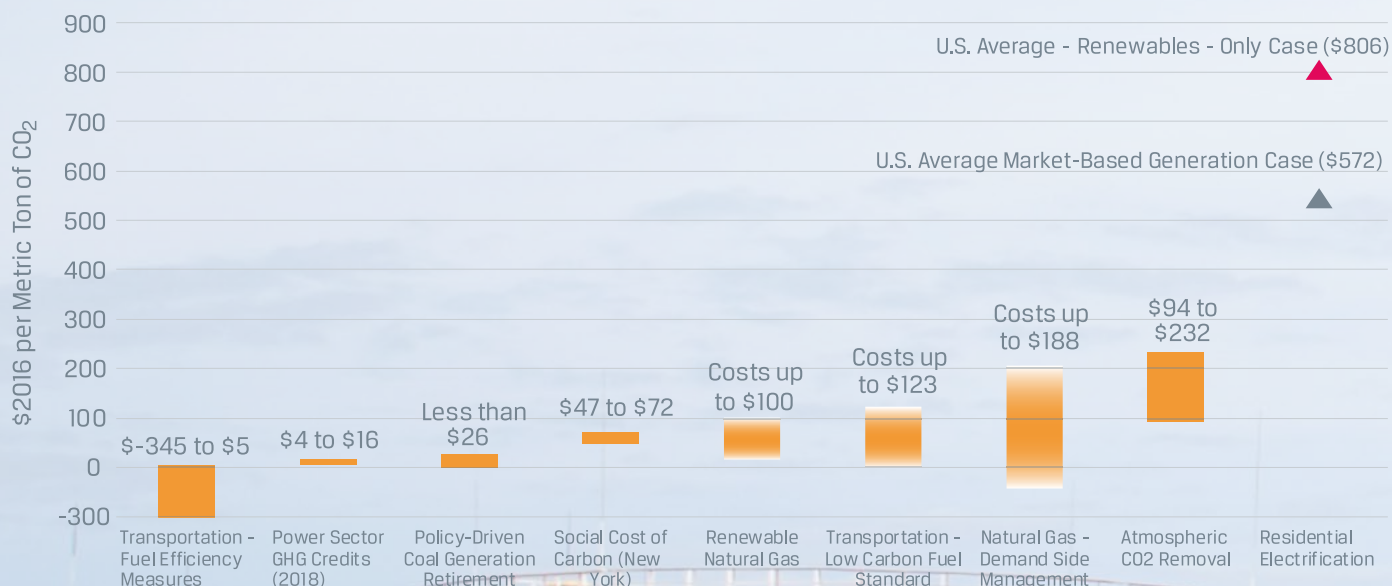
The increase in overall peak electricity demand resulting from the policy-driven residential electrification case would require an increase in total generation capacity in 2035 of between 10 and 28 percent relative to the Reference Case, depending on the power generation case.

The increase in peak demand would also require incremental investments in the transmission and distribution systems. This study includes an estimate for the required incremental investment in transmission capacity. However, it was beyond the scope of the study to assess the potential requirements for additional distribution capacity.

ES-4.1 Cost Effectiveness of Policy-Driven Residential Electrification as a Greenhouse Gas Emissions Reduction Policy

The study of policy-driven electrification of residential fossil fuel heating load (space and water) indicates that residential electrification would be a more expensive approach to greenhouse gas reduction relative to many of the other options being considered—based on considerations related to the emissions reduction potential and the cost competitiveness of this approach relative to other GHG emission reduction options.

Figure ES-1: Comparison of Cost Ranges for GHG Emissions by Reduction Mechanism



Sources: Energy Innovations, Energy Policy Simulator; GHG emission credits from the most recent auction for the Regional Greenhouse Gas Initiative (RGGI) and California Cap & Trade program; Estimates for GHG reduction costs for the existing coal generation units are based on the Levelized Cost of Energy (LCOE) consistent with the EIA's 2017 AEO Base Case; New York Public Service Commission's (NYPSC's) adoption of the Social Cost of Carbon (SCC); U.C. Davis, The Feasibility of Renewable Natural Gas as a Large-Scale, Low Carbon Substitute, 2016; Comparison of Greenhouse Gas Abatement Costs in California's Transportation Sector presented at the Center for Research in Regulated Industries - 27th Annual Western Conference (2014); The maximum cost of \$10 per MMBtu for any Demand Side Management (DSM) program costs is estimated based on an review of public DSM programs; Carbon Engineering, Keith et al., A Process for Capturing CO₂ from the Atmosphere, Joule (2018), <https://doi.org/10.1016/j.joule.2018.05.006>.

ES-4.2 Overall Conclusions on the Effectiveness of Residential Electrification as a Greenhouse Gas Emissions Reduction Policy

Electrification of direct-use natural gas from the residential sector would result in a significant decrease in the number of residential customers connected to the natural gas distribution system, and a significant decline in natural gas throughput on the system. These changes would result in a material shift in natural gas distribution system costs to the remaining gas utility consumers, including the remaining residential customers, and commercial and industrial sector customers. This study did not include an evaluation of these cost implications to consumers.

This study did not address electrification policies targeted at other sectors of the economy, including the transportation sector, where policy-driven electrification could prove to be a more cost effective approach to reducing GHG emissions. Overall, electrification policy measures aimed at residential natural gas and other non-electric sources of residential energy will be challenged by issues including cost-effectiveness, consumer cost impacts, transmission capacity constraints of the existing electrical system, current and projected electric grid emission levels, and requirements for new investments in the power grid to meet growth in peak generation and transmission requirements .

At the same time, the total GHG emissions reductions available from a policy targeting electrification of residential heating loads represent a small fraction of domestic emissions. Total residential natural gas emissions are expected to account for less than 5 percent of the estimated 6,200 million metric tons of GHG emissions in 2035 in the AEO 2017 Reference Case.³ Aggressive electrification policies would have the potential to reduce these emissions by up to 1.5 percent of the total U.S. GHG emissions.

³ The EIA's 2017 AEO Reference Case estimates 4,830 million metric tons of CO₂e in 2035 from combustion sources. An additional 1,370 million metric tons of CO₂e from both combustion and non-combustion is assumed based on 2016 emission levels from those sources.

1

Policy-Driven Residential Electrification— Introduction and Background

In recent years there has been a shift in the types of policies that are being proposed to reduce GHG emissions. The first wave of GHG policy initiatives focused primarily on regulation of GHG emissions in the power sector, as well as direct fuel efficiency targets and clean fuel standards in the transportation sector and appliance efficiency standards in the residential and commercial sectors. More recently, reducing GHG emissions by 80 percent relative to 1990 levels by 2050, consistent with the Paris Agreement, has become a stated environmental goal in many states and localities. The types of policies implemented in the first wave of GHG policy initiatives are expected to be insufficient to meet these deep decarbonization goals.

A second wave of GHG policy initiatives are being proposed and debated primarily at the local and state level, in order to reach these more aggressive targets. A few examples of jurisdictions discussing or implementing these GHG reduction policies include:

- **Denver:** A city task force has recommended policies to "shift commercial buildings and 200,000 households off natural gas to heat sources that do not lead to carbon pollution."⁴
- **Massachusetts:** Legislation has been proposed to require the conversion of residential fossil fuel use to electricity.⁵ The state has also proposed establishing targets for 100 percent renewable generation levels in efforts to decarbonize its economy.
- **Ontario:** Various non-governmental organizations promoted residential electrification, which was then aggressively pursued by the provincial environmental agency.⁶
- **Vancouver, British Columbia:** City council plans to position Vancouver as the greenest city in the world include establishing 100 percent renewable energy targets before 2050 and implementing a phased approach to achieving zero emissions in all new buildings by 2030. Some policies that effectively exclude natural gas have been initiated.⁷
- **California, Oregon, Washington:** Various local and state groups are in active discussion regarding the potential for residential electrification policies to reduce GHG emissions.⁸

While these discussions cover a broad range of initiatives and target markets, many also include discussion of residential electrification as one option for reducing GHG emissions.

⁴ <https://www.denverpost.com/2017/09/06/denver-greenhouse-gas-emissions-renewable-energy/>

⁵ Massachusetts Senate Bill 1849 and Massachusetts Bill SD1932 (100 Percent Renewable Energy Act)

⁶ It was reported in May 2016 that Ontario was considering policies targeting drastic reductions in GHG emissions, including a new building code rules that would have required all homes and small buildings built in 2030 or later to be heated without using fossil fuels, such as natural gas.

⁷ <http://vancouver.ca/green-vancouver/renewable-city.aspx>

⁸ California Energy Commission Report, "GHG Emission Benefits and Air Quality Impacts on California Renewable Integration and Electrification," January 2017; SoCal Edison's, "The Clean Power and Electrification Pathway," November 2017; Evolved Energy Research, "Deep Decarbonization Pathways Analysis for Washington State," April 2017; Energy + Environment Economics, "Pacific Northwest Low Carbon Scenario Analysis," November 2017

While policy-driven residential electrification has been discussed in multiple venues, there has been little or no analysis of the overall costs, benefits, and implications of such policies. AGA engaged ICF to develop this analysis of electrification policies for a set of policy cases specified by AGA. The study addresses a series of fundamental questions including:

- Will policy-driven residential electrification actually reduce emissions?
- How will policy-driven residential electrification impact natural gas utility customers?
- What will be the impacts on the power sector and on electric transmission infrastructure requirements?
- What will be the overall cost of policy-driven residential electrification?
- How do the costs of policy-driven residential electrification compare to the costs of other approaches to reducing GHG emissions?

1.1 What is Policy-Driven Residential Electrification?

Simply stated, policy-driven residential electrification is the required conversion of new and existing residential end-uses supplied by fossil fuel technologies with alternative electric appliances. For this analysis, the incremental electricity is provided by the local electric grid.

The underlying concept driving these proposals is the assumption that when the electric grid becomes sufficiently low-carbon emitting, conversion of fossil-fuel based residential heating loads and other appliances to electricity can reduce CO₂ emissions.

Proponents of policy-driven residential electrification have also suggested that this policy would provide a benefit to the electric grid by taking advantage of under-utilized power generation capacity during winter months and would allow for new electric load growth profiles to match with expected renewable generation profiles.

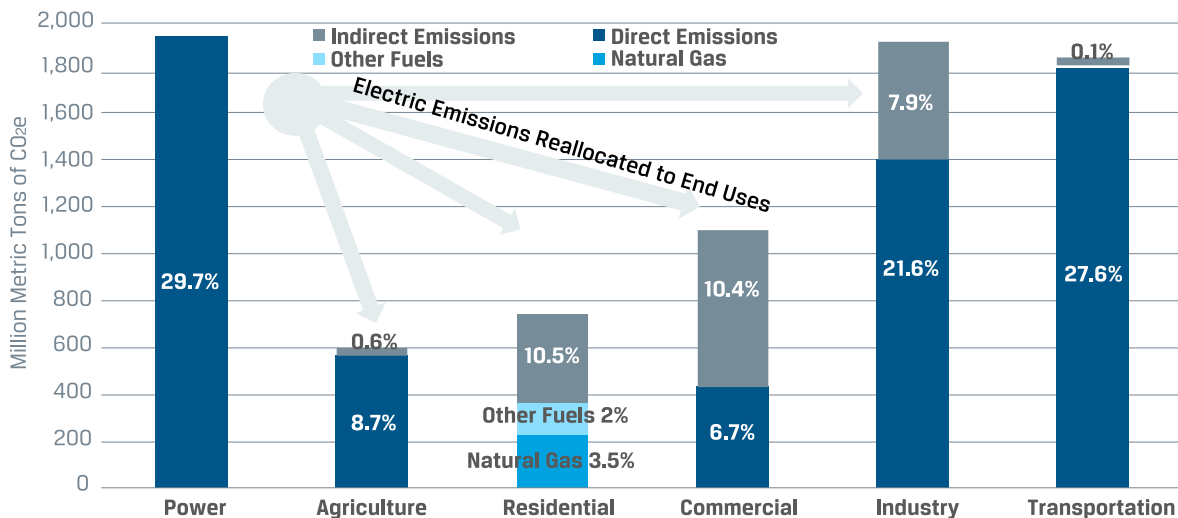
Policy-driven residential electrification also is viewed by some stakeholders as a means of reversing the impact of declining power usage trends on electric utilities and electric utility rates by increasing the number of appliances that run on electricity in residential households.

What are the Potential Environmental Benefits of Residential Electrification?

However, given the complicated interactions of this type of policy proposal, the potential for GHG emission reductions is not always clear and will depend on the relationship between residential electricity demand and the electric grid, which will differ based on regional and local considerations.

Despite the relatively broad interest in residential electrification, the potential benefits in terms of GHG emissions reductions are limited by the overall contribution of residential sector end-use demand to overall GHG emissions.

**Figure 1-1:
U.S. GHG Emissions by Source and Sector 2016**



Source: EPA GHG Inventory

As shown in Figure 1-1, direct GHG emissions from the residential sector currently comprise only 6 percent of total U.S. GHG emissions, with less than 4 percent coming from natural gas use, including fugitive methane emissions releases.

The residential sector is also responsible for 10.5 percent of total U.S. GHG emissions from its share of the electric sectors emissions. Hence, the emissions from the generation of the electricity used in the residential sector are almost twice as high as residential emissions from other fuels.

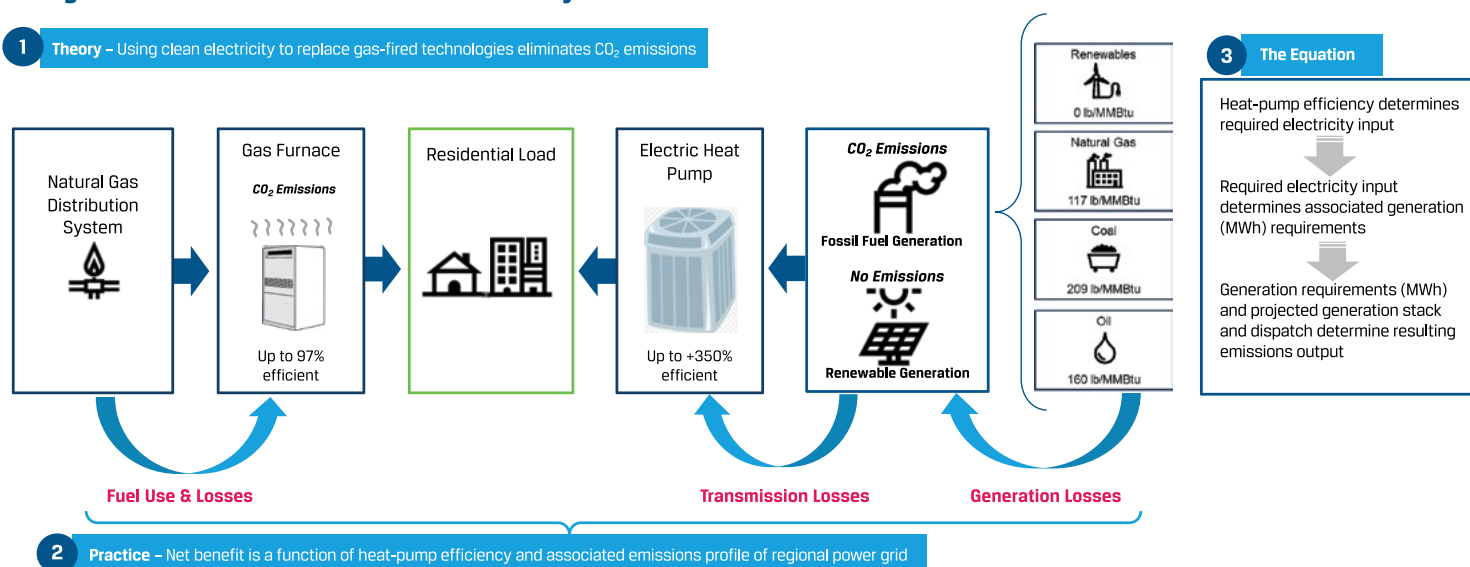
How Would Policy-Driven Residential Electrification Work?

While gas and related fossil fuel residential end-use technologies have achieved high levels of efficiency, their use still involves burning fossil fuels and releasing CO₂ and associated GHG emissions. In contrast, supplying the same MMBtu of heating load with an electric technology, such as a heat pump, results in no direct emissions at the site.

However, to understand the impact of each fuel source on net GHG emissions the full energy-cycle of each fuel path must be considered. This relationship is illustrated in Figure 1-2. In the case of natural gas, this involves the upstream drilling of natural gas, gathering, processing, transmission on interstate pipeline systems, and distribution to residential users. While these are not energy-free activities, they do not add substantially to the net overall energy content of the MMBtu delivered to the residential consumer or impact the residential energy costs significantly.

With the electric system, each Btu of electricity delivered to a residential user must be generated by a power plant, transmitted on high voltage transmission lines, and then across local distribution lines to each individual house. Electric transmission losses alone accounted for a loss of 6 percent of the delivered energy in 2016, compared to a 1 percent loss in natural gas transmission losses. The efficiencies and the GHG emission implications of the upstream generation facilities vary significantly based on the composition of the regional power generation portfolio.

**Figure 1-2:
 Diagram of Residential Electrification Theory**



If all upstream generation resources were renewable or zero-emitting alternatives, displacement of a gas-fired residential technology with an electric technology would result in net emission benefits, regardless of transmission and related losses. However, this does not reflect the current state of the electric grid and/or a realistic expectation in the foreseeable future. As such, to understand the net implications and benefits of residential electrification it is important to place such discussions in the context of the upstream generation portfolio.

What Factors Determine the Net GHG Benefits of Residential Electrification?

The potential environmental benefit of policy-driven residential electrification depends on four critical factors:

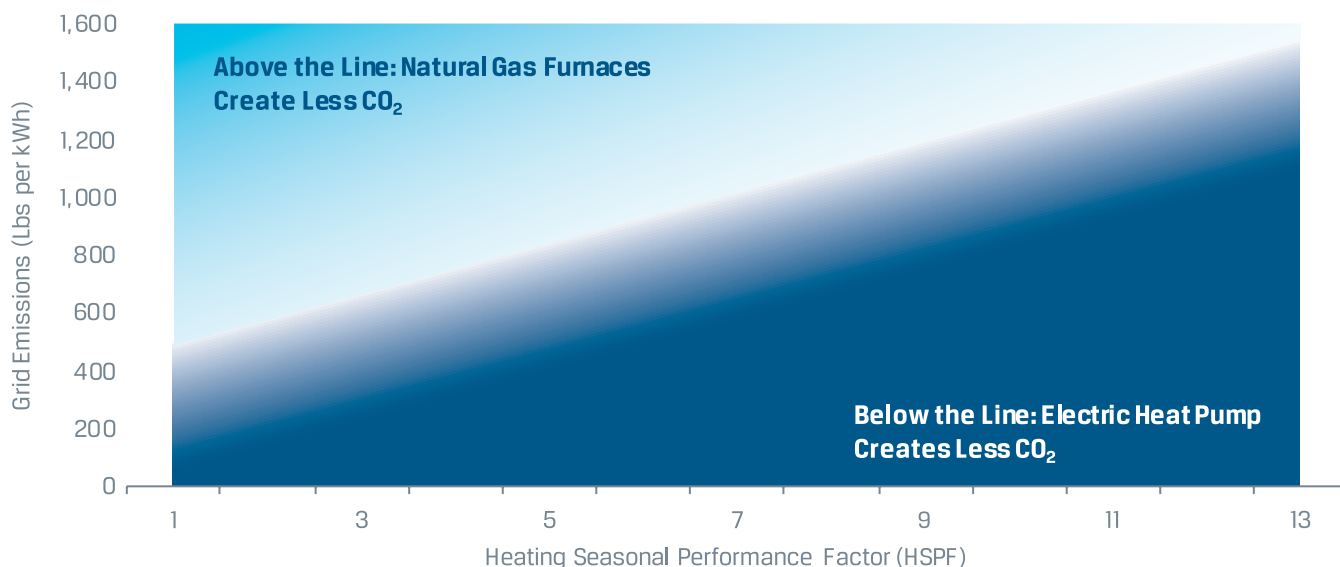
- The heating or water heating load being replaced.
- The efficiency of the appliance facing mandated replacement (e.g., the natural gas furnace and water heaters).
- The seasonal and climate-adjusted efficiency of the replacement electric technology (e.g., heat pump or heat pump water heater).
- The emission rate of the local electric grid used to provide the incremental replacement energy source.

To illustrate this relationship, consider the case of a high efficiency gas furnace being replaced by a heat pump. In warmer regions, the performance of the heat pump relative to the gas-fired furnace will result in greater relative net energy savings.

If this region has a sufficiently low GHG emitting electric grid, transferring energy consumption for the gas-fired technology to the electric technology can reduce net GHG emissions. However, if the same electric grid profile is assumed in a colder region where a heat pump's performance is degraded due to the colder temperatures, the net GHG emission benefits of the policy-driven electrification can be minimal or even negative.

Figure 1-3 shows this relationship. The heat pump performance is shown as actual Heating Seasonal Performance Factor (HSPF)⁹, which is a seasonally adjusted efficiency expressed in Btu/Wh and equal to the Coefficient of Performance (COP) factor times 3.4. A gas combined cycle power plant has emissions of approximately 800 pounds of CO₂ per MWh so an electric heat pump needs to operate at an actual HSPF of more than about 7 to have lower emissions than a natural gas furnace.

**Figure 1-3:
Emissions Reduction
For Electric Heat Pumps
Based on Weather and
Electric Grid Emissions**



1.2 Local and Regional Factors

This study's national level impacts were derived from a build-up of more localized analysis. This method was used to capture the unique regional factors for different parts of the country in order to more fully understand the impacts and implications of policy-driven residential electrification policies. The level of detail used in this analysis ranged from city level, to state, to the nine regions used in the study and then aggregated to the national totals.

Due to the complex interaction of the multiple factors involved with modelling the impacts of the residential electrification policy approach used, there are both significant differences in the regional results from the study, as well as significant variations of results within a given region or state based on a wide range of localized issues.

⁹The actual HSPF differs from the nominal HSPF typically used to measure heat pump efficiency. The nominal HSPF is defined for a specific set of climate conditions. Actual HSPF varies with climate and other operational factors. The same heat pump will have a higher actual HSPF in a warmer climate than in a colder climate. In this study, we have defined the heat pump based on nominal HSPF, but have used an estimate of actual HSPF based on Heating Degree Day's (HDDs) on a local level.

Actual emissions from electric generation to meet the growth in electricity demand from policy driven residential electrification for appliances across the U.S. Lower 48 are a result of each region's mix of coal, gas-fired, nuclear, and renewable generation sources, as well as the impact of climate on heat pump efficiency and energy requirements.

These impacts were evaluated on a regional basis to account for differences in both climate (and the relative performance of electric replacement technologies) and regional power grid characteristics. This study presents results using the regions highlighted in Appendix B. The regions were created based on state characteristics, including:

- Electric power pool and grid interconnections
- Regional Climate and Weather Conditions
- Natural gas Consumption Profiles
- Electric Grid Emissions (2035)

1.3 Electric Heat Pump Performance

The residential electrification policies under discussion in different areas generally depend on the replacement of natural gas, propane and fuel oil space heating with electric heat pumps for the majority of the expected environmental benefits. Heat pumps can be very efficient, particularly on an annual basis. However, heat pump performance degrades at lower outdoor temperatures,¹⁰ so heat pump performance must be assessed based on local climatic conditions. In order to assess the overall impacts on the electric grid, the study specifically addressed the question of the impact of the heat pump on peak period electric demand as well as annual electric demand.

Key Factors for Heat Pump Efficiency

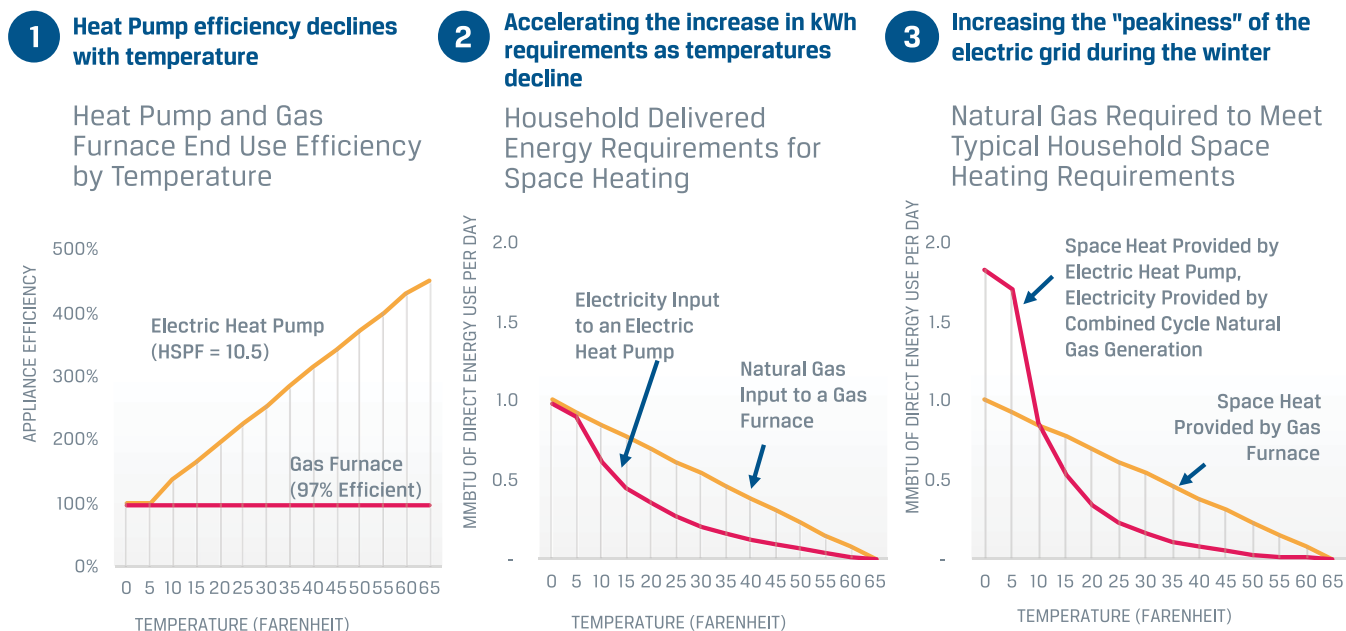
Heat pumps transfer heat rather than transforming chemical energy to heat through combustion. While combustion-based systems can never provide more energy than they consume, i.e., be more than 100 percent efficient, heat pumps can transfer more energy than they consume, i.e., be more than 100 percent efficient. A nominal heat pump efficiency of 300 percent is not unusual under certain operating conditions.

This high efficiency is critical to providing environmental benefits since the higher efficiency of the heat pump offsets the lower efficiency of the electric generating system. However, heat pump performance degrades as the outdoor temperature drops. Falling temperatures affect heat pump performance in three ways:

- The heat pump becomes less efficient.
- The discharge air temperature of the heat pump gets lower.
- The heat pump provides less heat output.

¹⁰Not all heat pumps degrade at the same rate. The reduction in efficiency for ground source and cold climate heat pumps degrades at a slower rate than conventional heat pumps as outside temperatures decline.

Figure 1-4: Illustration of Energy Delivery of an Electric Heat Pump and Natural Gas Furnace



In addition, heat pump installations are often sized to meet air conditioning load requirements rather than heating requirements. Oversizing a heat pump to meet peak winter requirements results in more expensive equipment, lower operating efficiency, and additional wear and tear on the equipment during the summer cooling season.

Since peak-day winter requirements occur only a few days each year, and design day conditions occur only every few years, most heat pump installations, including cold climate heat pumps, are designed with electric resistance heat to meet load requirements on the coldest days. The electric resistance heat has an operating efficiency of 100 percent, rather than the average annual operating efficiency of the heat pump which might range from 200 percent to 300 percent (or more).

In addition, at very low temperatures, heat pumps typically cannot provide adequate heat and require some form of back-up energy, typically electric resistance heat. The actual climate-adjusted heat pump performance must be calculated for each region to estimate the consumption and peak demand. This is discussed in Section 2.

Air source heat pumps (ASHP), also referred to as electric heat pumps in this study, have been in commercial use for over 50 years and are a relatively mature technology. Nevertheless, the analysis assumed further performance improvement.

2 Analysis of the Costs and Benefits of Policy-Driven Residential Electrification

In this section, the various cases and assumptions used to evaluate the impact of residential electrification policies are discussed. Descriptions for the following are included:

- **Electrification Policy Definition:** Guidelines for applying a residential electrification program.
- **Analytical Baseline and Alternative Electric Grid Cases:** Key assumptions related to the North American electric grid's response to electrification policies.
- **Impacts on Electricity Consumption and Demand Profiles:** Estimates for the number of households impacted by each policy and the changes in fuel use and electricity demand.
- **Consumer Cost of Electrification:** The development of consumer costs for residential gas-fired and electric appliances.

Though there has been discussion of electrification of residential space and water heating, few specific policies have been proposed by the stakeholders pursuing this agenda. Indeed, public electrification proposals have failed to address many real-world complexities associated with the application of these policies, such as:

- Feasibility of converting the existing household stock, of which a significant number of households would need retrofits to be able to use an electric heat pump.
- Direct consumer costs from the installation of new equipment and any difference in household energy purchases.
- New electric generation requirements and investments to meet new load-growth.
- Impacts on electric transmission networks and implications of a winter-peaking electric system.

2.1 Electrification Policy Definition

In order to perform an analysis of the implications of these policies, the following assumptions were developed for a policy-driven residential electrification policy that could be applied uniformly across the country. For this analysis, it was assumed that an electrification policy would be established in 2020 with the requirements starting in 2023.

Although the primary focus of this analysis is natural gas, it was assumed that the residential electrification policy would also impact fuel oil and propane systems.

The electrification policy included the following key assumptions:

- All new homes after 2023 are built with electric space and water heating appliances only.

- Starting in 2023, any existing direct-fuel use space and water heating systems would be replaced with electric systems at the end of the effective life of the current system. This would result in the conversion of nearly all residential households currently using natural gas, propane, and fuel oil fuels to electricity by 2050 (even households without forced air systems).
- This study does not address market-driven electrification or policy-driven electrification of commercial, industrial, or other sectors.
- The water heater conversions from natural gas to electric demand used a heat pump water heater with an average efficiency of 200 percent.

While the electrification policy was designed to convert all residential households from fossil fuel use to electricity by 2050, the analysis of the impacts of the policy was conducted through 2035, and considered the lifetime costs and benefits through 2050 of all of the households converted to electricity between 2023 and 2035.

2035 represents a point at which significant policy-driven electrification in pursuit of 2050 targets could be assumed to have occurred, but is still near enough that market results could be reasonably analyzed.

Background: Electric Alternatives to Fossil Fuel Space Heating

The analysis of policy-driven residential electrification uses a high efficiency ASHP as the electric alternative fossil fuel space heat throughout the analysis. In the analysis, the efficiency of the average new heat pump is expected to increase by about 1 percent per year, and averages an HSPF of 11.5 (COP of 3.7) over the time period from 2023 through 2035. After accounting for regional differences in weather, and the performance based on the annual temperature load (using the ASHRAE Design Temperature), the heat pumps installed in response to the residential electrification policy are expected to achieve an average winter season COP of 2.6 in the Renewables-Only Case and an average winter season COP of 2.9 in the Market- Based Generation Case. The COPs of the case differ due to the difference in regions covered under each case.

There are also new heat pump technologies that have been proposed as an alternative to the traditional ASHPs for residential electrification purposes. These include:

- **Ground Source Heat Pumps:** Ground source heat pumps use the earth as a heat source and can therefore maintain better cold weather performance. However, they require drilling and placement of underground heat exchangers, which results in much higher costs.
- **Cold Climate Heat Pumps:** Cold-climate heat pumps (ccHP) are still in the development phase but are expected to have better cold weather performance than conventional heat pumps. However, their performance still degrades in cold weather, and many applications will still require back-up heat. The new ccHP's include additional compressors and other equipment, and are expected to be more expensive than the standard high efficiency air source heat pumps.

Many of the current ccHP's are also "mini-split" systems in which the heating unit is a wall-mounted unit similar to a system found in a hotel room, and would not be effective replacements for a central heating system.

- **Heat Pumps with Fossil Fuel Backup:** One potential approach for reducing the impacts of electrification on peak electric grid requirements is to combine a fossil fuel backup (natural gas, propane or fuel oil) with the heat pump to meet space heating requirements on the colder days during the winter. This requires dual space heating systems.

These three systems were not included explicitly in this analysis. GSHP's and ccHP's were not explicitly included due to the incremental costs required for the systems, the general lack of information on the cost and performance of the ccHP's, and the operational challenges and costs associated with retrofitting existing residences with GSHP and ccHP units. However, the average heat pump efficiency used in this study is sufficiently high that it likely would include ccHP's and GSHP's in addition to a mix of medium to high efficiency conventional heat pumps in order to reach the overall average.

Fossil fuel backup was not considered in this study since equipment replacement occurs at the end of the useful life of the existing system, hence would have required the purchase of new fossil fuel equipment as well as the purchase and installation of the heat pump.

Insight: Household Impacts from Electrification Policies Can Vary Significantly

There is a wide range of impacts from policy-driven electrification on consumers based on where the consumer lives, the type of household under consideration, and the age of the household, and the household income.

The per-household cost of residential electrification also can be much greater on consumers in existing homes relative to costs for a newly constructed household. Existing households can often have installation costs more than double the cost difference of a new household, a problem that is particularly acute in older homes that would generally require more extensive retrofit costs and upgrades for electric conversions of heating equipment.

One major concern being raised related to residential electrification proposals is the impact on lower-income consumers. Given the concentration of low income consumers in older homes, the expected cost impacts of policy-driven electrification are expected to fall most heavily on lower income residents.

The relative costs of policy-driven residential electrification would account for a higher share of income for low-income consumers than for the average consumer.

2.2 Alternative Electric Grid Scenarios

A key component of this study was the analysis of the North American electric grid's response to increased electricity consumption and peak demand following the implementation of the residential electrification policy. The study used IPM[®] to model three separate electrification cases:

- **Reference Case:** For the Reference Case, IPM[®] was calibrated to reflect the market assumptions from the AEO 2017 Base Case, with no residential electrification policy in place.
- **Renewables-Only Case:** In the Renewables-Only Case, IPM[®] was constrained so that no new fossil-fueled capacity beyond the capacity built in the reference case would be built to meet the growth in electricity demand resulting from electrification. The only incremental energy generation allowed to meet this new demand was renewable and battery storage—generation from existing fossil-fuel based units was allowed to meet this incremental demand. In this case, electrification policies were applied to all states on the assumption that all new plant construction would be zero-emitting, thus even if the existing emissions were higher than the threshold for environmental benefit in the Reference Case, residential electrification would have the potential for emission reductions. The IPM[®] model was used to project the changes in generation mix, fuel, and emissions resulting from the policy.
- **Market-Based Generation Case:** In this case, the electric system response to the increase in electricity demand was determined by the market in order to provide a lower cost case than the Renewables-Only Case. The analysis was based on lowest cost mix of generating capacity consistent with environmental and renewable generation policies.

In the Market-Based Generation Case, residential electrification would have increased emissions in certain regions, including the Midwest, Plains and Rocky Mountain regions due to the reliance on incremental natural gas and coal generation to meet the increase in power generation requirements. In these regions, the increase in GHG emissions from the power sector was greater than the reduction in GHG emissions from direct fuel consumption by residential households. In order to avoid a policy that increased net emissions, the residential electrification policy was not implemented in these regions for the Market-Based Generation Case.

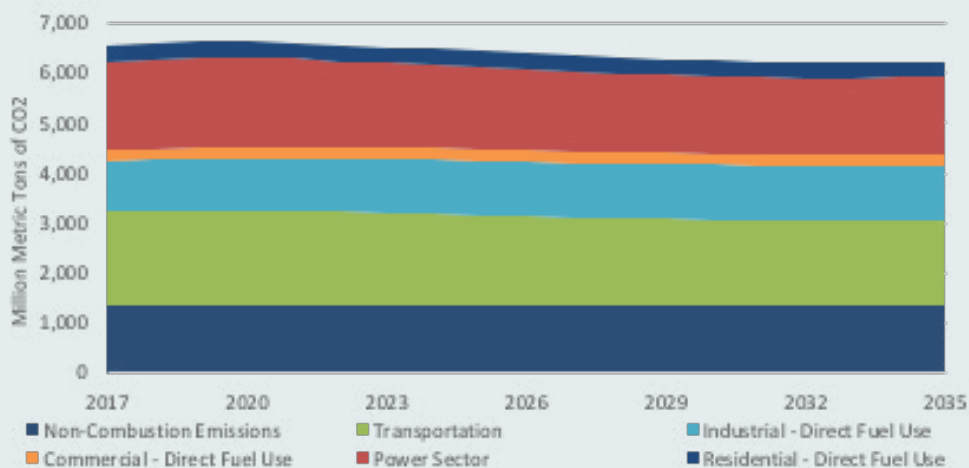
The detailed power sector results of the analysis are presented in Section 3.

**Background:
Energy Information
Agency's 2017 Annual
Energy Outlook (AEO)**

The EIA's 2017 AEO Base Case forecast is used as the Reference Case for this study. The AEO provides a comprehensive, publicly available forecast of energy consumption, energy prices, and carbon emissions through 2050.

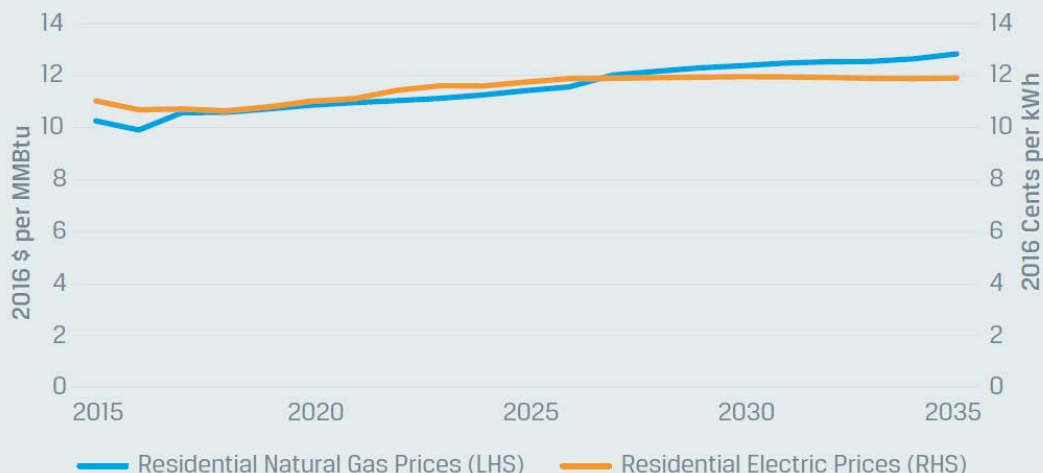
The AEO projects CO₂ emissions from combustion sources to decline from 5,182 million metric tons in 2017 to 4,827 million metric tons in 2035 and 5,084 million metric tons in 2050. Emissions from the power sector decline by 14 percent between 2017 and 2035, primarily due to a 78 percent increase in renewable generation and a decline in coal generation of 22 percent.

**Figure 2-1:
Total U.S. GHG
Emissions (2023 to
2035) in the EIA AEO
2017 Base Case**



The relationship between residential electricity and natural gas prices is one of the important determinants of the cost implications of the policy-driven residential electrification analysis. The study used regional AEO price projections to project state-by-state natural gas and electricity prices in the cost analysis. The AEO projects growth in real residential natural gas prices of about 1 percent per year, and real growth in residential electricity prices of about 0.56 percent per year between 2017 and 2035.

**Figure 2-2:
Average U.S.
Residential Prices
from EIA's 2017
AEO Base Case
(Real 2016 \$)**



2.3 Household Conversions to Electricity

The Renewables-Only Case, the study assumed that residential electrification policies would be applied in all states. In Figure 2-3, there are 49.8 million natural gas households and 6.4 million oil and propane households converted to electricity by 2035 – representing 60 percent of households using natural gas, propane, and fuel oil under the Reference Case. As a result, there are 36.3 million households that still use fossil-fuels for space and water heating.

In the Market-Based Generation Case, the study assumed that residential electrification policies would only be applied in states where there was a clear emissions benefit based on the state's electric grid emissions profile in 2035 based on the EIA AEO Reference Case (2017). Figure 2-4 shows the conversion impacts for the Market-Based Generation Case. By 2035 this case results in the conversion of 32.4 million natural gas fueled households and 4.8 million oil and propane-fueled households. By 2035 there are 55.3 million households that still use fossil-fuels for space and water heating.

The broader geographic coverage in the Renewables-Only Case results in a greater impact in many aspects of the results and needs to be kept in mind when comparing the results of the two policy cases.

Figure 2-3: Renewables-Only Case Household Conversions

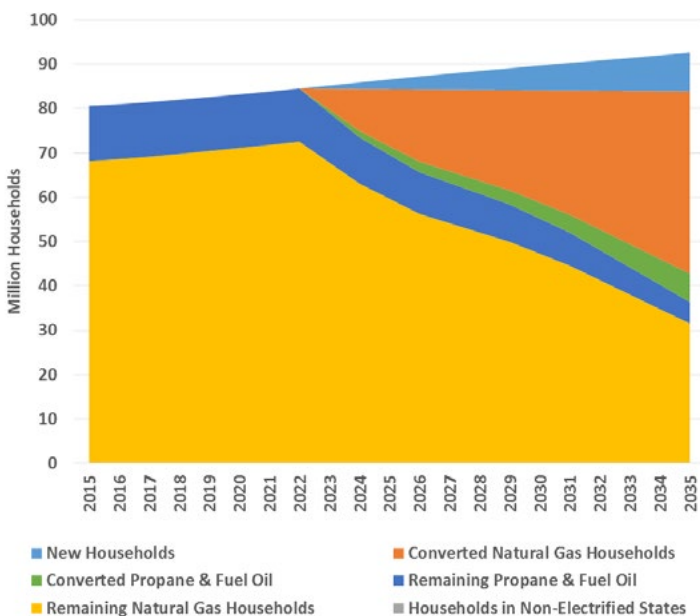
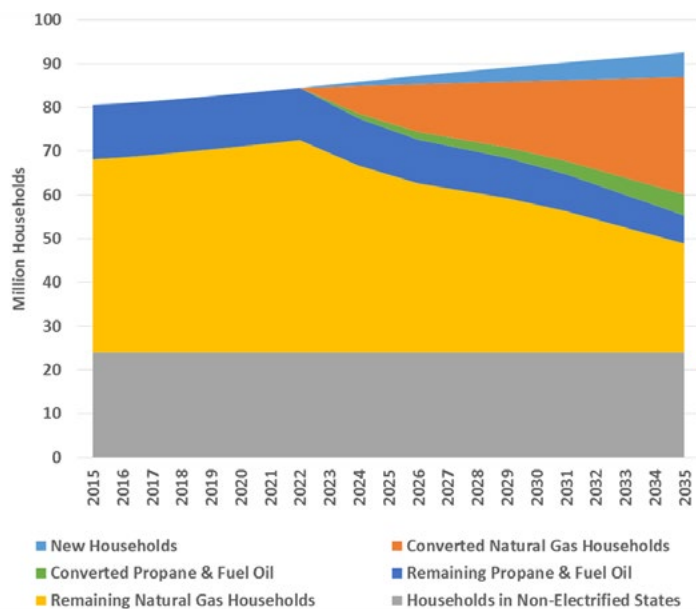


Figure 2-4: Market-Based Generation Case Household Conversions



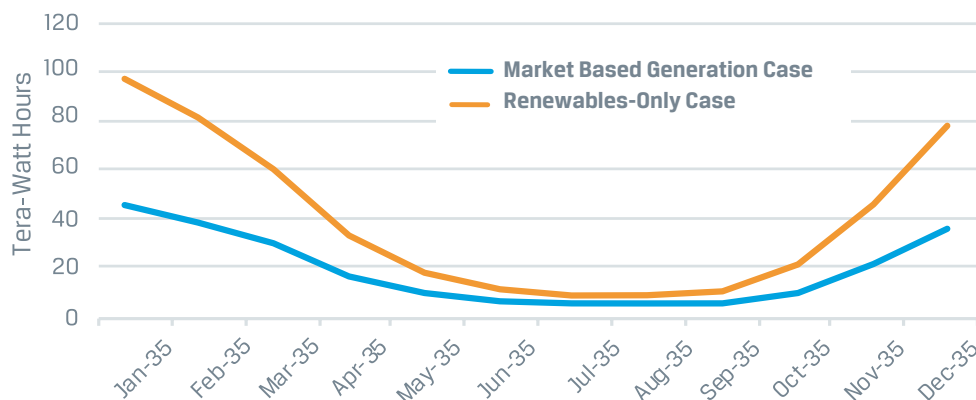
2.4 Impacts on Electricity Consumption and Demand Profiles

For the study, a separate profile was created for the total electricity consumption as well as peak period electric generation requirements in order to fully evaluate the effect of electrification on power system requirements. Electricity consumption is a key variable in understanding the incremental power generation requirements as well as changes in emissions levels and residential energy costs between each case.

Peak electricity demand is a key variable for understanding the impact of electrification policies on electric system capacity requirements. Electric systems must be designed to meet the peak demand at any given time. In many parts of the country the peak demand occurs during summer air conditioning peaks and the system is sized to meet that demand. However the peak in other areas is associated with the peak winter heating load and that peak determines system capacity requirements. As residential space and water heating is electrified in response to the policy-driven electrification mandate, the peak requirements in winter-peaking regions will increase. In regions that are summer peaking in the Reference Case, a certain degree of growth in peak winter demand can occur without significantly impacting the need for electric grid infrastructure. However, when electrification leads to significant growth in space heating demand, regions may switch from summer-peaking to winter-peaking, increasing peak capacity requirements.

- Incremental Electricity Consumption:** Starting from a baseline natural gas consumption profile for electric generation based on the AEO Reference case, a monthly electric consumption profile was created for use in the electrification cases. This profile includes converted space and water heating demand. To estimate the level of electric demand from space heating conversions, each state's average ASHRAE design temperature and performance characteristics was used for an electric heat pump with an HSPF of 11.5 by 2035, corrected for local climatic conditions.¹¹ Natural gas water heating usage was converted to an electric water heating system based on current technologies. Water heating demand accounts for the majority of incremental electric demand during the Summer months.

**Figure 2-5:
 2035 Monthly Electric
 Consumption by Case**



¹¹ See Appendix A for an explanation of this in the Heating System Efficiency Assumption Section

- Peak Period Demand:** To determine the impacts of policy-driven residential electrification on peak generation requirements, the first step was to create a peak day sendout for natural gas under the AEO's Reference Case natural gas demand forecast for 2025, 2030 and 2035.¹² Using this peak day demand, an hourly profile of natural gas usage by type (space heating, water heating, and other demand) was developed. The hourly profile was used for estimating the equivalent electric generation requirement based on the heat-pump efficiency at the local design day temperature. Figure 2-6 details the impact of peak period generation on the overall power system capacity requirements for the two cases.

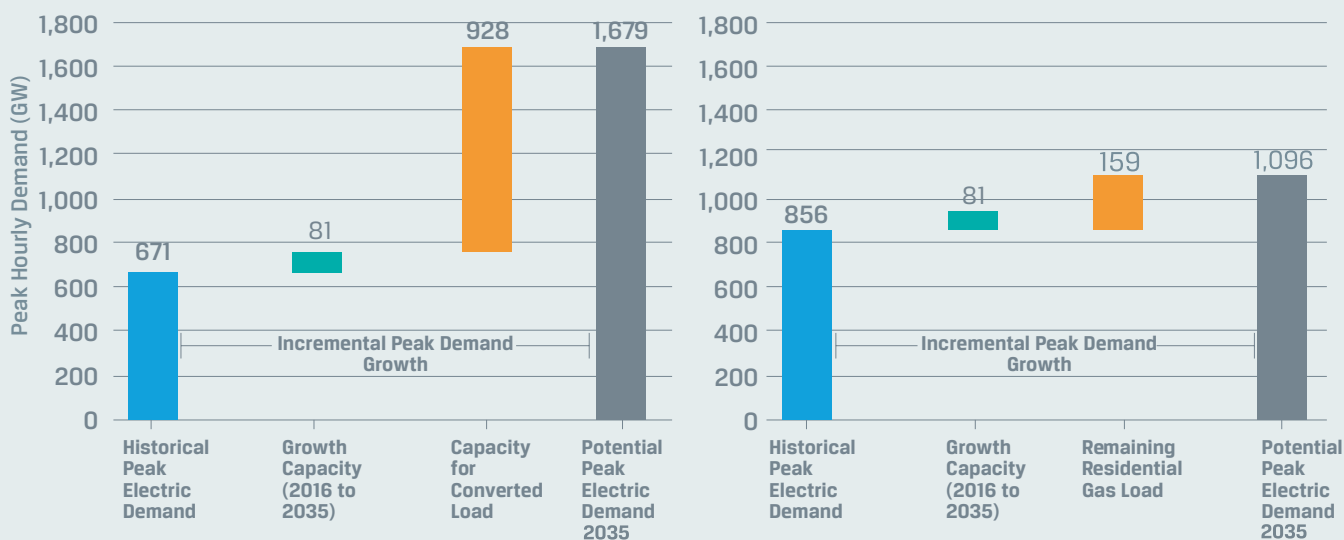
Insight: Impact on Peak-Period Power Demand From 100% Electrification of Residential Natural Gas¹³

Electrifying all direct-use U.S. residential natural gas demand (based on the coincident peak day sendout) would be greater than the highest recorded peak hourly electric generation in the U.S. (July 2011) and 140 percent of highest electric generation ever recorded in the winter (January 2014).¹⁴

Figure 2-6:

Impact of Residential Electrification on Peak Winter Demand

Impact of Residential Electrification on Peak Summer Demand



2.5 Consumer Cost of Policy-Driven Residential Electrification

New electric heat pump systems typically have a higher lifetime capital cost (equipment cost and installation cost, adjusted for equipment life) than new natural gas systems. In warm regions, this higher cost can be offset by lower energy costs associated with higher efficiency levels (electric heat pump efficiency is directly tied to the ambient temperature), depending on the relative prices of electricity and natural gas.

¹² A detailed description of the Peak Day Methodology is provided in the Appendix.

¹³ The AEA scenarios do not assume 100% electrification.

¹⁴ The estimates for the residential natural gas electrification were developed using the same assumptions outlined in Section 3.3 and Appendix 2, with estimates for space and water heating load derived from the EIA's 2009 RECs data. The historic peak-generation levels were sourced from the Form EIA-861.

However, as shown in the previous section, most of the converted households are not new systems but conversions of existing households, which typically incur higher costs for conversions to new heating system types than for a replacement system. The cost of retrofitting a heat pump to natural gas, propane, or fuel oil system can be much higher than replacing the existing system and can include incremental costs related to the following requirements:

- Upgrades to electrical services and hook-ups.
- Installation and connection of the outdoor portion of the heat pump.
- Resizing ductwork due to different air flow and discharge temperatures.

Moreover, some natural gas systems are not forced air systems but various types of hydronic systems, such as baseboard or radiator heating systems. If the house does not have ductwork for heating or air conditioning then retrofitting to a central heat pump system would be even more expensive and challenging due to the need to install ductwork.¹⁵

Table 2-1 shows the appliance replacement costs used for the analysis. There are large first-year cost differences between a natural gas and electric heating system based on whether it is new construction or a retrofit to an existing house. For instance, the first-year cost difference between a gas furnace and electric heat pump in a new household indicate an electric system is lower cost, while system retrofit from natural gas to electric heat pumps typically increase first-year costs significantly. Although first-year costs might be lower for an electric heat pump in a new household, the relative cost differences between natural gas and electric heating systems are heavily dependent on the local natural gas and electric prices as well as the heat pump performance in the local climate. These costs were adjusted to account for regional cost variation.

**Table 2-1:
National Installation Costs and Annual Fuel Costs (2035) by Household Heating
& Cooling System Type (Real 2016 \$)**

Household Heating & Cooling System Type	New Household Gas Furnace & AC unit	New Household ASHP ¹	Replacement - Gas Furnace & AC unit	Conversion of Forced Air Furnace		Conversion of Hydronic System	
	Gas Furnace & A/C	ASHP	Gas Furnace & A/C	ASHP (Existing A/C)	ASHP (No Existing A/C)	ASHP (Existing A/C)	ASHP (No Existing A/C)
Purchase Cost (Capital)	\$4,495	\$3,903	\$4,495	\$4,065	\$4,065	\$4,065	\$4,065
Total Installation & Upgrade Costs (1-Year Cost)	\$6,281	\$5,991	\$6,858	\$6,993	\$10,909	\$8,637	\$11,509
Annual Equipment Costs	\$337	\$408	\$361	\$464	\$681	\$555	\$714
Annual Heating Expense	\$998	\$1,475	\$998	\$1,475	\$1,475	\$1,475	\$1,475
Total Annualized Costs	\$1,335	\$1,883	\$1,359	\$1,939	\$2,156	\$2,030	\$2,189

¹⁵ Mini-split systems could be installed without installing ductwork but might not be acceptable for aesthetic reasons and often would require multiple systems in order to serve all the rooms in a typical single-family home.

2.6

Direct Consumer Cost Impacts from Policy-Driven Residential Electrification

The total impact to consumers from potential electrification policies targeting the residential housing sector will depend on the local conditions (relative energy prices, local climate, and the housing stock's heating and cooling systems). For instance, in most areas across the country residential electricity prices are higher than natural gas prices so electrification can result in higher energy costs if the heat pump is not sufficiently efficient.

Insight: Applicability of National and Regional Results to Specific Utility Service Territories

This study is focused on the national level impacts of potential policies requiring electrification of residential energy load. While the analysis conducted for this study was focused on national level impacts, it is not possible to evaluate the impacts of a potential residential electrification policy without looking at the market in a much more disaggregate manner due to the differences in energy demand, energy prices and other factors in different parts of the country. The study used a variety of different data sources, ranging from sub-state level data on heating degree days, housing stock, and changes in electrical and natural gas demand, to state level data on appliance installation costs, regional data on forecasted energy prices, and other inputs. As a result, the analysis is reported at the regional level as well as the national level. The results have been aggregated into nine regions that reflect major regional differences in climate, natural gas use, and power and transmission grid boundaries.

However, the results shown for each region reflect broad averages, and do not include all local cost differences. The study also did not consider the cost impacts on the electric utility distribution system, which are expected to be significant, but are highly utility specific, and difficult to estimate on a national or regional basis. As a result, the regional results reported in this study are unlikely to be representative of individual utility service territories or individual states.

The results of a similar analysis conducted for a specific state or utility service territory within a region may differ significantly from the regional results shown in this report due to:

- Differences in natural gas and electricity prices even within the same region,
- Differences in housing stock,
- Differences in the electric grid, and
- Inclusion of distribution system cost impacts and other factors.

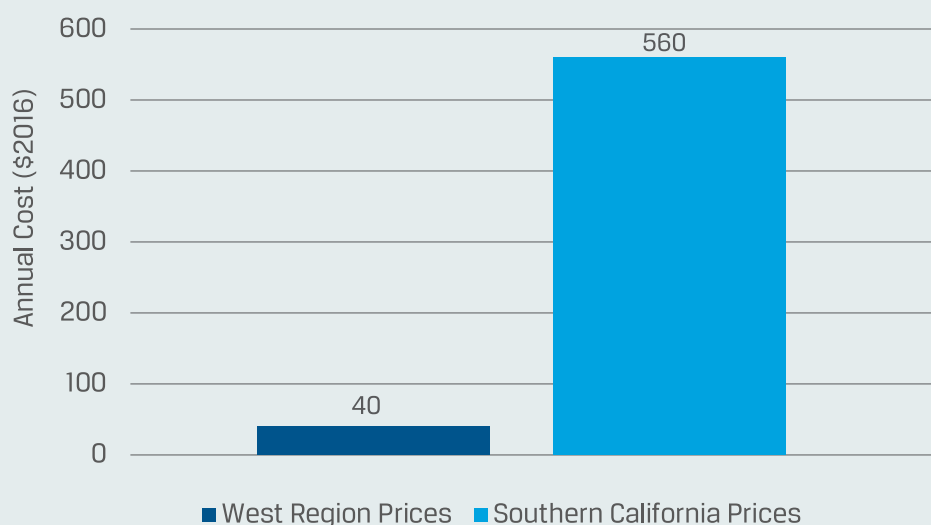
Given the complexity of the issues surrounding residential electrification policies, this study made a number of simplifying assumptions. For instance, this study assumed that all residential households were similar to a national average single-family household, despite the large number of multi-residence households that would be included in these policy proposals. The study found comprehensive data on certain housing characteristics to be limited, and as a result, conservative assumptions for installation and conversion costs were used. In higher cost areas or for households not ideally suited for conversion to electric heating equipment, the actual costs are likely to be understated, particularly for older households and non-single family residential households, which typically are concentrated in lower-income areas.

Case Study: Examining the Impacts of Intra-Regional Residential Prices

In order to illustrate the impact of local conditions relative to the regional averages, we created a simple case study comparing the impact of using Southern California energy prices rather than regional average energy prices on the consumer cost impacts in the Western region.

The projected electricity prices in Southern California (2020) are roughly 37 percent higher than the electricity prices used for the entire West Region, while the local natural gas prices for Southern California were 8.5 percent lower than the regional study price.¹⁶ Using Southern California specific residential rates, when compared to the West's regional average, would result in an incremental increase in consumer's utility bills from \$40 per customer reported in the study for the West Region to \$560 per year per household, as shown in Figure 2-7.¹⁷

**Figure 2-7:
Annual Energy Costs
from Electrification
Based on Different
Residential Rates**



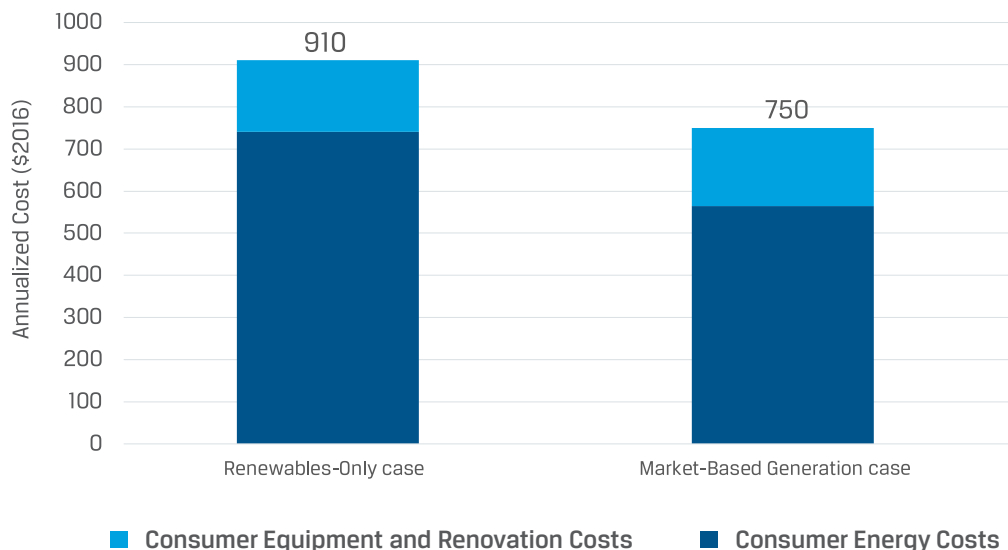
While the study methodology can be applied at the state or utility service territory level, this was beyond the scope of the AGA study. In addition, this type of more localized study approach would also need to consider many costs that were beyond the scope of the study, such as electric distribution costs, natural gas and electric rate impacts and other local considerations not included in this study.

¹⁶ Southern California Rates from California Energy Commission, IEPR Forecasts

¹⁷ Note: It would be inappropriate to use Southern California natural gas and electricity prices for the entire West Region. In addition, if applied only to customers in the Southern California area, the estimated \$560 per year would be lower due to lower space heating requirements in this part of the Western Region relative to the overall average.

To capture the differences in the direct costs to consumers¹⁸ from electrification policies, the study considered state level conversion costs for household heating and cooling systems based on state level construction costs, energy usage characteristics, and residential energy rates. These assumptions are more fully documented in Appendix A. These results were then summarized into the nine regions used in this study.

**Figure 2-8:
Annualized Direct
Consumer Costs
by Case**



Based on this analysis, in the Renewables-Only Case, consumers should expect to see their direct energy expenditures increase by over \$760 billion due to higher household fuel purchases and equipment costs. This equates to roughly \$910 per converted household per year. (Figure 2-8). In the Market-Based Generation Case, consumers should expect to see their direct energy expenditures increase by about \$415 billion. In the Market-Based Generation Case, the average cost per-year nationally would be \$750 per converted household.

The reduction in direct energy expenditures in the Market-Based Generation Case relative to the Renewables-Only Case is largely the result of the exclusion of mandated residential electrification policies for the Market-Based Generation Case in the Midwest, Plains, and Rockies regions. These regions have both higher heating loads and are in colder parts of the country, impacting the heat pump performance.

While both cases result in increases in costs to consumers, there is a more nuanced cost impact when evaluating electrification policies in specific regions of the country. Table 2-2 shows the direct consumer costs by each region modelled in this study. One key message from reviewing the regional results is that colder climates with higher heating loads, lower heat pump efficiency, and higher electricity prices relative to natural gas, such as New York and New England, face higher relative costs. Similarly, warm regions with a lower differential in electric and natural gas rates, such as the Southern U.S. can result in lower household fuel purchases and explains why electric heating has made greater inroads in southern cities, even when there are accessible natural gas distribution systems.

¹⁸ Direct costs to consumers include the differences in household capital costs between a natural gas and electric space and water system, and include the differences in household energy purchases over the life of the equipment.

**Table 2-2:
Annualized Direct
Consumer Cost Impacts
by Region (Real 2016 \$
Per Year Per Household)**

Region	Annual Household Fuel Purchases	Annualized Equipment Conversion Costs	Total Annualized Increase in Consumer Costs per Converted Household
East Coast	770	190	960
Midwest ¹	1,200	150	1,360
New England	1,330	220	1,550
New York	2,630	210	2,840
Plains ¹	910	150	1,070
Rockies ¹	880	140	1,030
South	-330	140	-190
Texas	-120	150	30
West	40	180	230
U.S. Total	740	170	910

The direct consumer costs are derived from households converted from 2023 to 2035. These costs include the installation and equipment costs and the difference in energy purchases for these households from 2023 to 2050 in order to account for future expenditures post-conversions for the natural gas and electric heating systems.

¹These regions were not included in the Market-Based Generation Case since the residential electrification policy would have increased overall GHG emissions.



3 Impact of Policy-Driven Residential Electrification on the Electric Sector

Electrification of residential natural gas and other direct use fuels will increase annual consumption of electricity. It will also increase the demand for electricity during peak periods, including the impact of additional electric space heating on winter peaking, and additional electric water heating on both summer and winter peak periods. Peak period demand is the primary determinant for the overall amount of electrical generation, transmission, and distribution capacity required, and hence determines the overall size of the electrical grid. In most of the country, electricity demand currently peaks during the summer due to air conditioning load. However, some regions of the country experience the electricity demand peak during the winter heating season.

The impact of policy-driven residential electrification depends on the characteristics of the peak electricity demand and the specific region:

- Electrification of residential water heating will have a direct impact on peak electric demand in all regions.
- Electrification of home heating in regions that are already winter peaking will have a direct impact on peak capacity requirements.
- Electrification of home heating in regions that are currently summer peaking will not lead to significant increases in overall peak demand until the conversions create sufficient new winter demand to cause the region to change from summer to winter peaking. Thereafter, additional electrification of space heating will directly contribute to peak period demand.

3.1 Impact on Electric Generation Capacity

The impact of residential electrification on peak electric grid capacity requirements and electric infrastructure is often overlooked in studies of policy-driven residential electrification.¹⁹ This study explicitly projects the potential impact of policy-driven residential electrification on the power grid infrastructure requirements for generation capacity and transmission capacity. Increased demand for electricity is met through the construction of a mix of base load, intermediate load, and peaking generating plants in the Market-Based Generation Case and a combination of renewables and energy storage in the Renewables-Only Case. The need for new plant construction is also affected by retirements of existing plants and environmental and renewable portfolio policies in each region.

For the electric system analysis of the study, the study used IPM[®] to model the power grid requirements and incremental investments needed to meet electric load growth for each of the three cases described in Section 2. The difference between the Reference Case and each of the two policy cases is used to project the impact of the residential electrification policy on:

- New plant construction by region
- Plant retirements
- Capital expenditure on new plants
- Power plant fuel use and emissions

¹⁹ See, for example: California Energy Commission Report, SoCal Edison's, "The Clean Power and Electrification Pathway," November 2017; Evolved Energy Research, "Deep Decarbonization Pathways Analysis for Washington State," April 2017; Energy + Environment Economics, "Pacific Northwest Low Carbon Scenario Analysis," November 2017

IPM[®] is a detailed engineering/economic capacity expansion and production-costing model of the power sector supported by an extensive database of every generator in the nation. It is a multi-region model that projects capacity and transmission expansion plans, unit dispatch and compliance decisions, and power and allowance prices, all based on power market fundamentals. IPM[®] explicitly considers gas, oil, and coal markets, power plant costs and performance characteristics, environmental constraints, and other power market fundamentals. A more detailed description of IPM[®] is included in Appendix C.

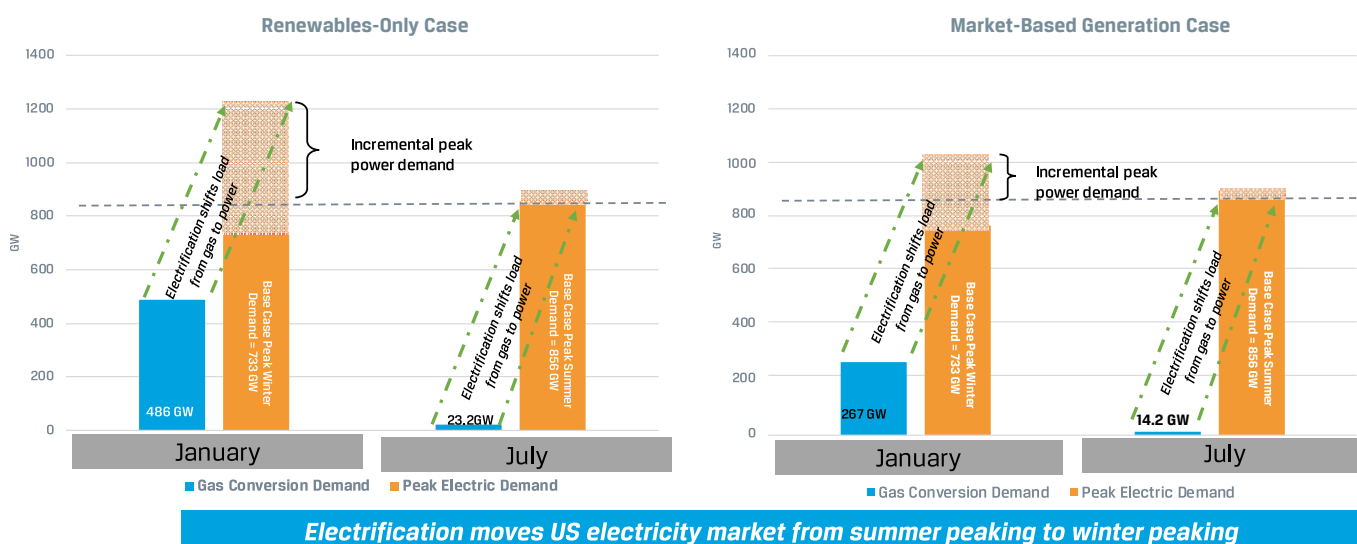
The Reference Case applied the assumptions from the EIA AEO 2017 Reference case, including the Clean Power Plan (CPP).²⁰ This reference case was calibrated to the EIA results with respect to emissions, total generation mix, levels of total renewable generation, and the mix of newly installed generation capacity. The assumptions were then modified for the policy cases to incorporate the increased electricity consumption and demand from the policy-driven electrification of residential gas use on a regional and seasonal basis.

3.1.1 Impact of Policy-driven Residential Electrification on Peak Period Demand

The effect of electrification on peak electric demand is one of the key drivers of impact on the electricity sector. The impacts are highly dependent on regional weather and generating mix and were modeled on a regional basis. The results also incorporate interactions between generators and transfers between generating regions. Regional results for the power sector analysis are shown in Appendix B, but Figure 3-1 summarizes the national results and illustrates the impact and implications. The figure shows the summer and winter peak demand before and after the policy.

In the AEO 2017 Base Case, or Reference Case, the 2035 peak-hour generation in the winter is 733 GW, 123 GW lower than the summer peak-hour generation of 856 GW. In the Renewables-Only Case, the impacts of electrification increase the winter peak by 486 GW,²¹ while the summer peak is increased by only 23 GW (primarily for water heating). The net incremental increase in demand is the winter increase above the pre-existing summer peak capacity or roughly 360 GW.

Figure 3-1: Impact of Residential Electrification on Peak Electric Generation Requirements



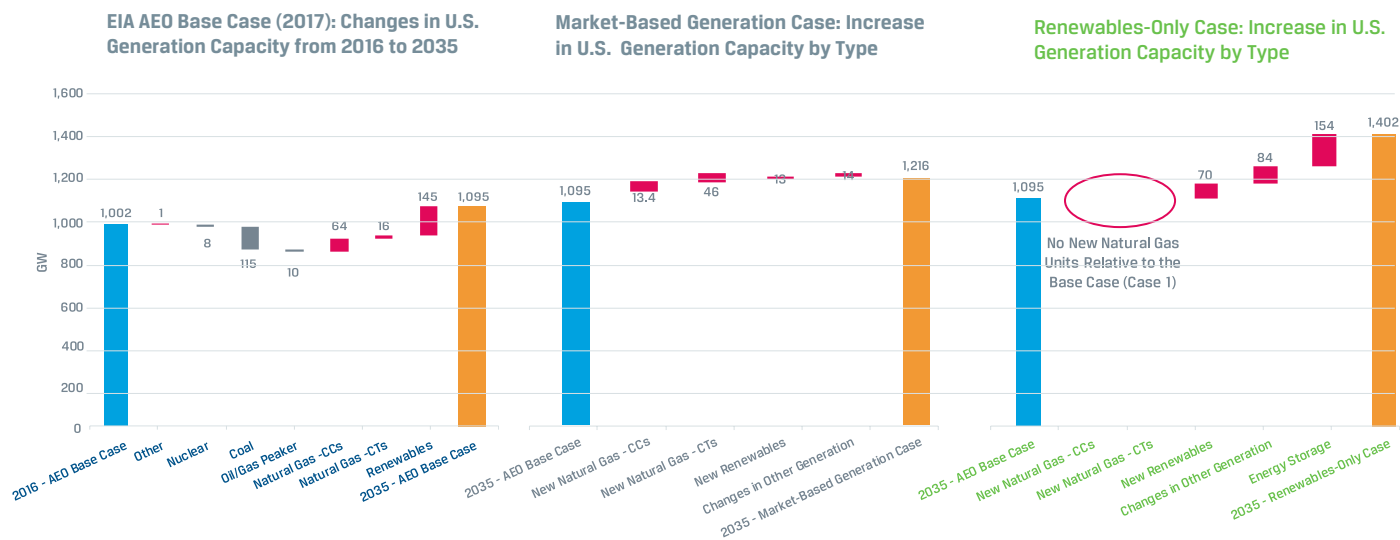
²⁰ The CPP was put on hold and was not included in the EIA's 2018 AEO Reference Case Assumptions but constitutes a more aggressive environmental case for this analysis.

²¹ This is a simplified approach given the differences between coincident and non-coincident peak-hour demand from electrification policies.

In the Market-Based Generation case, the coincident peak-hour increase from electrification is 267 GW and the net incremental generation capacity is 144 GW. The increase for the Renewables-Only case is larger due to the inclusion of electrification in all regions and states within U.S. Lower 48, whereas the Market-Based Generation case excludes several regions. These regions included in the Renewables-Only case have a high penetration of gas heating and are colder, which results in higher demand, exacerbated by lower heat pump efficiency, hence the much higher demand increment.

Figure 3-2 summarizes the projected changes in generating capacity between 2016 and 2035 for the three cases. In the Reference Case, there are 115 GW of retirements of coal-fired plants and 10 GW of retirements for oil/gas steam/peaking units. There are 64 GW of new gas combined-cycle capacity and 145 GW of new renewable capacity.

Figure 3-2:
Changes in U.S. Generating Capacity Due to Residential Electrification



The two policy cases (Renewables-Only and Market-Based Generation) both start from the Reference Case:

- In the Renewables-Only Case, all of the growth in generating capacity needed to meet the electric load growth associated with the policy-driven residential electrification is met with renewable power generation capacity and battery storage capacity. There is no incremental fossil-fuel capacity built in response to the electrification case beyond the capacity built in the Reference Case.
- In the Market-Based Generation Case, the investments in new generating capacity needed to meet the incremental electricity demand associated with the policy-driven residential electrification case are based on the most economic available option, consistent with the environmental regulations (including the CPP) in the 2017 EIA AEO Base Case forecast.

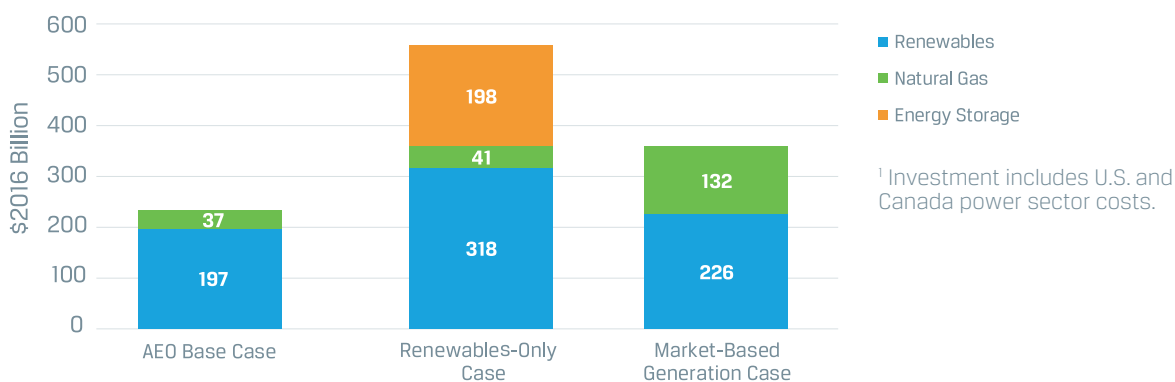
In the Reference Case, the 84 GW of retired capacity was replaced with higher efficiency, lower emitting natural gas combined cycle capacity. In the Renewables-Only Case, we did not allow these units to be replaced with new gas-fired units, which resulted in a delay in the retirement of these units. As a result, the Renewables-Only Case results in higher emissions from existing generation plants than occurs in the Reference Case, which reduces the overall emissions benefits associated with policy-driven electrification.

In the Market-Based Generation Case, the less efficient plants are retired as in the Reference Case and the incremental demand is met primarily with new gas combined cycle (52 GW) and gas combustion turbine peaking units (46 GW), as well as a smaller amount (13 GW) of additional renewable capacity beyond the Reference Case.

3.1.2 Impact of Policy-driven Residential Electrification on Incremental Power Sector Investments

Figure 3-3 shows the cumulative capital investment for generating capacity in North America from 2023 to 2035. The investment in renewable capacity accounts for the majority of the costs in all cases followed by the cost of battery storage in the Renewables-Only Case. The required investment in new generating capacity in the Renewables-Only Case is more than twice as high as the investment in the Reference Case, while electric demand is only 11 percent higher. The increase in investment for the Market-Based Generation Case is about 65 percent of the Renewables-Only Case due to the lower renewable component and lack of battery storage and also because the demand increment is lower for this case.

**Figure 3-3:
 Investment
 in Generating
 Capacity by
 2035¹**



3.1.3 Impact of Policy-driven Residential Electrification on Generation by Source

Figure 3-4 illustrates how the actual generation by fuel changes in the various cases to meet the incremental demand for electricity. The Renewables-Only Case has the highest generation due to the broader geographic coverage of electrification and has the highest renewable generation due to the limitation on construction of new fossil plants. Despite that limitation, fossil generation does not decline significantly in this case due to the delayed retirement of fossil units. Fossil-fueled generation is very similar in the two policy cases.

In the Market-Based Generation Case, much of the gas-based generation is from new, more efficient combined cycle capacity, with implications for gas consumption and emissions.

**Figure 3-4:
U.S. Electric Generation
by Fuel - 2035 (TWh)**

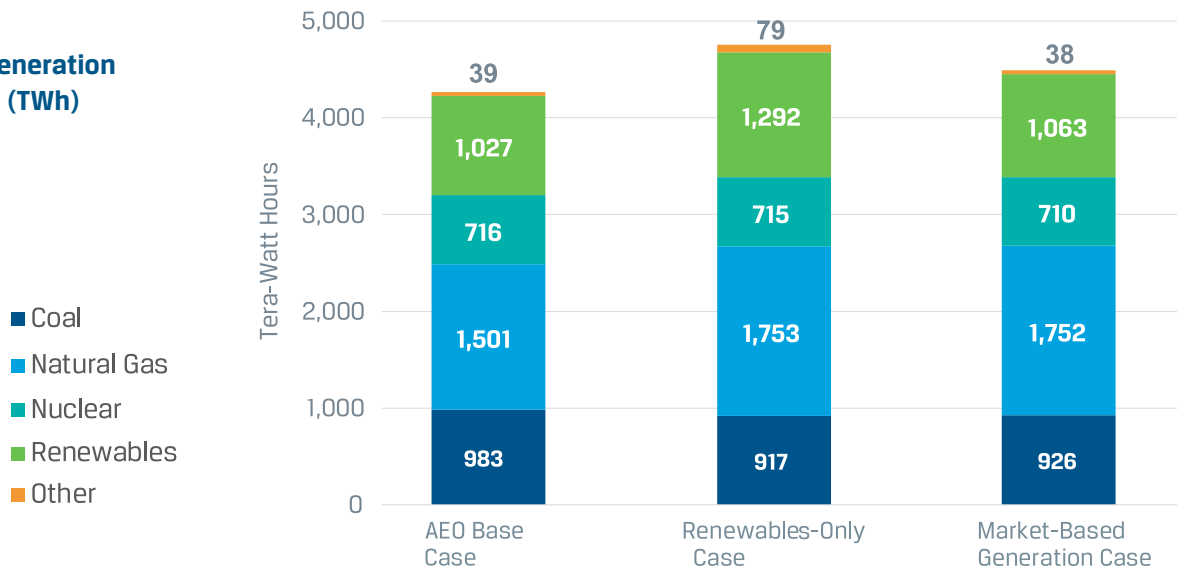
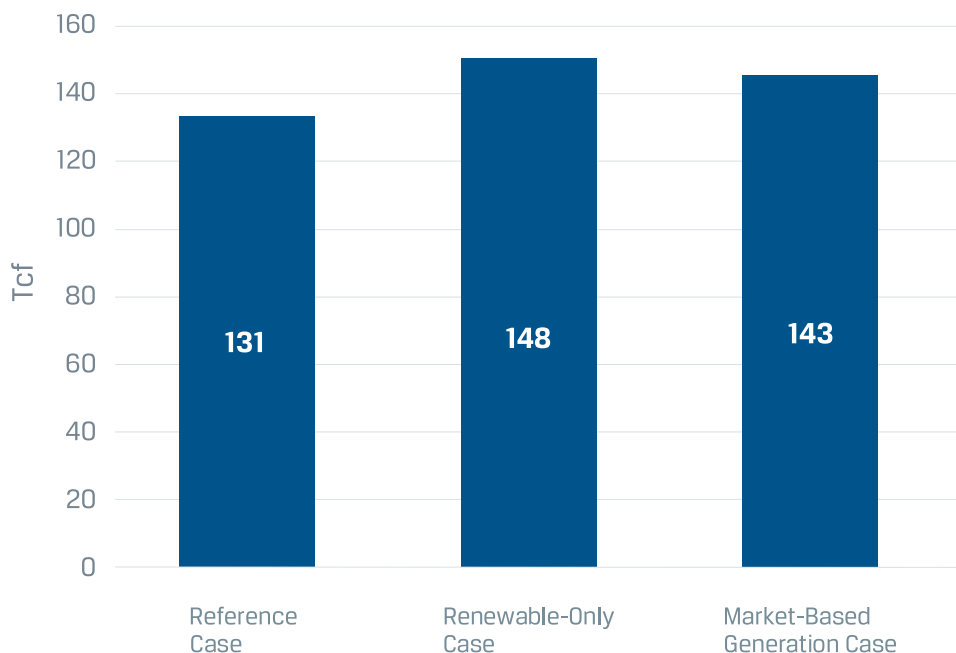


Figure 3-5 shows the gas consumption for power generation in the three cases. Natural gas consumption for electricity production increases in both policy cases as electricity generation increases to meet the increased demand for electric space and water heating loads. This is true even in the Renewables-Only Case as existing gas plants increase their utilization to meet demand and some plants that were retired in the Reference Case remain on line to meet demand. From 2023 to 2035, natural gas consumption for power generation increases by 16.5 Tcf in the Renewables-Only Case and 11.9 Tcf in the Market-Based Generation Case. However, for each case there are offsetting reductions in direct-use natural gas by households from the electrification of space and water heating.

**Figure 3-5:
Power Sector Natural
Gas Consumption for
2023 to 2035**

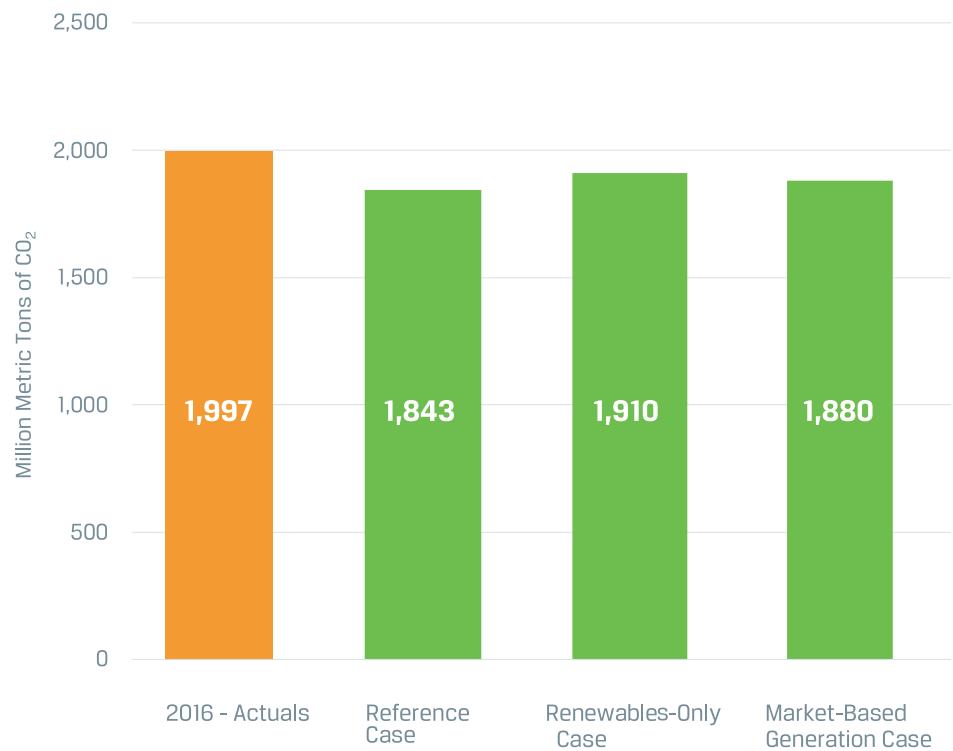


3.1.4 Impact of Policy Driven Residential Electrification on Power Sector CO₂ Emissions

Figure 3-6 shows the power sector emissions of CO₂ for 2016 and the three cases in 2035. In the Reference Case, emissions have declined from 2016 due to coal plant retirements and increased use of gas combined cycles and renewables. Both electrification cases have higher power sector emissions than the Reference Case.

In the Renewables-Only Case, power sector emissions increase due to the increased demand for electricity. In addition, even though no new fossil capacity is allowed, emissions increase due to increased overall generation and greater generation from existing, lower efficiency gas power plants. The Market-Based Generation Case has lower emissions than the Renewables-Only Case because of the lower overall change in generation (due to smaller geographic coverage) and because some older plants are replaced by more efficient/lower-emitting gas combined cycle plants.

**Figure 3-6:
2035 U.S. and
Canada Power Sector
CO₂ Emissions by
Case**



3.2 Impact on Transmission Requirements

As peak period electricity demand increases and as new electric generating capacity is constructed, the need for additional electric transmission capacity – both local and regional – is also expected to increase. In some cases, generating capacity in one region serves load in an adjacent region, requiring regional transmission. This can be especially important for renewable generation such as wind power, where the potential resources are often in different regions than the demand growth.

This section presents the analysis of electric transmission impacts of the electrification case.²²

3.2.1 Analytical Approach

The cost of incremental transmission infrastructure that would be needed to meet the higher electric demand levels from the policy-driven electrification was calculated compared to the business-as-usual scenario based on the 2017 EIA AEO Reference Case) for the Market-Based Generation and Renewables-Only cases. To calculate these costs for the study, a detailed review of the transmission network in two of the regions created for this analysis was performed. For these two representative regions, a power flow simulation model was developed that included generation dispatch, regional demand, and net interchange with neighboring regions adjusted to match the peak condition projected by IPM[®] for the electrification cases.²³ The model simulated the operation of the bulk power system under normal conditions (all assets in service) and contingency conditions (one line or transformer out of service). This identified vulnerable transmission facilities that were likely to be overloaded as a result of the higher demand, and provided estimates for the cost to upgrade these facilities in order to resolve the violations.

Next a detailed model of the East Coast region was created to evaluate the incremental costs from a region that produces a majority of its generation in-region. The Northwestern U.S. in the West region was used to evaluate the transmission costs in a region more reliant on imported electric flows. These two regions were then used as representative regions to extrapolate the transmission costs across all regions.

For each region, the results of the Market-Based Generation and Renewables-Only cases were compared to the Reference Case to identify transmission system overloads unique to the electrification cases. The study also compared the projected inter-regional interchanges to the regional interface transfer limits and estimated the cost of upgrades to increase the limits of interfaces that were found to be deficient.

²² The transmission infrastructure cost estimates do not include incremental distribution system costs, which vary widely by utility and were beyond the scope of this study.

²³ PowerWorld was licensed to perform the detailed transmission flow modelling.

3.2.2 Impact of Policy-Driven Residential Electrification on Transmission Infrastructure Requirements

**Table 3-1:
Total Costs by 2035 of
Transmission Investments
(Real 2016 \$ Billions)¹**

Table 3-1 summarizes the results of the transmission analysis.²⁴ The increased cost for transmission infrastructure in the Renewables-Only Case was estimated at \$107.1 billion while the cost in the Market-Based Generation Case was \$53.2 billion. The difference is driven in part by the broader geographic coverage and the greater electric demand impact of the Renewables-Only Case. Regional results are presented in Appendix B.

Case	Intra-regional Improvements (Transformers)	Import Facilities (Transmission Lines)	Total Transmission Cost
Renewables-Only Case	91.3	15.8	107.1
Market-Based Generation Case ¹	41.7	11.5	53.2

Note: Transmission costs in the Market-Based Generation case are lower than in the Renewables-Only case in part due to the exclusion of the Plains, Rockies, and Midwest regions from the residential electrification policy in these regions.

Note: The transmission infrastructure cost estimates do not include incremental distribution system costs, which vary widely by utility and were beyond the scope of this study.

The incremental transmission costs vary widely by region, but are dominated in all regions by intra-regional improvements.

The transmission cost analysis should be considered conservative. The analysis did not consider a number of factors that likely would increase the overall transmission cost impacts associated with the electrical load growth driven by mandatory residential electrification policies. These factors include:

- Planning for Stressed Conditions
- Voltage Support
- Zonal Capacity Deliverability
- Permitting challenges, both inter- and intra-state

Additionally, the transmission infrastructure cost estimates do not include incremental distribution system costs, which vary widely by utility.

²⁴Two major electric transmissions projects were added in the Renewables-Only case, connecting renewable generation resources in Canada to the Midwest and Northeastern U.S.

4 Overall Impacts of Policy- Driven Residential Electrification

4.1 Overall Cost of Policy-Driven Residential Electrification

The individual components of the costs and emissions benefits associated with the residential electrification policies evaluated in this study have been reviewed earlier in this report. This section of the report combines these results to assess the overall implications of policy driven residential electrification policies on residential energy costs and the power grid, compared to the potential emissions reductions associated with these policies.

The cost impacts from electrification policies include:

Consumer Costs: The direct costs to consumers of policy-driven electrification include.

- The incremental costs for new or replacement electric space and water heating equipment relative to the natural gas or other direct fuel alternative.
- Costs of upgrading or renovating existing home HVAC and electrical systems.
- Difference in energy costs (utility bills) between the electricity options and the natural gas and other direct fuel options.

Most of the affected households will be existing households retrofitting from natural gas and other direct fuel appliances to electric appliances. The costs for these customers typically will be higher than the incremental costs for new households installing the equipment.

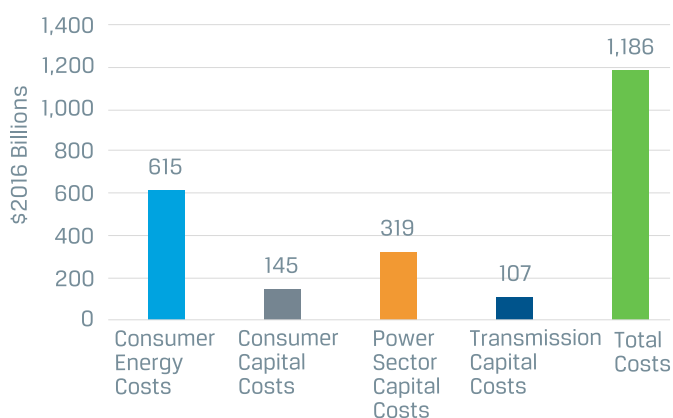
Power Generation Costs: The capital cost of new electric generating capacity needed to supply the increased electricity demand.

Transmission Costs: The cost of new electric transmission infrastructure required to serve the increased load and generation.

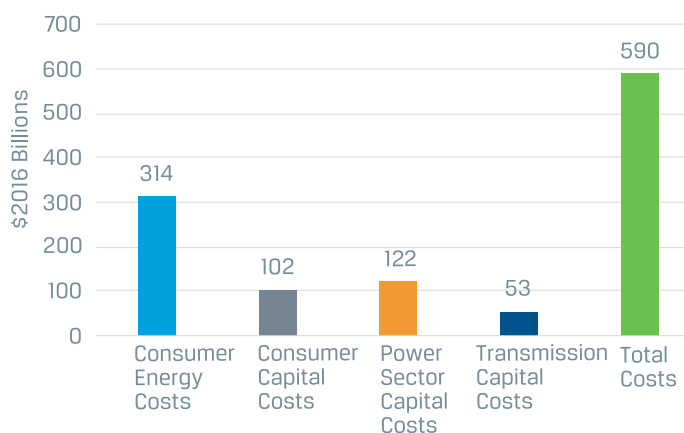
Figure 4-1 summarizes these costs for the Renewables- Only Case showing that the total cumulative cost increase relative to the Reference Case is nearly \$1.2 trillion by 2035. Roughly half of this cost is the increase in consumer energy costs. One third is the cost of new generating capacity and consumer equipment and transmission costs make up the remainder.

The Market-Based Generation Case has a total cumulative cost increase of \$590 billion by 2035, shown in Figure 4-2. The consumer energy costs are lower in this case because it does not include electrification of the Midwestern, Plains, and Rockies regions, which have higher heating loads, greater saturation of gas heating equipment, and colder temperatures, which result in lower efficiency for electric heat pumps. The other costs are also somewhat lower, especially the capital cost of new generating capacity. The generating cost is lower because the model is selecting the lowest cost option, rather than being limited to only renewable sources, which increases costs, especially for battery storage, in the Renewables-Only Case.

**Figure 4-1:
 Total Cost of Renewables-Only Case by Sector**



**Figure 4-2:
 Total Cost of Market-Based Generation Case by Sector**



4.2 Cost per Consumer of Policy Driven Residential Electrification

The overall magnitude of the costs of policy-driven residential electrification is expected to place a significant burden on consumers. Table 4-1 shows the cumulative and annualized costs of the conversion to electricity spread out over the total number of converted households. These costs include the direct costs per household, including the direct consumer costs (appliance and energy costs), and an allocation of the capital cost for electric generating plants and electric transmission. The costs are discounted to 2023 and expressed in real 2016 dollars.

One important result from this study was the wide degree of variation in direct consumer costs based on the region of the study.²⁵

The cumulative cost per household in the Renewables-Only Case ranged from \$1,970 in Texas to over \$58,500 in New York, with a national average of \$21,140. The annualized cost ranges from \$130 to \$3,900 per year with a national average of \$1,420 per year.

The cumulative cost per household in the Market-Based Generation Case, ranged from \$650 in the South region to almost \$57,800 in New York, with a national average of \$15,830. The annualized cost ranges from \$40 per year to nearly \$3,880 per year with a national average of over \$1,060 per year.

²⁵Results within each region can vary significantly based on the local climate and differences in residential energy rates and equipment installation costs.

**Table 4-1:
Annual Per Household Total
Costs of Electrification
Policies (Real 2016 \$)¹**

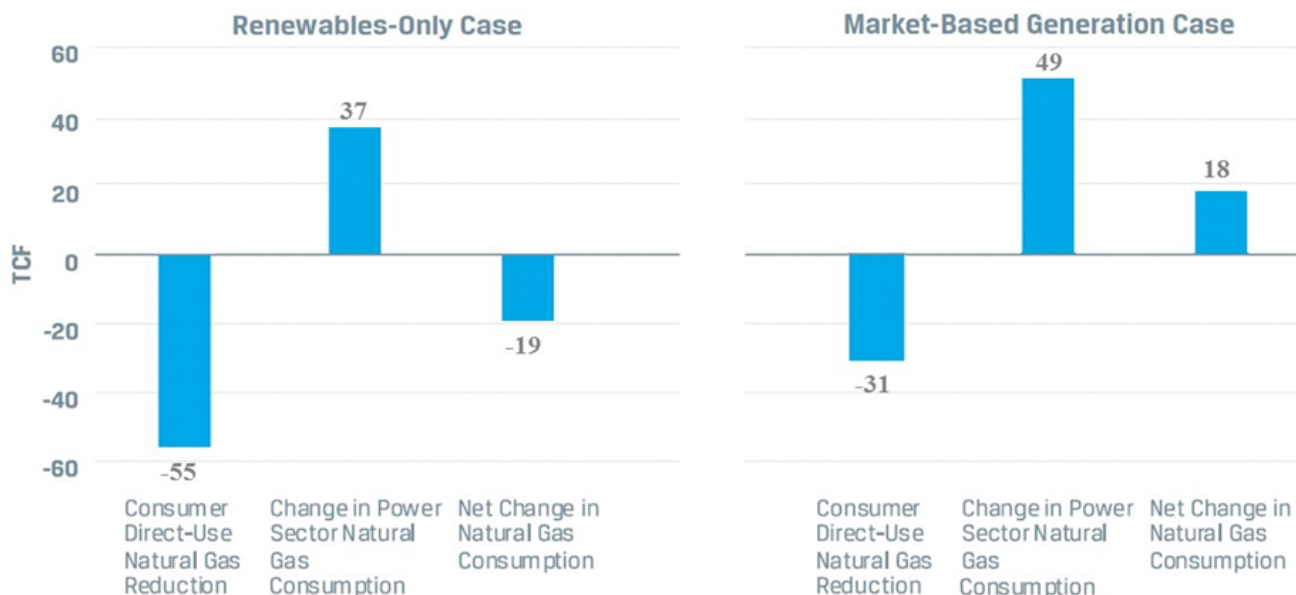
Region	Renewables-Only Case		Market-Based Generation Case	
	Cumulative Change in Costs Per Converted Household	Annualized Change in Costs Per Converted Household	Cumulative Change in Costs Per Converted Household	Annualized Change in Costs Per Converted Household
East Coast	18,440	1,240	16,550	1,110
Midwest	25,920	1,740	Policy Not Implemented	
New York	58,580	3,930	57,770	3,880
New England	41,210	2,770	35,340	2,370
Plains	29,120	1,950	Policy Not Implemented	
Rockies	25,060	1,680	Policy Not Implemented	
South	7,820	520	650	40
Texas	1,970	130	740	50
West	5,880	390	5,140	340
Total U.S.	21,140	1,420	15,830	1,060

¹All costs are discounted in Real 2016 \$ to 2023 using a 5 percent discount rate. Costs include direct household conversion costs from 2023 to 2035, power sector and transmission costs from 2023 to 2035 and the cost difference in household energy purchases from 2023 to 2050.

4.3 Net Impacts on Natural Gas Consumption

The residential electrification policies result in a significant reduction in natural gas consumption from home heating and water heating, as well as reductions in fuel oil and propane consumption. However, the growth in electricity demand associated with the residential electrification policies partially offsets the reduction in direct natural gas consumption. Hence the net reduction in natural gas consumption is less than the reduction in direct natural gas use. Figure 4-3 below illustrates the net impact of the residential electrification policy in the two alternative cases.

**Figure 4-3:
Change in Cumulative Gas Consumption From - 2023 to 2050**



As illustrated in Figure 4-3, the cumulative reduction from 2023 to 2050 in residential natural gas consumption in the Renewables-Only Case is 55 Tcf, or 43 percent of the total residential natural gas consumption in the Reference Case. However, power generation natural gas consumption is projected to increase by 37 Tcf, leading to a net impact on natural gas consumption of 19 Tcf, or about 2.3 percent of total U.S. natural gas consumption over this period.

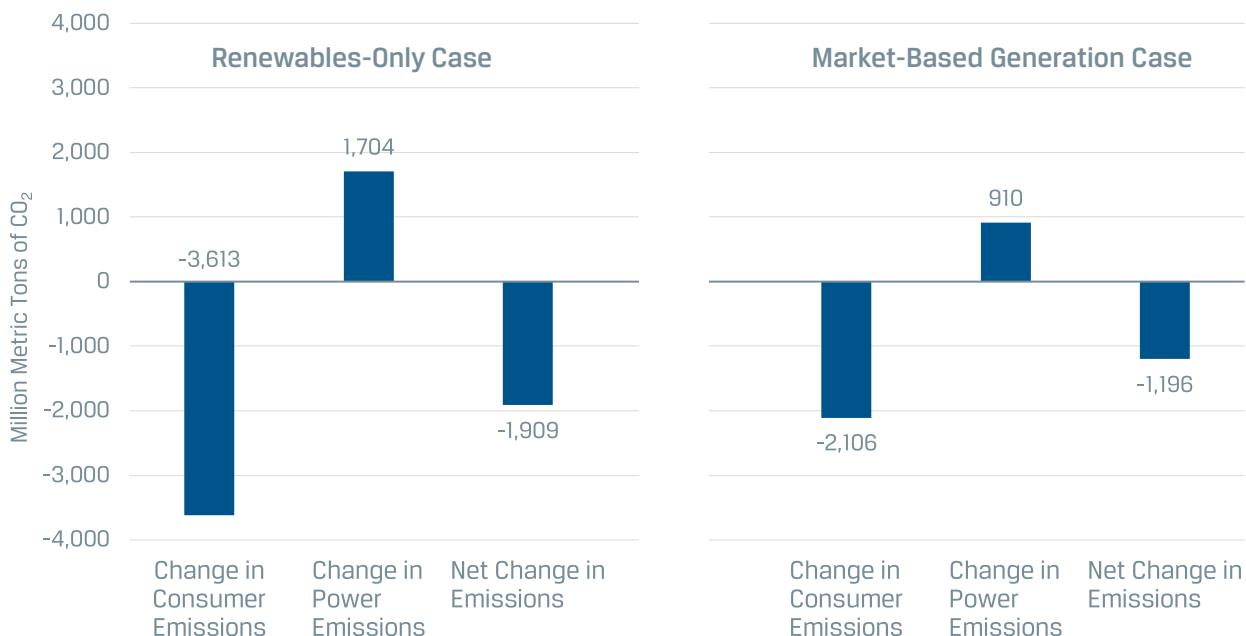
Natural gas consumption in the power generation sector increases in the Renewables-Only Case due to increased dispatch of the existing natural gas plants, as well as the operation of lower efficiency gas-fired generation capacity that was not retired in this case due to the higher cost of renewable generation capacity.

In the Market-Based Generation Case, the reduction in on-site gas consumption is lower than in the All-Renewables Case due to the reduced geographic coverage—a cumulative reduction of Tcf, shown in Figure 4-3. Cumulative gas use for power generation is higher at 49.2 Tcf due to the greater construction of gas plants to meet the increased electricity demand. As a result, there is a net increase in gas consumption of 18.1 Tcf or about 0.7 Tcf per year. Similar to the impact on natural gas consumption, residential electrification policies are expected to reduce CO₂ emissions from the residential sector, but lead to an increase in emissions from the power generation sector.

4.4 Net Environmental Impacts

**Figure 4-4:
 Cumulative GHG Emissions
 Reductions by Electrification
 Case From - 2023 to 2050**

Figure 4-4 shows the net change in emissions for the two electrification cases from 2023 to 2050. The Renewables-Only case has the larger on-site reduction due to its larger geographic coverage—a cumulative reduction of 1,909 million metric tons of CO₂ from 2023 to 2050. Despite the prohibition on new fossil fuel



plants to meet the increased demand, CO₂ emissions from the power sector increase by a cumulative total of 1,704 million metric tons of CO₂ (159.7 million metric tons of CO₂ in 2035) due to increased generation from existing fossil-fuel fired generation plants, including natural gas (combined cycles and combustion turbines), coal, and oil-peaking units. This results in a cumulative net emission reduction of 1,909 million metric tons of CO₂, and a total of 96 million metric tons of CO₂ in 2035, which represent about 1 percent of baseline U.S. GHG emissions for that year.

In the Market-Based Generation Case, the cumulative emission reduction is 1,196 million metric tons of CO₂ (65 million metric tons of CO₂ in 2035) due to the exclusion of some regions from the program.

Even though there is more gas generating capacity added than in the Renewables-Only case, the cumulative increase in power sector emissions from the Market-Based Generation case is 910 million metric tons of CO₂ (27.5 million metric tons of CO₂ in 2035). This is lower than in the Renewables-Only Case because the increase in electricity demand is lower and because the new gas plants are more efficient than the older plants that are used in the Renewables-Only Case. Nevertheless, the cumulative total net reduction of emissions is lower, 1,196 Million Metric Tons of CO₂, largely due to the lower geographical application of electrification policies.

Table 4-2: Change in 2035 GHG Emissions by Case (Million Metric Tons of CO₂)

Change in Consumer Emissions	Change in Consumer Emissions	Change in Power Emissions	Net Change in Emissions
Renewables-Only case	-159.7	63.4	-96.3
Market-Based Generation case	-92.7	27.5	-65.2

Even though the Renewables-Only Case prohibits the development of new fossil-fuel generating capacity, and all of the new generating capacity installed in the U.S. in this case is renewable and energy storage, residential electrification still results in higher emissions from the power sector, partially offsetting the larger decline in residential emissions from the expanded application of the electrification policy.

The increase in power sector emissions in the Renewables-Only Case is due to economic market forces in the generation sector and is driven by two factors:

- There are fewer existing natural gas and coal plants retired between 2018 and 2035 than in the Reference Case. In the Reference Case, many of the older existing gas and coal units were driven out of the market by higher efficiency, hence lower cost, new natural gas units. The higher cost of renewable capacity capable of meeting peak winter demands allows these existing units to remain economic longer. These units emit more GHG's than the newer gas units in the baseline.
- The remaining natural gas and coal generating capacity operates at a higher utilization due to the increase in overall electrical load.

4.5 Cost per Ton of CO₂ Emissions Reduced

The primary driver for policy-driven residential electrification is GHG emissions reductions. In order to assess the effectiveness of residential electrification for this purpose, the study calculated the cost implications of the policies based on the cost per metric ton of reduction (Real 2016 \$ per metric ton of CO₂ reduced). This is a common figure-of-merit for emission reduction programs and allows comparison of these policies with alternative policies and technologies for GHG reduction.

Table 4-3 shows the emissions cost of reduction from the conversion to electric heating programs and summarizes the cost of emissions reductions for the two policy cases based on the net reductions including increased emissions from the power sector. These costs vary widely among regions based on heating loads, temperature dependent heat pump performance, generating mix, electric transmission capacity, and renewable generation potential among other factors.

For the Renewables-Only Case, the average cost of the net emissions reductions was \$806 per metric ton of CO₂. On a regional basis, the costs ranged from \$218 per metric ton of CO₂ reduced in the South region to nearly \$8,800 per metric ton of CO₂ reduced in New York. The very high cost in New York is due to high costs for the electric generating capacity and infrastructure, high cost of electricity, and cold temperatures reducing heat pump efficiency. Two regions (New England and the Midwest) did not see a reduction in net emissions as growth in power generation emissions more than offset the reduction in residential sector emissions.

**Table 4-3:
Cost of Emission
Reductions (Real 2016
\$ Per Metric Ton of CO₂)**

Region	Total Cost of Net Emissions Reductions	
	Renewables-Only case	Market-Based Generation case
East Coast	635	391
Midwest ^{1,2}	N/A	Policy Not Implemented
New York	8,784	6,450
New England ¹	N/A	1,081
Plains ²	230	Policy Not Implemented
Rockies ²	794	Policy Not Implemented
South	218	63
Texas	251	54
West	749	485
U.S. Total	806	572

¹The Midwest and New England regions show increased total emissions on a Discounted Basis.

²In the Market-Based Generation Case, the electrification policy was not implemented in the Midwest, Plains, and Rockies regions due to the lack of potential emissions reductions.

In the Market-Based Generation Case, all regions included in the electrification policy case experienced a net-reduction in GHG emissions. The net cost of emissions reductions by region for the case ranges from \$54 to \$6,450 per metric ton of CO₂ reduced, with a national average of \$572 per metric ton of CO₂. The low cost in the Texas and Southwest regions are due to the mild climate and higher efficiency of heat pumps which result in minimal increases to peak electric generation demand in these summer peaking regions and low incremental energy costs for consumers.

5 Study Conclusions

Overall, the residential electrification policy assessed in this study would convert between 37.3 and 56.3 million households from natural gas, propane, and fuel oil space and water heating to electricity between 2023 and 2035. This represents about 60 percent of the total non-electric households in each region where the policy is implemented. Table 5-1 summarizes the results of the analysis.

5.1 Study Results

**Table 5-1:
Summary of Results**

	Renewables-Only Case	Market-Based Generation Case
U.S. Greenhouse Gas Emissions	Annual U.S. GHG emissions reduced by 93 million metric tons of CO ₂ by 2035 (1.5 percent)	Annual U.S. GHG emissions reduced by 65 million metric tons of CO ₂ by 2035 (1 percent)
Residential Households	56.3 million households converted to electricity	37.3 million households converted to electricity
	\$760 billion in energy & equipment costs	\$415 billion in energy & equipment costs
	Direct consumer annual cost increase of \$910 per household	Direct consumer annual cost increase of \$750 per household
Power Sector	320 GW of incremental generation capacity required at a cost of \$319 billion	132 GW of incremental generation capacity required at a cost of \$102 billion
	\$107 Billion of associated transmission system upgrades	\$53 Billion of associated transmission system upgrades
Total Cost of Policy-Driven Residential Electrification	Total energy costs increase by \$1.19 trillion	Total energy costs increase by \$590 billion
	\$21,140 average per converted household	\$15,830 average per converted household
	\$1,420 per year per converted household increase in energy costs	\$1,060 per year per converted household increase in energy costs
Cost of Emission Reductions	\$806 per metric ton of CO ₂ reduction	\$572 per metric ton of CO ₂ reduction

Overall, the analysis of the AGA policy-driven residential electrification cases indicates that residential electrification policies would likely result in small reductions in GHG emissions relative to total U.S. emissions, at a cost on a dollar per metric ton basis that would be higher than the cost of other emissions reduction options under consideration, both to individual consumers and society at large.

- Based on the 2017 EIA AEO, by 2035 direct residential natural gas use will account for about 4 percent of total GHG emissions, and the sum of natural gas, propane, and fuel oil used in the residential sector will account for about 5 percent of total GHG emissions. Reductions from policy-driven residential electrification would reduce GHG emissions by 1 percent to 1.5 percent of U.S. GHG emissions in 2035 from the EIA AEO 2017 Baseline emissions.
- GHG emissions from the generation of electricity supplied to the residential sector are expected to account for about 10 percent of total GHG emissions in 2035, or more than twice the GHG emissions from the direct use of natural gas in the residential sector.
- Policy-driven electrification would increase the average residential household energy-related costs (amortized appliance and electric system upgrade costs and utility bill payments) by between \$750 and \$910 per year, or about 38 to 46 percent above expected energy related costs in the absence of electrification.
- Growth in peak winter period electricity demand resulting from policy-driven residential electrification would shift the U.S. electric grid from summer peaking to winter peaking in every region of the country, and would increase the overall electric system peak period requirements, resulting in the need for major new investments in the electric grid including generation capacity, transmission capacity, and distribution capacity. Incremental investment in the electric grid could range from \$155 billion to \$456 billion between 2023 and 2035.
- The total economy-wide increase in energy-related costs (residential consumer costs plus incremental power generation and transmission costs) from policy-driven residential electrification ranges from \$590 billion to \$1.2 trillion (real 2016 \$), which is equal to from \$1,060 to \$1,420 per year for each affected household, depending on the power generation scenario. This reflects changes in consumer energy costs between 2023 and 2050, as well as changes in consumer space heating and water heating equipment costs, and incremental power generation and transmission infrastructure costs between 2023 and 2035.
- The average cost of U.S. GHG emissions reductions achieved by policy-driven residential electrification would be between \$572 and \$806 per metric ton of CO₂ reduced, well above the costs of other emissions reductions policies under consideration.

5.2 Impact of Policy-Driven Residential Electrification on the Power Grid

The increase in peak winter load associated with the electrification of residential space heating would convert most areas of the U.S. power grid from summer peaking to winter peaking—the incremental generation requirements from electrification policies are typically more pronounced in regions that are already winter peaking.

The analysis conducted for this study indicates that significant residential electrification efforts would change the overall pattern of electricity demand and lead to increases in peak electric demand. Such policies could also shift the U.S. electric grid from summer peaking to winter peaking in most of the country, resulting in the need for major new investments in the electric grid including generation capacity, transmission capacity, and distribution capacity.

Currently, most of the U.S. electric grid is summer peaking, with higher peak demand during the summer than in the winter. As a result, the primary driver of electric grid capacity requirements is peak summer load. The residential electrification policies evaluated in this study do increase summer demand due to conversion of water heaters to electricity. However, natural gas and other fossil fuel space heating load is heavily focused over the winter season, and electrification of space heating will significantly increase electricity demand during the winter, particularly on the coldest winter days when electric heat pump efficiency is lowest, and electricity use for space heating will be the highest.

The increase in peak winter demand would lead to an increase in overall peak electric demand, and require an increase in total generation capacity in 2035 of between 10 and 28 percent relative to the reference case, depending on the electrification case.

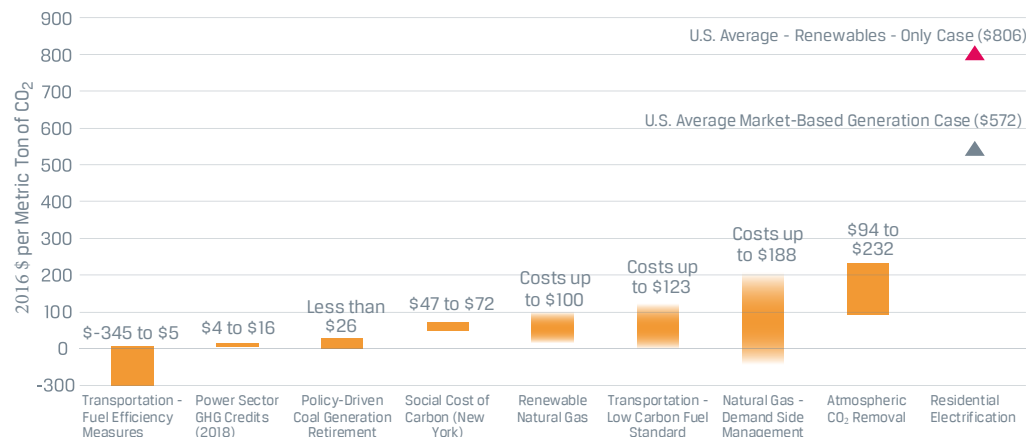
The growth in peak winter demand will also require incremental investments in the transmission and distribution systems. While this study includes an estimate for the required incremental investment in transmission capacity, it was beyond the scope of the study to assess the potential requirements for additional electric distribution capacity.

5.3 Cost-Effectiveness of Residential Electrification as a Greenhouse Gas Emissions Reduction Policy

Figure 5-1: Comparison of Cost Ranges For GHG Emissions by Reduction Mechanism

Sources: Energy Innovations, Energy Policy Simulator; GHG emission credits from the most recent auction for the Regional Greenhouse Gas Initiative (RGGI) and California Cap & Trade program; GHG reduction costs for the existing coal generation units estimated based on the Levelized Cost of Energy (LCOE) consistent with the EIA's 2017 AEO Base Case; New York Public Service Commission's (NYPSC's) adoption of the Social Cost of Carbon (SCC); U.C. Davis, The Feasibility of Renewable Natural Gas as a Large-Scale, Low Carbon Substitute, 2016; Comparison of Greenhouse Gas Abatement Costs in California's Transportation Sector presented at the Center for Research in Regulated Industries - 27th Annual Western Conference (2014); Maximum cost of \$10 per MMBtu for any Demand Side Management (DSM) program costs estimated based on an review of public DSM programs; Carbon Engineering, Keith et al., A Process for Capturing CO₂ from the Atmosphere, Joule (2018), <https://doi.org/10.1016/j.joule.2018.05>

The study of policy-driven electrification of residential fossil fuel heating load (space and water) indicates that the national average cost of U.S. GHG emissions reductions achieved would be between \$572 and \$806 per metric ton of CO₂ reduced, depending on the power generation case considered. These costs indicate that this policy approach would be a more expensive approach to GHG reductions compared to other options being considered. Figure 5-1 provides a comparison of the estimated cost per ton of GHG emissions reductions for a range of alternative policy options and technologies available for reducing carbon emissions.²⁹



This illustrative comparison to other GHG reduction measures shows the high relative and absolute cost of policy-driven electrification policies at a national level. The other GHG reduction measures shown for comparison include:

- Fuel Efficiency Improvements (Transportation Sector):** GHG reduction costs from fuel efficiency standards are generally negative, meaning that they generate both cost savings and GHG reductions. Costs range from -\$345 to \$5 per metric ton of CO₂ reduction.
- Power Sector GHG Reduction Credits:** Costs range from \$4 to \$16 per metric ton of CO₂ reduction based on the 2018 GHG reduction credits in the Regional Greenhouse Gas Initiative (RGGI) and the California Cap & Trade programs.
- Policy-Driven Retirement of Existing Generation:** The EIA 2017 AEO projects GHG emissions from the generation of electricity supplied to the residential sector to account for about 10 percent of total U.S. GHG emissions in 2035, or more than twice the contribution of the CO₂ emissions from natural gas use in the residential sector in the same year.

These emissions could be reduced at a much lower cost than policy-driven residential electrification by replacing coal generation with natural gas generation. Reducing CO₂ emissions from the power sector by replacing existing coal generation with a new gas generation combined cycle plant would cost up to about \$26 per metric ton of CO₂ reduced.

- **Renewable Natural Gas (RNG):** There are broad ranges of estimates for the cost to capture and deliver RNG to consumers. The upper range of these costs has been as high as \$100 per metric ton of CO₂ reductions, although there are RNG volumes available at lower costs.
- **Social Cost of Carbon:** Several states are beginning to consider the use of a social cost of carbon as a means to quantifying the comprehensive estimate of climate change damages in future regulatory planning. New York used a social cost of carbon ranging from \$47 to \$72 per metric ton of CO₂ reduction based on the year of emissions.
- **Low Carbon Fuel Standard (Transportation Sector):** A low carbon fuel standard is a performance-based standard that provides regulated parties an opportunity to find the most cost-effective compliance mechanism to reduce a fuels carbon intensity, which can result in a broad range of costs for these policies. Costs for these policies can be up to \$123 per metric ton of CO₂ reduction.
- **Demand Side Management (Natural Gas Use):**
There are a wide range of DSM measures that natural gas customers can implement to reduce natural gas usage and reduce CO₂ emissions. Many DSM measures can be implemented at below the avoided cost of natural gas, resulting in a negative cost per ton of ton of CO₂ reduction. An upper range on the cost of DSM activity likely to be considered is around \$10 per MMBtu above the avoided cost of natural gas, which would correspond to \$188 per metric ton of CO₂ reduction.
- **Atmospheric CO₂ Removal:** In June 2018, Joule Magazine published a peer-reviewed study detailing the Carbon Engineering cost estimates for the company's planned large-scale CO₂ removal plant. The company estimates that the costs per metric ton of CO₂ reduction range from \$94 to \$232 per metric ton of CO₂ reduction, well below prior estimates for this type of technology.

5.4 Applicability of Study Conclusions to Specific Policy Proposals at the State and Local Level

The analysis in this study was focused on broad regional and national markets. However, the residential electrification policy discussion is typically occurring at the state and local level. The study evaluated one set of residential electrification policy options under two alternative approaches to regulating growth in power grid requirements for all states. The policies evaluated here are unlikely to precisely replicate any specific proposed policy option, and there can be a wide variety of permutations of the residential electrification policies under discussion. Different variations of the basic policy will have costs and benefits that are likely to differ from the costs and benefits associated with the scenarios evaluated in this study.

In addition, the costs associated with policy-driven residential electrification can differ widely from the results of this study. For example, the results would differ if the residential electrification policy is implemented on a local or state level rather than the regional and national level as reported in this study.

Natural gas and electricity prices to residential customers, space heating requirements and existing housing stock characteristics can vary widely in different utility service territories even within the same state and region. Hence, the results of this analysis should not be applied or relied on as an indicator of the expected costs and benefits of a specific electrification policy proposal for a specific state or locality. However, the results of the analysis are sufficiently robust to indicate that residential electrification is likely to be a higher cost option for reducing GHG emissions even in areas with stringent renewable power requirements and an expectation of low-emitting future electric grids.

5.5 Other Impacts of Policy Driven Residential Electrification

- **Impact on Natural Gas Distribution System Costs to Other Customers:** Policy-driven electrification of direct-use natural gas from the residential sector would result in a significant decrease in the number of residential customers connected to the natural gas distribution system and in the volume of natural gas throughput on those distribution systems. Payments by residential customers currently support much of the overall natural gas distribution system. While the overall costs incurred by the natural gas distribution system would be expected to decline with the reduction in the number of customers and throughput, the cost reductions would not impact previously incurred costs on the system, which would need to be recovered from the remaining customers. This would result in a material shift in natural gas distribution system costs to the remaining gas utility consumers, including the remaining residential customers, commercial sector, and industrial sector customers. This study did not include an evaluation of these cost implications to consumers.
- **Impact on Electric Distribution System Costs:** While the study includes an assessment of the costs likely to be incurred to meet the growth in electricity demand for generation and transmission assets, the incremental costs not included in current electric rates of expanding the electric distribution system to meeting the increase in load have not been addressed. These costs will differ widely based on the specific locations of the load growth and are difficult to estimate. However, given the estimated increase in peak system requirements nationally, between 10 and 28 percent relative to the Reference Case, these costs are potentially substantial.
- **Impact of Policy-Driven Residential Electrification on Fugitive Methane Emissions:** This study did not include upstream or life-cycle emissions from any of the fuels consumed on site or for electricity generation. Doing so would have required a broader analysis of life-cycle emissions for all fuels through 2050, which was outside the scope of this study. Some studies have included only the upstream emissions of methane associated with on-site gas use. This neglects both the upstream impact on electricity generation and the effect on other fossil fuels. That said, even an assessment of upstream methane emissions has little effect on the net emission reductions calculated in this study. Including upstream methane emissions increases the GHG emissions factor for natural gas for on-site and electricity generation. In the Market-Based Case, net natural gas consumption increases, so including methane emissions reduces the net emissions reductions (including power sector emissions) and increases the cost per ton of reduction.

In the Renewables-Only Case, the emissions reductions would have been roughly 12 percent to 17 percent greater based on GWPI00, reducing the cost per ton of emissions reductions by an equivalent amount. Neither change affects the fundamental conclusions or significantly changes the cost-effectiveness relative to other control options.

5.6 Implications for the Policy Debate on Residential Electrification

The study did not address electrification policies targeted at other sectors of the economy, including the transportation sector, where policy-driven electrification could prove to be a more cost-effective approach to reducing GHG emissions, or market-driven electrification where consumers decide to invest in electric technologies rather than natural gas or other fuels. Overall, the results of this study reflect the scenarios evaluated, the costs considered, and the baseline emissions and energy prices from the EIA 2017 AEO. The analysis indicates that electrification policy measures that require the widespread conversion of residential space heating and water heating applications from natural gas and other fuels to electricity in order to reduce GHG emissions will be challenged by issues including the cost-effectiveness, consumer cost impacts, current and projected electric grid emission levels, and requirements for new investments in the power grid to meet growth in peak generation requirements over the winter periods.

At the same time, the total GHG emissions reductions available from a policy targeting electrification of residential heating loads represent a small fraction of domestic emissions. Total residential natural gas emissions are expected to account for less than 4 percent and total residential fossil fuel emissions are expected to account for less than 6 percent of the estimated 6,200 million metric tons of GHG emissions in 2035 in the AEO 2017 Reference Case. Aggressive electrification policies would have the potential to reduce these emissions by up to 1.5 percent of the total U.S. GHG emissions, at a net cost to energy consumers ranging from \$590 million to \$1.2 trillion (real 2016 \$).

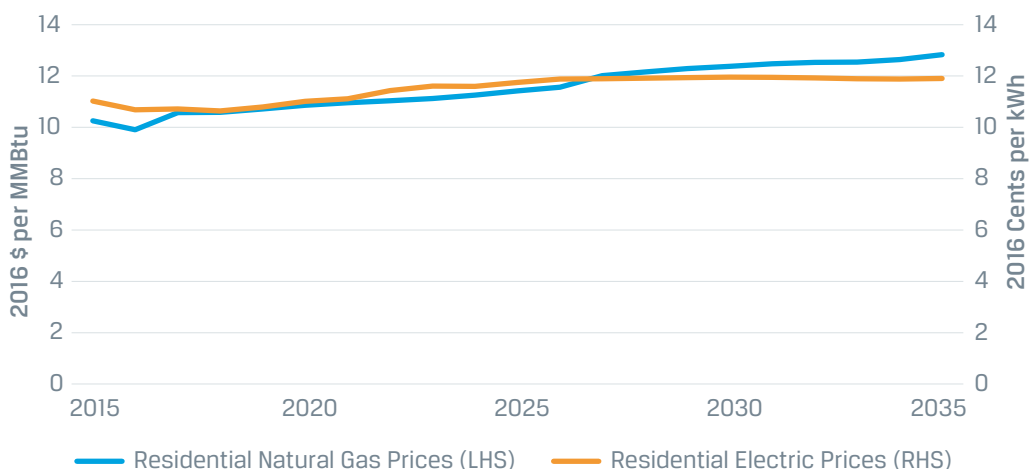
As a result, the conversations surrounding residential electrification policies and other approaches toward a low-carbon economy need to be evaluated in an integrated manner that includes not only the potential emissions reductions, but also considers the feasibility and real-world issues of complying with the proposed policies, as well as the potential consequences of the policies, including the economic impacts on consumers, and potential impacts on the power grid.

Appendix A: Study Inputs and Assumptions

A-1 Natural Gas and Electric Rates

The electric and natural gas prices (Real 2016 \$) from the EIA 2017 AEO Base Case are used to calculate the difference in the cost of energy between a gas furnace and electric heat pump based on the equipment's regional performance. The residential natural gas and electricity prices from the EIA AEO are summarized in Exhibits A-1 and A-2 below:

**Exhibit A-1:
Average U.S. Residential
Prices from EIA's 2017
AEO Base Case (Real
2016 \$)**



**Exhibit A-2:
Regional Residential
Natural Gas and
Electric Rates (Real
2016 \$)¹**

Region	Residential Electric Prices (2016 Cents per kWh)					Residential Natural Gas Prices (\$2016 per MMBtu)				
	2016	2020	2025	2030	2035	2016	2020	2025	2030	2035
East Coast	12.69	14.25	15.89	16.41	16.48	10.15	10.74	11.50	12.12	12.67
Midwest	10.85	11.20	11.98	12.32	12.25	8.46	9.49	9.93	10.62	10.96
New England	15.80	13.61	15.44	16.60	17.27	11.68	12.19	12.91	13.58	14.19
New York	15.90	17.92	20.33	21.16	21.29	11.26	12.06	12.77	13.30	14.08
Plains	10.91	10.47	10.88	10.86	10.85	9.06	10.47	10.77	11.47	11.74
Rockies	9.66	9.46	10.12	10.23	10.62	7.89	8.83	9.39	9.89	10.21
South	9.20	9.90	10.45	10.59	10.49	12.26	13.15	13.95	14.98	15.35
Texas	8.96	9.28	9.80	10.06	9.75	9.47	10.71	10.75	11.48	11.84
West	12.88	12.86	14.22	14.84	15.42	11.01	11.91	12.50	14.84	15.41
U.S. Total	10.69	11.01	11.75	11.96	11.91	9.91	10.86	11.42	12.37	12.83

¹ The regional averages are based on a weighted average of the state-level residential prices based on the number of converted natural gas households in each state. The state level residential prices are based on the EIA's 2017 AEO Base Case census division prices, which were used to derive each state's residential rates based on that state's 2016 prices relative to the census division average.

A-2 Impact of Policy-Driven Residential Electrification on Emissions:

Residential and Power Generation Sector Emissions

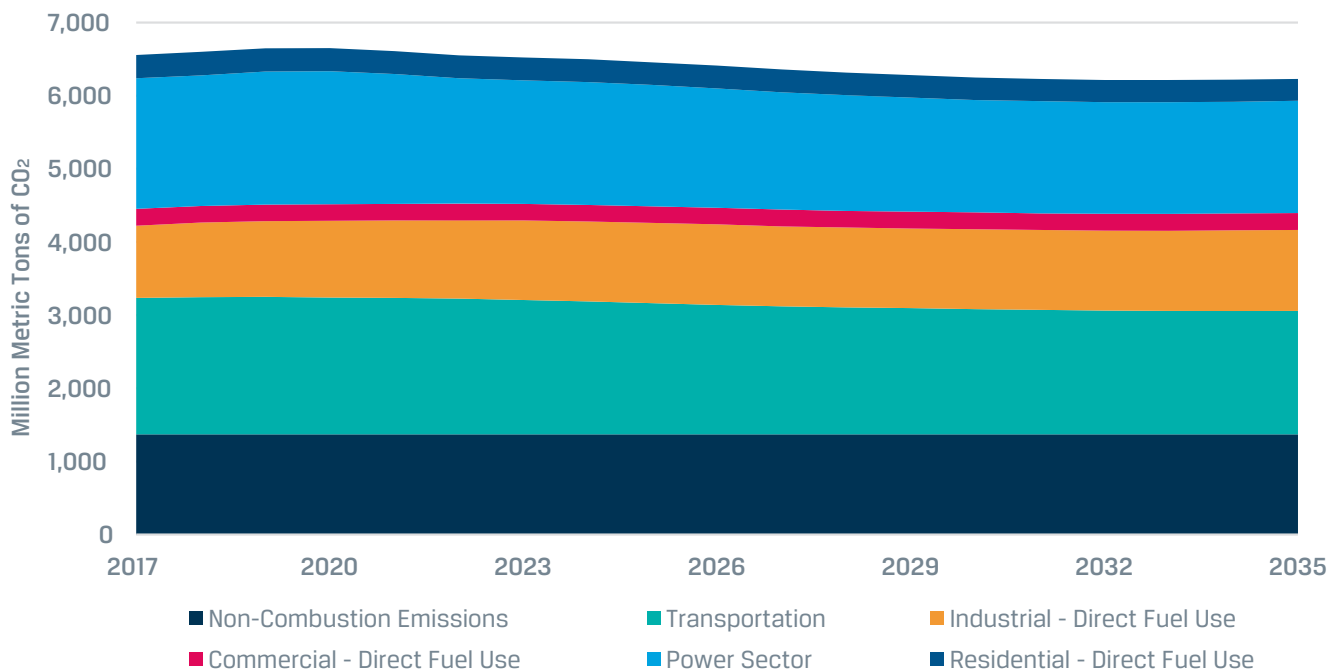
The impact of the residential electrification policies on CO₂ emissions are estimated based on the impact of the residential electrification policies on energy consumption in the residential and power generation sectors relative to the Base Case. The following fuel emissions factors are used to estimate the changes in emissions:²

- 117 pounds of CO₂ per Million Btu of natural gas
- 161 pounds of CO₂ per Million Btu of diesel fuel / heating oil
- 139 pounds of CO₂ per Million Btu of propane
- 208 pounds of CO₂ per Million Btu of coal
- 195 pounds of CO₂ per Million Btu of biomass

Other Emission Sources

To estimate the total change in emissions for each region, the study used emissions estimates from the EIA 2017 AEO Base Case for the energy related CO₂ emissions by sector and source and an estimate of 1,370 Million Metric Tons of CO₂ from non-energy related GHG emissions from combustion and non-combustion. This estimate is based on the 2016 reported GHG emission levels from non-combustion sources based on the Environmental Protection Agency's 2016 Inventory of U.S. Greenhouse Gas Emissions and Sinks.³ Exhibit A-2 shows the total U.S. GHG emissions by emitting sector for the Reference Case from 2017 to 2035.

**Exhibit A-3:
Reference Case - Total U.S. GHG Emissions by Sector**



² Source: Energy Information Administration: How much carbon dioxide is produced when different fuels are burned?

³ <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2016>

A-3 Residential Household Conversions to Electricity

The policy-driven residential electrification scenario evaluated in this study reflects a policy implemented in 2023 that requires all new homes to be built with electric space and water heating appliances, and requires the conversion of existing homes with natural gas, propane, or fuel oil space and water heating appliances to electricity at the end of the useful life of the space heating appliance.

In order to determine the consumer costs associated with the conversion to electricity, the housing stock is disaggregated by:

- New household construction
- Households with forced-air furnaces and existing air-conditioning
- Households with forced-air furnaces without existing air-conditioning
- Households with hydronic (Radiator) heating systems – Both with and without existing air-conditioning systems

Exhibit A-4: Number of Natural Gas, Fuel Oil, and Propane Households Converted to Electricity from 2023 to 2035 by Type of Heating System (Million Households)

The number of space heating households converted to electricity between 2023 and 2035 by type of household is shown in Exhibit A-4. The number of space heating households converted to electricity between 2023 and 2035 by region for the Renewables Only Case is shown in Exhibit A-5.

Household Fuel Type	New Households	Forced Air Furnace with A/C	Forced Air Furnace without A/C	Hydronic Heating with A/C	Hydronic Heating without A/C	U.S. Lower 48 Total
Natural Gas	8.6	33.3	1.0	5.5	1.3	49.7
Propane/Fuel Oil	0.0	3.9	0.7	1.6	0.3	6.4
Total Fossil/Fuel Households Subject to Electrification Policy	8.6	37.1	1.7	7.1	1.6	56.1

Exhibit A-5: Number of Natural Gas, Fuel Oil, and Propane Households Converted to Electricity in the "Renewable Generation Only" Case from 2023 to 2035 by Region (Million Households)

Household Fuel Type	East Coast	Midwest	New England	New York	Plains	Rockies	Texas	South	West	U.S. Lower 48
Natural Gas	6.4	10.0	2.0	3.7	5.1	2.2	5.0	3.0	12.3	49.7
Propane/Fuel Oil	1.1	0.8	1.4	1.0	0.7	0.1	0.7	0.2	0.5	6.4
Total Households Converted (2023 to 2035)	7.5	10.8	3.3	4.8	5.8	2.3	5.7	3.2	12.8	56.1

A-4 Residential Energy Efficiency and Cost Analysis Assumptions⁴

The number of households converted shown in Exhibits A-4 and A-5 are for the Renewables-Only Case. In the Renewables-Only Case, the residential electrification policy is applied in all regions. In the Market-Based Generation Case, the policy is applied only in regions where the electric grid is expected to be sufficiently clean to reduce overall CO₂ emissions, based on the EIA AEO 2017 Base Case projection of the electric grid. Hence, in this scenario, conversions in the Midwest, Plains, and Rockies are zero due to the lack of emissions reductions. The number of conversions in the other regions is the same in both scenarios.

Different conversion costs are estimated for each of the following household heating types:

- New household construction
- Households with forced-air furnaces and existing air-conditioning
- Households with forced-air furnaces without existing air-conditioning
- Households with hydronic (radiator) heating systems – Both with and without existing air-conditioning systems

A typical 2,250 square foot household is used as the baseline for estimating the conversion cost differences between a fossil-fuel heated and electric-heated households. All households are assumed to be single-family households. Other types of residential housing (duplexes, manufactured homes, and large residential housing, etc.) are treated as single-family homes to simplify the analysis, given the wide range of cost uncertainties in converting non-single family homes.

- The equipment and energy cost comparisons for all new construction households and existing households converting to electricity include a fossil-fuel furnace and an electric air conditioning system.
- A real discount rate of 5 percent is used in the economic analysis between systems.

Existing natural gas, propane and fuel oil space heating systems:

- The average efficiency of the existing furnaces being replaced: 80%

New natural gas, propane, and fuel oil space heating systems:

- New furnace costs are based on a 90,000 BTU per Hour High-Efficiency Energy Star[®] rated system.

⁴ All costs are presented in real 2016 \$, unless otherwise specified.

- New furnace efficiency – Same as existing furnace efficiency to ensure that the analysis does not overstate potential gas furnace efficiency, or understate furnace installation costs.
- Expected equipment life of 24 years
- Annual non-energy operating costs of \$75 (Real 2016 \$)
- A/C System - Seasonal Energy Efficiency Ratio (SEER) = 15

New electric space heating system:

- Average HSPF of 11.5 for all new systems installed between 2023 and 2035.
- Heat Pump equipment prices are based on the cost of a typical 3 Ton 9.5 HSPF System in 2016 – We assume that average efficiency improves without increasing system costs in real 2016\$ through 2035. The increase in costs associated with higher efficiency units is offset by improvements in technology and economies to scale. The full impact of improvements in technology and economies to scale are assumed to be reflected in improvements in efficiency, rather than reductions in costs.
- Expected equipment life of 18 years.
- Annual non-energy operating costs of \$75 (real 2016 \$).

Exhibit A-6: National Installation Costs and Annual Fuel Costs (2035) by Household Heating & Cooling System Type

Household Heating & Cooling System Type	New Household		Replacement - Gas Furnace & A/C unit	Conversion of Forced Air Furnace		Conversion of Hydronic System	
	Gas Furnace & A/C	ASHP	Gas Furnace & A/C	ASHP (Existing A/C)	ASHP (No Existing A/C)	ASHP (Existing A/C)	ASHP (No Existing A/C)
Purchase Cost (Capital)	\$4,495	\$3,903	\$4,495	\$4,065	\$4,065	\$4,065	\$4,065
Total Installation & Upgrade Costs (1-Year Cost)	\$6,281	\$5,991	\$6,858	\$6,993	\$10,909	\$8,637	\$11,509
Annual Equipment Costs ¹	\$337	\$408	\$361	\$464	\$681	\$555	\$714
Annual Heating Expense ¹	\$998	\$1,475	\$998	\$1,475	\$1,475	\$1,475	\$1,475
Total Annualized Costs	\$1,335	\$1,883	\$1,359	\$1,939	\$2,156	\$2,030	\$2,189

Source: Derived from national level and state level estimates for installation costs from a variety of sources, including homewyse.com, homeadvisor.com, energyhomes.org, HomeDepot.com, homesteady.com, and manufacture reported retail sales prices for home heating equipment.

¹ Equipment costs are annualized over the expected life of the equipment, using a real discount rate of 5%.

The study uses the household capital cost differences in Exhibit A-6 in the calculation of each region's consumer capital and investment cost impacts. These costs are based on the national average household costs for each system type and heating fuel (Natural Gas & Electric) with a regional cost factor to capture differences in installation and equipment costs between regions.

Water Heating Equipment

The study uses average costs for currently available high efficiency water heating equipment with a 50-gallon tank storage, placed indoors, with no regional variation in water heater efficiency factors. Fuel oil and propane water heating households are treated as if natural gas households.

Natural gas water heating system:

- The replacement natural gas water heater is sized at 42,000 Btu output with an energy efficiency rating of 80 percent.
- Natural gas water heater equipment cost is \$1,392, with an expected life of 10 years, with installation costs of \$540.

Electric heat pump water heating system:

- Electric heat pump water heater equipment cost is \$1,651, with an expected life of 10 years, and installation costs of \$520.

A-5 Heating and Cooling System Efficiency Assumptions

Space Heating Efficiency

The study uses a high-efficiency conventional air source heat pump as the electric alternative to fossil fuel space heating equipment throughout the analysis. Heating efficiency for air-source electric heat pumps is indicated by the HSPF, which is the total space heating required during the heating season, expressed in Btu, divided by the total electrical energy consumed by the heat pump system during the same season, expressed in watt-hours.

Electric Heat Pump Heating Efficiency Assumptions

This analysis starts with an Air Source Heat Pump with a reported HSPF of 11.0 in 2023. The efficiency of the average newly installed heat pump is assumed to increase by about 1 percent per year, reaching an HSPF of 12.5 by 2035. This results in an average reported HSPF of 11.5 (COP of 3.4) for the heat pumps used to replace the furnaces converted to electricity due to the residential electrification policy over the time period from 2023 through 2035.

Impact of Weather on Heating System Efficiencies

Actual heat pump performance is highly dependent on the weather conditions (temperature) when the heat pump is operating. To account for the variations in effective performance of electric ASHPs across the different regions, this study adjusts efficiency ratings for the newly installed electric heat pumps for each state based on actual temperature data.

The study uses weather data from 220 different regional weather stations to estimate the weighted average ASHRAE heating season Design Temperature for each state. The seasonal design temperature, based on a consumption weighted annual temperature average for each state, is used to estimate the actual average heating season efficiency of the ASHP for each state.

The study's effective performance ratings for the electric ASHPs are derived based on research from the Florida Solar Energy Center.⁵ In addition, the study bases the heat pump performance on manufacturer's performance ratings at select temperature ranges.⁶

The average weather-adjusted effective COP is based on local winter weather conditions from 220 weather reporting regions aggregated to the state level. When adjusted for actual expected weather conditions, the heat pumps installed between 2023 and 2035 are expected to achieve an average weather-adjusted effective COP of 2.6 in the Renewables-Only Case and 2.9 in the Market-Based Generation Case.⁷

At temperatures below 4 degrees Fahrenheit, the study assumes that ASHPs switch-over to electric resistance heating, which has an efficiency of 100 percent, or a COP of 1.

Electric Water Heater Efficiency

The water heater conversions from natural gas to electric demand are based on an electric heat pump water heater with an average efficiency of 200 percent, applied in a uniform manner across all regions.

Air Conditioning

Installation of a heat pump provides both heating and air conditioning. In this study, all gas furnace replacements are paired with an air conditioner when evaluating equipment and operating costs between the different equipment options. The efficiency of the air conditioner used is assumed to be equivalent to the efficiency of the heat pump for cooling load, hence air conditioning load did not impact the incremental operating costs between the different equipment options.

⁵ Fairey, P., D.S. Parker, B. Wilcox and M. Lombardi, "Climate Impacts on Heating Seasonal Performance Factor (HSPF) and Seasonal Energy Efficiency Ratio (SEER) for Air Source Heat Pumps." ASHRAE Transactions, American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc., Atlanta, GA, June 2004.

⁶ These performance profiles for ASHPs were selected from currently available electric ASHPs on the market rated with performance rating of 10.5 HSPF

⁷ The Market-Based case excludes regions where electrification would increase GHG emissions based on the expected grid emissions. This included the Plains and Rockies regions where colder temperatures reduce the effective efficiency of the heat pumps.

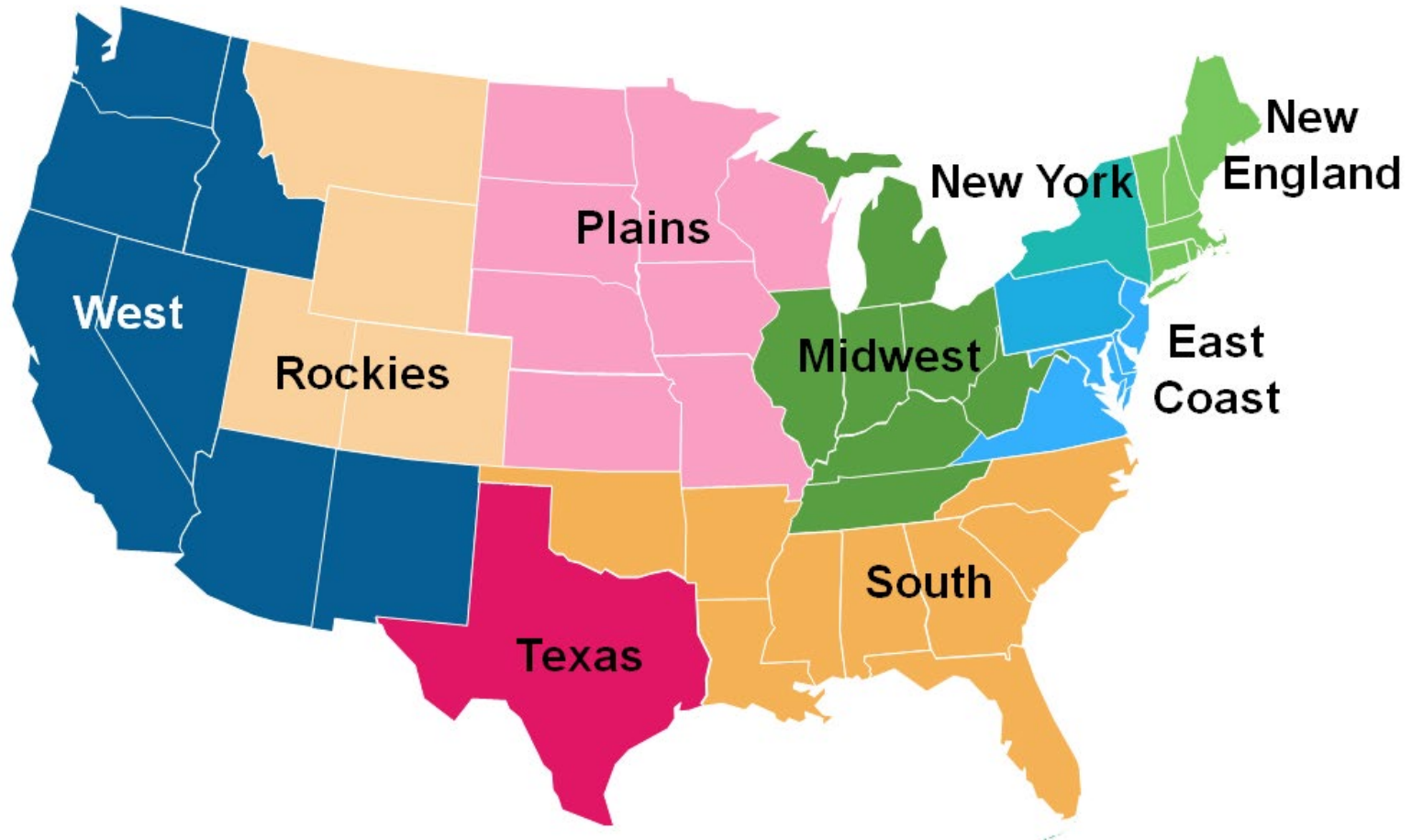
A-6 Impact of Conversion to Electricity on Peak and Annual Electricity Demand

The impact on peak and heating season electricity demand resulting from the conversion of residential fossil-fuel space and water heating consumption of natural gas, fuel oil and propane to electricity is estimated by converting the fossil fuel consumption from the converted households to the electricity demand based on the electricity that would be needed to replace the end-use energy provided by the existing space and water heating applications, accounting for the differences in efficiency of the different applications, and the difference in heating season efficiency and peak period efficiency for the ASHPs.

- Residential household energy consumption information from the 2015 EIA Residential Energy Consumption Survey (RECS) is used to segment household usage between space heating, water heating and other use. This is done for each census region and allocated to each state based on 2016 state data.
- 2015 RECS data is used to determine residential fossil fuel consumption by fuel type and end-use demand type. (Space Water, Water Heating, and Other). A monthly consumption profile is created using RECs information and monthly natural gas deliveries to residential consumers by state from the EIA.
- The peak day design sendout for water and gas heating load is created in order to estimate peak winter period electric demand impacts of converting residential households to electricity. To calculate the peak day natural gas demand levels, the study uses Heating Degree Days (HDDs) from the coldest day from 1986 to 2016 from 220 locations to estimate the HDDs for each state based on weighted state-wide average of the number of natural gas households.
- The average space heating consumption (BTU) per Household and per HDD is calculated for the winter months (December to February) for the past 10-years. The study then uses this ratio to calculate the 2035 residential space heating sendout based on the HDDs from the coldest day from 1986 to 2016 and the number of natural gas households.
- The average monthly consumption per household is then calculated for water heating and other demand for natural gas. This ratio is used to create the 2035 residential water heating and other demand projections based on the number of natural gas households and consumption patterns by region sourced from the EIA RECS.

Appendix B: Regional Results

Exhibit B-1 Study Regions



B-1 East Coast

Exhibit B-2 East Coast Regional Generation and Capacity

Generation Type	2016	2035 Generation (GWh)			2016	2035 Capacity (MW)		
		Reference Case	Renewables-Only	Market-Based Generation		Reference Case	Renewables-Only	Market-Based Generation
Existing Units	423,159	446,559	486,686	434,777	101,927	93,818	106,800	98,096
Coal	76,433	52,589	34,761	38,436	21,755	8,987	13,258	10,275
Nuclear	151,839	129,846	129,846	129,846	19,189	16,409	16,409	16,409
Natural Gas	162,332	238,560	295,657	241,035	39,663	54,611	54,611	54,611
Wind & Solar	4,906	5,683	5,683	5,683	2,310	2,678	2,678	2,678
Other Renewables	13,819	14,922	13,161	14,781	7,949	8,119	8,120	8,119
Oil/Gas & Other	13,829	4,960	7,579	4,997	11,060	3,013	11,724	6,003
New Units	0	30,197	43,980	71,653	0	9,132	28,252	21,042
Natural Gas	0	16,536	19,409	57,721	0	2,994	2,994	14,741
Wind & Solar	0	13,661	20,679	13,933	0	6,139	9,328	6,302
Energy Storage	0	0	3,892	0	0	0	15930.0503	0
East Coast Total	423,159	476,756	530,666	506,431	101,927	102,950	135,053	119,138

Exhibit B-3. East Coast Regional Results

Region	Consumer Direct-Use Natural Gas Use	Power Sector Natural Gas Use	Change in Natural Gas Use	Cumulative Household CO ₂ Emissions (Natural Gas, Propane, and Fuel Oil)	Cumulative Power Sector CO ₂ Emissions	Cumulative Total Change in CO ₂ Emissions	Cost of Emissions Reduction (Discounted to 2023)
Units	Tcf from 2023 to 2050 (Not Discounted)			Million Metric Tons of CO ₂ from 2023 to 2050 (Non-Discounted)			2016 \$ per Metric Ton of CO ₂
Reference Case	17.3	50.2	N/A	1,253.7	4,786	N/A	N/A
Renewables-Only Case	9.7	56.3	-1.5	715.6	5,091	-223	635
Market-Based Generation Case	9.7	62.5	4.7	715.6	4,840	-380	391

Region	Coincident Peak Electric Generation Requirement in 2035 (Space & Water Heating)	Incremental Electric Consumption Levels in 2035 (Space & Water Heating)				
	Maximum Hourly Peak Generation (GW)	Average Winter Day (November - April) (GW)	Normal Day June 2035 (GW)	2035 Annual Electric Consumption (GWh)	January 2035 Electric Consumption (GWh)	June 2035 Electric Consumption (GWh)
Renewables-Only Case	86.1	15.1	2.8	61,899	13,629	1,058
Market-Based Generation Case	86.1	15.1	2.8	61,899	13,629	1,058

Sector Description	Units	Base Case	Change from Base Case	
			Renewables-Only	Market-Based Generation
Consumer Energy Purchases	2016 \$ Billions	148.2	86.1	86.1
Consumer Capital Costs		475.2	21.7	21.7
Power Sector Capital Costs		16.4	22.5	12.2
Transmission Capital Costs		N/A	8.7	4.7
Total Costs		639.8	138.9	124.7
Pre-Electrification: Average Household Annual Household Energy Costs	2016 \$ per Household	2,178	N/A	N/A
Cumulative Change in Costs Per Converted Household		N/A	17,600	16,550
Annualized Change in Costs Per Converted Household		N/A	1,200	1,110

B-2 Midwest

Exhibit B-4. Midwest Regional Generation and Capacity

Generation Type	2016	2035 Generation (GWh)			2016	2035 Capacity (MW)		
		Reference Case	Renewables-Only	Market-Based Generation		Reference Case	Renewables-Only	Market-Based Generation
Existing Units	730,975	698,035	755,301	690,846	184,214	153,361	174,483	152,879
Coal	420,221	356,793	355,665	350,739	87,560	50,951	66,726	50,772
Nuclear	168,344	147,173	147,173	147,173	22,210	18,599	18,599	18,599
Natural Gas	95,416	136,081	187,934	136,431	51,633	59,471	59,816	59,334
Wind & Solar	21,650	27,086	27,086	27,086	8,679	10,800	10,800	10,800
Other Renewables*	22,775	27,585	32,277	26,099	8,815	9,481	10,664	9,315
Oil/Gas & Other	2,569	3,317	5,166	3,317	5,317	4,060	7,878	4,060
New Units	0	55,050	73,215	77,658	0	21,247	53,772	24,858
Natural Gas	0	9,561	10,255	32,169	0	1,389	1,389	5,001
Wind & Solar	0	45,489	56,495	45,489	0	19,857	23,661	19,857
Energy Storage	0	0	6,465	0	0	0	28,721	0
Midwest Total	730,975	753,085	828,516	768,504	184,214	174,608	228,255	177,737

Exhibit B-5 Midwest Regional Results

Region	Consumer Direct-Use Natural Gas Use	Power Sector Natural Gas Use	Change in Natural Gas Use	Cumulative Household CO ₂ Emissions (Natural Gas, Propane, and Fuel Oil)	Cumulative Power Sector CO ₂ Emissions	Cumulative Total Change in CO ₂ Emissions	Cost of Emissions Reduction (Discounted to 2023)
Units	Tcf from 2023 to 2050 (Non-Discounted)			Million Metric Tons of CO ₂ from 2023 to 2050 (Non-Discounted)			2016 \$ per Metric Ton of CO ₂
Reference Case	32.3	28.8	N/A	1,962	12,278	N/A	N/A
Renewables-Only Case	17.9	32.1	-11.2	1,091	13,090	-38	N/A
Market-Based Generation Case	32.3	40.0	11.1	1,962	12,379	Not Modelled	Not Modelled

Region	Coincident Peak Electric Generation Requirement in 2035 (Space & Water Heating)			Incremental Electric Consumption Levels in 2035 (Space & Water Heating)		
	Maximum Hourly Peak Generation (GW)	Average Winter Day (November - April) (GW)	Normal Day June 2035 (GW)	2035 Annual Electric Consumption (GWh)	January 2035 Electric Consumption (GWh)	June 2035 Electric Consumption (GWh)
Renewables-Only Case	133.5	32.9	4.8	132,856	29,400	1,425
Market-Based Generation Case	N/A	N/A	N/A	N/A	N/A	N/A

Sector Description	Units	Base Case	Change from Base Case	
			Renewables-Only	Market-Based Generation
Consumer Energy Purchases	2016 \$ Billions	207.9	193	N/A
Consumer Capital Costs		215.6	24.8	N/A
Power Sector Capital Costs		7.8	47.5	N/A
Transmission Capital Costs		N/A	13.5	N/A
Total Costs		865.9	278.8	N/A
Pre-Electrification: Average Household Annual Household Energy Costs	2016 \$ per Household	1,997	N/A	N/A
Cumulative Change in Costs Per Converted Household		N/A	25,920	N/A
Annualized Change in Costs Per Converted Household		N/A	1,740	N/A

B-3 New England

Exhibit B-6 New England Regional Generation and Capacity

Generation Type	2016	2035 Generation (GWh)			2016	2035 Capacity (MW)		
		Reference Case	Renewables-Only	Market-Based Generation		Reference Case	Renewables-Only	Market-Based Generation
Existing Units	104,928	87,114	119,073	85,039	32,344	28,769	33,779	33,345
Coal	864	0	0	0	1,986	0	0	0
Nuclear	31,795	26,870	26,870	26,870	4,018	3,396	3,396	3,396
Natural Gas	55,127	38,246	69,451	34,423	14,871	17,946	17,946	17,946
Wind & Solar	2,927	4,603	4,603	4,603	1,355	2,181	2,181	2,181
Other Renewables	13,234	17,007	17,759	18,754	4,767	5,162	5,323	5,446
Oil/Gas & Other	982	389	389	389	5,347	84	4,933	4,376
New Units	0	12,912	24,616	45,192	0	3,512	36,909	34,651
Natural Gas	0	0	0	29,035	0	0	0	30,075
Wind & Solar	0	12,912	21,835	16,157	0	3,512	6,531	4,576
Energy Storage	0	0	2,781	0	0	0	30,378	0
New England Total	104,928	100,026	143,689	130,230	32,344	32,281	70,688	67,996

Exhibit B-7 New England Regional Results

Region	Consumer Direct-Use Natural Gas Use	Power Sector Natural Gas Use	Change in Natural Gas Use	Cumulative Household CO ₂ Emissions (Natural Gas, Propane, and Fuel Oil)	Cumulative Power Sector CO ₂ Emissions	Cumulative Total Change in CO ₂ Emissions	Cost of Emissions Reduction (Discounted to 2023)
Units	Tcf from 2023 to 2050 (Non-Discounted)			Million Metric Tons of CO ₂ from 2023 to 2050 (Non-Discounted)			2016 \$ per Metric Ton of CO ₂
Reference Case	5.7	8.2	N/A	652.7	702	N/A	N/A
Renewables-Only Case	3.1	12.0	12.5	367.3	1,023	57	N/A
Market-Based Generation Case	3.1	13.7	14.3	367.3	926	-56	1,081

Region	Coincident Peak Electric Generation Requirement in 2035 (Space & Water Heating)			Incremental Electric Consumption Levels in 2035 (Space & Water Heating)		
	Maximum Hourly Peak Generation (GW)	Average Winter Day (November - April) (GW)	Normal Day June 2035 (GW)	2035 Annual Electric Consumption (GWh)	January 2035 Electric Consumption (GWh)	June 2035 Electric Consumption (GWh)
Renewables-Only Case	52.5	13.6	2.7	55,811	11,290	789
Market-Based Generation Case	52.5	13.6	2.7	55,811	11,290	789

Sector Description	Units	Base Case	Change from Base Case	
			Renewables-Only	Market-Based Generation
Consumer Energy Purchases	2016 \$ Billions	80.9	66.2	66.2
Consumer Capital Costs		200.2	11	11
Power Sector Capital Costs		22.6	48.6	29.9
Transmission Capital Costs		N/A	11.8	10.9
Total Costs		303.7	137.7	118.1
Pre-Electrification: Average Household Annual Household Energy Costs	2016 \$ per Household	2,373	N/A	N/A
Cumulative Change in Costs Per Converted Household		N/A	41,210	35,340
Annualized Change in Costs Per Converted Household		N/A	2,770	2,370

B-4 New York

Exhibit B-8 New York Regional Generation and Capacity

Generation Type	2016	2035 Generation (GWh)			2016	2035 Capacity (MW)		
		Reference Case	Renewables-Only	Market-Based Generation		Reference Case	Renewables-Only	Market-Based Generation
Existing Units	128,091	109,245	130,810	96,334	39,570	35,861	41,019	40,714
Coal	449	2,657	3,031	1,203	2,246	897	1,562	1,260
Nuclear	42,711	38,844	37,095	32,662	5,398	4,909	4,909	4,909
Natural Gas	40,907	29,711	48,838	23,144	13,213	14,959	14,992	14,992
Wind & Solar	4,046	4,624	4,624	4,624	1,978	2,260	2,260	2,260
Other Renewables	28,583	29,939	32,415	31,231	6,251	6,411	6,803	6,623
Oil/Gas & Other	11,395	3,470	4,807	3,470	10,484	6,425	10,494	10,671
New Units	0	35,601	60,937	106,526	0	12,149	46,712	49,458
Natural Gas	0	0	1	47,007	0	0	0	28,990
Wind & Solar	0	35,601	58,208	59,519	0	12,149	20,500	20,468
Energy Storage	0	0	2,728	0	0	0	26,212	0
New York Total	128,091	144,846	191,747	202,860	39,570	48,010	87,732	90,173

Exhibit B-9 New York Regional Results

Region	Consumer Direct-Use Natural Gas Use	Power Sector Natural Gas Use	Change in Natural Gas Use	Cumulative Household CO ₂ Emissions (Natural Gas, Propane, and Fuel Oil)	Cumulative Power Sector CO ₂ Emissions	Cumulative Total Change in CO ₂ Emissions	Cost of Emissions Reduction (Discounted to 2023)
Units	Tcf from 2023 to 2050 (Non-Discounted)			Million Metric Tons of CO ₂ from 2023 to 2050 (Non-Discounted)			2016 \$ per Metric Ton of CO ₂
Reference Case	11.2	7.3	N/A	796.2	567	N/A	N/A
Renewables-Only Case	6.1	13.3	0.9	445.2	869	-23	8,784
Market-Based Generation Case	6.1	11.3	-1.2	445.2	902	-31	6,450

Region	Coincident Peak Electric Generation Requirement in 2035 (Space & Water Heating)			Incremental Electric Consumption Levels in 2035 (Space & Water Heating)		
	Maximum Hourly Peak Generation (GW)	Average Winter Day (November – April) (GW)	Normal Day June 2035 (GW)	2035 Annual Electric Consumption (GWh)	January 2035 Electric Consumption (GWh)	June 2035 Electric Consumption (GWh)
Renewables-Only Case	45.4	8.0	1.9	34,118	6,662	663
Market-Based Generation Case	45.4	8.0	1.9	34,118	6,662	663

Sector Description	Units	Base Case	Change from Base Case	
			Renewables-Only	Market-Based Generation
Consumer Energy Purchases	2016 \$ Billions	105.4	186.7	186.7
Consumer Capital Costs		307.3	15.2	15.2
Power Sector Capital Costs		3.5	59.5	56.3
Transmission Capital Costs		N/A	18.3	17.6
Total Costs		416.2	279.6	275.7
Pre-Electrification: Average Household Annual Household Energy Costs	2016 \$ per Household	2,252	N/A	N/A
Cumulative Change in Costs Per Converted Household		N/A	58,580	57,770
Annualized Change in Costs Per Converted Household		N/A	3,930	3,880

B-5 Plains

Exhibit B-10 Plains Regional Generation and Capacity

Generation Type	2016	2035 Generation (GWh)			2016	2035 Capacity (MW)		
		Reference Case	Renewables-Only	Market-Based Generation		Reference Case	Renewables-Only	Market-Based Generation
Existing Units	378,755	349,520	336,415	346,296	107,212	94,203	104,650	93,884
Coal	194,284	156,029	133,210	153,405	41,690	25,665	31,448	25,371
Nuclear	51,906	41,077	41,077	41,077	6,560	5,191	5,191	5,191
Natural Gas	52,528	56,431	62,558	56,073	29,476	31,529	31,529	31,529
Wind & Solar	61,867	75,913	75,913	75,913	20,200	24,245	24,245	24,245
Other Renewables	15,273	18,217	21,674	17,976	4,983	5,551	5,965	5,472
Oil/Gas & Other	2,897	1,853	1,982	1,853	4,303	2,023	6,272	2,076
New Units	0	36,823	112,398	44,859	0	8,259	54,763	9,932
Natural Gas	0	9,506	10,193	13,512	0	1,425	1,425	2,151
Wind & Solar	0	27,317	98,450	31,347	0	6,834	23,614	7,781
Energy Storage	0	0	3,755	0	0	0	29,724	0
Plains Total	378,755	386,343	448,813	391,155	107,212	102,461	159,412	103,815

Exhibit B-11 Plains Regional Results

Region	Consumer Direct-Use Natural Gas Use	Power Sector Natural Gas Use	Change in Natural Gas Use	Cumulative Household CO ₂ Emissions (Natural Gas, Propane, and Fuel Oil)	Cumulative Power Sector CO ₂ Emissions	Cumulative Total Change in CO ₂ Emissions	Cost of Emissions Reduction (Discounted to 2023)
Units	Tcf from 2023 to 2050 (Non-Discounted)			Million Metric Tons of CO ₂ from 2023 to 2050 (Non-Discounted)			2016 \$ per Metric Ton of CO ₂
Reference Case	15.0	12.3	N/A	1,011	5,856	N/A	N/A
Renewables-Only Case	8.0	12.8	-6.5	548.6	5,367	-951	230
Market-Based Generation Case	15.0	13.7	1.4	1,011	5,826	Not Modelled	Not Modelled

Region	Coincident Peak Electric Generation Requirement in 2035 (Space & Water Heating)			Incremental Electric Consumption Levels in 2035 (Space & Water Heating)		
	Maximum Hourly Peak Generation (GW)	Average Winter Day (November - April) (GW)	Normal Day June 2035 (GW)	2035 Annual Electric Consumption (GWh)	January 2035 Electric Consumption (GWh)	June 2035 Electric Consumption (GWh)
Renewables-Only Case	60.7	16.9	2.6	68,594	15,331	831
Market-Based Generation Case	N/A	N/A	N/A	N/A	N/A	N/A

Sector Description	Units	Base Case	Change from Base Case	
			Renewables-Only	Market-Based Generation
Consumer Energy Purchases	2016 \$ Billions	112.0	78.4	N/A
Consumer Capital Costs		334	13.1	N/A
Power Sector Capital Costs		0.7	64.9	N/A
Transmission Capital Costs		N/A	11.2	N/A
Total Costs		446.7	167.5	N/A
Pre-Electrification: Average Household Annual Household Energy Costs	2016 \$ per Household	1,867	N/A	N/A
Cumulative Change in Costs Per Converted Household		N/A	29,120	N/A
Annualized Change in Costs Per Converted Household		N/A	1,950	N/A

B-6 Rockies

Exhibit B-12 Rockies Regional Generation and Capacity

Generation Type	2016	2035 Generation (GWh)			2016	2035 Capacity (MW)		
		Reference Case	Renewables-Only	Market-Based Generation		Reference Case	Renewables-Only	Market-Based Generation
Existing Units	423,159	446,559	486,686	434,777	38,881	35,254	38,311	35,259
Coal	76,433	52,589	34,761	38,436	18,444	12,764	15,069	12,742
Nuclear	151,839	129,846	129,846	129,846	0	0	0	0
Natural Gas	162,332	238,560	295,657	241,035	9,481	9,551	9,551	9,551
Wind & Solar	4,906	5,683	5,683	5,683	5,930	8,109	8,109	8,109
Other Renewables	13,819	14,922	13,161	14,781	4,698	4,824	4,851	4,851
Oil/Gas & Other	13,829	4,960	7,579	4,997	328	6	731	6
New Units	0	30,197	43,980	71,653	0	3,490	17,182	3,445
Natural Gas	0	16,536	19,409	57,721	0	0	0	48
Wind & Solar	0	13,661	20,679	13,933	0	3,490	7,489	3,396
Energy Storage	0	0	3,892	0	0	0	9,694	0
Rockies Total	423,159	476,756	530,666	506,431	38,881	38,744	55,494	38,704

Exhibit B-13 Rockies Regional Results

Region	Consumer Direct-Use Natural Gas Use	Power Sector Natural Gas Use	Change in Natural Gas Use	Cumulative Household CO ₂ Emissions (Natural Gas, Propane, and Fuel Oil)	Cumulative Power Sector CO ₂ Emissions	Cumulative Total Change in CO ₂ Emissions	Cost of Emissions Reduction (Discounted to 2023)
Units	Tcf from 2023 to 2050 (Non-Discounted)			Million Metric Tons of CO ₂ from 2023 to 2050 (Non-Discounted)			2016 \$ per Metric Ton of CO ₂
Reference Case	7.2	3.7	N/A	434.3	3,009	N/A	N/A
Renewables-Only Case	4.3	3.9	-2.7	261.3	3,063	-119	794
Market-Based Generation Case	7.2	4.1	0.4	434.3	2,982	Not Modelled	Not Modelled

Region	Coincident Peak Electric Generation Requirement in 2035 (Space & Water Heating)			Incremental Electric Consumption Levels in 2035 (Space & Water Heating)		
	Maximum Hourly Peak Generation (GW)	Average Winter Day (November - April) (GW)	Normal Day June 2035 (GW)	2035 Annual Electric Consumption (GWh)	January 2035 Electric Consumption (GWh)	June 2035 Electric Consumption (GWh)
Renewables-Only Case	25.8	7.2	1.4	30,840	5,926	430
Market-Based Generation Case	N/A	N/A	N/A	N/A	N/A	N/A

Sector Description	Units	Base Case	Change from Base Case	
			Renewables-Only	Market-Based Generation
Consumer Energy Purchases	2016 \$ Billions	42.7	30.1	N/A
Consumer Capital Costs		117.5	4.9	N/A
Power Sector Capital Costs		26.6	18.3	N/A
Transmission Capital Costs		N/A	4	N/A
Total Costs		186.8	57.3	N/A
Pre-Electrification: Average Household Annual Household Energy Costs	2016 \$ per Household	1,577	N/A	N/A
Cumulative Change in Costs Per Converted Household		N/A	25,060	N/A
Annualized Change in Costs Per Converted Household		N/A	1,680	N/A

B-7 South

Exhibit B-14 South Regional Generation

Generation Type	2016	2035 Generation (GWh)			2016	2035 Capacity (MW)		
		Reference Case	Renewables-Only	Market-Based Generation		Reference Case	Renewables-Only	Market-Based Generation
Existing Units	1,021,072	996,577	1,012,688	943,877	249,599	228,274	248,598	229,662
Coal	208,336	187,857	165,784	158,801	59,150	31,382	37,191	30,273
Nuclear	232,893	250,839	250,839	250,839	29,432	31,755	31,755	31,755
Natural Gas	490,144	466,048	506,168	443,383	114,184	119,539	119,539	119,539
Wind & Solar	22,424	42,630	42,630	42,630	8,777	17,196	17,196	17,196
Other Renewables	36,617	37,422	35,525	36,643	17,066	17,328	17,588	17,328
Oil/Gas & Other	30,658	11,782	11,743	11,581	20,991	11,074	25,330	13,571
New Units	0	155,836	278,687	243,009	0	40,049	77,286	54,478
Natural Gas	0	85,886	88,012	173,060	0	13,830	13,830	28,259
Wind & Solar	0	69,950	180,400	69,950	0	26,219	53,422	26,219
Energy Storage	0	0	10,275	0	0	0	10,034	0
South Total	1,021,072	1,152,413	1,291,375	1,186,886	249,599	268,322	325,884	284,140

Exhibit B-15 South Regional Results

Region	Consumer Direct-Use Natural Gas Use	Power Sector Natural Gas Use	Change in Natural Gas Use	Cumulative Household CO ₂ Emissions (Natural Gas, Propane, and Fuel Oil)	Cumulative Power Sector CO ₂ Emissions	Cumulative Total Change in CO ₂ Emissions	Cost of Emissions Reduction (Discounted to 2023)
Units	Tcf from 2023 to 2050 (Non-Discounted)			Million Metric Tons of CO ₂ from 2023 to 2050 (Non-Discounted)			2016 \$ per Metric Ton of CO ₂
Reference Case	12.2	106.8	N/A	752.9	12,341	N/A	N/A
Renewables-Only Case	7.3	115.9	4.3	450.0	12,320	-324	218
Market-Based Generation Case	7.3	114.8	3.1	450.0	12,233	-431	63

Region	Coincident Peak Electric Generation Requirement in 2035 (Space & Water Heating)			Incremental Electric Consumption Levels in 2035 (Space & Water Heating)		
	Maximum Hourly Peak Generation (GW)	Average Winter Day (November - April) (GW)	Normal Day June 2035 (GW)	2035 Annual Electric Consumption (GWh)	January 2035 Electric Consumption (GWh)	June 2035 Electric Consumption (GWh)
Renewables-Only Case	24.5	4.3	1.4	18,815	4,039	529
Market-Based Generation Case	24.5	4.3	1.4	18,815	4,039	529

Sector Description	Units	Base Case	Change from Base Case	
			Renewables-Only	Market-Based Generation
Consumer Energy Purchases	2016 \$ Billions	110.6	-28.2	-28.2
Consumer Capital Costs		322.4	12.3	12.3
Power Sector Capital Costs		9.5	46.4	14.9
Transmission Capital Costs		N/A	14.1	4.7
Total Costs		442.4	44.6	3.7
Pre-Electrification: Average Household Annual Household Energy Costs	2016 \$ per Household	2,116	N/A	N/A
Cumulative Change in Costs Per Converted Household		N/A	7,820	650
Annualized Change in Costs Per Converted Household		N/A	520	40

B-8 Texas

Exhibit B-16 Texas Regional Generation and Capacity

Generation Type	2016	2035 Generation (GWh)			2016	2035 Capacity (MW)		
		Reference Case	Renewables-Only	Market-Based Generation		Reference Case	Renewables-Only	Market-Based Generation
Existing Units	397,338	421,880	422,276	425,839	111,309	118,662	118,663	118,755
Coal	77,212	88,965	84,860	87,209	22,998	18,531	18,638	18,319
Nuclear	39,249	41,369	41,369	41,369	4,960	5,228	5,228	5,228
Natural Gas	199,368	196,711	202,186	202,929	43,772	47,247	47,247	47,247
Wind & Solar	58,503	83,382	83,382	83,382	21,272	29,321	29,321	29,321
Other Renewables	2,289	3,140	3,130	3,142	1,043	1,091	1,091	1,091
Oil/Gas & Other	20,718	8,313	7,348	7,808	17,263	17,243	17,137	17,548
New Units	0	45,484	46,994	47,725	0	17,391	17,999	17,459
Natural Gas	0	39,465	40,122	41,707	0	16,018	16,018	16,086
Wind & Solar	0	6,018	5,968	6,018	0	1,373	1,362	1,373
Energy Storage	0	0	905	0	0	0	620	0
Texas Total	397,338	467,364	469,270	473,564	111,309	136,053	136,662	136,215

Exhibit B-17 Texas Regional Results

Region	Consumer Direct-Use Natural Gas Use	Power Sector Natural Gas Use	Change in Natural Gas Use	Cumulative Household CO ₂ Emissions (Natural Gas, Propane, and Fuel Oil)	Cumulative Power Sector CO ₂ Emissions	Cumulative Total Change in CO ₂ Emissions	Cost of Emissions Reduction (Discounted to 2023)
Units	Tcf from 2023 to 2050 (Non-Discounted)			Million Metric Tons of CO ₂ from 2023 to 2050 (Non-Discounted)			2016 \$ per Metric Ton of CO ₂
Reference Case	6.0	48.6	N/A	334.7	5,865	N/A	N/A
Renewables-Only Case	3.6	50.1	-0.9	200.7	5,832	-167	251
Market-Based Generation Case	3.6	49.7	-1.4	200.7	5,888	-136	54

Region	Coincident Peak Electric Generation Requirement in 2035 (Space & Water Heating)			Incremental Electric Consumption Levels in 2035 (Space & Water Heating)		
	Maximum Hourly Peak Generation (GW)	Average Winter Day (November - April) (GW)	Normal Day June 2035 (GW)	2035 Annual Electric Consumption (GWh)	January 2035 Electric Consumption (GWh)	June 2035 Electric Consumption (GWh)
Renewables-Only Case	13.5	2.6	0.9	11,293	2,523	340
Market-Based Generation Case	13.5	2.6	0.9	11,293	2,523	340

Sector Description	Units	Base Case	Change from Base Case	
			Renewables-Only	Market-Based Generation
Consumer Energy Purchases	2016 \$ Billions	38.6	-5.6	-5.6
Consumer Capital Costs		193.0	7.2	7.2
Power Sector Capital Costs		20.0	0.7	0.8
Transmission Capital Costs		N/A	4	0
Total Costs		251.6	6.3	2.3
Pre-Electrification: Average Household Annual Household Energy Costs	2016 \$ per Household	1,975	N/A	N/A
Cumulative Change in Costs Per Converted Household		N/A	1,970	740
Annualized Change in Costs Per Converted Household		N/A	130	50

B-9 West

Exhibit B-18 West Regional Generation and Capacity

Generation Type	2035 Generation (GWh)				2035 Capacity (MW)			
	2016	Reference Case	Renewables-Only	Market-Based Generation	2016	Reference Case	Renewables-Only	Market-Based Generation
Existing Units	567,251	541,800	587,577	571,951	170,002	168,265	177,505	172,537
Coal	66,504	51,140	52,062	49,870	12,324	7,036	7,206	6,902
Nuclear	58,042	40,475	40,475	40,475	7,335	5,115	5,115	5,115
Natural Gas	197,704	148,572	183,836	176,260	60,162	59,935	64,439	63,782
Wind & Solar	56,664	82,151	82,151	82,151	28,117	38,258	38,258	38,258
Other Renewables	183,105	214,687	224,609	218,490	52,661	57,042	58,356	57,532
Oil/Gas & Other	5,230	4,775	4,444	4,704	9,403	880	4,130	948
New Units	0	82,632	79,597	97,154	0	23,479	25,800	25,746
Natural Gas	0	9,156	5,496	22,535	0	1,261	1,261	3,071
Wind & Solar	0	73,476	73,868	74,619	0	22,218	22,196	22,675
Energy Storage	0	0	233	0	0	0	2,343	0
West Total	567,251	624,432	667,174	669,105	170,002	191,744	203,305	198,283

Exhibit B-19 West Regional Results

Region	Consumer Direct-Use Natural Gas Use	Power Sector Natural Gas Use	Change in Natural Gas Use	Cumulative Household CO ₂ Emissions (Natural Gas, Propane, and Fuel Oil)	Cumulative Power Sector CO ₂ Emissions	Cumulative Total Change in CO ₂ Emissions	Cost of Emissions Reduction (Discounted to 2023)
Units	Tcf from 2023 to 2050 (Non-Discounted)			Million Metric Tons of CO ₂ from 2023 to 2050 (Non-Discounted)			2016\$ per Metric Ton of CO ₂
Reference Case	20.2	31.4	N/A	1,183	3,692	N/A	N/A
Renewables-Only Case	11.7	37.9	-2.0	689	4,039	-147	749
Market-Based Generation Case	11.7	36.9	-3.0	689	4,032	-155	485

Region	Coincident Peak Electric Generation Requirement in 2035 (Space & Water Heating)			Incremental Electric Consumption Levels in 2035 (Space & Water Heating)		
	Maximum Hourly Peak Generation (GW)	Average Winter Day (November - April) (GW)	Normal Day June 2035 (GW)	2035 Annual Electric Consumption (GWh)	January 2035 Electric Consumption (GWh)	June 2035 Electric Consumption (GWh)
Renewables-Only Case	44.7	8.8	4.4	41,892	7,088	1,552
Market-Based Generation Case	44.7	8.8	4.4	41,892	7,088	1,552

Sector Description	Units	Base Case	Change from Base Case	
			Renewables-Only	Market-Based Generation
Consumer Energy Purchases	2016\$ Billions	171.9	8.3	8.3
Consumer Capital Costs		742.5	34.5	34.5
Power Sector Capital Costs		115.6	10.7	7.4
Transmission Capital Costs		N/A	21.5	15.3
Total Costs		1030.0	75	65.5
Pre-Electrification: Average Household Annual Household Energy Costs	2016 \$ per Household	1,653	N/A	N/A
Cumulative Change in Costs Per Converted Household		N/A	5,880	5,140
Annualized Change in Costs Per Converted Household		N/A	390	340

B-10 U.S. Lower 48

Exhibit B-20 U.S. Lower 48 Regional Generation and Capacity

Generation Type	2016	2035 Generation (GWh)			2016	2035 Capacity (MW)		
		Reference Case	Renewables-Only	Market-Based Generation		Reference Case	Renewables-Only	Market-Based Generation
Existing Units	3,898,887	3,797,327	3,999,903	3,740,849	1,035,057	956,466	1,043,809	975,131
Coal	1,142,790	983,392	917,032	925,989	268,153	156,212	191,098	155,915
Nuclear	776,778	716,492	714,743	710,311	99,100	90,601	90,601	90,601
Natural Gas	1,311,444	1,331,115	1,579,671	1,334,573	376,457	414,787	419,669	418,530
Wind & Solar	249,072	348,535	348,535	348,535	98,619	135,049	135,049	135,049
Other Renewables	330,482	378,891	396,420	383,278	108,233	115,007	118,763	115,777
Oil/Gas & Other	88,321	38,902	43,501	38,163	84,496	44,809	88,629	59,259
New Units	0	469,374	756,150	748,626	0	138,707	358,676	241,070
Natural Gas	0	170,110	173,489	417,076	0	36,917	36,917	128,422
Wind & Solar	0	299,263	547,043	331,550	0	101,791	168,102	112,648
Energy Storage	0	0	35,619	0	0	0	153,657	0
U.S. Lower 48 Total	3,898,887	4,266,700	4,756,054	4,489,474	1,035,057	1,095,174	1,402,484	1,216,201

Exhibit B-21 U.S. Lower 48 Regional Results

Region	Consumer Direct-Use Natural Gas Use	Power Sector Natural Gas Use	Change in Natural Gas Use	Cumulative Household CO ₂ Emissions (Natural Gas, Propane, and Fuel Oil)	Cumulative Power Sector CO ₂ Emissions	Cumulative Total Change in CO ₂ Emissions	Cost of Emissions Reduction (Discounted to 2023)
Units	Tcf from 2023 to 2050 (Non-Discounted)			Million Metric Tons of CO ₂ from 2023 to 2050 (Non-Discounted)			2016 per Metric Ton of CO ₂
Reference Case	127.1	297.5	N/A	8,382.2	49,097	N/A	N/A
Renewables-Only Case	71.8	334.3	-18.6	4,769.4	50,694	-1,909	806
Market-Based Generation Case	95.2	346.7	18.1	6,276.3	50,007	-1,196	572

Region	Coincident Peak Electric Generation Requirement in 2035 (Space & Water Heating)			Incremental Electric Consumption Levels in 2035 (Space & Water Heating)		
	Maximum Hourly Peak Generation (GW)	Average Winter Day (November - April) (GW)	Normal Day June 2035 (GW)	2035 Annual Electric Consumption (GWh)	January 2035 Electric Consumption (GWh)	June 2035 Electric Consumption (GWh)
Renewables-Only Case	486.7	109.1	22.9	456,118	95,887	7,617
Market-Based Generation Case	266.7	52.2	14.2	223,825	45,231	5,840

Sector Description	Units	Base Case	Change from Base Case	
			Renewables-Only	Market-Based Generation
Consumer Energy Purchases	2016 \$ Billions	1,018	615.1	313.5
Consumer Capital Costs		3,342	144.6	101.8
Power Sector Capital Costs		223	318.9	121.6
Transmission Capital Costs		N/A	107.1	53.2
Total Costs		4,583	1,185.6	590.1
Pre-Electrification: Average Household Annual Household Energy Costs	2016 \$ per Household	1,990	N/A	N/A
Cumulative Change in Costs Per Converted Household		N/A	21,140	15,830
Annualized Change in Costs Per Converted Household		N/A	1,420	1,060

Exhibit B-22 North America Regional Generation and Capacity

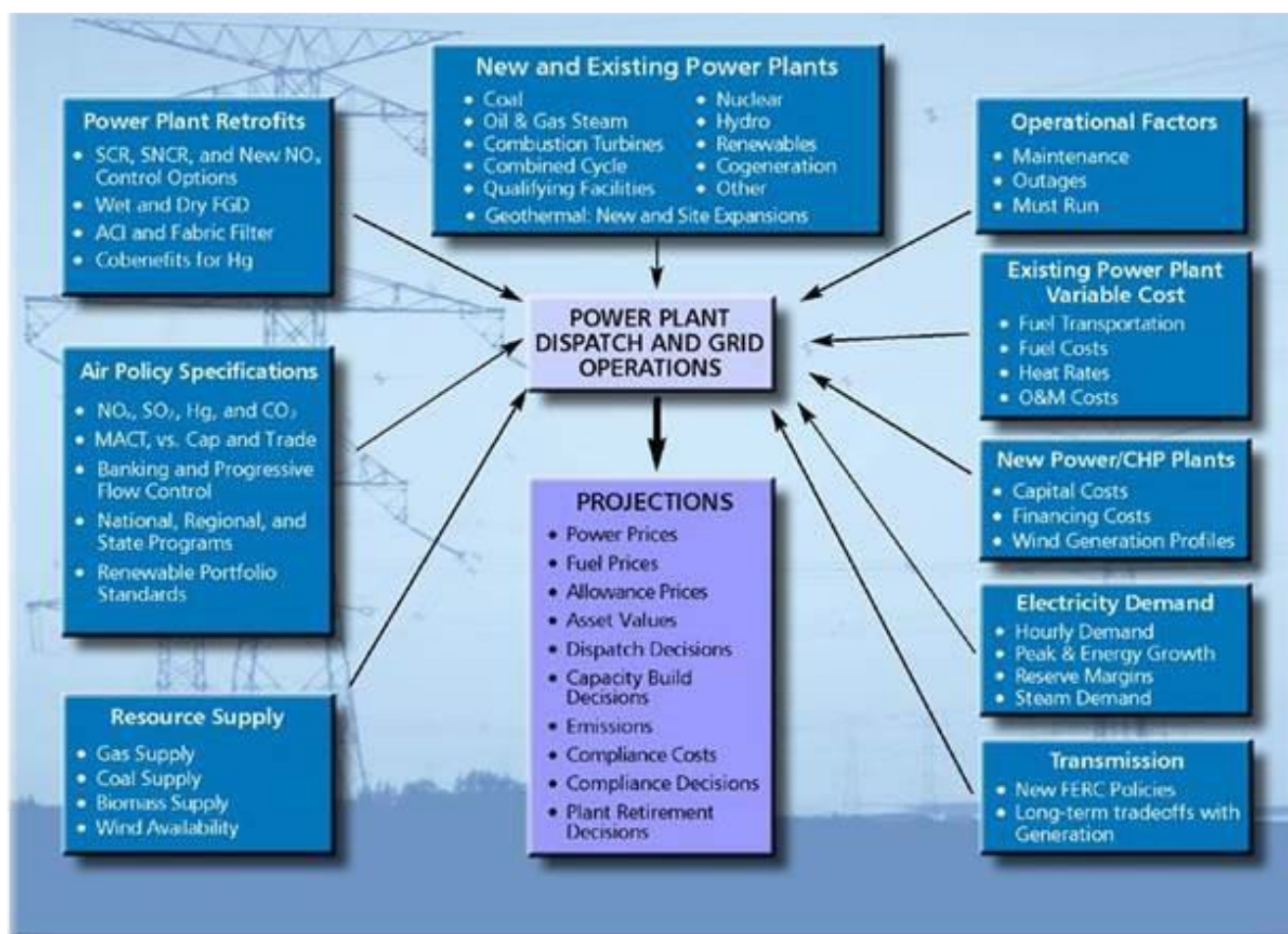
Generation Type	2016	2035 Generation (GWh)			2016	2035 Capacity (MW)		
		Reference Case	Renewables-Only	Market-Based Generation		Reference Case	Renewables-Only	Market-Based Generation
Existing Units	4,511,467	4,404,042	4,619,157	4,344,442	1,175,935	1,097,072	1,189,379	1,118,713
Coal	1,203,359	1,040,841	974,315	983,416	277,673	164,867	199,753	164,570
Nuclear	873,198	789,568	785,444	782,166	112,465	100,912	100,912	100,912
Natural Gas	1,350,699	1,376,059	1,628,495	1,377,768	394,133	434,852	439,734	438,595
Wind & Solar	271,561	373,089	373,089	373,089	110,593	147,742	147,742	147,742
Other Renewables	717,710	776,980	805,379	781,236	190,656	201,025	206,768	201,795
Oil/Gas & Other	94,941	47,505	52,434	46,766	90,416	47,673	94,470	65,099
New Units	0	543,889	840,328	835,447	0	159,452	387,108	269,912
Natural Gas	0	173,739	183,851	421,443	0	42,756	49,789	139,810
Wind & Solar	0	370,149	620,859	414,004	0	116,696	183,663	130,102
Energy Storage	0	0	35,619	0	0	0	153,657	0
North America Total	4,511,467	4,947,930	5,459,486	5,179,887	1,175,935	1,256,525	1,576,487	1,388,625

Appendix C: ICF IPM[®] Model Description

IPM[®] is a detailed engineering/economic capacity expansion and production-costing model of the power and industrial sectors supported by an extensive database of every boiler and generator in the nation. It is a multi-region model that provides capacity and transmission expansion plans, unit dispatch and compliance decisions, and power and allowance price forecasts, all based on power market fundamentals.

IPM[®] explicitly considers gas, oil, and coal markets, power plant costs and performance characteristics, environmental constraints, and other power market fundamentals. Figure C-1 illustrates the key components of IPM[®].

Figure C-1: IPM[®] Schematic



IPM[®] uses a dynamic linear programming model the electric demand, generation, and transmission within each region as well as the transmission grid that connects the regions.

All existing utility-owned boilers and generators are modeled, as well as independent power producers and cogeneration facilities that sell firm capacity into the wholesale market. IPM[®] also is capable of explicitly modeling individual (or aggregated) end-use energy efficiency investments. Each technology (e.g., compact fluorescent lighting) or general program (e.g., load control) is characterized in terms of its load shape impacts and costs. Costs can be characterized simply as total costs or more accurately according to its components (e.g., equipment or measure costs, program or equipment costs, and administrative costs), and penetration curves reflecting the market potential for a technology or program. End-use energy efficiency investments compete on a level playing field with traditional electric supply options to meet future demands. As supply side resources become more constrained or expensive (e.g., due to environmental regulation) more energy efficiency resources are used.

IPM[®] has been used in support of numerous project assignments including:

- Valuation studies for generation and transmission assets
- Forecasting of regional forward energy and capacity prices
- Air emissions compliance strategies and pollution allowances
- Impact assessments of alternate environmental regulatory standards
- Impact assessments of changes in fuel pricing
- Economic or electricity demand growth analysis
- Assessment of power plant retirement decisions
- Combined heat and power (CHP) analysis
- Pricing impact of demand responsiveness
- Determination of probability and cost of lost or unserved load

Outputs of IPM[®] include estimates of regional energy and capacity prices, optimal build patterns based on timing of need and available technology, unit dispatch, air emission changes, retrofit decisions, incremental electric power system costs (capital, FOM VOM), allowance prices for controlled pollutants, changes in fuel use, and fuel price impacts. Results can be directly reported at the national and power market region levels. ICF can readily develop individual state or regional impacts aggregating unit plant information to those levels. IPM[®] analyzes wholesale power markets and assesses competitive market prices of electrical energy, based on an analysis of supply and demand fundamentals. IPM[®] projects zonal wholesale market power prices, power plant dispatch, fuel consumption and prices, interregional transmission flows, environmental emissions and associated costs, capacity expansion and retirements, and retrofits based on an analysis of the engineering economic fundamentals. The model does not extrapolate from historical conditions but rather for a given set of future conditions which determine how the industry will function (i.e., new demand, new power plant costs, new fuel market conditions, new environmental regulations, etc.), provides a least cost optimization projection. The optimization routine has dynamic effects (i.e., it looks ahead at future years and simultaneously evaluates decisions over a specified time horizon). All major factors affecting wholesale electricity prices are explicitly modeled, including detailed modeling of existing and planned units, with careful consideration of fuel prices, environmental allowance and compliance costs, transmission constraints and operating constraints. Based on looking at the supply/demand balance in the context of the various factors discussed above, IPM[®] projects hourly spot prices of electric energy within a larger wholesale power market. IPM[®] also projects an annual "pure" capacity price.

Study Authors

Michael Sloan

Michael.Sloan@icf.com + 1.703.218.2758

Joel Bluestein

Joel.Bluestein@icf.com +1.703.934.3381

Eric Kuhle

eric.kuhle@icf.com +1.703.272.6619



Implications of **Policy-Driven Residential Electrification**

An American Gas Association Study
prepared by ICF

Biden's Clean Energy Plans Accelerate Shifts for Public Entities and Power Projects

Plans are Generally Credit Neutral for US Infrastructure, Utilities and States

Key takeaways:

- Credit implications of clean energy goals limited in the near-to-medium term.
- Clean energy goals will require significant advancements in technology and infrastructure.
- Tax credits for clean energy projects have bipartisan support; a direct-pay model will be most appealing for renewable power projects.
- Public power utilities well-positioned for transition to renewable energy.
- Proposals largely neutral for state and local governments, but some areas face transition risk.

Related Research

[Renewable Energy Economics to Bring Disruption in 2020 \(April 2021\)](#)

[US Climate Policy May Alter Some US Corporate Business Models \(March 2021\)](#)

[Global Renewables Performance Review \(Solar and Wind Withstand the Pandemic\) \(March 2021\)](#)

[Global Trends Sustain Uncertainty for U.S. Coal-Producing States \(February 2020\)](#)

Analysts



Marcy Block
+1 212 908-0239
marcy.block@fitchratings.com



Dennis Pidherny
+1 212 908-0738
dennis.pidherny@fitchratings.com



Andrew Joynt
+1 212 908-0594
andrew.joynt@fitchratings.com



Eric Kim
+1 212 908-0241
eric.kim@fitchratings.com

Sarah Repucci
+1 212 908-0726
sarah.repucci@fitchratings.com

Credit Implications of Energy Proposals Limited

President Joseph Biden's clean energy goals have come into sharper focus with the announcement of the American Jobs Plan (AJP), an all-encompassing, \$2.2 trillion infrastructure plan. The plan envisions a carbon-free electricity grid by 2035, requiring changes to electricity generation and transmission that would have varied effects on sectors in the public finance and infrastructure space, specifically renewable energy projects, public power utilities and states.

The credit implications of more ambitious climate goals are expected to be fairly limited in these sectors over the near-to-medium term. Clean energy plans are expected to spur investment in renewables, energy storage and transmission infrastructure, leading to new renewable power projects and related infrastructure projects. Public power utilities have been planning for the obsolescence of coal plants and are increasingly using renewable energy. Longer term, however, the administration's goal to fully decarbonize the power sector by 2035 could pressure utilities powered by natural gas.

The costs of transitioning to renewable energy from fossil fuels could be significant for utilities and other issuers in the near-to-medium term, but we expect that transaction structures and financial flexibility assumed in the rating will be able to absorb these costs until the longer-term efficiencies and savings are realized. Stranded-asset risk could be more material for issuers with significant fossil fuel exposure.

The AJP aims to reduce fossil fuel reliance in conjunction with the president's previously issued executive orders advancing clean energy initiatives, particularly rejoining the Paris Climate Agreement, stopping the Keystone XL pipeline, restoring the Obama-era social cost of carbon (SCC) calculation through 2022, suspending new oil and gas leases on federal land and prohibiting direct federal subsidization of fossil fuels.

American Jobs Plan Faces Hurdles

Congress could try to pass a bill using budget reconciliation, although Biden is working to engage Republican support for an infrastructure plan and has signalled willingness to decrease the scope of the plan. The recently announced \$568 billion Republican infrastructure plan does not include a provision for renewable energy projects or investment and instead focuses more narrowly on traditional infrastructure projects. Additional executive actions or levying a carbon tax may be considered, though the latter has not been proposed by the administration to date.

The Made in America Tax Plan, released by the US Treasury, outlines the fiscal measures that would support the AJP, specifically an increase in the corporate tax rate to 28% from 21%. The plan also includes strengthening minimum taxation for US multinational corporations and ramping up corporate tax enforcement.

While passage of certain tenets of the AJP remain uncertain, there is bipartisan support for tax credits for clean energy projects like solar and wind. The tax proposals for renewable power projects can be implemented through budget reconciliation without bipartisan support, and we expect these tax credits to be a part of any final plan.

Biden also recently pledged to reduce US greenhouse gas emissions to below 50% of 2005 levels by 2030. The proposals in the AJP are consistent with this goal but hurdles remain, one of which is approval of the plan by Congress.

Advancements in technology are also necessary in order to meet these clean energy goals. Longer duration battery storage capabilities are critical for extensive use of renewable energy. Retrofits of natural gas plants would need to have carbon capture and disposal installed, which is still nascent technology.

Carbon-Free Power by 2035

The AJP would create a national standard around the timeframe for full transition to renewable energy sources, which would support project planning and investment due to increased visibility around market demand.

The plan provides for \$400 billion in tax credits for clean energy generation and storage, extends clean energy tax credits for 10 years and eliminates tax preferences for fossil fuels.

Federal investment and incentives will facilitate a greater scaling of clean energy nationally, positioning the US to build energy and economic advantages longer-term. The US electrical grid's reliance on fossil fuels had been declining, and a planned, strategic approach has the potential to mitigate negative impacts and boost economic growth. Policy continuity in successive administrations is an important factor in realizing and sustaining some of the economic benefits of the clean energy plan.

A pillar of Biden's plan is clean energy as means for economic growth and job creation, although workforce requirements for renewable projects versus oil and gas are not always directly comparable. Shrinking the oil and gas sector further could impact employment that is not easily replaced by renewable-energy jobs. Areas whose economies rely on natural-resource development face

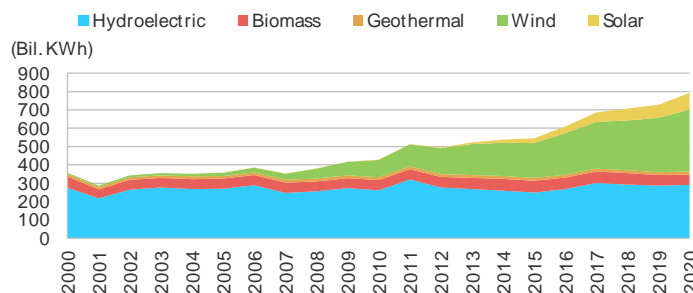
the risk of slower growth or declines in economic output and activity with the transition away from fossil fuels.

A transition to a zero-carbon grid by 2035 would be challenging and necessitate significant advancements and scaling in renewable energy technologies to meet requirements, namely long-duration battery storage, carbon capture, modular nuclear reactors and hydrogen production.

Progress toward increased renewable power use depends upon better storage and transmission technologies to meet variable demand periods. Battery storage duration is currently a critical technological limitation to increased use of solar power as a dependable baseload energy source. Fossil fuels will continue to play a part in meeting demand until renewable technology evolves.

To address the need for improved technology, the AJP provides \$15 billion for R&D, including utility-scale energy storage, carbon capture and storage, hydrogen, advanced nuclear, floating offshore wind, biofuel/bioproducts and electric vehicles. The AJP also plans on investment in 15 decarbonized hydrogen demonstration projects in distressed communities with a new production tax credit to spur capital-project retrofits and installations.

USElectricity Generation from Renewable Energy Sources



Source: USEnergy Information Administration.

Improved Electric Grid to Support Demand

The AJP creates the Grid Deployment Authority to speed use of existing rights of way along roads and railways to lay high voltage transmission lines and anticipates an investment tax credit that incentivizes the buildout of at least 20GW of high-voltage-capacity power lines.

For those utilities that own transmission assets, investment in improved transmission infrastructure will be positive if they are chosen to build transmission assets, and neutral otherwise, but transmission costs may increase for utilities that do not own their own transmission assets. Increased transmission infrastructure will help renewable projects reach more customers, particularly in areas that do not have renewable generation.

Plan Will Drive Electric Vehicle Infrastructure Demand

Electricity demand is expected to receive a boost from increased investment in electric vehicles (EVs). The AJP provides \$174 billion to boost EV market share and supply chains and establish 500,000 charging stations by 2030. This would lead to an increase in electricity demand, potentially leading to investment in renewable projects to supply charging stations. In the interim, markets that

have not fully decarbonized their electricity sectors will most likely rely on fossil-fuel based generation to meet this rising electricity demand.

Tax Credits Boon for Renewable Energy Projects

Three tax proposals for renewables are expected to receive bipartisan support and are likely to pass in Congress. These are a 10-year extension of the investment tax credit (primarily used for solar) and production tax credit (primarily used for wind), a new standalone tax credit for energy storage, and directly refundable tax credits, also known as direct-pay credits.

In order for renewable projects to take advantage of traditional tax credits, they often need to bring in a partner with sufficient tax liability to benefit from the tax credits. The process of forming such tax-equity partnerships adds time and uncertainty to a project's development.

Direct-pay tax credits for renewable generation are the most important feature of the AJP for renewable projects, as the refundable credits preclude the need for a tax-equity partner. This will make capital formation more efficient as developers will not need to negotiate with a limited pool of tax-equity investors.

Direct-pay tax credits have proven to be very popular in the past. The federal cash-grant program, which ran from 2009–2016, was significantly more popular than initially projected and accelerated widespread deployment of wind and solar projects.

The AJP also seeks to redevelop brownfield sites with a \$5 billion investment. The sites could possibly be turned into solar or wind farms to provide renewable energy to areas that do not otherwise have access to renewable sources.

Public Utilities Reducing Carbon Emissions

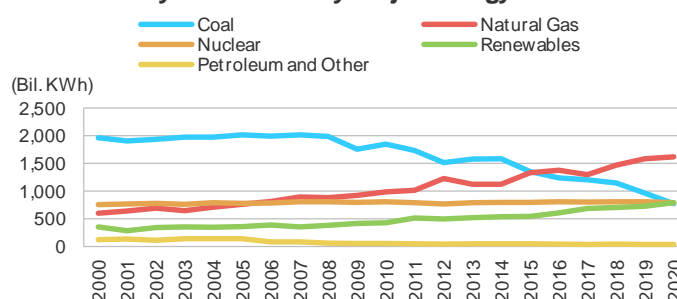
Most public power utilities have been preparing for the transition away from fossil fuels, partially due to state-level mandates, with many targeting net-zero carbon by 2050 or earlier. In some cases, the cost to upgrade infrastructure has already been factored into planned rate increases. Utilities have experienced a period of low capex, and this is not expected to change over the near term. Purchasing energy from privately-owned renewable sources is more economical, and should remain so given proposed tax incentives.

Many coal units are expected to be closed by 2030 given existing environmental regulations and market pressures to reduce carbon dioxide emissions, but a zero-carbon grid by 2035 may be an aggressive goal. Until renewables scale up and storage technology improves, natural gas plants will continue to be necessary to address dispatchable capacity needs and ensure energy in reserve. Moreover, many gas plants typically only run for short periods to provide peak energy needs, so emissions are low such that future limits may not affect operations.

It is still economical to run owned-asset gas facilities; however, utilities could be pressured to move away from natural gas as a power source if disincentives make it costly to do so or there is further change to environmental regulations. In either of these scenarios, construction of new natural gas plants could pose greater risk as utilities may eventually be faced with high stranded costs.

Construction of new nuclear projects in the US is a fraught endeavour. Recent new construction has run considerably overbudget while both new and existing facilities are often political pariahs due to community safety concerns. Given cheaper alternative fuel sources, growth in this resource in the US is not currently expected.

USElectricity Generation by Major Energy Source



Source: US Energy Information Administration.

Some Initiatives Will Need State and Local Government Support

Biden's climate proposals are largely neutral from a public finance perspective, although the success of some initiatives will rely on state and local government cooperation. Some states have budgeted for investments in renewable energy in anticipation of increased renewable demand and further federal investment. Both New York and New Jersey's executive budgets included provisions for infrastructure projects that would support an expansion in wind energy in their states.

Restrictions on new federal oil-and-gas drilling leases are not expected to have a material impact on local and state economies that have exposure to this resource extraction, particularly if these areas are able to take advantage of investment and job creation in renewable energy. However, as the US gradually moves to zero carbon energy, states and localities whose economies rely on the oil and gas sector will face notable transition risks such as lost jobs and lower economic output. For governments that do not have a tax regime that is dependent upon and/or connected to this activity, the financial impacts are expected to be less burdensome.

A challenge to broad renewables adoption will be distribution of energy incentives across states given state policy and labor market asymmetry. The AJP focuses on distressed, underserved and rural communities in particular, providing greater economic incentives to invest in these communities.

States Share of Energy Production in Trillion Btu, 2018

(000 Btu)

State	Fossil Fuels				Renewable Energy					Total Energy Production ^g	% Change Energy Production 2014-2018	State Share of US Energy Production (%)	State Oil, Gas, Mining Extraction and Supports as % State GDP ^h
	Coal ^a	Natural Gas ^b	Crude Oil ^c	Nuclear Electric Power	Biofuels ^d	Wood and Waste ^e	Other ^f	Total					
Texas	328.8	9,577.7	9,181.4	431	80.6	84.2	738.2	903.0	20,421.4	16	22	14	
Pennsylvania	1,278.1	6,576.4	37.0	873	23.2	121.3	78.6	223.0	8,987.2	27	10	4	
Wyoming	5,316.0	1,848.6	501.9	0	0.0	4.9	46.6	51.5	7,717.9	(18)	8	25	
Oklahoma	15.1	3,419.0	1,145.1	0	4.5	29.5	268.1	302.1	4,881.4	37	5	21	
West Virginia	2,468.6	2,189.4	66.3	0	0.0	12.3	33.1	45.4	4,769.8	15	5	14	
North Dakota	399.8	992.2	2,633.5	0	73.4	2.1	127.7	203.1	4,228.6	30	5	17	
Colorado	293.1	2,200.0	1,014.6	0	17.2	15.6	121.4	154.2	3,662.0	20	4	6	
Louisiana	20.4	2,920.4	278.7	179	0.0	122.5	14.8	137.3	3,536.1	24	4	7	
New Mexico	200.2	1,726.3	1,420.6	0	0.0	13.0	72.1	85.1	3,432.2	36	4	16	
Ohio	219.9	2,658.4	132.5	191	86.3	57.1	24.3	167.7	3,370.1	118	4	3	
Illinois	1,095.9	2.5	48.0	1,026	249.3	19.1	114.5	382.8	2,554.9	(5)	3	0	
California	—	228.9	965.3	190	35.5	130.5	857.6	1,023.6	2,408.2	0	3	1	
Alaska	13.8	375.3	997.4	0	(i)	7.3	16.8	24.1	1,410.6	(4)	2	24	
Alabama	370.5	149.6	33.6	413	1.7	170.1	105.0	276.7	1,243.0	(9)	1	1	
Kentucky	955.5	96.0	12.9	0	10.7	34.6	43.7	89.0	1,153.4	(44)	1	1	

^aIncludes refuse recovery. ^bMarketed production. ^cIncludes lease condensate. ^dBiomass inputs (feedstock) to the production of biofuels. ^eWood energy production and biomass waste energy consumption. ^fConsumption of noncombustible renewable energy, including hydroelectric power as well as geothermal, solar, and wind energy. ^gExcludes federal off-shore production. ^hReal GDP is in millions of chained 2012 dollars. Industry detail is based on the 2012 North American Industry Classification System (NAICS). Calculations are performed on unrounded data. Chained (2012) dollar series are calculated as the product of the chain-type quantity index and the 2012 current-dollar value of the corresponding series, divided by 100. Because the formula for the chain-type quantity indexes uses weights of more than one period, the corresponding chained-dollar estimates are usually not additive. The difference between the United States and sum-of-states reflects federal military and civilian activity located overseas, as well as the differences in source data used to estimate GDP by industry and the expenditures measure of real GDP. (i)=Less than 0.05 trillion Btu. Note: Totals may not equal sum of components due to independent rounding.

Source: Fitch Ratings, US Energy Information Administration - State Energy Data System, US Bureau of Economic Analysis.

Social Cost of Carbon Likely to Rise

The SCC calculation captures the negative externalities of fossil fuels and is an estimate of the cost of emitting one additional ton of carbon dioxide into the atmosphere. The calculation is used by federal, state and local governments to assess the economic impact of policies that affect emissions.

New York and Illinois use the SCC as the basis for zero-emission credits paid to electric utilities under state-level clean energy legislation. Colorado, Minnesota and Washington also require energy utilities to integrate the SCC in their resource plans. California requires regulators to use the SCC in their policy analysis.

Biden addressed the SCC via an executive order, which integrated the SCC into federal procurement decisions until 2022, and

reinstated the SCC Interagency Working Group to change SCC methodology to better capture climate change effects. The interim SCC was recommended at \$51/ton, with a final recommendation expected in January 2022.

The SCC cost-benefit analysis is an important component in the determination of federal regulations on power plants and other goods and services, and updates to the SCC are expected to lead to more restrictive emissions standards.

However, a high cost of carbon in some situations has been legally challenged, as Republican attorneys general in 12 states have filed a lawsuit claiming the president lacks the authority to change the SCC.

Fitch Wire offers rapid Fitch opinion on the most important events affecting the global credit markets.

[Subscribe to our daily email alert](#), or visit the [Fitch Wire homepage](#).

Fitch Wire Analysts

Justin Patrie, CFA

Head of Fitch Wire

+1 646 582-4964

justin.patrie@fitchratings.com

Mark Brown

Sovereigns, Structured Finance

+44 20 3530-1588

mark.brown@fitchratings.com

Duncan Innes-Ker

Asia-Pacific

+852 2263 9993

duncan.innes-ker@fitchratings.com

Laura Kaster, CFA

Financial Institutions

+1 646 582-4497

laura.kaster@fitchratings.com

Tatiana Kordyukova

Corporates, Infrastructure & Project Finance

+44 20 3530-1954

tatiana.kordyukova@fitchratings.com

Carla Norfleet Taylor, CFA

Corporates

+1 312 368-3195

carla.norfleettaylor@fitchratings.com

David Prowse

Financial Institutions

+44 20 3530-1250

david.prowse@fitchratings.com

Sarah Repucci

Infrastructure & Project Finance,
Public Finance, Structured Finance

+1 212 908-0726

sarah.repucci@fitchratings.com

Fitch Wire Editors

London

Sarah Abu-Sharkh,

James Keighley, Natalie Morton,

Samantha Pankovas, Brian Reid,

Mike Rothschild, Neil Sen

New York

Jennifer Hickey, Louis Standish,

John Forde

Chicago

Brad Lewis, Philip Milano,

Catherine Eves

Asia Pacific

Marissa Chew, Koh Keat Kian,

John Laubscher, Daniel Morrissey,

Joanna Pelc

ALL FITCH CREDIT RATINGS ARE SUBJECT TO CERTAIN LIMITATIONS AND DISCLAIMERS. PLEASE READ THESE LIMITATIONS AND DISCLAIMERS BY FOLLOWING THIS LINK: [HTTPS://FITCHRATINGS.COM/UNDERSTANDINGCREDITRATINGS](https://fitchratings.com/understandingcreditratings). IN ADDITION, RATING DEFINITIONS AND THE TERMS OF USE OF SUCH RATINGS ARE AVAILABLE ON THE AGENCY'S PUBLIC WEB SITE AT WWW.FITCHRATINGS.COM. PUBLISHED RATINGS, CRITERIA, AND METHODOLOGIES ARE AVAILABLE FROM THIS SITE AT ALL TIMES. FITCH'S CODE OF CONDUCT, CONFIDENTIALITY, CONFLICTS OF INTEREST, AFFILIATE FIREWALL, COMPLIANCE, AND OTHER RELEVANT POLICIES AND PROCEDURES ARE ALSO AVAILABLE FROM THE CODE OF CONDUCT SECTION OF THIS SITE. FITCH MAY HAVE PROVIDED ANOTHER PERMISSIBLE SERVICE TO THE RATED ENTITY OR ITS RELATED THIRD PARTIES. DETAILS OF THIS SERVICE FOR WHICH THE LEAD ANALYST IS BASED IN AN ESMA-OR FCA-REGISTERED FITCH RATINGS COMPANY (OR BRANCH OF SUCH A COMPANY) CAN BE FOUND ON THE ENTITY SUMMARY PAGE FOR THIS ISSUER ON THE FITCH RATINGS WEBSITE.

Copyright © 2021 by Fitch Ratings, Inc., Fitch Ratings Ltd. and its subsidiaries. 33 Whitehall Street, NY, NY 10004. Telephone: 1-800-753-4824, (212) 908-0500. Fax: (212) 480-4435. Reproduction or retransmission in whole or in part is prohibited except by permission. All rights reserved. In issuing and maintaining its ratings and in making other reports (including forecast information), Fitch relies on factual information it receives from issuers and underwriters and from other sources Fitch believes to be credible. Fitch conducts a reasonable investigation of the factual information relied upon by it in accordance with its ratings methodology, and obtains reasonable verification of that information from independent sources, to the extent such sources are available for a given security or in a given jurisdiction. The manner of Fitch's factual investigation and the scope of the third-party verification it obtains will vary depending on the nature of the rated security and its issuer, the requirements and practices in the jurisdiction in which the rated security is offered and sold and/or the issuer is located, the availability and nature of relevant public information, access to the management of the issuer and its advisers, the availability of pre-existing third-party verifications such as audit reports, agreed-upon procedures letters, appraisals, actuarial reports, engineering reports, legal opinions and other reports provided by third parties, the availability of independent and competent third-party verification sources with respect to the particular security or in the particular jurisdiction of the issuer, and a variety of other factors. Users of Fitch's ratings and reports should understand that neither an enhanced factual investigation nor any third-party verification can ensure that all of the information Fitch relies on in connection with a rating or a report will be accurate and complete. Ultimately, the issuer and its advisers are responsible for the accuracy of the information they provide to Fitch and to the market in offering documents and other reports. In issuing its ratings and its reports, Fitch must rely on the work of experts, including independent auditors with respect to financial statements and attorneys with respect to legal and tax matters. Further, ratings and forecasts of financial and other information are inherently forward-looking and embody assumptions and predictions about future events that by their nature cannot be verified as facts. As a result, despite any verification of current facts, ratings and forecasts can be affected by future events or conditions that were not anticipated at the time a rating or forecast was issued or affirmed.

The information in this report is provided "as is" without any representation or warranty of any kind, and Fitch does not represent or warrant that the report or any of its contents will meet any of the requirements of a recipient of the report. A Fitch rating is an opinion as to the creditworthiness of a security. This opinion and reports made by Fitch are based on established criteria and methodologies that Fitch is continuously evaluating and updating. Therefore, ratings and reports are the collective work product of Fitch and no individual, or group of individuals, is solely responsible for a rating or a report. The rating does not address the risk of loss due to risks other than credit risk, unless such risk is specifically mentioned. Fitch is not engaged in the offer or sale of any security. All Fitch reports have shared authorship. Individuals identified in a Fitch report were involved in, but are not solely responsible for, the opinions stated therein. The individuals are named for contact purposes only. A report providing a Fitch rating is neither a prospectus nor a substitute for the information assembled, verified and presented to investors by the issuer and its agents in connection with the sale of the securities. Ratings may be changed or withdrawn at any time for any reason in the sole discretion of Fitch. Fitch does not provide investment advice of any sort. Ratings are not a recommendation to buy, sell, or hold any security. Ratings do not comment on the adequacy of market price, the suitability of any security for a particular investor, or the tax-exempt nature or taxability of payments made in respect to any security. Fitch receives fees from issuers, insurers, guarantors, other obligors, and underwriters for rating securities. Such fees generally vary from US\$1,000 to US\$750,000 (or the applicable currency equivalent) per issue. In certain cases, Fitch will rate all or a number of issues issued by a particular issuer, or insured or guaranteed by a particular insurer or guarantor, for a single annual fee. Such fees are expected to vary from US\$10,000 to US\$1,500,000 (or the applicable currency equivalent). The assignment, publication, or dissemination of a rating by Fitch shall not constitute a consent by Fitch to use its name as an expert in connection with any registration statement filed under the United States securities laws, the Financial Services and Markets Act of 2000 of the United Kingdom, or the securities laws of any particular jurisdiction. Due to the relative efficiency of electronic publishing and distribution, Fitch research may be available to electronic subscribers up to three days earlier than to print subscribers.

For Australia, New Zealand, Taiwan and South Korea only: Fitch Australia Pty Ltd holds an Australian financial services license (AFS license no. 337123) which authorizes it to provide credit ratings to wholesale clients only. Credit ratings information published by Fitch is not intended to be used by persons who are retail clients within the meaning of the Corporations Act 2001.

**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2021-00185**

**SECOND PSC DATA REQUEST
DATED JULY 12, 2021**

22. Refer to the Moul Testimony, page 7, lines 1–15.

e. Explain whether Mr. Moul agrees that natural gas is a preferred choice of many energy intensive industries and whether this dampens the competitive risk.

Response:

e. Mr. Moul is not aware of the preferred commodity of energy intensive industries, but since Delta is being compared to other gas distribution utilities, their market data would reflect their relative attractiveness of the commodity to energy intensive industries, and as such would not dampen any relative risk between the Company and the Gas Group.

Sponsoring Witness: Dylan D'Ascendis

**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2021-00185**

**SECOND PSC DATA REQUEST
DATED JULY 12, 2021**

23. Refer to the Moul Testimony, page 8 generally. Explain whether filing a forecasted test year rate case as opposed to a historical has any effect on the perceived riskiness of Delta. Include in the explanation how credit rating agencies view forecasted test years.

Response:

Estimating the cost of capital is a comparative exercise, so if the use of a forecasted test year is common throughout the companies on which one bases their analyses on, the comparative risk is zero, because any impact of the perceived reduced risk of the forecasted test year by investors would be reflected in the market data of the proxy group. Upon a review of Moody's and S&P credit rating methodologies (see PSC 2-23 Attachments 1 and 2), credit rating agencies generally view forecasted test years favorably, however, the salient issue is whether Delta is more or less risky than the proxy group due to its forecasted test year.

Sponsoring Witness: Dylan D'Ascendis

RATING METHODOLOGY

Regulated Electric and Gas Utilities

Table of Contents:

SUMMARY	1
ABOUT THE RATED UNIVERSE	3
ABOUT THIS RATING METHODOLOGY	4
DISCUSSION OF THE GRID FACTORS	6
APPENDIX A: REGULATED ELECTRIC AND GAS UTILITIES METHODOLOGY FACTOR GRID	29
APPENDIX B: APPROACH TO RATINGS WITHIN A UTILITY FAMILY	35
APPENDIX C: BRIEF DESCRIPTIONS OF THE TYPES OF COMPANIES RATED UNDER THIS METHODOLOGY	38
APPENDIX D: KEY INDUSTRY ISSUES OVER THE INTERMEDIATE TERM	40
APPENDIX E: REGIONAL AND OTHER CONSIDERATIONS	44
APPENDIX F: TREATMENT OF POWER PURCHASE AGREEMENTS ("PPAS")	46
METHODS FOR ESTIMATING A LIABILITY AMOUNT FOR PPAS	48
MOODY'S RELATED RESEARCH	49

This rating methodology replaces "Regulated Electric and Gas Utilities" last revised on December 23, 2013. We have updated some outdated links and removed certain issuer-specific information.

Summary

This rating methodology explains our approach to assessing credit risk for regulated electric and gas utilities globally. This document does not include an exhaustive treatment of all factors that are reflected in our ratings but should enable the reader to understand the qualitative considerations and financial information and ratios that are usually most important for ratings in this sector.¹

This report includes a detailed rating grid which is a reference tool that can be used to approximate credit profiles within the regulated electric and gas utility sector in most cases. The grid provides summarized guidance for the factors that are generally most important in assigning ratings to companies in the regulated electric and gas utility industry. However, the grid is a summary that does not include every rating consideration. The weights shown for each factor in the grid represent an approximation of their importance for rating decisions but actual importance may vary substantially. In addition, the grid in this document uses historical results while ratings are based on our forward-looking expectations. As a result, the grid-indicated rating is not expected to match the actual rating of each company.

Analyst Contacts:

NEW YORK	+1.212.553.1653
Michael G. Haggarty	+1.212.553.7172
<i>Associate Managing Director</i>	
michael.haggarty@moodys.com	
Jim Hempstead	+1.212.553.4318
<i>Managing Director – Utilities</i>	
james.hempstead@moodys.com	
Walter Winrow	+1.212.553.7943
<i>Managing Director - Global Project and Infrastructure Finance</i>	
walter.winrow@moodys.com	
Jeffrey Cassella	+1.212.553.1665
<i>Vice President - Senior Analyst</i>	
jeffrey.cassella@moodys.com	
Natividad Martel	+1.212.553.4561
<i>Vice President - Senior Analyst</i>	
natividad.martel@moodys.com	

» contacts continued on the last page

¹ This update may not be effective in some jurisdictions until certain requirements are met.

The grid contains four key factors that are important in our assessment for ratings in the regulated electric and gas utility sector:

1. Regulatory Framework
2. Ability to Recover Costs and Earn Returns
3. Diversification
4. Financial Strength

Some of these factors also encompass a number of sub-factors. There is also a notching factor for holding company structural subordination.

This rating methodology is not intended to be an exhaustive discussion of all factors that our analysts consider in assigning ratings in this sector. We note that our analysis for ratings in this sector covers factors that are common across all industries such as ownership, management, liquidity, corporate legal structure, governance and country related risks which are not explained in detail in this document, as well as factors that can be meaningful on a company-specific basis. Our ratings consider these and other qualitative considerations that do not lend themselves to a transparent presentation in a grid format. The grid used for this methodology reflects a decision to favor a relatively simple and transparent presentation rather than a more complex grid that might map grid-indicated ratings more closely to actual ratings.

Highlights of this report include:

- » An overview of the rated universe
- » A summary of the rating methodology
- » A discussion of the key rating factors that drive ratings
- » Comments on the rating methodology assumptions and limitations, including a discussion of rating considerations that are not included in the grid

The Appendices show the full grid (Appendix A), our approach to ratings within a utility family (Appendix B), a description of the various types of companies rated under this methodology (Appendix C), key industry issues over the intermediate term (Appendix D), regional and other considerations (Appendix E), and treatment of power purchase agreements (Appendix F).

This methodology describes the analytical framework used in determining credit ratings. In some instances our analysis is also guided by additional publications which describe our approach for analytical considerations that are not specific to any single sector. Examples of such considerations include but are not limited to: the assignment of short-term ratings, the relative ranking of different classes of debt and hybrid securities, how sovereign credit quality affects non-sovereign issuers, and the assessment of credit support from other entities. A link to documents that describe our approach to such cross-sector credit rating methodological considerations can be found in the Related Research section of this report.

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

About the Rated Universe

The Regulated Electric and Gas Utilities rating methodology applies to rate-regulated² electric and gas utilities that are not Networks³. Regulated Electric and Gas Utilities are companies whose predominant⁴ business is the sale of electricity and/or gas or related services under a rate-regulated framework, in most cases to retail customers. Also included under this methodology are rate-regulated utilities that own generating assets as any material part of their business, utilities whose charges or bills to customers include a meaningful component related to the electric or gas commodity, utilities whose rates are regulated at a sub-sovereign level (e.g. by provinces, states or municipalities), and companies providing an independent system operator function to an electric grid. Companies rated under this methodology are primarily rate-regulated monopolies or, in certain circumstances, companies that may not be outright monopolies but where government regulation effectively sets prices and limits competition.

This rating methodology covers regulated electric and gas utilities worldwide. These companies are engaged in the production, transmission, coordination, distribution and/or sale of electricity and/or natural gas, and they are either investor owned companies, commercially oriented government owned companies or, in the case of independent system operators, not-for-profit or similar entities. As detailed in Appendix C, this methodology covers a wide variety of companies active in the sector, including vertically integrated utilities, transmission and distribution utilities with retail customers and/or sub-sovereign regulation, local gas distribution utility companies (LDCs), independent system operators, and regulated generation companies. These companies may be operating companies or holding companies.

An over-arching consideration for regulated utilities is the regulatory environment in which they operate. While regulation is also a key consideration for networks, a utility's regulatory environment is in comparison often more dynamic and more subject to political intervention. The direct relationship that a regulated utility has with the retail customer, including billing for electric or gas supply that has substantial price volatility, can lead to a more politically charged rate-setting environment. Similarly, regulation at the sub-sovereign level is often more accessible for participation by interveners, including disaffected customers and the politicians who want their votes. Our views of regulatory environments evolve over time in accordance with our observations of regulatory, political, and judicial events that affect issuers in the sector.

This methodology pertains to regulated electric and gas utilities and excludes the following types of issuers, which are covered by separate rating methodologies: Regulated Networks, Unregulated Utilities and Power Companies, Public Power Utilities, Municipal Joint Action Agencies, Electric Cooperatives, Regulated Water Companies and Natural Gas Pipelines.⁵

The Regulated Electric and Gas Utility sector is predominantly investment grade, reflecting the stability generally conferred by regulation that typically sets prices and also limits competition, such that defaults have been lower than in many other non-financial corporate sectors. However, the nature of regulation can

² Companies in many industries are regulated. We use the term rate-regulated to distinguish companies whose rates (by which we also mean tariffs or revenues in general) are set by regulators.

³ Regulated Electric and Gas Networks are companies whose predominant business is purely the transmission and/or distribution of electricity and/or natural gas without involvement in the procurement or sale of electricity and/or gas; whose charges to customers thus do not include a meaningful commodity cost component; which sell mainly (or in many cases exclusively) to non-retail customers; and which are rate-regulated under a national framework.

⁴ We generally consider a company to be predominantly a regulated electric and gas utility when a majority of its cash flows, prospectively and on a sustained basis, are derived from regulated electric and gas utility businesses. Since cash flows can be volatile (such that a company might have a majority of utility cash flows simply due to a cyclical downturn in its non-utility businesses), we may also consider the breakdown of assets and/or debt of a company to determine which business is predominant.

⁵ A link to credit rating methodologies covering these and other sectors can be found in the Related Research section of this report.

vary significantly from jurisdiction to jurisdiction. Most issuers at the lower end of the ratings spectrum operate in challenging regulatory environments.

About this Rating Methodology

This report explains the rating methodology for regulated electric and gas utilities in six sections, which are summarized as follows:

1. Identification and Discussion of the Rating Factors in the Grid

The grid in this rating methodology focuses on four rating factors. The four factors are comprised of sub-factors that provide further detail:

Factor / Sub-Factor Weighting - Regulated Utilities

Broad Rating Factors	Broad Rating Factor Weighting	Rating Sub-Factor	Sub-Factor Weighting
Regulatory Framework	25%	Legislative and Judicial Underpinnings of the Regulatory Framework	12.5%
		Consistency and Predictability of Regulation	12.5%
Ability to Recover Costs and Earn Returns	25%	Timeliness of Recovery of Operating and Capital Costs	12.5%
		Sufficiency of Rates and Returns	12.5%
Diversification	10%	Market Position	5%*
		Generation and Fuel Diversity	5%**
Financial Strength, Key Financial Metrics	40%	CFO pre-WC + Interest / Interest	7.5%
		CFO pre-WC / Debt	15.0%
		CFO pre-WC – Dividends / Debt	10.0%
		Debt/Capitalization	7.5%
Total	100%		100%
Notching Adjustment			
Holding Company Structural Subordination			0 to -3
*10% weight for issuers that lack generation; **0% weight for issuers that lack generation			

2. Measurement or Estimation of Factors in the Grid

We explain our general approach for scoring each grid factor and show the weights used in the grid. We also provide a rationale for why each of these grid components is meaningful as a credit indicator. The information used in assessing the sub-factors is generally found in or calculated from information in company financial statements, derived from other observations or estimated by our analysts.⁶ All of the quantitative credit metrics incorporate Moody's standard adjustments to income statement, cash flow statement and balance sheet amounts for restructuring, impairment, off-balance sheet accounts, receivable securitization programs, under-funded pension obligations, and recurring operating leases.⁷

⁶ For definitions of our most common ratio terms, please see "Moody's Basic Definitions for Credit Statistics, User's Guide," a link to which may be found in the Related Research section of this report.

⁷ Our standard adjustments are described in "Financial Statement Adjustments in the Analysis of Non-Financial Corporations". A link to this and other sector and cross-sector credit rating methodologies can be found in the Related Research section of this report.

Our ratings are forward-looking and reflect our expectations for future financial and operating performance. However, historical results are helpful in understanding patterns and trends of a company's performance as well as for peer comparisons. We utilize historical data (in most cases, an average of the last three years of reported results) in the rating grid. However, the factors in the grid can be assessed using various time periods. For example, rating committees may find it analytically useful to examine both historical and expected future performance for periods of several years or more, or for individual twelve month periods.

3. Mapping Factors to the Rating Categories

After estimating or calculating each sub-factor, the outcomes for each of the sub-factors are mapped to a broad Moody's rating category (Aaa, Aa, A, Baa, Ba, B, or Caa).

4. Assumptions, Limitations and Rating Considerations Not Included in the Grid

This section discusses limitations in the use of the grid to map against actual ratings, some of the additional factors that are not included in the grid but can be important in determining ratings, and limitations and assumptions that pertain to the overall rating methodology.

5. Determining the Overall Grid-Indicated Rating⁸

To determine the overall grid-indicated rating, we convert each of the sub-factor ratings into a numeric value based upon the scale below.

Aaa	Aa	A	Baa	Ba	B	Caa	Ca
1	3	6	9	12	15	18	20

The numerical score for each sub-factor is multiplied by the weight for that sub-factor with the results then summed to produce a composite weighted-factor score. The composite weighted factor score is then mapped back to an alphanumeric rating based on the ranges in the table below.

Grid-Indicated Rating

Grid-Indicated Rating	Aggregate Weighted Total Factor Score
Aaa	$x < 1.5$
Aa1	$1.5 \leq x < 2.5$
Aa2	$2.5 \leq x < 3.5$
Aa3	$3.5 \leq x < 4.5$
A1	$4.5 \leq x < 5.5$
A2	$5.5 \leq x < 6.5$
A3	$6.5 \leq x < 7.5$
Baa1	$7.5 \leq x < 8.5$
Baa2	$8.5 \leq x < 9.5$
Baa3	$9.5 \leq x < 10.5$

⁸ In general, the grid-indicated rating is oriented to the Corporate Family Rating (CFR) for speculative-grade issuers and the senior unsecured rating for investment-grade issuers. For issuers that benefit from ratings uplift due to parental support, government ownership or other institutional support, the grid-indicated rating is oriented to the baseline credit assessment. For an explanation of baseline credit assessment, please refer to our rating methodology on government-related issuers. Individual debt instrument ratings also factor in decisions on notching for seniority level and collateral. The documents that provide broad guidance for these notching decisions are our rating methodologies on loss given default for speculative grade non-financial companies and for aligning corporate instrument ratings based on differences in security and priority of claim. The link to these and other sector and cross-sector credit rating methodologies can be found in the Related Research section of this report.

Grid-Indicated Rating

Grid-Indicated Rating	Aggregate Weighted Total Factor Score
Ba1	$10.5 \leq x < 11.5$
Ba2	$11.5 \leq x < 12.5$
Ba3	$12.5 \leq x < 13.5$
B1	$13.5 \leq x < 14.5$
B2	$14.5 \leq x < 15.5$
B3	$15.5 \leq x < 16.5$
Caa1	$16.5 \leq x < 17.5$
Caa2	$17.5 \leq x < 18.5$
Caa3	$18.5 \leq x < 19.5$
Ca	$x \geq 19.5$

For example, an issuer with a composite weighted factor score of 11.7 would have a Ba2 grid-indicated rating.

6. Appendices

The Appendices present a full grid and provide additional commentary and insights on our view of credit risks in this industry.

Discussion of the Grid Factors

Our analysis of electric and gas utilities focuses on four broad factors:

- » Regulatory Framework
- » Ability to Recover Costs and Earn Returns
- » Diversification
- » Financial Strength

There is also a notching factor for holding company structural subordination.

Factor 1: Regulatory Framework (25%)

Why It Matters

For rate-regulated utilities, which typically operate as a monopoly, the regulatory environment and how the utility adapts to that environment are the most important credit considerations. The regulatory environment is comprised of two rating factors - the Regulatory Framework and its corollary factor, the Ability to Recover Costs and Earn Returns. Broadly speaking, the Regulatory Framework is the foundation for how all the decisions that affect utilities are made (including the setting of rates), as well as the predictability and consistency of decision-making provided by that foundation. The Ability to Recover Costs and Earn Returns relates more directly to the actual decisions, including their timeliness and the rate-setting outcomes.

Utility rates⁹ are set in a political/regulatory process rather than a competitive or free-market process; thus, the Regulatory Framework is a key determinant of the success of utility. The Regulatory Framework has many components: the governing body and the utility legislation or decrees it enacts, the manner in which regulators are appointed or elected, the rules and procedures promulgated by those regulators, the judiciary that interprets the laws and rules and that arbitrates disagreements, and the manner in which the utility manages the political and regulatory process. In many cases, utilities have experienced credit stress or default primarily or at least secondarily because of a break-down or obstacle in the Regulatory Framework – for instance, laws that prohibited regulators from including investments in uncompleted power plants or plants not deemed “used and useful” in rates, or a disagreement about rate-making that could not be resolved until after the utility had defaulted on its debts.

How We Assess Legislative and Judicial Underpinnings of the Regulatory Framework for the Grid

For this sub-factor, we consider the scope, clarity, transparency, supportiveness and granularity of utility legislation, decrees, and rules as they apply to the issuer. We also consider the strength of the regulator’s authority over rate-making and other regulatory issues affecting the utility, the effectiveness of the judiciary or other independent body in arbitrating disputes in a disinterested manner, and whether the utility’s monopoly has meaningful or growing carve-outs. In addition, we look at how well developed the framework is – both how fully fleshed out the rules and regulations are and how well tested it is – the extent to which regulatory or judicial decisions have created a body of precedent that will help determine future rate-making. Since the focus of our scoring is on each issuer, we consider

⁶ In jurisdictions where utility revenues include material government subsidy payments, we consider utility rates to be inclusive of these payments, and we thus evaluate sub-factors 1a, 1b, 2a and 2b in light of both rates and material subsidy payments. For example, we would consider the legal and judicial underpinnings and consistency and predictability of subsidies as well as rates.

how effective the utility is in navigating the regulatory framework – both the utility’s ability to shape the framework and adapt to it.

A utility operating in a regulatory framework that is characterized by legislation that is credit supportive of utilities and eliminates doubt by prescribing many of the procedures that the regulators will use in determining fair rates (which legislation may show evidence of being responsive to the needs of the utility in general or specific ways), a long history of transparent rate-setting, and a judiciary that has provided ample precedent by impartially adjudicating disagreements in a manner that addresses ambiguities in the laws and rules will receive higher scores in the Legislative and Judicial Underpinnings sub-factor. A utility operating in a regulatory framework that, by statute or practice, allows the regulator to arbitrarily prevent the utility from recovering its costs or earning a reasonable return on prudently incurred investments, or where regulatory decisions may be reversed by politicians seeking to enhance their populist appeal will receive a much lower score.

In general, we view national utility regulation as being less liable to political intervention than regulation by state, provincial or municipal entities, so the very highest scoring in this sub-factor is reserved for this category. However, we acknowledge that states and provinces in some countries may be larger than small nations, such that their regulators may be equally “above-the-fray” in terms of impartial and technically-oriented rate setting, and very high scoring may be appropriate.

⁹ In jurisdictions where utility revenues include material government subsidy payments, we consider utility rates to be inclusive of these payments, and we thus evaluate sub-factors 1a, 1b, 2a and 2b in light of both rates and material subsidy payments. For example, we would consider the legal and judicial underpinnings and consistency and predictability of subsidies as well as rates.

The relevant judicial system can be a major factor in the regulatory framework. This is particularly true in litigious societies like the United States, where disagreements between the utility and its state or municipal regulator may eventually be adjudicated in federal district courts or even by the US Supreme Court. In addition, bankruptcy proceedings in the US take place in federal courts, which have at times been able to impose rate settlement agreements on state or municipal regulators. As a result, the range of decisions available to state regulators may be effectively circumscribed by court precedent at the state or federal level, which we generally view as favorable for the credit-supportiveness of the regulatory framework.

Electric and gas utilities are generally presumed to have a strong monopoly that will continue into the foreseeable future, and this expectation has allowed these companies to have greater leverage than companies in other sectors with similar ratings. Thus, the existence of a monopoly in itself is unlikely to be a driver of strong scoring in this sub-factor. On the other hand, a strong challenge to the monopoly could cause lower scoring, because the utility can only recover its costs and investments and service its debt if customers purchase its services. There have been some instances of incursions into utilities' monopoly, including municipalization, self-generation, distributed generation with net metering, or unauthorized use (beyond the level for which the utility receives compensation in rates). Incursions that are growing significantly or having a meaningful impact on rates for customers that remain with the utility could have a negative impact on scoring of this sub-factor and on factor 2 - Ability to Recover Costs and Earn Returns.

The scoring of this sub-factor may not be the same for every utility in a particular jurisdiction. We have observed that some utilities appear to have greater sway over the relevant utility legislation and promulgation of rules than other utilities – even those in the same jurisdiction. The content and tone of publicly filed documents and regulatory decisions sometimes indicates that the management team at one utility has better responsiveness to and credibility with its regulators or legislators than the management at another utility.

While the underpinnings to the regulatory framework tend to change relatively slowly, they do evolve, and our factor scoring will seek to reflect that evolution. For instance, a new framework will typically become tested over time as regulatory decisions are issued, or perhaps litigated, thereby setting a body of precedent. Utilities may seek changes to laws in order to permit them to securitize certain costs or collect interim rates, or a jurisdiction in which rates were previously recovered primarily in base rate proceedings may institute riders and trackers. These changes would likely impact scoring of sub-factor 2b - Timeliness of Recovery of Operating and Capital Costs, but they may also be sufficiently significant to indicate a change in the regulatory underpinnings. On the negative side, a judiciary that had formerly been independent may start to issue decisions that indicate it is conforming its decisions to the expectations of an executive branch that wants to mandate lower rates.

Factor 1a: Legislative and Judicial Underpinnings of the Regulatory Framework (12.5%)

Aaa	Aa	A	Baa
<p>Utility regulation occurs under a fully developed framework that is national in scope based on legislation that provides the utility a nearly absolute monopoly (see note 1) within its service territory, an unquestioned assurance that rates will be set in a manner that will permit the utility to make and recover all necessary investments, an extremely high degree of clarity as to the manner in which utilities will be regulated and prescriptive methods and procedures for setting rates. Existing utility law is comprehensive and supportive such that changes in legislation are not expected to be necessary, or any changes that have occurred have been strongly supportive of utilities credit quality in general and sufficiently forward-looking so as to address problems before they occurred. There is an independent judiciary that can arbitrate disagreements between the regulator and the utility should they occur, including access to national courts, very strong judicial precedent in the interpretation of utility laws, and a strong rule of law. We expect these conditions to continue.</p>	<p>Utility regulation occurs under a fully developed national, state or provincial framework based on legislation that provides the utility an extremely strong monopoly (see note 1) within its service territory, a strong assurance, subject to limited review, that rates will be set in a manner that will permit the utility to make and recover all necessary investments, a very high degree of clarity as to the manner in which utilities will be regulated and reasonably prescriptive methods and procedures for setting rates. If there have been changes in utility legislation, they have been timely and clearly credit supportive of the issuer in a manner that shows the utility has had a strong voice in the process. There is an independent judiciary that can arbitrate disagreements between the regulator and the utility, should they occur including access to national courts, strong judicial precedent in the interpretation of utility laws, and a strong rule of law. We expect these conditions to continue.</p>	<p>Utility regulation occurs under a well developed national, state or provincial framework based on legislation that provides the utility a very strong monopoly (see note 1) within its service territory, an assurance, subject to reasonable prudency requirements, that rates will be set in a manner that will permit the utility to make and recover all necessary investments, a high degree of clarity as to the manner in which utilities will be regulated, and overall guidance for methods and procedures for setting rates. If there have been changes in utility legislation, they have been mostly timely and on the whole credit supportive for the issuer, and the utility has had a clear voice in the legislative process. There is an independent judiciary that can arbitrate disagreements between the regulator and the utility, should they occur, including access to national courts, clear judicial precedent in the interpretation of utility law, and a strong rule of law. We expect these conditions to continue.</p>	<p>Utility regulation occurs (i) under a national, state, provincial or municipal framework based on legislation that provides the utility a strong monopoly within its service territory that may have some exceptions such as greater self-generation (see note 1), a general assurance that, subject to prudency requirements that are mostly reasonable, rates will be set in a manner that will permit the utility to make and recover all necessary investments, reasonable clarity as to the manner in which utilities will be regulated and overall guidance for methods and procedures for setting rates; or (ii) under a new framework where independent and transparent regulation exists in other sectors. If there have been changes in utility legislation, they have been credit supportive or at least balanced for the issuer but potentially less timely, and the utility had a voice in the legislative process. There is either (i) an independent judiciary that can arbitrate disagreements between the regulator and the utility, including access to courts at least at the state or provincial level, reasonably clear judicial precedent in the interpretation of utility laws, and a generally strong rule of law; or (ii) regulation has been applied (under a well developed framework) in a manner such that redress to an independent arbiter has not been required. We expect these conditions to continue.</p>
Ba	B	Caa	
<p>Utility regulation occurs (i) under a national, state, provincial or municipal framework based on legislation or government decree that provides the utility a monopoly within its service territory that is generally strong but may have a greater level of exceptions (see note 1), and that, subject to prudency requirements which may be stringent, provides a general assurance (with somewhat less certainty) that rates will be set in a manner that will permit the utility to make and recover necessary investments; or (ii) under a new framework where the jurisdiction has a history of less independent and transparent regulation in other sectors. Either: (i) the judiciary that can arbitrate disagreements between the regulator and the utility may not have clear authority or may not be fully independent of the regulator or other political pressure, but there is a reasonably strong rule of law; or (ii) where there is no independent arbiter, the regulation has mostly been applied in a manner such redress has not been required. We expect these conditions to continue.</p>	<p>Utility regulation occurs (i) under a national, state, provincial or municipal framework based on legislation or government decree that provides the utility monopoly within its service territory that is reasonably strong but may have important exceptions, and that, subject to prudency requirements which may be stringent or at times arbitrary, provides more limited or less certain assurance that rates will be set in a manner that will permit the utility to make and recover necessary investments; or (ii) under a new framework where we would expect less independent and transparent regulation, based either on the regulator's history in other sectors or other factors. The judiciary that can arbitrate disagreements between the regulator and the utility may not have clear authority or may not be fully independent of the regulator or other political pressure, but there is a reasonably strong rule of law. Alternately, where there is no independent arbiter, the regulation has been applied in a manner that often requires some redress adding more uncertainty to the regulatory framework. There may be a periodic risk of creditor-unfriendly government intervention in utility markets or rate-setting.</p>	<p>Utility regulation occurs (i) under a national, state, provincial or municipal framework based on legislation or government decree that provides the utility a monopoly within its service territory, but with little assurance that rates will be set in a manner that will permit the utility to make and recover necessary investments; or (ii) under a new framework where we would expect unpredictable or adverse regulation, based either on the jurisdiction's history of in other sectors or other factors. The judiciary that can arbitrate disagreements between the regulator and the utility may not have clear authority or is viewed as not being fully independent of the regulator or other political pressure. Alternately, there may be no redress to an effective independent arbiter. The ability of the utility to enforce its monopoly or prevent uncompensated usage of its system may be limited. There may be a risk of creditor-unfriendly nationalization or other significant intervention in utility markets or rate-setting.</p>	

Note 1: The strength of the monopoly refers to the legal, regulatory and practical obstacles for customers in the utility's territory to obtain service from another provider. Examples of a weakening of the monopoly would include the ability of a city or large user to leave the utility system to set up their own system, the extent to which self-generation is permitted (e.g. cogeneration) and/or encouraged (e.g., net metering, DSM generation). At the lower end of the ratings spectrum, the utility's monopoly may be challenged by pervasive theft and unauthorized use. Since utilities are generally presumed to be monopolies, a strong monopoly position in itself is not sufficient for a strong score in this sub-factor, but a weakening of the monopoly can lower the score.

How We Assess Consistency and Predictability of Regulation for the Grid

For the Consistency and Predictability sub-factor, we consider the track record of regulatory decisions in terms of consistency, predictability and supportiveness. We evaluate the utility's interactions in the regulatory process as well as the overall stance of the regulator toward the utility.

In most jurisdictions, the laws and rules seek to make rate-setting a primarily technical process that examines costs the utility incurs and the returns on investments the utility needs to earn so it can make investments that are required to build and maintain the utility infrastructure - power plants, electric transmission and distribution systems, and/or natural gas distribution systems. When the process remains technical and transparent such that regulators can support the financial health of the utility while balancing their public duty to assure that reliable service is provided at a reasonable cost, and when the utility is able to align itself with the policy initiatives of the governing jurisdiction, the utility will receive higher scores in this sub-factor. When the process includes substantial political intervention, which could take the form of legislators or other government officials publicly second-guessing regulators, dismissing regulators who have approved unpopular rate increases, or preventing the implementation of rate increases, or when regulators ignore the laws/rules to deliver an outcome that appears more politically motivated, the utility will receive lower scores in this sub-factor.

As with the prior sub-factor, we may score different utilities in the same jurisdiction differently, based on outcomes that are more or less supportive of credit quality over a period of time. We have observed that some utilities are better able to meet the expectations of their customers and regulators, whether through better service, greater reliability, more stable rates or simply more effective regulatory outreach and communication. These utilities typically receive more consistent and credit supportive outcomes, so they will score higher in this sub-factor. Conversely, if a utility has multiple rapid rate increases, chooses to submit major rate increase requests during a sensitive election cycle or a severe economic downturn, has chronic customer service issues, is viewed as frequently providing incomplete information to regulators, or is tone deaf to the priorities of regulators and politicians, it may receive less consistent and supportive outcomes and thus score lower in this sub-factor.

In scoring this sub-factor, we will primarily evaluate the actions of regulators, politicians and jurists rather than their words. Nonetheless, words matter when they are an indication of future action. We seek to differentiate between political rhetoric that is perhaps oriented toward gaining attention for the viewpoint of the speaker and rhetoric that is indicative of future actions and trends in decision-making.

Factor 1b: Consistency and Predictability of Regulation (12.5%)

Aaa	Aa	A	Baa
<p>The issuer's interaction with the regulator has led to a strong, lengthy track record of predictable, consistent and favorable decisions. The regulator is highly credit supportive of the issuer and utilities in general. We expect these conditions to continue.</p>	<p>The issuer's interaction with the regulator has led to a considerable track record of predominantly predictable and consistent decisions. The regulator is mostly credit supportive of utilities in general and in almost all instances has been highly credit supportive of the issuer. We expect these conditions to continue.</p>	<p>The issuer's interaction with the regulator has led to a track record of largely predictable and consistent decisions. The regulator may be somewhat less credit supportive of utilities in general, but has been quite credit supportive of the issuer in most circumstances. We expect these conditions to continue.</p>	<p>The issuer's interaction with the regulator has led to an adequate track record. The regulator is generally consistent and predictable, but there may be some evidence of inconsistency or unpredictability from time to time, or decisions may at times be politically charged. However, instances of less credit supportive decisions are based on reasonable application of existing rules and statutes and are not overly punitive. We expect these conditions to continue.</p>
Ba	B	Caa	
<p>We expect that regulatory decisions will demonstrate considerable inconsistency or unpredictability or that decisions will be politically charged, based either on the issuer's track record of interaction with regulators or other governing bodies, or our view that decisions will move in this direction. The regulator may have a history of less credit supportive regulatory decisions with respect to the issuer, but we expect that the issuer will be able to obtain support when it encounters financial stress, with some potentially material delays. The regulator's authority may be eroded at times by legislative or political action. The regulator may not follow the framework for some material decisions.</p>	<p>We expect that regulatory decisions will be largely unpredictable or even somewhat arbitrary, based either on the issuer's track record of interaction with regulators or other governing bodies, or our view that decisions will move in this direction. However, we expect that the issuer will ultimately be able to obtain support when it encounters financial stress, albeit with material or more extended delays. Alternately, the regulator is untested, lacks a consistent track record, or is undergoing substantial change. The regulator's authority may be eroded on frequent occasions by legislative or political action. The regulator may more frequently ignore the framework in a manner detrimental to the issuer.</p>	<p>We expect that regulatory decisions will be highly unpredictable and frequently adverse, based either on the issuer's track record of interaction with regulators or other governing bodies, or our view that decisions will move in this direction. Alternately, decisions may have credit supportive aspects, but may often be unenforceable. The regulator's authority may have been seriously eroded by legislative or political action. The regulator may consistently ignore the framework to the detriment of the issuer.</p>	

Factor 2: Ability to Recover Costs and Earn Returns (25%)

Why It Matters

This rating factor examines the ability of a utility to recover its costs and earn a return over a period of time, including during differing market and economic conditions. While the Regulatory Framework looks at the transparency and predictability of the rules that govern the decision-making process with respect to utilities, the Ability to Recover Costs and Earn Returns evaluates the regulatory elements that directly impact the ability of the utility to generate cash flow and service its debt over time. The ability to recover prudently incurred costs on a timely basis and to attract debt and equity capital are crucial credit considerations. The inability to recover costs, for instance if fuel or purchased power costs ballooned during a rate freeze period, has been one of the greatest drivers of financial stress in this sector, as well as the cause of some utility defaults. In a sector that is typically free cash flow negative (due to large capital expenditures and dividends) and that routinely needs to refinance very large maturities of long-term debt, investor concerns about a lack of timely cost recovery or the sufficiency of rates can, in an extreme scenario, strain access to capital markets and potentially lead to insolvency of the utility (as was the case when "used and useful" requirements threatened some utilities that experienced years of delay in completing nuclear power plants in the 1980s). While our scoring for the Ability to Recover Costs and Earn Returns may primarily be influenced by our assessment of the regulatory relationship, it can also be highly impacted by the management and business decisions of the utility.

How We Assess Ability to Recover Costs and Earn Returns

The timeliness and sufficiency of rates are scored as separate sub-factors; however, they are interrelated. Timeliness can have an impact on our view of what constitutes sufficient returns, because a strong assurance of timely cost recovery reduces risk. Conversely, utilities may have a strong assurance that they will earn a full return on certain deferred costs until they are able to collect them, or their generally strong returns may allow them to weather some rate lag on recovery of construction-related capital expenditures. The timeliness of cost recovery is particularly important in a period of rapidly rising costs. During the past five years, utilities have benefitted from low interest rates and generally decreasing fuel costs and purchased power costs, but these market conditions could easily reverse. For example, fuel is a large component of total costs for vertically integrated utilities and for natural gas utilities, and fuel prices are highly volatile, so the timeliness of fuel and purchased power cost recovery is especially important.

While Factors 1 and 2 are closely inter-related, scoring of these factors will not necessarily be the same. We have observed jurisdictions where the Regulatory Framework caused considerable credit concerns – perhaps it was untested or going through a transition to de-regulation, but where the track record of rate case outcomes was quite positive, leading to a higher score in the Ability to Recover Costs and Earn Returns. Conversely, there have been instances of strong Legislative and Judicial Underpinnings of the Regulatory Framework where the commission has ignored the framework (which would affect Consistency and Predictability of Regulation as well as Ability to Recover Costs and Earn Returns) or has used extraordinary measures to prevent or defer an increase that might have been justifiable from a cost perspective but would have caused rate shock.

One might surmise that Factors 2 and 4 should be strongly correlated, since a good Ability to Recover Costs and Earn Returns would normally lead to good financial metrics. However, the scoring for the Ability to Recover Costs and Earn Returns sub-factor places more emphasis on our expectation of timeliness and sufficiency of rates over time; whereas financial metrics may be impacted by one-time events, market conditions or construction cycles - trends that we believe could normalize or even reverse.

How We Assess Timeliness of Recovery of Operating and Capital Costs for the Grid

The criteria we consider include provisions and cost recovery mechanisms for operating costs, mechanisms that allow actual operating and/or capital expenditures to be trued-up periodically into rates without having to file a rate case (this may include formula rates, rider and trackers, or the ability to periodically adjust rates for construction work in progress) as well as the process and timeframe of general tariff/base rate cases – those that are fully reviewed by the regulator, generally in a public format that includes testimony of the utility and other stakeholders and interest groups. We also look at the track record of the utility and regulator for timeliness. For instance, having a formula rate plan is positive, but if the actual process has included reviews that are delayed for long periods, it may dampen the benefit to the utility. In addition, we seek to estimate the lag between the time that a utility incurs a major construction expenditures and the time that the utility will start to recover and/or earn a return on that expenditure.

How We Assess Sufficiency of Rates and Returns for the Grid

The criteria we consider include statutory protections that assure full cost recovery and a reasonable return for the utility on its investments, the regulatory mechanisms used to determine what a reasonable return should be, and the track record of the utility in actually recovering costs and earning returns. We examine outcomes of rate cases/tariff reviews and compare them to the requests submitted by the utility, to prior rate cases/tariff reviews for the same utility and to recent rate/tariff decisions for a peer group of comparable utilities. In this context, comparable utilities are typically utilities in the same or similar jurisdiction. In cases where the utility is unique or nearly unique in its jurisdiction, comparison will be made to other peers with an adjustment for local differences, including prevailing rates of interest and returns on capital, as well as the timeliness of rate-setting. We look at regulatory disallowances of costs or investments, with a focus on their financial severity and also on the reasons given by the regulator, in order to assess the likelihood that such disallowances will be repeated in the future.

Factor 2a: Timeliness of Recovery of Operating and Capital Costs (12.5%)

Aaa	Aa	A	Baa
<p>Tariff formulas and automatic cost recovery mechanisms provide full and highly timely recovery of all operating costs and essentially contemporaneous return on all incremental capital investments, with statutory provisions in place to preclude the possibility of challenges to rate increases or cost recovery mechanisms. By statute and by practice, general rate cases are efficient, focused on an impartial review, quick, and permit inclusion of fully forward-looking costs.</p>	<p>Tariff formulas and automatic cost recovery mechanisms provide full and highly timely recovery of all operating costs and essentially contemporaneous or near-contemporaneous return on most incremental capital investments, with minimal challenges by regulators to companies' cost assumptions. By statute and by practice, general rate cases are efficient, focused on an impartial review, of a very reasonable duration before non-appealable interim rates can be collected, and primarily permit inclusion of forward-looking costs.</p>	<p>Automatic cost recovery mechanisms provide full and reasonably timely recovery of fuel, purchased power and all other highly variable operating expenses. Material capital investments may be made under tariff formulas or other rate-making permitting reasonably contemporaneous returns, or may be submitted under other types of filings that provide recovery of cost of capital with minimal delays. Instances of regulatory challenges that delay rate increases or cost recovery are generally related to large, unexpected increases in sizeable construction projects. By statute or by practice, general rate cases are reasonably efficient, primarily focused on an impartial review, of a reasonable duration before rates (either permanent or non-refundable interim rates) can be collected, and permit inclusion of important forward-looking costs.</p>	<p>Fuel, purchased power and all other highly variable expenses are generally recovered through mechanisms incorporating delays of less than one year, although some rapid increases in costs may be delayed longer where such deferrals do not place financial stress on the utility. Incremental capital investments may be recovered primarily through general rate cases with moderate lag, with some through tariff formulas. Alternately, there may be formula rates that are untested or unclear. Potentially greater tendency for delays due to regulatory intervention, although this will generally be limited to rates related to large capital projects or rapid increases in operating costs.</p>
Ba	B	Caa	
<p>There is an expectation that fuel, purchased power or other highly variable expenses will eventually be recovered with delays that will not place material financial stress on the utility, but there may be some evidence of an unwillingness by regulators to make timely rate changes to address volatility in fuel, or purchased power, or other market-sensitive expenses. Recovery of costs related to capital investments may be subject to delays that are somewhat lengthy, but not so pervasive as to be expected to discourage important investments.</p>	<p>The expectation that fuel, purchased power or other highly variable expenses will be recovered may be subject to material delays due to second-guessing of spending decisions by regulators or due to political intervention. Recovery of costs related to capital investments may be subject to delays that are material to the issuer, or may be likely to discourage some important investment.</p>	<p>The expectation that fuel, purchased power or other highly variable expenses will be recovered may be subject to extensive delays due to second-guessing of spending decisions by regulators or due to political intervention. Recovery of costs related to capital investments may be uncertain, subject to delays that are extensive, or that may be likely to discourage even necessary investment.</p>	

Note: Tariff formulas include formula rate plans as well as trackers and riders related to capital investment.

Factor 2b: Sufficiency of Rates and Returns (12.5%)

Aaa	Aa	A	Baa
Sufficiency of rates to cover costs and attract capital is (and will continue to be) unquestioned.	Rates are (and we expect will continue to be) set at a level that permits full cost recovery and a fair return on all investments, with minimal challenges by regulators to companies' cost assumptions. This will translate to returns (measured in relation to equity, total assets, rate base or regulatory asset value, as applicable) that are strong relative to global peers.	Rates are (and we expect will continue to be) set at a level that generally provides full cost recovery and a fair return on investments, with limited instances of regulatory challenges and disallowances. In general, this will translate to returns (measured in relation to equity, total assets, rate base or regulatory asset value, as applicable) that are generally above average relative to global peers, but may at times be average.	Rates are (and we expect will continue to be) set at a level that generally provides full operating cost recovery and a mostly fair return on investments, but there may be somewhat more instances of regulatory challenges and disallowances, although ultimate rate outcomes are sufficient to attract capital without difficulty. In general, this will translate to returns (measured in relation to equity, total assets, rate base or regulatory asset value, as applicable) that are average relative to global peers, but may at times be somewhat below average.
Ba	B	Caa	
Rates are (and we expect will continue to be) set at a level that generally provides recovery of most operating costs but return on investments may be less predictable, and there may be decidedly more instances of regulatory challenges and disallowances, but ultimate rate outcomes are generally sufficient to attract capital. In general, this will translate to returns (measured in relation to equity, total assets, rate base or regulatory asset value, as applicable) that are generally below average relative to global peers, or where allowed returns are average but difficult to earn. Alternately, the tariff formula may not take into account all cost components and/or remuneration of investments may be unclear or at times unfavorable.	We expect rates will be set at a level that at times fails to provide recovery of costs other than cash costs, and regulators may engage in somewhat arbitrary second-guessing of spending decisions or deny rate increases related to funding ongoing operations based much more on politics than on prudence reviews. Return on investments may be set at levels that discourage investment. We expect that rate outcomes may be difficult or uncertain, negatively affecting continued access to capital. Alternately, the tariff formula may fail to take into account significant cost components other than cash costs, and/or remuneration of investments may be generally unfavorable.	We expect rates will be set at a level that often fails to provide recovery of material costs, and recovery of cash costs may also be at risk. Regulators may engage in more arbitrary second-guessing of spending decisions or deny rate increases related to funding ongoing operations based primarily on politics. Return on investments may be set at levels that discourage necessary maintenance investment. We expect that rate outcomes may often be punitive or highly uncertain, with a markedly negative impact on access to capital. Alternately, the tariff formula may fail to take into account significant cash cost components, and/or remuneration of investments may be primarily unfavorable.	

Factor 3: Diversification (10%)

Why It Matters

Diversification of overall business operations helps to mitigate the risk that economic cycles, material changes in a single regulatory regime or commodity price movements will have a severe impact on cash flow and credit quality of a utility. While utilities' sales volumes have lower exposure to economic recessions than many non-financial corporate issuers, some sales components, including industrial sales, are directly affected by economic trends that cause lower production and/or plant closures. In addition, economic activity plays a role in the rate of customer growth in the service territory and (absent energy efficiency and conservation) can often impact usage per customer. The economic strength or weakness of the service territory can affect the political and regulatory environment for rate increase requests by the utility. For utilities in areas prone to severe storms and other natural disasters, the utility's geographic diversity or concentration can be a key determinant for creditworthiness.

Diversity among regulatory regimes can mitigate the impact of a single unfavorable decision affecting one part of the utility's footprint.

For utilities with electric generation, fuel source diversity can mitigate the impact (to the utility and to its rate-payers) of changes in commodity prices, hydrology and water flow, and environmental or other regulations affecting plant operations and economics. We have observed that utilities' regulatory environments are most likely to become unfavorable during periods of rapid rate increases (which are more important than absolute rate levels) and that fuel diversity leads to more stable rates over time.

For that reason, fuel diversity can be important even if fuel and purchased power expenses are an automatic pass-through to the utility's ratepayers. Changes in environmental, safety and other regulations have caused vulnerabilities for certain technologies and fuel sources during the past five years. These vulnerabilities have varied widely in different countries and have changed over time.

How We Assess Market Position for the Grid

Market position is comprised primarily of the economic diversity of the utility's service territory and the diversity of its regulatory regimes. We also consider the diversity of utility operations (e.g., regulated electric, gas, water, steam) when there are material operations in more than one area.

Economic diversity is a typically a function of the population, size and breadth of the territory and the businesses that drive its GDP and employment. For the size of the territory, we typically consider the number of customers and the volumes of generation and/or throughput. For breadth, we consider the number of sizeable metropolitan areas served, the economic diversity and vitality in those metropolitan areas, and any concentration in a particular area or industry. In our assessment, we may consider various information sources. For example, in the US, information sources on the diversity and vitality of economies of individual states and metropolitan areas may include Moody's Economy.com. We also look at the mix of the utility's sales volumes among customer types, as well as the track record of volume sales and any notable payment patterns during economic cycles. For diversity of regulatory regimes, we typically look at the number of regulators and the percentages of revenues and utility assets that are under the purview of each. While the highest scores in the Market Position sub-factor are reserved for issuers regulated in multiple jurisdictions, when there is only one regulator, we make a differentiation of regimes perceived as having lower or higher volatility.

Issuers with multiple supportive regulatory jurisdictions, a balanced sales mix among residential, commercial, industrial and governmental customers in a large service territory with a robust and diverse economy will generally score higher in this sub-factor. An issuer with a small service territory economy that

has a high dependence on one or two sectors, especially highly cyclical industries, will generally score lower in this sub-factor, as will issuers with meaningful exposure to economic dislocations caused by natural disasters.

For issuers that are vertically integrated utilities having a meaningful amount of generation, this sub-factor has a weighting of 5%. For electric transmission and distribution utilities without meaningful generation and for natural gas local distribution companies, this sub-factor has a weighting of 10%.

How We Assess Generation and Fuel Diversity for the Grid

Criteria include the fuel type of the issuer's generation and important power purchase agreements, the ability of the issuer economically to shift its generation and power purchases when there are changes in fuel prices, the degree to which the utility and its rate-payers are exposed to or insulated from changes in commodity prices, and exposure to Challenged Source and Threatened Sources (see the explanations for how we generally characterize these generation sources in the table below). A regulated utility's capacity mix may not in itself be an indication of fuel diversity or the ability to shift fuels, since utilities may keep old and inefficient plants (e.g., natural gas boilers) to serve peak load. For this reason, we do not incorporate set percentages reflecting an "ideal" or "sub-par" mix for capacity or even generation. In addition to looking at a utility's generation mix to evaluate fuel diversity, we consider the efficiency of the utility's plants, their placement on the regional dispatch curve, and the demonstrated ability/inability of the utility to shift its generation mix in accordance with changing commodity prices.

Issuers having a balanced mix of hydro, coal, natural gas, nuclear and renewable energy as well as low exposure to challenged and threatened sources of generation will score more highly in this sub-factor. Issuers that have concentration in one or two sources of generation, especially if they are threatened or challenged sources, will incur lower scores.

In evaluating an issuer's degree of exposure to challenged and threatened sources, we will consider not only the existence of those plants in the utility's portfolio, but also the relevant factors that will determine the impact on the utility and on its rate-payers. For instance, an issuer that has a fairly high percentage of its generation from challenged sources could be evaluated very differently if its peer utilities face the same magnitude of those issues than if its peers have no exposure to challenged or threatened sources. In evaluating threatened sources, we consider the utility's progress in its plan to replace those sources, its reserve margin, the availability of purchased power capacity in the region, and the overall impact of the replacement plan on the issuer's rates relative to its peer group. Especially if there are no peers in the same jurisdiction, we also examine the extent to which the utility's generation resources plan is aligned with the relevant government's fuel/energy policy.

Factor 3: Diversification (10%)

Weighting 10%	Sub-Factor Weighting	Aaa	Aa	A	Baa
Market Position	5.00% *	A very high degree of multinational and regional diversity in terms of regulatory regimes and/or service territory economies.	Material operations in three or more nations or substantial geographic regions providing very good diversity of regulatory regimes and/or service territory economies.	Material operations in two to three nations, states, provinces or regions that provide good diversity of regulatory regimes and service territory economies. Alternately, operates within a single regulatory regime with low volatility, and the service territory economy is robust, has a very high degree of diversity and has demonstrated resilience in economic cycles.	May operate under a single regulatory regime viewed as having low volatility, or where multiple regulatory regimes are not viewed as providing much diversity. The service territory economy may have some concentration and cyclical, but is sufficiently resilient that it can absorb reasonably foreseeable increases in utility rates.
Generation and Fuel Diversity	5.00% **	A high degree of diversity in terms of generation and/or fuel sources such that the utility and rate-payers are well insulated from commodity price changes, no generation concentration, and very low exposures to Challenged or Threatened Sources (see definitions below).	Very good diversification in terms of generation and/or fuel sources such that the utility and rate-payers are affected only minimally by commodity price changes, little generation concentration, and low exposures to Challenged or Threatened Sources.	Good diversification in terms of generation and/or fuel sources such that the utility and rate-payers have only modest exposure to commodity price changes; however, may have some concentration in a source that is neither Challenged nor Threatened. Exposure to Threatened Sources is low. While there may be some exposure to Challenged Sources, it is not a cause for concern.	Adequate diversification in terms of generation and/or fuel sources such that the utility and rate-payers have moderate exposure to commodity price changes; however, may have some concentration in a source that is Challenged. Exposure to Threatened Sources is moderate, while exposure to Challenged Sources is manageable.
	Sub-Factor Weighting	Ba	B	Caa	Definitions
Market Position	5.00% *	Operates in a market area with somewhat greater concentration and cyclical in the service territory economy and/or exposure to storms and other natural disasters, and thus less resilience to absorbing reasonably foreseeable increases in utility rates. May show somewhat greater volatility in the regulatory regime(s).	Operates in a limited market area with material concentration and more severe cyclical in service territory economy such that cycles are of materially longer duration or reasonably foreseeable increases in utility rates could present a material challenge to the economy. Service territory may have geographic concentration that limits its resilience to storms and other natural disasters, or may be an emerging market. May show decided volatility in the regulatory regime(s).	Operates in a concentrated economic service territory with pronounced concentration, macroeconomic risk factors, and/or exposure to natural disasters.	Challenged Sources are generation plants that face higher but not insurmountable economic hurdles resulting from penalties or taxes on their operation, or from environmental upgrades that are required or likely to be required. Some examples are carbon-emitting plants that incur carbon taxes, plants that must buy emissions credits to operate, and plants that must install environmental equipment to continue to operate, in each where the taxes/credits/upgrades are sufficient to have a material impact on those plants' competitiveness relative to other generation types or on the utility's rates, but where the impact is not so severe as to be likely require plant closure.

Generation and Fuel Diversity	5.00% **	Modest diversification in generation and/or fuel sources such that the utility or rate-payers have greater exposure to commodity price changes. Exposure to Challenged and Threatened Sources may be more pronounced, but the utility will be able to access alternative sources without undue financial stress.	Operates with little diversification in generation and/or fuel sources such that the utility or rate-payers have high exposure to commodity price changes. Exposure to Challenged and Threatened Sources may be high, and accessing alternate sources may be challenging and cause more financial stress, but ultimately feasible.	Operates with high concentration in generation and/or fuel sources such that the utility or rate-payers have exposure to commodity price shocks. Exposure to Challenged and Threatened Sources may be very high, and accessing alternate sources may be highly uncertain.	Threatened Sources are generation plants that are not currently able to operate due to major unplanned outages or issues with licensing or other regulatory compliance, and plants that are highly likely to be required to de-activate, whether due to the effectiveness of currently existing or expected rules and regulations or due to economic challenges. Some recent examples would include coal fired plants in the US that are not economic to retro-fit to meet mercury and air toxics standards, plants that cannot meet the effective date of those standards, nuclear plants in Japan that have not been licensed to re-start after the Fukushima Dai-ichi accident, and nuclear plants that are required to be phased out within 10 years (as is the case in some European countries).
-------------------------------	----------	--	--	---	---

* 10% weight for issuers that lack generation **0% weight for issuers that lack generation

Factor 4: Financial Strength (40%)

Why It Matters

Electric and gas utilities are regulated, asset-based businesses characterized by large investments in long-lived property, plant and equipment. Financial strength, including the ability to service debt and provide a return to shareholders, is necessary for a utility to attract capital at a reasonable cost in order to invest in its generation, transmission and distribution assets, so that the utility can fulfill its service obligations at a reasonable cost to rate-payers.

How We Assess It for the Grid

In comparison to companies in other non-financial corporate sectors, the financial statements of regulated electric and gas utilities have certain unique aspects that impact financial analysis, which is further complicated by disparate treatment of certain elements under US Generally Accepted Accounting Principles (GAAP) versus International Financial Reporting Standards (IFRS). Regulatory accounting may permit utilities to defer certain costs (thereby creating regulatory assets) that a non-utility corporate entity would have to expense. For instance, a regulated utility may be able to defer a substantial portion of costs related to recovery from a storm based on the general regulatory framework for those expenses, even if the utility does not have a specific order to collect the expenses from ratepayers over a set period of time. A regulated utility may be able to accrue and defer a return on equity (in addition to capitalizing interest) for construction-work-in-progress for an approved project based on the assumption that it will be able to collect that deferred equity return once the asset comes into service. For this reason, we focus more on a utility's cash flow than on its reported net income.

Conversely, utilities may collect certain costs in rates well ahead of the time they must be paid (for instance, pension costs), thereby creating regulatory liabilities. Many of our metrics focus on Cash Flow from Operations Before Changes in Working Capital (CFO Pre-WC) because, unlike Funds from Operations (FFO), it captures the changes in long-term regulatory assets and liabilities.

However, under IFRS the two measures are essentially the same. In general, we view changes in working capital as less important in utility financial analysis because they are often either seasonal (for example, power demand is generally greatest in the summer) or caused by changes in fuel prices that are typically a relatively automatic pass-through to the customer. We will nonetheless examine the impact of working capital changes in analyzing a utility's liquidity (see Other Rating Considerations – Liquidity).

Given the long-term nature of utility assets and the often lumpy nature of their capital expenditures, it is important to analyze both a utility's historical financial performance as well as its prospective future performance, which may be different from backward-looking measures. Scores under this factor may be higher or lower than what might be expected from historical results, depending on our view of expected future performance. Multi-year periods are usually more representative of credit quality because utilities can experience swings in cash flows from one-time events, including such items as rate refunds, storm cost deferrals that create a regulatory asset, or securitization proceeds that reduce a regulatory asset. Nonetheless, we also look at trends in metrics for individual periods, which may influence our view of future performance and ratings.

For this scoring grid, we have identified four key ratios that we consider the most consistently useful in the analysis of regulated electric and gas utilities. However, no single financial ratio can adequately convey the relative credit strength of these highly diverse companies. Our ratings consider the overall financial strength of a company, and in individual cases other financial indicators may also play an important role.

CFO Pre-Working Capital Plus Interest/Interest or Cash Flow Interest Coverage

The cash flow interest coverage ratio is an indicator for a utility's ability to cover the cost of its borrowed capital. The numerator in the ratio calculation is the sum of CFO Pre-WC and interest expense, and the denominator is interest expense.

CFO Pre-Working Capital / Debt

This important metric is an indicator for the cash generating ability of a utility compared to its total debt. The numerator in the ratio calculation is CFO Pre-WC, and the denominator is total debt.

CFO Pre-Working Capital Minus Dividends / Debt

This ratio is an indicator for financial leverage as well as an indicator of the strength of a utility's cash flow after dividend payments are made. Dividend obligations of utilities are often substantial, quasi-permanent outflows that can affect the ability of a utility to cover its debt obligations, and this ratio can also provide insight into the financial policies of a utility or utility holding company. The higher the level of retained cash flow relative to a utility's debt, the more cash the utility has to support its capital expenditure program. The numerator of this ratio is CFO Pre-WC minus dividends, and the denominator is total debt.

Debt/Capitalization

This ratio is a traditional measure of balance sheet leverage. The numerator is total debt and the denominator is total capitalization. All of our ratios are calculated in accordance with our standard adjustments¹⁰, but we note that our definition of total capitalization includes deferred taxes in addition to total debt, preferred stock, other hybrid securities, and common equity. Since the presence or absence of deferred taxes is a function of national tax policy, comparing utilities using this ratio may be more meaningful among utilities in the same country or in countries with similar tax policies. High debt levels in comparison to capitalization can indicate higher interest obligations, can limit the ability of a utility to raise additional financing if needed, and can lead to leverage covenant violations in bank credit facilities or other financing agreements¹¹. A high ratio may result from a regulatory framework that does not permit a robust cushion of equity in the capital structure, or from a material write-off of an asset, which may not have impacted current period cash flows but could affect future period cash flows relative to debt.

There are two sets of thresholds for three of these ratios based on the level of the issuer's business risk – the Standard Grid and the Lower Business Risk (LBR) Grid. In our view, the different types of utility entities covered under this methodology (as described in Appendix E) have different levels of business risk.

Generation utilities and vertically integrated utilities generally have a higher level of business risk because they are engaged in power generation, so we apply the Standard Grid. We view power generation as the highest-risk component of the electric utility business, as generation plants are typically the most expensive part of a utility's infrastructure (representing asset concentration risk) and are subject to the greatest risks in both construction and operation, including the risk that incurred costs will either not be recovered in rates or recovered with material delays.

Other types of utilities may have lower business risk, such that we believe that they are most appropriately assessed using the LBR Grid, due to factors that could include a generally greater transfer of risk to customers, very strong insulation from exposure to commodity price movements, good protection from volumetric risks, fairly limited capex needs and low exposure to storms, major accidents and natural

¹⁰ In certain circumstances, analysts may also apply specific adjustments.

¹¹ We also examine debt/capitalization ratios as defined in applicable covenants (which typically exclude deferred taxes from capitalization) relative to the covenant threshold level.

disasters. For instance, we tend to view many US natural gas local distribution companies (LDCs) and certain US electric transmission and distribution companies (T&Ds, which lack generation but generally retain some procurement responsibilities for customers), as typically having a lower business risk profile than their vertically integrated peers. In cases of T&Ds that we do not view as having materially lower risk than their vertically integrated peers, we will apply the Standard grid. This could result from a regulatory framework that exposes them to energy supply risk, large capital expenditures for required maintenance or upgrades, a heightened degree of exposure to catastrophic storm damage, or increased regulatory scrutiny due to poor reliability, or other considerations. The Standard Grid will also apply to LDCs that in our view do not have materially lower risk; for instance, due to their ownership of high pressure pipes or older systems requiring extensive gas main replacements, where gas commodity costs are not fully recovered in a reasonably contemporaneous manner, or where the LDC is not well insulated from declining volumes.

The four key ratios, their weighting in the grid, and the Standard and LBR scoring thresholds are detailed in the following table.

Factor 4: Financial Strength

Weighting 40%	Sub-Factor Weighting		Aaa	Aa	A	Baa	Ba	B	Caa
CFO pre-WC + Interest / Interest	7.50%		≥ 8.0x	6.0x - 8.0x	4.5x - 6.0x	3.0x - 4.5x	2.0x - 3.0x	1.0x - 2.0x	< 1.0x
CFO pre-WC / Debt	15.00%	Standard Grid	≥ 40%	30% - 40%	22% - 30%	13% - 22%	5% - 13%	1% - 5%	< 1%
		Low Business Risk Grid	≥ 38%	27% - 38%	19% - 27%	11% - 19%	5% - 11%	1% - 5%	< 1%
CFO pre-WC - Dividends / Debt	10.00%	Standard Grid	≥ 35%	25% - 35%	17% - 25%	9% - 17%	0% - 9%	(5%) - 0%	< (5%)
		Low Business Risk Grid	≥ 34%	23% - 34%	15% - 23%	7% - 15%	0% - 7%	(5%) - 0%	< (5%)
Debt / Capitalization	7.50%	Standard Grid	< 25%	25% - 35%	35% - 45%	45% - 55%	55% - 65%	65% - 75%	≥ 75%
		Low Business Risk Grid	< 29%	29% - 40%	40% - 50%	50% - 59%	59% - 67%	67% - 75%	≥ 75%

Notching for Structural Subordination of Holding Companies

Why It Matters

A typical utility company structure consists of a holding company ("HoldCo") that owns one or more operating subsidiaries (each an "OpCo"). OpCos may be regulated utilities or non-utility companies. A HoldCo typically has no operations – its assets are mostly limited to its equity interests in subsidiaries, and potentially other investments in subsidiaries that are structured as advances, debt, or even hybrid securities.

Most HoldCos present their financial statements on a consolidated basis that blurs legal considerations about priority of creditors based on the legal structure of the family, and grid scoring is thus based on consolidated ratios. However, HoldCo creditors typically have a secondary claim on the group's cash flows and assets after OpCo creditors. We refer to this as structural subordination, because it is the corporate legal structure, rather than specific subordination provisions, that causes creditors at each of the utility and non-utility subsidiaries to have a more direct claim on the cash flows and assets of their respective OpCo obligors. By contrast, the debt of the HoldCo is typically serviced primarily by dividends that are up-

streamed by the OpCos¹². Under normal circumstances, these dividends are made from net income, after payment of the OpCo's interest and preferred dividends. In most non-financial corporate sectors where cash often moves freely between the entities in a single issuer family, this distinction may have less of an impact. However, in the regulated utility sector, barriers to movement of cash among companies in the corporate family can be much more restrictive, depending on the regulatory framework. These barriers can lead to significantly different probabilities of default for HoldCos and OpCos. Structural subordination also affects loss given default. Under most default¹³¹⁰ scenarios, an OpCo's creditors will be satisfied from the value residing at that OpCo before any of the OpCo's assets can be used to satisfy claims of the HoldCo's creditors. The prevalence of debt issuance at the OpCo level is another reason that structural subordination is usually a more serious concern in the utility sector than for investment grade issuers in other non-financial corporate sectors.

The grids for factors 1-4 are primarily oriented to OpCos (and to some degree for HoldCos with minimal current structural subordination; for example, there is no current structural subordination to debt at the operating company if all of the utility family's debt and preferred stock is issued at the HoldCo level, although there is structural subordination to other liabilities at the OpCo level). The additional risk from structural subordination is addressed via a notching adjustment to bring grid outcomes (on average) closer to the actual ratings of HoldCos.

How We Assess It

Grid-indicated ratings of holding companies may be notched down based on structural subordination. The risk factors and mitigants that impact structural subordination are varied and can be present in different combinations, such that a formulaic approach is not practical and case-by-case analyst judgment of the interaction of all pertinent factors that may increase or decrease its importance to the credit risk of an issuer are essential.

Some of the potentially pertinent factors that could increase the degree and/or impact of structural subordination include the following:

- » Regulatory or other barriers to cash movement from OpCos to HoldCo
- » Specific ring-fencing provisions
- » Strict financial covenants at the OpCo level
- » Higher leverage at the OpCo level
- » Higher leverage at the HoldCo level¹⁴
- » Significant dividend limitations or potential limitations at an important OpCo
- » HoldCo exposure to subsidiaries with high business risk or volatile cash flows

Strained liquidity at the HoldCo level

- » The group's investment program is primarily in businesses that are higher risk or new to the group

Some of the potentially mitigating factors that could decrease the degree and/or impact of structural subordination include the following:

¹² The HoldCo and OpCo may also have intercompany agreements, including tax sharing agreements, that can be another source of cash to the HoldCo.

¹³ Actual priority in a default scenario will be determined by many factors, including the corporate and bankruptcy laws of the jurisdiction, the asset value of each OpCo, specific financing terms, inter-relationships among members of the family, etc.

¹⁴ While higher leverage at the HoldCo does not increase structural subordination per se, it exacerbates the impact of any structural subordination that exists

- » Substantial diversity in cash flows from a variety of utility OpCos
- » Meaningful dividends to HoldCo from unlevered utility OpCos
- » Dependable, meaningful dividends to HoldCo from non-utility OpCos
- » The group's investment program is primarily in strong utility businesses
- » Inter-company guarantees - however, in many jurisdictions the value of an upstream guarantee may be limited by certain factors, including by the value that the OpCo received in exchange for granting the guarantee

Notching for structural subordination within the grid may range from 0 to negative 3 notches. Instances of extreme structural subordination are relatively rare, so the grid convention does not accommodate wider differences, although in the instances where we believe it is present, actual ratings do reflect the full impact of structural subordination.

A related issue is the relationship of ratings within a utility family with multiple operating companies, and sometimes intermediate holding companies. Some of the key issues are the same, such as the relative amounts of debt at the holding company level compared to the operating company level (or at one OpCo relative to another), and the degree to which operating companies have credit insulation due to regulation or other protective factors. Appendix B has additional insights on ratings within a utility family.

Rating Methodology Assumptions, Limitations, and Other Rating Considerations

The grid in this rating methodology represents a decision to favor simplicity that enhances transparency and to avoid greater complexity that might enable the grid to map more closely to actual ratings. Accordingly, the four rating factors and the notching factor in the grid do not constitute an exhaustive treatment of all of the considerations that are important for ratings of companies in the regulated electric and gas utility sector. In addition, our ratings incorporate expectations for future performance, while the financial information that is used in the grid in this document is mainly historical. In some cases, our expectations for future performance may be informed by confidential information that we can't disclose. In other cases, we estimate future results based upon past performance, industry trends, competitor actions or other factors. In either case, predicting the future is subject to the risk of substantial inaccuracy.

Assumptions that may cause our forward-looking expectations to be incorrect include unanticipated changes in any of the following factors: the macroeconomic environment and general financial market conditions, industry competition, disruptive technology, regulatory and legal actions.

Key rating assumptions that apply in this sector include our view that sovereign credit risk is strongly correlated with that of other domestic issuers, that legal priority of claim affects average recovery on different classes of debt, sufficiently to generally warrant differences in ratings for different debt classes of the same issuer, and the assumption that lack of access to liquidity is a strong driver of credit risk.

In choosing metrics for this rating methodology grid, we did not explicitly include certain important factors that are common to all companies in any industry such as the quality and experience of management, assessments of corporate governance and the quality of financial reporting and information disclosure. Therefore ranking these factors by rating category in a grid would in some cases suggest too much precision in the relative ranking of particular issuers against all other issuers that are rated in various industry sectors.

Ratings may include additional factors that are difficult to quantify or that have a meaningful effect in differentiating credit quality only in some cases, but not all. Such factors include financial controls, exposure to uncertain licensing regimes and possible government interference in some countries.

Regulatory, litigation, liquidity, technology and reputational risk as well as changes to consumer and business spending patterns, competitor strategies and macroeconomic trends also affect ratings. While these are important considerations, it is not possible precisely to express these in the rating methodology grid without making the grid excessively complex and significantly less transparent.

Ratings may also reflect circumstances in which the weighting of a particular factor will be substantially different from the weighting suggested by the grid.

This variation in weighting rating considerations can also apply to factors that we choose not to represent in the grid. For example, liquidity is a consideration frequently critical to ratings and which may not, in other circumstances, have a substantial impact in discriminating between two issuers with a similar credit profile. As an example of the limitations, ratings can be heavily affected by extremely weak liquidity that magnifies default risk. However, two identical companies might be rated the same if their only differentiating feature is that one has a good liquidity position while the other has an extremely good liquidity position.

Other Rating Considerations

We consider other factors in addition to those discussed in this report, but in most cases understanding the considerations discussed herein should enable a good approximation of our view on the credit quality of companies in the regulated electric and gas utilities sector. Ratings consider our assessment of the quality of management, corporate governance, financial controls, liquidity management, event risk and seasonality. The analysis of these factors remains an integral part of our rating process.

Liquidity and Access to Capital Markets

Liquidity analysis is a key element in the financial analysis of electric and gas utilities, and it encompasses a company's ability to generate cash from internal sources as well as the availability of external sources of financing to supplement these internal sources. Liquidity and access to financing are of particular importance in this sector. Utility assets can often have a very long useful life—30, 40 or even 60 years is not uncommon, as well as high price tags. Partly as a result of construction cycles, the utility sector has experienced prolonged periods of negative free cash flow—essentially, the sum of its dividends and its capital expenditures for maintenance and growth of its infrastructure frequently exceeds cash from operations, such that a portion of capital expenditures must routinely be debt financed. Utilities are among the largest debt issuers in the corporate universe and typically require consistent access to the capital markets to assure adequate sources of funding and to maintain financial flexibility. Substantial portions of capex are non-discretionary (for example, maintenance, adding customers to the network, or meeting environmental mandates); however, utilities were swift to cut or defer discretionary spending during the 2007-2009 recession. Dividends represent a quasi-permanent outlay, since utilities typically only rarely will cut their dividend. Liquidity is also important to meet maturing obligations, which often occur in large chunks, and to meet collateral calls under any hedging agreements.

Due to the importance of liquidity, incorporating it as a factor with a fixed weighting in the grid would suggest an importance level that is often far different from the actual weight in the rating. In normal circumstances most companies in the sector have good access to liquidity. The industry generally requires, and for the most part has, large, syndicated, multi-year committed credit facilities. In addition, utilities have demonstrated strong access to capital markets, even under difficult conditions. As a result, liquidity

generally has not been an issue for most utilities and a utility with very strong liquidity may not warrant a rating distinction compared to a utility with strong liquidity. However, when there is weakness in liquidity or liquidity management, it can be the dominant consideration for ratings.

Our assessment of liquidity for regulated utilities involves an analysis of total sources and uses of cash over the next 12 months or more, as is done for all corporates. Using our financial projections of the utility and our analysis of its available sources of liquidity (including an assessment of the quality and reliability of alternate liquidity such as committed credit facilities), we evaluate how its projected sources of cash (cash from operations, cash on hand and existing committed multi-year credit facilities) compare to its projected uses (including all or most capital expenditures, dividends, maturities of short and long-term debt, our projection of potential liquidity calls on financial hedges, and important issuer-specific items such as special tax payments). We assume no access to capital markets or additional liquidity sources, no renewal of existing credit facilities, and no cut to dividends. We examine a company's liquidity profile under this scenario, its ability to make adjustments to improve its liquidity position, and any dependence on liquidity sources with lower quality and reliability.

Management Quality and Financial Policy

The quality of management is an important factor supporting the credit strength of a regulated utility or utility holding company. Assessing the execution of business plans over time can be helpful in assessing management's business strategies, policies, and philosophies and in evaluating management performance relative to performance of competitors and our projections. A record of consistency provides us with insight into management's likely future performance in stressed situations and can be an indicator of management's tendency to depart significantly from its stated plans and guidelines.

We also assess financial policy (including dividend policy and planned capital expenditures) and how management balances the potentially competing interests of shareholders, fixed income investors and other stakeholders. Dividends and discretionary capital expenditures are the two primary components over which management has the greatest control in the short term. For holding companies, we consider the extent to which management is willing to stretch its payout ratio (through aggressive increases or delays in needed decreases) in order to satisfy common shareholders. For a utility that is a subsidiary of a parent company with several utility subsidiaries, dividends to the parent may be more volatile depending on the cash generation and cash needs of that utility, because parents typically want to assure that each utility maintains the regulatory debt/equity ratio on which its rates have been set. The effect we have observed is that utility subsidiaries often pay higher dividends when they have lower capital needs and lower dividends when they have higher capital expenditures or other cash needs. Any dividend policy that cuts into the regulatory debt/equity ratio is a material credit negative.

Size – Natural Disasters, Customer Concentration and Construction Risks

The size and scale of a regulated utility has generally not been a major determinant of its credit strength in the same way that it has been for most other industrial sectors. While size brings certain economies of scale that can somewhat affect the utility's cost structure and competitiveness, rates are more heavily impacted by costs related to fuel and fixed assets. Particularly in the US, we have not observed material differences in the success of utilities' regulatory outreach based on their size. Smaller utilities have sometimes been better able to focus their attention on meeting the expectations of a single regulator than their multi-state peers.

However, size can be a very important factor in our assessment of certain risks that impact ratings, including exposure to natural disasters, customer concentration (primarily to industrial customers in a single sector) and construction risks associated with large projects. While the grid attempts to incorporate the first two of

these into Factor 3, for some issuers these considerations may be sufficiently important that the rating reflects a greater weight for these risks. While construction projects always carry the risk of cost over-runs and delays, these risks are materially heightened for projects that are very large relative to the size of the utility.

Interaction of Utility Ratings with Government Policies and Sovereign Ratings

Compared to most industrial sectors, regulated utilities are more likely to be impacted by government actions. Credit impacts can occur directly through rate regulation, and indirectly through energy, environmental and tax policies. Government actions affect fuel prices, the mix of generating plants, the certainty and timing of revenues and costs, and the likelihood that regulated utilities will experience financial stress. While our evolving view of the impact of such policies and the general economic and financial climate is reflected in ratings for each utility, some considerations do not lend themselves to incorporation in a simple ratings grid.¹⁵

Diversified Operations at the Utility

A small number of regulated utilities have diversified operations that are segments within the utility company, as opposed to the more common practice of housing such operations in one or more separate affiliates. In general, we will seek to evaluate the other businesses that are material in accordance with the appropriate methodology and the rating will reflect considerations from such methodologies. There may be analytical limitations in evaluating the utility and non-utility businesses when segment financial results are not fully broken out and these may be addressed through estimation based on available information. Since regulated utilities are a relatively low risk business compared to other corporate sectors, in most cases diversified non-utility operations increase the business risk profile of a utility. Reflecting this tendency, we note that assigned ratings are typically lower than grid- indicated ratings for such companies.

Event Risk

We also recognize the possibility that an unexpected event could cause a sudden and sharp decline in an issuer's fundamental creditworthiness. Typical special events include mergers and acquisitions, asset sales, spin-offs, capital restructuring programs, litigation and shareholder distributions.

Corporate Governance

Among the areas of focus in corporate governance are audit committee financial expertise, the incentives created by executive compensation packages, related party transactions, interactions with outside auditors, and ownership structure.

Investment and Acquisition Strategy

In our credit assessment we take into consideration management's investment strategy. Investment strategy is benchmarked with that of the other companies in the rated universe to further verify its consistency. Acquisitions can strengthen a company's business. Our assessment of a company's tolerance for acquisitions at a given rating level takes into consideration (1) management's risk appetite, including the likelihood of further acquisitions over the medium term; (2) share buy-back activity; (3) the company's commitment to specific leverage targets; and (4) the volatility of the underlying businesses, as well as that of the business acquired. Ratings can often hold after acquisitions even if leverage temporarily climbs above normally acceptable ranges. However, this depends on (1) the strategic fit; (2) pro-forma capitalization/leverage

¹⁵ See also the cross-sector methodology "How Sovereign Credit Quality May Affect Other Ratings." A link to this and other sector and cross-sector credit rating methodologies can be found in the Related Research section of this report.

following an acquisition; and (3) our confidence that credit metrics will be restored in a relatively short timeframe.

Financial Controls

We rely on the accuracy of audited financial statements to assign and monitor ratings in this sector. Such accuracy is only possible when companies have sufficient internal controls, including centralized operations, the proper tone at the top and consistency in accounting policies and procedures.

Weaknesses in the overall financial reporting processes, financial statement restatements or delays in regulatory filings can be indications of a potential breakdown in internal controls.

Appendix A: Regulated Electric and Gas Utilities Methodology Factor Grid

Factor 1a: Legislative and Judicial Underpinnings of the Regulatory Framework (12.5%)

Aaa	Aa	A	Baa
<p>Utility regulation occurs under a fully developed framework that is national in scope based on legislation that provides the utility a nearly absolute monopoly (see note 1) within its service territory, an unquestioned assurance that rates will be set in a manner that will permit the utility to make and recover all necessary investments, an extremely high degree of clarity as to the manner in which utilities will be regulated and prescriptive methods and procedures for setting rates. Existing utility law is comprehensive and supportive such that changes in legislation are not expected to be necessary, or any changes that have occurred have been strongly supportive of utilities credit quality in general and sufficiently forward-looking so as to address problems before they occurred.</p> <p>There is an independent judiciary that can arbitrate disagreements between the regulator and the utility should they occur, including access to national courts, very strong judicial precedent in the interpretation of utility laws, and a strong rule of law. We expect these conditions to continue.</p>	<p>Utility regulation occurs under a fully developed national, state or provincial framework based on legislation that provides the utility an extremely strong monopoly (see note 1) within its service territory, a strong assurance, subject to limited review, that rates will be set in a manner that will permit the utility to make and recover all necessary investments, a very high degree of clarity as to the manner in which utilities will be regulated and reasonably prescriptive methods and procedures for setting rates. If there have been changes in utility legislation, they have been timely and clearly credit supportive of the issuer in a manner that shows the utility has had a strong voice in the process. There is an independent judiciary that can arbitrate disagreements between the regulator and the utility, should they occur including access to national courts, strong judicial precedent in the interpretation of utility laws, and a strong rule of law. We expect these conditions to continue.</p>	<p>Utility regulation occurs under a well developed national, state or provincial framework based on legislation that provides the utility a very strong monopoly (see note 1) within its service territory, an assurance, subject to reasonable prudence requirements, that rates will be set in a manner that will permit the utility to make and recover all necessary investments, a high degree of clarity as to the manner in which utilities will be regulated, and overall guidance for methods and procedures for setting rates. If there have been changes in utility legislation, they have been mostly timely and on the whole credit supportive for the issuer, and the utility has had a clear voice in the legislative process. There is an independent judiciary that can arbitrate disagreements between the regulator and the utility, should they occur, including access to national courts, clear judicial precedent in the interpretation of utility law, and a strong rule of law. We expect these conditions to continue.</p>	<p>Utility regulation occurs (i) under a national, state, provincial or municipal framework based on legislation that provides the utility a strong monopoly within its service territory that may have some exceptions such as greater self-generation (see note 1), a general assurance that, subject to prudence requirements that are mostly reasonable, rates will be set in a manner that will permit the utility to make and recover all necessary investments, reasonable clarity as to the manner in which utilities will be regulated and overall guidance for methods and procedures for setting rates; or (ii) under a new framework where independent and transparent regulation exists in other sectors. If there have been changes in utility legislation, they have been credit supportive or at least balanced for the issuer but potentially less timely, and the utility had a voice in the legislative process. There is either (i) an independent judiciary that can arbitrate disagreements between the regulator and the utility, including access to courts at least at the state or provincial level, reasonably clear judicial precedent in the interpretation of utility laws, and a generally strong rule of law; or</p> <p>(ii) regulation has been applied (under a well developed framework) in a manner such that redress to an independent arbiter has not been required. We expect these conditions to continue.</p>
Baa	B	Caa	
<p>Utility regulation occurs (i) under a national, state, provincial or municipal framework based on legislation or government decree that provides the utility a monopoly within its service territory that is generally strong but may have a greater level of exceptions (see note 1), and that, subject to prudence requirements which may be stringent, provides a general assurance (with somewhat less certainty) that rates will be set in a manner that will permit the utility to make and recover necessary investments; or (ii) under a new framework where the jurisdiction has a history of less independent and transparent regulation in other sectors. Either: (i) the judiciary that can arbitrate disagreements between the regulator and the utility may not have clear authority or may not be fully independent of the regulator or other political pressure, but there is a reasonably strong rule of law; or (ii) where there is no independent arbiter, the regulation has mostly been applied in a manner such redress has not been required. We expect these conditions to continue.</p>	<p>Utility regulation occurs (i) under a national, state, provincial or municipal framework based on legislation or government decree that provides the utility monopoly within its service territory that is reasonably strong but may have important exceptions, and that, subject to prudence requirements which may be stringent or at times arbitrary, provides more limited or less certain assurance that rates will be set in a manner that will permit the utility to make and recover necessary investments; or (ii) under a new framework where we would expect less independent and transparent regulation, based either on the regulator's history in other sectors or other factors. The judiciary that can arbitrate disagreements between the regulator and the utility may not have clear authority or may not be fully independent of the regulator or other political pressure, but there is a reasonably strong rule of law. Alternately, where there is no independent arbiter, the regulation has been applied in a manner that often requires some redress adding more uncertainty to the regulatory framework.</p> <p>There may be a periodic risk of creditor-unfriendly government intervention in utility markets or rate-setting.</p>	<p>Utility regulation occurs (i) under a national, state, provincial or municipal framework based on legislation or government decree that provides the utility a monopoly within its service territory, but with little assurance that rates will be set in a manner that will permit the utility to make and recover necessary investments; or (ii) under a new framework where we would expect unpredictable or adverse regulation, based either on the jurisdiction's history of in other sectors or other factors. The judiciary that can arbitrate disagreements between the regulator and the utility may not have clear authority or is viewed as not being fully independent of the regulator or other political pressure. Alternately, there may be no redress to an effective independent arbiter. The ability of the utility to enforce its monopoly or prevent uncompensated usage of its system may be limited. There may be a risk of creditor-unfriendly nationalization or other significant intervention in utility markets or rate-setting.</p>	

Note 1: The strength of the monopoly refers to the legal, regulatory and practical obstacles for customers in the utility's territory to obtain service from another provider. Examples of a weakening of the monopoly would include the ability of a city or large user to leave the utility system to set up their own system, the extent to which self-generation is permitted (e.g. cogeneration) and/or encouraged (e.g., net metering, DSM generation). At the lower end of the ratings spectrum, the utility's monopoly may be challenged by pervasive theft and unauthorized use. Since utilities are generally presumed to be monopolies, a strong monopoly position in itself is not sufficient for a strong score in this sub-factor, but a weakening of the monopoly can lower the score.

* 10% weight for issuers that lack generation **0% weight for issuers that lack generation

Factor 1b: Consistency and Predictability of Regulation (12.5%)

Aaa	Aa	A	Baa
<p>The issuer's interaction with the regulator has led to a strong, lengthy track record of predictable, consistent and favorable decisions. The regulator is highly credit supportive of the issuer and utilities in general. We expect these conditions to continue.</p>	<p>The issuer's interaction with the regulator has led to a considerable track record of predominantly predictable and consistent decisions. The regulator is mostly credit supportive of utilities in general and in almost all instances has been highly credit supportive of the issuer. We expect these conditions to continue.</p>	<p>The issuer's interaction with the regulator has led to a track record of largely predictable and consistent decisions. The regulator may be somewhat less credit supportive of utilities in general, but has been quite credit supportive of the issuer in most circumstances. We expect these conditions to continue.</p>	<p>The issuer's interaction with the regulator has led to an adequate track record. The regulator is generally consistent and predictable, but there may be some evidence of inconsistency or unpredictability from time to time, or decisions may at times be politically charged. However, instances of less credit supportive decisions are based on reasonable application of existing rules and statutes and are not overly punitive. We expect these conditions to continue.</p>
Ba	B	Caa	
<p>We expect that regulatory decisions will demonstrate considerable inconsistency or unpredictability or that decisions will be politically charged, based either on the issuer's track record of interaction with regulators or other governing bodies, or our view that decisions will move in this direction. The regulator may have a history of less credit supportive regulatory decisions with respect to the issuer, but we expect that the issuer will be able to obtain support when it encounters financial stress, with some potentially material delays. The regulator's authority may be eroded at times by legislative or political action. The regulator may not follow the framework for</p>	<p>We expect that regulatory decisions will be largely unpredictable or even somewhat arbitrary, based either on the issuer's track record of interaction with regulators or other governing bodies, or our view that decisions will move in this direction. However, we expect that the issuer will ultimately be able to obtain support when it encounters financial stress, albeit with material or more extended delays. Alternately, the regulator is untested, lacks a consistent track record, or is undergoing substantial change. The regulator's authority may be eroded on frequent occasions by legislative or political action. The regulator may more frequently ignore the framework in a manner detrimental to the issuer.</p>	<p>We expect that regulatory decisions will be highly unpredictable and frequently adverse, based either on the issuer's track record of interaction with regulators or other governing bodies, or our view that decisions will move in this direction. Alternately, decisions may have credit supportive aspects, but may often be unenforceable. The regulator's authority may have been seriously eroded by legislative or political action. The regulator may consistently ignore the framework to the detriment of the issuer.</p>	

Factor 2a: Timeliness of Recovery of Operating and Capital Costs (12.5%)

Aaa	Aa	A	Baa
<p>Tariff formulas and automatic cost recovery mechanisms provide full and highly timely recovery of all operating costs and essentially contemporaneous return on all incremental capital investments, with statutory provisions in place to preclude the possibility of challenges to rate increases or cost recovery mechanisms. By statute and by practice, general rate cases are efficient, focused on an impartial review, quick, and permit inclusion of fully forward-looking costs.</p>	<p>Tariff formulas and automatic cost recovery mechanisms provide full and highly timely recovery of all operating costs and essentially contemporaneous or near-contemporaneous return on most incremental capital investments, with minimal challenges by regulators to companies' cost assumptions. By statute and by practice, general rate cases are efficient, focused on an impartial review, of a very reasonable duration before non-appealable interim rates can be collected, and primarily permit inclusion of forward-looking costs.</p>	<p>Automatic cost recovery mechanisms provide full and reasonably timely recovery of fuel, purchased power and all other highly variable operating expenses. Material capital investments may be made under tariff formulas or other rate-making permitting reasonably contemporaneous returns, or may be submitted under other types of filings that provide recovery of cost of capital with minimal delays. Instances of regulatory challenges that delay rate increases or cost recovery are generally related to large, unexpected increases in sizeable construction projects. By statute or by practice, general rate cases are reasonably efficient, primarily focused on an impartial review, of a reasonable duration before rates (either permanent or non-refundable interim rates) can be collected, and permit inclusion of important forward-looking costs.</p>	<p>Fuel, purchased power and all other highly variable expenses are generally recovered through mechanisms incorporating delays of less than one year, although some rapid increases in costs may be delayed longer where such deferrals do not place financial stress on the utility. Incremental capital investments may be recovered primarily through general rate cases with moderate lag, with some through tariff formulas. Alternately, there may be formula rates that are untested or unclear.</p> <p>Potentially greater tendency for delays due to regulatory intervention, although this will generally be limited to rates related to large capital projects or rapid increases in operating costs.</p>
Ba	B	Caa	
<p>There is an expectation that fuel, purchased power or other highly variable expenses will eventually be recovered with delays that will not place material financial stress on the utility, but there may be some evidence of an unwillingness by regulators to make timely rate changes to address volatility in fuel, or purchased power, or other market-sensitive expenses. Recovery of costs related to capital investments may be subject to delays that are somewhat lengthy, but not so pervasive as to be expected to discourage important investments.</p>	<p>The expectation that fuel, purchased power or other highly variable expenses will be recovered may be subject to material delays due to second-guessing of spending decisions by regulators or due to political intervention. Recovery of costs related to capital investments may be subject to delays that are material to the issuer, or may be likely to discourage some important investment.</p>	<p>The expectation that fuel, purchased power or other highly variable expenses will be recovered may be subject to extensive delays due to second-guessing of spending decisions by regulators or due to political intervention. Recovery of costs related to capital investments may be uncertain, subject to delays that are extensive, or that may be likely to discourage even necessary investment.</p>	

Note: Tariff formulas include formula rate plans as well as trackers and riders related to capital investment.

Factor 2b: Sufficiency of Rates and Returns (12.5%)

Aaa	Aa	A	Baa
<p>Sufficiency of rates to cover costs and attract capital is (and will continue to be) unquestioned.</p>	<p>Rates are (and we expect will continue to be) set at a level that permits full cost recovery and a fair return on all investments, with minimal challenges by regulators to companies' cost assumptions. This will translate to returns (measured in relation to equity, total assets, rate base or regulatory asset value, as applicable) that are strong relative to global peers.</p>	<p>Rates are (and we expect will continue to be) set at a level that generally provides full cost recovery and a fair return on investments, with limited instances of regulatory challenges and disallowances.</p> <p>In general, this will translate to returns (measured in relation to equity, total assets, rate base or regulatory asset value, as applicable) that are generally above average relative to global peers, but may at times be average.</p>	<p>Rates are (and we expect will continue to be) set at a level that generally provides full operating cost recovery and a mostly fair return on investments, but there may be somewhat more instances of regulatory challenges and disallowances, although ultimate rate outcomes are sufficient to attract capital without difficulty. In general, this will translate to returns (measured in relation to equity, total assets, rate base or regulatory asset value, as applicable) that are average relative to global peers, but may at times be somewhat below average.</p>
Baa	B	Caa	
<p>Rates are (and we expect will continue to be) set at a level that generally provides recovery of most operating costs but return on investments may be less predictable, and there may be decidedly more instances of regulatory challenges and disallowances, but ultimate rate outcomes are generally sufficient to attract capital. In general, this will translate to returns (measured in relation to equity, total assets, rate base or regulatory asset value, as applicable) that are generally below average relative to global peers, or where allowed returns are average but difficult to earn.</p> <p>Alternately, the tariff formula may not take into account all cost components and/or remuneration of investments may be unclear or at times unfavorable.</p>	<p>We expect rates will be set at a level that at times fails to provide recovery of costs other than cash costs, and regulators may engage in somewhat arbitrary second-guessing of spending decisions or deny rate increases related to funding ongoing operations based much more on politics than on prudence reviews. Return on investments may be set at levels that discourage investment. We expect that rate outcomes may be difficult or uncertain, negatively affecting continued access to capital.</p> <p>Alternately, the tariff formula may fail to take into account significant cost components other than cash costs, and/or remuneration of investments may be generally unfavorable.</p>	<p>We expect rates will be set at a level that often fails to provide recovery of material costs, and recovery of cash costs may also be at risk. Regulators may engage in more arbitrary second-guessing of spending decisions or deny rate increases related to funding ongoing operations based primarily on politics. Return on investments may be set at levels that discourage necessary maintenance investment. We expect that rate outcomes may often be punitive or highly uncertain, with a markedly negative impact on access to capital. Alternately, the tariff formula may fail to take into account significant cash cost components, and/or remuneration of investments may be primarily unfavorable.</p>	

Factor 3: Diversification (10%)

Weighting 10%	Sub-Factor Weighting	Aaa	Aa	A	Baa
Market Position	5% *	A very high degree of multinational and regional diversity in terms of regulatory regimes and/or service territory economies.	Material operations in three or more nations or substantial geographic regions providing very good diversity of regulatory regimes and/or service territory economies.	Material operations in two to three nations, states, provinces or regions that provide good diversity of regulatory regimes and service territory economies. Alternately, operates within a single regulatory regime with low volatility, and the service territory economy is robust, has a very high degree of diversity and has demonstrated resilience in economic cycles.	May operate under a single regulatory regime viewed as having low volatility, or where multiple regulatory regimes are not viewed as providing much diversity. The service territory economy may have some concentration and cyclicality, but is sufficiently resilient that it can absorb reasonably foreseeable increases in utility rates.
Generation and Fuel Diversity	5% **	A high degree of diversity in terms of generation and/or fuel sources such that the utility and rate-payers are well insulated from commodity price changes, no generation concentration, and very low exposures to Challenged or Threatened Sources (see definitions below).	Very good diversification in terms of generation and/or fuel sources such that the utility and rate-payers are affected only minimally by commodity price changes, little generation concentration, and low exposures to Challenged or Threatened Sources.	Good diversification in terms of generation and/or fuel sources such that the utility and rate-payers have only modest exposure to commodity price changes; however, may have some concentration in a source that is neither Challenged nor Threatened. Exposure to Threatened Sources is low. While there may be some exposure to Challenged Sources, it is not a cause for concern.	Adequate diversification in terms of generation and/or fuel sources such that the utility and rate-payers have moderate exposure to commodity price changes; however, may have some concentration in a source that is Challenged. Exposure to Threatened Sources is moderate, while exposure to Challenged Sources is manageable.
	Sub-Factor Weighting	Ba	B	Caa	Definitions
Market Position	5% *	Operates in a market area with somewhat greater concentration and cyclicality in the service territory economy and/or exposure to storms and other natural disasters, and thus less resilience to absorbing reasonably foreseeable increases in utility rates. May show somewhat greater volatility in the regulatory regime(s).	Operates in a limited market area with material concentration and more severe cyclicality in service territory economy such that cycles are of materially longer duration or reasonably foreseeable increases in utility rates could present a material challenge to the economy. Service territory may have geographic concentration that limits its resilience to storms and other natural disasters, or may be an emerging market. May show decided volatility in the regulatory regime(s).	Operates in a concentrated economic service territory with pronounced concentration, macroeconomic risk factors, and/or exposure to natural disasters.	Challenged Sources are generation plants that face higher but not insurmountable economic hurdles resulting from penalties or taxes on their operation, or from environmental upgrades that are required or likely to be required. Some examples are carbon-emitting plants that incur carbon taxes, plants that must buy emissions credits to operate, and plants that must install environmental equipment to continue to operate, in each where the taxes/credits/upgrades are sufficient to have a material impact on those plants' competitiveness relative to other generation types or on the utility's rates, but where the impact is not so severe as to be likely require plant closure.
Generation and Fuel Diversity	5% **	Modest diversification in generation and/or fuel sources such that the utility or rate-payers have greater exposure to commodity price changes. Exposure to Challenged and Threatened Sources may be more pronounced, but the utility will be able to access alternative sources without undue financial stress.	Operates with little diversification in generation and/or fuel sources such that the utility or rate-payers have high exposure to commodity price changes. Exposure to Challenged and Threatened Sources may be high, and accessing alternate sources may be challenging and cause more financial stress, but ultimately feasible.	Operates with high concentration in generation and/or fuel sources such that the utility or rate-payers have exposure to commodity price shocks. Exposure to Challenged and Threatened Sources may be very high, and accessing alternate sources may be highly uncertain.	Threatened Sources are generation plants that are not currently able to operate due to major unplanned outages or issues with licensing or other regulatory compliance, and plants that are highly likely to be required to de-activate, whether due to the effectiveness of currently existing or expected rules and regulations or due to economic challenges. Some recent examples would include coal fired plants in the US that are not economic to retro-fit to meet mercury and air toxics standards, plants that cannot meet the effective date of those standards, nuclear plants in Japan that have not been licensed to re-start after the Fukushima Dai-ichi accident, and nuclear plants that are required to be phased out within 10 years (as is the case in some European countries).

* 10% weight for issuers that lack generation **0% weight for issuers that lack generation

Factor 4: Financial Strength

Weighting 40%	Sub-Factor Weighting		Aaa	Aa	A	Baa	Ba	B	Caa
CFO pre-WC + Interest / Interest	7.5%		≥ 8x	6x - 8x	4.5x - 6x	3x - 4.5x	2x - 3x	1x - 2x	< 1x
		Standard Grid	≥ 40%	30% - 40%	22% - 30%	13% - 22%	5% - 13%	1% - 5%	< 1%
CFO pre-WC / Debt	15%	Low Business Risk Grid	≥ 38%	27% - 38%	19% - 27%	11% - 19%	5% - 11%	1% - 5%	< 1%
		Standard Grid	≥ 35%	25% - 35%	17% - 25%	9% - 17%	0% - 9%	(5%) - 0%	< (5%)
CFO pre-WC - Dividends / Debt	10%	Low Business Risk Grid	≥ 34%	23% - 34%	15% - 23%	7% - 15%	0% - 7%	(5%) - 0%	< (5%)
		Standard Grid	< 25%	25% - 35%	35% - 45%	45% - 55%	55% - 65%	65% - 75%	≥ 75%
Debt / Capitalization	7.5%	Low Business Risk Grid	< 29%	29% - 40%	40% - 50%	50% - 59%	59% - 67%	67% - 75%	≥ 75%

Appendix B: Approach to Ratings within a Utility Family

Typical Composition of a Utility Family

A typical utility company structure consists of a holding company ("HoldCo") that owns one or more operating subsidiaries (each an "OpCo"). OpCos may be regulated utilities or non-utility companies. Financing of these entities varies by region, in part due to the regulatory framework. A HoldCo typically has no operations – its assets are mostly limited to its equity interests in subsidiaries, and potentially other investments in subsidiaries or minority interests in other companies. However, in certain cases there may be material operations at the HoldCo level. Financing can occur primarily at the OpCo level, primarily at the HoldCo level, or at both HoldCo and OpCos in varying proportions. When a HoldCo has multiple utility OpCos, they will often be located in different regulatory jurisdictions. A HoldCo may have both levered and unlevered OpCos.

General Approach to a Utility Family

In our analysis, we generally consider the stand-alone credit profile of an OpCo and the credit profile of its ultimate parent HoldCo (and any intermediate HoldCos), as well as the profile of the family as a whole, while acknowledging that these elements can have cross-family credit implications in varying degrees, principally based on the regulatory framework of the OpCos and the financing model (which has often developed in response to the regulatory framework).

In addition to considering individual OpCos under this (or another applicable) methodology, we typically¹⁶ approach a HoldCo rating by assessing the qualitative and quantitative factors in this methodology for the consolidated entity and each of its utility subsidiaries. Ratings of individual entities in the issuer family may be pulled up or down based on the interrelationships among the companies in the family and their relative credit strength.

In considering how closely aligned or how differentiated ratings should be among members of a utility family, we assess a variety of factors, including:

- » Regulatory or other barriers to cash movement among OpCos and from OpCos to HoldCo
- » Differentiation of the regulatory frameworks of the various OpCos
- » Specific ring-fencing provisions at particular OpCos
- » Financing arrangements – for instance, each OpCo may have its own financing arrangements, or the sole liquidity facility may be at the parent; there may be a liquidity pool among certain but not all members of the family; certain members of the family may better be able to withstand a temporary hiatus of external liquidity or access to capital markets
- » Financial covenants and the extent to which an Event of Default by one OpCo limits availability of liquidity to another member of the family
- » The extent to which higher leverage at one entity increases default risk for other members of the family
- » An entity's exposure to or insulation from an affiliate with high business risk
- » Structural features or other limitations in financing agreements that restrict movements of funds, investments, provision of guarantees or collateral, etc.

¹⁶ See paragraph at the end of this section for approaches to Hybrid HoldCos.

» The relative size and financial significance of any particular OpCo to the HoldCo and the family
See also those factors noted in Notching for Structural Subordination of Holding Companies.

Our approach to a Hybrid HoldCo (see definition in Appendix C) depends in part on the importance of its non-utility operations and the availability of information on individual businesses. If the businesses are material and their individual results are fully broken out in financial disclosures, we may be able to assess each material business individually by reference to the relevant Moody's methodologies to arrive at a composite assessment for the combined businesses. If non-utility operations are material but are not broken out in financial disclosures, we may look at the consolidated entity under more than one methodology. When non-utility operations are less material but could still impact the overall credit profile, the difference in business risks and our estimation of their impact on financial performance will be qualitatively incorporated in the rating.

Higher Barriers to Cash Movement with Financing Predominantly at the OpCos

Where higher barriers to cash movement exist on an OpCo or OpCos due the regulatory framework or debt structural features, ratings among family members are likely to be more differentiated. For instance, for utility families with OpCos in the US, where regulatory barriers to free cash movement are relatively high, greater importance is generally placed on the stand-alone credit profile of the OpCo.

Our observation of major defaults and bankruptcies in the US sector generally corroborates a view that regulation creates a degree of separateness of default probability. For instance, Portland General Electric (Baa1 RUR-up) did not default on its securities, even though its then-parent Enron Corp. entered bankruptcy proceedings. When Entergy New Orleans (Ba2 stable) entered into bankruptcy, the ratings of its affiliates and parent Entergy Corporation (Baa3 stable) were unaffected. PG&E Corporation (Baa1 stable) did not enter bankruptcy proceedings despite bankruptcies of two major subsidiaries - Pacific Gas & Electric Company (A3 stable) in 2001 and National Energy Group in 2003.

The degree of separateness may be greater or smaller and is assessed on a case by case basis, because situational considerations are important. One area we consider is financing arrangements. For instance, there will tend to be greater differentiation if each member of a family has its own bank credit facilities and difficulties experienced by one entity would not trigger events of default for other entities. While the existence of a money pool might appear to reduce separateness between the participants, there may be regulatory barriers within money pools that preserve separateness. For instance, non-utility entities may have access to the pool only as a borrower, only as a lender, and even the utility entities may have regulatory limits on their borrowings from the pool or their credit exposures to other pool members. If the only source of external liquidity for a money pool is borrowings by the HoldCo under its bank credit facilities, there would be less separateness, especially if the utilities were expected to depend on that liquidity source. However, the ability of an OpCo to finance itself by accessing capital markets must also be considered. Inter-company tax agreements can also have an impact on our view of how separate the risks of default are.

For a HoldCo, the greater the regulatory, economic, and geographic diversity of its OpCos, the greater its potential separation from the default probability of any individual subsidiary. Conversely, if a HoldCo's actions have made it clear that the HoldCo will provide support for an OpCo encountering some financial stress (for instance, due to delays and/or cost over-runs on a major construction project), we would be likely to perceive less separateness.

Even where high barriers to cash movement exist, onerous leverage at a parent company may not only give rise to greater notching for structural subordination at the parent, it may also pressure an OpCo's rating, especially when there is a clear dependence on an OpCo's cash flow to service parent debt.

While most of the regulatory barriers to cash movement are very real, they are not absolute. Furthermore, while it is not usually in the interest of an insolvent parent or its creditors to bring an operating utility into a bankruptcy proceeding, such an occurrence is not impossible.

The greatest separateness occurs where strong regulatory insulation is supplemented by effective ring-fencing provisions that fully separate the management and operations of the OpCo from the rest of the family and limit the parent's ability to cause the OpCo to commence bankruptcy proceedings as well as limiting dividends and cash transfers. Typically, most entities in US utility families (including HoldCos and OpCos) are rated within 3 notches of each other. However, it is possible for the HoldCo and OpCos in a family to have much wider notching due to the combination of regulatory imperatives and strong ring-fencing that includes a significant minority shareholder who must agree to important corporate decisions, including a voluntary bankruptcy filing.

Lower Barriers to Cash Movement with Financing Predominantly at the OpCos

Our approach to rating issuers within a family where there are lower regulatory barriers to movement of cash from OpCos to HoldCos (e.g., many parts of Asia and Europe) places greater emphasis on the credit profile of the consolidated group. Individual OpCos are considered based on their individual characteristics and their importance to the family, and their assigned ratings are typically banded closely around the consolidated credit profile of the group due to the expectation that cash will transit relatively freely among family entities.

Some utilities may have OpCos in jurisdictions where cash movement among certain family members is more restricted by the regulatory framework, while cash movement from and/or among OpCos in other jurisdictions is less restricted. In these situations, OpCos with more restrictions may vary more widely from the consolidated credit profile while those with fewer restrictions may be more tightly banded around the other entities in the corporate family group.

Appendix C: Brief Descriptions of the Types of Companies Rated Under This Methodology

The following describes the principal categories of companies rated under this methodology:

Vertically Integrated Utility: Vertically integrated utilities are regulated electric or combination utilities (see below) that own generation, distribution and (in most cases) electric transmission assets. Vertically integrated utilities are generally engaged in all aspects of the electricity business. They build power plants, procure fuel, generate power, build and maintain the electric grid that delivers power from a group of power plants to end-users (including high and low voltage lines, transformers and substations), and generally meet all of the electric needs of the customers in a specific geographic area (also called a service territory). The rates or tariffs for all of these monopolistic activities are set by the relevant regulatory authority.

Transmission & Distribution Utility: Transmission & Distribution utilities (T&Ds) typically operate in deregulated markets where generation is provided under a competitive framework. T&Ds own and operate the electric grid that transmits and/or distributes electricity within a specific state or region.

T&Ds provide electrical transportation and distribution services to carry electricity from power plants and transmission lines to retail, commercial, and industrial customers. T&Ds are typically responsible for billing customers for electric delivery and/or supply, and most have an obligation to provide a standard supply or provider-of-last-resort (POLR) service to customers that have not switched to a competitive supplier. These factors distinguish T&Ds from Networks, whose customers are retail electric suppliers and/or other electricity companies. In a smaller number of cases, T&Ds rated under this methodology may not have an obligation to provide POLR services, but are regulated in sub-sovereign jurisdictions. The rates or tariffs for these monopolistic T&D activities are set by the relevant regulatory authority.

Local Gas Distribution Company: Distribution is the final step in delivering natural gas to customers. While some large industrial, commercial, and electric generation customers receive natural gas directly from high capacity pipelines that carry gas from gas producing basins to areas where gas is consumed, most other users receive natural gas from their local gas utility, also called a local distribution company (LDC). LDCs are regulated utilities involved in the delivery of natural gas to consumers within a specific geographic area. Specifically, LDCs typically transport natural gas from delivery points located on large-diameter pipelines (that usually operate at fairly high pressure) to households and businesses through thousands of miles of small-diameter distribution pipe (that usually operate at fairly low pressure). LDCs are typically responsible for billing customers for gas delivery and/or supply, and most also have the responsibility to procure gas for at least some of their customers, although in some markets gas supply to all customers is on a competitive basis. These factors distinguish LDCs from gas networks, whose customers are retail gas suppliers and/or other natural gas companies. The rates or tariffs for these monopolistic activities are set by the relevant regulatory authority.

Integrated Gas Utility: Integrated gas regulated utilities are regulated utilities that deliver gas to all end users in a particular service territory by sourcing the commodity; operating transport infrastructure that often combines high pressure pipelines with low pressure distribution systems and, in some cases, gas storage, re-gasification or other related facilities; and performing other supply-related activities, such as customer billing and metering. The rates or tariffs for the totality of these activities are set by the relevant regulatory authority. Many integrated gas utilities are national in scope.

Combination Utility: Combination utilities are those that combine an LDC or Integrated Gas Utility with either a vertically integrated utility or a T&D utility. The rates or tariffs for these monopolistic activities are set by the relevant regulatory authority.

Regulated Generation Utility: Regulated generation utilities (Regulated Gencos) are utilities that almost exclusively have generation assets, but their activities are generally regulated like those of vertically integrated utilities. In the US, this means that the purchasers of their output (typically other investor-owned, municipal or cooperative utilities) pay a regulated rate based on the total allowed costs of the Regulated Genco, including a return on equity based on a capital structure designated by the regulator (primarily FERC). Companies that have been included in this group include certain generation companies (including in Korea and China) that are not rate regulated in the usual sense of recovering costs plus a regulated rate of return on either equity or asset value. Instead, we have looked at a combination of governmental action with respect to setting feed-in tariffs and directives on how much generation will be built (or not built) in combination with a generally high degree of government ownership, and we have concluded that these companies are currently best rated under this methodology. Future evolution in our view of the operating and/or regulatory environment of these companies could lead us to conclude that they may be more appropriately rated under a related methodology (for example, Unregulated Utilities and Power Companies).

Independent System Operator: An Independent System Operator (ISO) is an organization formed in certain regional electricity markets to act as the sole chief coordinator of an electric grid. In the areas where an ISO is established, it coordinates, controls and monitors the operation of the electrical power system to assure that electric supply and demand are balanced at all times, and, to the extent possible, that electric demand is met with the lowest-cost sources. ISOs seek to assure adequate transmission and generation resources, usually by identifying new transmission needs and planning for a generation reserve margin above expected peak demand. In regions where generation is competitive, they also seek to establish rules that foster a fair and open marketplace, and they may conduct price-setting auctions for energy and/or capacity. The generation resources that an ISO coordinates may belong to vertically integrated utilities or to independent power producers. ISOs may not be rate-regulated in the traditional sense, but fall under governmental oversight. All participants in the regional grid are required to pay a fee or tariff (often volumetric) to the ISO that is designed to recover its costs, including costs of investment in systems and equipment needed to fulfill their function. ISOs may be for profit or not-for-profit entities.

In the US, most ISOs were formed at the direction or recommendation of the Federal Energy Regulatory Commission (FERC), but the ISO that operates solely in Texas falls under state jurisdiction. Some US ISOs also perform certain additional functions such that they are designated as Regional Transmission Organizations (or RTOs).

Transmission-Only Utility: Transmission-only utilities are solely focused on owning and operating transmission assets. The transmission lines these utilities own are typically high-voltage and allow energy producers to transport electric power over long distances from where it is generated (or received) to the transmission or distribution system of a T&D or vertically integrated utility. Unlike most of the other utilities rated under this methodology, transmission-only utilities primarily provide services to other utilities and ISOs. Transmission-only utilities in most parts of the world other than the US have been rated under the Regulated Networks methodology.

Utility Holding Company (Utility HoldCo): As detailed in Appendix B, regulated electric and gas utilities are often part of corporate families under a parent holding company. The operating subsidiaries of Utility Holdcos are overwhelmingly regulated electric and gas utilities.

Hybrid Holding Company (Hybrid HoldCo): Some utility families contain a mix of regulated electric and gas utilities and other types of companies, but the regulated electric and gas utilities represent the majority of the consolidated cash flows, assets and debt. The parent company is thus a Hybrid HoldCo.

Appendix D: Key Industry Issues Over the Intermediate Term

Political and Regulatory Issues

As highly regulated monopolistic entities, regulated utilities continually face political and regulatory risk, and managing these risks through effective outreach to key customers as well as key political and regulatory decision-makers is, or at least should be, a core competency of companies in this sector. However, larger waves of change in the political, regulatory or economic environment have the potential to cause substantial changes in the level of risk experienced by utilities and their investors in somewhat unpredictable ways.

One of the more universal risks faced by utilities currently is the compression of allowed returns. A long period of globally low interest rates, held down by monetary stimulus policies, has generally benefited utilities, since reductions in allowed returns have been slower than reductions in incurred capital costs. Essentially all regulated utilities face a ratcheting down of allowed and/or earned returns. More difficult to predict is how regulators will respond when monetary stimulus reverses, and how well utilities will fare when fixed income investors require higher interest rates and equity investors require higher total returns and growth prospects.

The following global snapshot highlights that regulatory frameworks evolve over time. On an overall basis in the US over the past several years, we have noted some incremental positive regulatory trends, including greater use of formula rates, trackers and riders, and (primarily for natural gas utilities) de-coupling of returns from volumetric sales. In Canada, the framework has historically been viewed as predictable and stable, which has helped offset somewhat lower levels of equity in the capital structure, but the compression of returns has been relatively steep in recent years. In Japan, the regulatory authorities are working through the challenges presented by the decision to shut down virtually all of the country's nuclear generation capacity, leading to uncertainty regarding the extent to which increased costs will be reflected in rate increases sufficient to permit returns on capital to return to prior levels. China's regulatory framework has continued to evolve, with fairly low transparency and some time-to-time shifts in favored versus less-favored generation sources balanced by an overall state policy of assuring sustainability of the sector, adequate supply of electricity and affordability to the general public. Singapore and Hong Kong have fairly well developed and supportive regulatory frameworks despite a trend towards lower returns, whereas Malaysia, Korea and Thailand have been moving towards a more transparent regulatory framework. The Philippines is in the process of deregulating its power market, while Indian power utilities continue to grapple with structural challenges. In Latin America, there is a wide dispersion among frameworks, ranging from the more stable, long established and predictable framework in Chile to the decidedly unpredictable framework in Argentina. Generally, as Latin American economies have evolved to more stable economic policies, regulatory frameworks for utilities have also shown greater stability and predictability.

All of the other issues discussed in this section have a regulatory/political component, either as the driver of change or in reaction to changes in economic environments and market factors.

Economic and Financial Market Conditions

As regulated monopolies, electric and gas utilities have generally been quite resistant to unsettled economic and financial market conditions for several reasons. Unlike many companies that faced direct market-based competition, their rates do not decrease when demand decreases. The elasticity of demand for electricity and gas is much lower than for most products in the consumer economy.

When financial markets are volatile, utilities often have greater capital market access than industrial companies in competitive sectors, as was the case in the 2007-2009 recession. However, regulated electric and gas utilities are by no means immune to a protracted or severe recession.

Severe economic malaise can negatively affect utility credit profiles in several ways. Falling demand for electricity or natural gas may negatively impact margins and debt service protection measures, especially when rates are designed such that a substantial portion of fixed costs is in theory recovered through volumetric charges. The decrease in demand in the 2007-2009 recession was notable in comparison to prior recessions, especially in the residential sector. Poor economic conditions can make it more difficult for regulators to approve needed rate increases or provide timely cost recovery for utilities, resulting in higher cost deferrals and longer regulatory lag. Finally, recessions can coincide with a lack of confidence in the utility sector that impacts access to capital markets for a period of time. For instance, in the Great Depression and (to a lesser extent) in the 2001 recession, access for some issuers was curtailed due to the sector's generally higher leverage than other corporate sectors, combined with a concern over a lack of transparency in financial reporting.

Fuel Price Volatility and the Global Impact of Shale Gas

The ability of most utilities to pass through their fuel costs to end users may insulate a utility from exposure to price volatility of these fuels, but it does not insulate consumers. Consumers and regulators complained vociferously about utility rates during the run-up in hydro-carbon prices in 2005-2008 (oil, natural gas and, to a lesser extent, coal). The steep decline in US natural gas prices since 2009, caused in large part by the development of shale gas and shale oil resources, has been a material benefit to US utilities, because many have been able to pass through substantial base rate increases during a period when all-in rates were declining. Shale hydro-carbons have also had a positive impact, albeit one that is less immediate and direct, on non-US utilities. In much of the eastern hemisphere, natural gas prices under long-term contracts have generally been tied to oil prices, but utilities and other industrial users have started to have some success in negotiating to de-link natural gas from oil. In addition, increasing US production of oil has had a noticeable impact on world oil prices, generally benefitting oil and gas users.

Not all utilities will benefit equally. Utilities that have locked in natural gas under high-priced long-term contracts that they cannot re-negotiate are negatively impacted if they cannot pass through their full contracted cost of gas, or if the high costs cause customer dissatisfaction and regulatory backlash. Utilities with large coal fleets or utilities constructing nuclear power plants may also face negative impacts on their regulatory environment, since their customers will benefit less from lower natural gas prices.

Distributed Generation Versus the Central Station Paradigm

The regulation and the financing of electric utilities are based on the premise that the current model under which electricity is generated and distributed to customers will continue essentially unchanged for many decades to come. This model, called the central station paradigm (because electricity is generated in large, centrally located plants and distributed to a large number of customers, who may in fact be hundreds of miles away), has been in place since the early part of the 20th century. The model has worked because the economies of scale inherent to very large power plants has more than offset the cost and inefficiency (through power losses) inherent to maintaining a grid for transmitting and distributing electricity to end users.

Despite rate structures that only allow recovery of invested capital over many decades (up to 60 years), utilities can attract capital because investors assume that rates will continue to be collected for at least that long a period. Regulators and politicians assume that taxes and regulatory charges levied on electricity usage will be paid by a broad swath of residences and businesses and will not materially discourage usage of electricity in a way that would decrease the amount of taxes collected. A corollary assumption is that the number of customers taking electricity from the system during that period will continue to be high enough such that rates will be reasonable and generally more attractive than other alternatives. In the event that consumers were to switch en masse to alternate sources of generating or receiving power (for instance

distributed generation), rates for remaining customers would either not cover the utility's costs, or rates would need to be increased so much that more customers may be incentivized to leave the system. This scenario has been experienced in the regulated US copper wire telephone business, where rates have increased quite dramatically for users who have not switched to digital or wireless telephone service. While this scenario continues to be unlikely for the electricity sector, distributed generation, especially from solar panels, has made inroads in certain regions.

Distributed generation is any retail-scale generation, differentiated from self-generation, which generally describes a large industrial plant that builds its own reasonably large conventional power plant to meet its own needs. While some residential property owners that install distributed generation may choose to sever their connection to the local utility, most choose to remain connected, generating power into the grid when it is both feasible and economic to do so, and taking power from the grid at other times. Distributed generation is currently concentrated in roof-top photovoltaic solar panels, which have benefitted from varying levels of tax incentives in different jurisdictions.

Regulatory treatment has also varied, but some rate structures that seek to incentivize distributed renewable energy are decidedly credit negative for utilities, in particular net metering.

Under net metering, a customer receives a credit from the utility for all of its generation at the full (or nearly full) retail rate and pays only for power taken, also at the retail rate, resulting in a materially reduced monthly bill relative to a customer with no distributed generation. The distributed generation customer has no obligation to generate any particular amount of power, so the utility must stand ready to generate and deliver that customer's full power needs at all times. Since most utility costs, including the fixed costs of financing and maintaining generation and delivery systems, are currently collected through volumetric rates, a customer owning distributed generation effectively transfers a portion of the utility's costs of serving that customer to other customers with higher net usage, notably to customers that do not own distributed generation. The higher costs may incentivize more customers to install solar panels, thereby shifting the utility's fixed costs to an even smaller group of rate-payers. California is an example of a state employing net solar metering in its rate structure, whereas in New Jersey, which has the second largest residential solar program in the US, utilities buy power at a price closer to their blended cost of generation, which is much lower than the retail rate.

To date, solar generation and net metering have not had a material credit impact on any utilities, but ratings could be negatively impacted if the programs were to grow and if rate structures were not amended so that each customer's monthly bill more closely approximated the cost of serving that customer.

In our current view, the possibility that there will be a widespread movement of electric utility customers to sever themselves from the grid is remote. However, we acknowledge that new technologies, such as the development of commercially viable fuel cells and/or distributed electric storage, could disrupt materially the central station paradigm and the credit quality of the utility sector.

Nuclear Issues

Utilities with nuclear generation face unique safety, regulatory, and operational issues. The nuclear disaster at Fukushima Daiichi had a severely negative credit impact on its owner, Tokyo Electric Power Company, Incorporated, as well as all the nuclear utilities in the country. Japan previously generated about 30% of its power from 50 reactors, but all are currently either idled or shut down, and utilities in the country face materially higher costs of replacement power, a credit negative.

Fukushima Daiichi also had global consequences. Germany's response was to require that all nuclear power plants in the country be shut by 2022. Switzerland opted for a phase-out by 2031. (Most European nuclear plants are owned by companies rated under other the Unregulated Utilities and Power Companies methodology.) Even in countries where the regulatory response was more moderate, increased regulatory scrutiny has raised operating costs, a credit negative, especially in the US, where low natural gas prices have rendered certain primarily smaller nuclear plants uneconomic. Nonetheless, we view robust and independent nuclear safety regulation as a credit-positive for the industry.

Other general issues for nuclear operators include higher costs and lower reliability related to the increasing age of the fleet. In 2013, Duke Energy Florida, Inc. decided to shut permanently Crystal River Unit 3 after it determined that a de-lamination (or separation) in the concrete of the outer wall of the containment building was uneconomic to repair. San Onofre Nuclear Generating Station was closed permanently in 2013 after its owners, including Southern California Edison Company (A3, RUR-up) and San Diego Gas & Electric Company (A2, RUR-up), decided not to pursue a re-start in light of operating defects in two steam generators that had been replaced in 2010 and 2011.

Korea Hydro and Nuclear Power Company Limited and its parent, Korea Electric Power Corporation, faced a scandal related to alleged corruption and acceptance of falsified safety documents provided by its parts suppliers for nuclear plants. Korean prosecutors' widening probe into KHNP's use of substandard parts at many of its 23 nuclear power plants caused three plants to be shut down temporarily.

Appendix E: Regional and Other Considerations

Notching Considerations for US First Mortgage Bonds

In most regions, our approach to notching between different debt classes of the same regulated utility issuer follows the guidance in the publication "Updated Summary Guidance for Notching Bonds, Preferred Stocks and Hybrid Securities of Corporate Issuers," including a one notch differential between senior secured and senior unsecured debt.¹⁷ However, in most cases we have two notches between the first mortgage bonds and senior unsecured debt of regulated electric and gas utilities in the US.

Wider notching differentials between debt classes may also be appropriate in speculative grade. Additional insights for speculative grade issuers are provided in the publication "Loss Given Default for Speculative-Grade Companies."¹⁸

First mortgage bond holders in the US generally benefit from a first lien on most of the fixed assets used to provide utility service, including such assets as generating stations, transmission lines, distribution lines, switching stations and substations, and gas distribution facilities, as well as a lien on franchise agreements. In our view, the critical nature of these assets to the issuers and to the communities they serve has been a major factor that has led to very high recovery rates for this class of debt in situations of default, thereby justifying a two notch uplift. The combination of the breadth of assets pledged and the bankruptcy-tested recovery experience has been unique to the US.

In some cases, there is only a one notch differential between US first mortgage bonds and the senior unsecured rating. For instance, this is likely when the pledged property is not considered critical infrastructure for the region, or if the mortgage is materially weakened by carve-outs, lien releases or similar creditor-unfriendly terms.

Securitization

The use of securitization, a financing technique utilizing a discrete revenue stream (typically related to recovery of specifically defined expenses) that is dedicated to servicing specific securitization debt, has primarily been used in the US, where it has been quite pervasive in the past two decades. The first generation of securitization bonds were primarily related to recovery of the negative difference between the market value of utilities' generation assets and their book value when certain states switched to competitive electric supply markets and utilities sold their generation (so-called stranded costs). This technique was then used for significant storm costs (especially hurricanes) and was eventually broadened to include environmental related expenditures, deferred fuel costs, or even deferred miscellaneous expenses. States that have implemented securitization frameworks include Arkansas, California, Connecticut, Illinois, Louisiana, Maryland, Massachusetts, Mississippi, New Hampshire, New Jersey, Ohio, Pennsylvania, Texas and West Virginia. In its simplest form, a securitization isolates and dedicates a stream of cash flow into a separate special purpose entity (SPE). The SPE uses that stream of revenue and cash flow to provide annual debt service for the securitized debt instrument. Securitization is typically underpinned by specific legislation to segregate the securitization revenues from the utility's revenues to assure their continued collection, and the details of the enabling legislation may vary from state to state. The utility benefits from the securitization because it receives an immediate source of cash (although it gives up the opportunity to earn a return on the corresponding asset), and ratepayers benefit because the cost of the

¹⁷ A link to this and other sector and cross-sector credit rating methodologies can be found in the Related Research section of this report.

¹⁸ A link to this and other sector and cross-sector credit rating methodologies can be found in the Related Research section of this report.

securitized debt is lower than the utility's cost of debt and much lower than its all-in cost of capital, which reduces the revenue requirement associated with the cost recovery.

In the presentation of US securitization debt in published financial ratios, we make our own assessment of the appropriate credit representation but in most cases follows the accounting in audited statements under US Generally Accepted Accounting Principles (GAAP), which in turn considers the terms of enabling legislation. As a result, accounting treatment may vary. In most states utilities have been required to consolidate securitization debt under GAAP, even though it is technically non-recourse.

In general, we view securitization debt of utilities as being on-credit debt, in part because the rates associated with it reduce the utility's headroom to increase rates for other purposes while keeping all-in rates affordable to customers. Thus, where accounting treatment is off balance sheet, we seek to adjust the company's ratios by including the securitization debt and related revenues for our analysis. Where the securitized debt is on balance sheet, our credit analysis also considers the significance of ratios that exclude securitization debt and related revenues. Since securitization debt amortizes mortgage-style, including it makes ratios look worse in early years (when most of the revenue collected goes to pay interest) and better in later years (when most of the revenue collected goes to pay principal).

Strong levels of government ownership in Asia Pacific (ex-Japan) provide rating uplift

Strong levels of government ownership have dominated the credit profiles of utilities in Asia Pacific (excluding Japan), generally leading to ratings that are a number of notches above the Baseline Credit Assessment. Regulated electric and gas utilities with significant government ownership are rated using this methodology in conjunction with the Joint Default Analysis approach in our methodology for Government-Related Issuers.¹⁹

Support system for large corporate entities in Japan can provide ratings uplift, with limits

Our ratings for large corporate entities in Japan reflect the unique nature of the country's support system, and they are higher than they would otherwise be if such support were disregarded. This is reflected in the tendency for ratings of Japanese utilities to be higher than their grid implied ratings. However, even for large prominent companies, our ratings consider that support will not be endless and is less likely to be provided when a company has questionable viability rather than being in need of temporary liquidity assistance.

¹⁹ A link to this and other sector and cross-sector credit rating methodologies can be found in the Related Research section of this report.

Appendix F: Treatment of Power Purchase Agreements ("PPAs")

Although many utilities own and operate power stations, some have entered into PPAs to source electricity from third parties to satisfy retail demand. The motivation for these PPAs may be one or more of the following: to outsource operating risks to parties more skilled in power station operation, to provide certainty of supply, to reduce balance sheet debt, to fix the cost of power, or to comply with regulatory mandates regarding power sourcing, including renewable portfolio standards. While we regard PPAs that reduce operating or financial risk as a credit positive, some aspects of PPAs may negatively affect the credit of utilities. The most conservative treatment would be to treat a PPA as a debt obligation of the utility as, by paying the capacity charge, the utility is effectively providing the funds to service the debt associated with the power station. At the other end of the continuum, the financial obligations of the utility could also be regarded as an ongoing operating cost, with no long-term capital component recognized.

Under most PPAs, a utility is obliged to pay a capacity charge to the power station owner (which may be another utility or an Independent Power Producer – IPP); this charge typically covers a portion of the IPP's fixed costs in relation to the power available to the utility. These fixed payments usually help to cover the IPP's debt service and are made irrespective of whether the utility calls on the IPP to generate and deliver power. When the utility requires generation, a further energy charge, to cover the variable costs of the IPP, will also typically be paid by the utility. Some other similar arrangements are characterized as tolling agreements, or long-term supply contracts, but most have similar features to PPAs and are thus we analyze them as PPAs.

PPAs are recognized qualitatively to be a future use of cash whether or not they are treated as debt-like obligations in financial ratios

The starting point of our analysis is the issuer's audited financial statements – we consider whether the utility's accountants determine that the PPA should be treated as a debt equivalent, a capitalized lease, an operating lease, or in some other manner. PPAs have a wide variety of operational and financial terms, and it is our understanding that accountants are required to have a very granular view into the particular contractual arrangements in order to account for these PPAs in compliance with applicable accounting rules and standards. However, accounting treatment for PPAs may not be entirely consistent across US GAAP, IFRS or other accounting frameworks. In addition, we may consider that factors not incorporated into the accounting treatment may be relevant (which may include the scale of PPA payments, their regulatory treatment including cost recovery mechanisms, or other factors that create financial or operational risk for the utility that is greater, in our estimation, than the benefits received). When the accounting treatment of a PPA is a debt or lease equivalent (such that it is reported on the balance sheet, or disclosed as an operating lease and thus included in our adjusted debt calculation), we generally do not make adjustments to remove the PPA from the balance sheet.

However, in relevant circumstances we consider making adjustments that impute a debt equivalent to PPAs that are off-balance sheet for accounting purposes.

Regardless of whether we consider that a PPA warrants or does not warrant treatment as a debt obligation, we assess the totality of the impact of the PPA on the issuer's probability of default. Costs of a PPA that cannot be recovered in retail rates creates material risk, especially if they also cannot be recovered through market sales of power.

Additional considerations for PPAs

PPAs have a wide variety of financial and regulatory characteristics, and each particular circumstance may be treated differently by Moody's. Factors which determine where on the continuum we treat a particular PPA include the following:

- » Risk management: An overarching principle is that PPAs have normally been used by utilities as a risk management tool and we recognize that this is the fundamental reason for their existence. Thus, we will not automatically penalize utilities for entering into contracts for the purpose of reducing risk associated with power price and availability. Rather, we will look at the aggregate commercial position, evaluating the risk to a utility's purchase and supply obligations. In addition, PPAs are similar to other long-term supply contracts used by other industries and their treatment should not therefore be fundamentally different from that of other contracts of a similar nature.
- » Pass-through capability: Some utilities have the ability to pass through the cost of purchasing power under PPAs to their customers. As a result, the utility takes no risk that the cost of power is greater than the retail price it will receive. Accordingly we regard these PPA obligations as operating costs with no long-term debt-like attributes. PPAs with no pass-through ability have a greater risk profile for utilities. In some markets, the ability to pass through costs of a PPA is enshrined in the regulatory framework, and in others can be dictated by market dynamics. As a market becomes more competitive or if regulatory support for cost recovery deteriorates, the ability to pass through costs may decrease and, as circumstances change, our treatment of PPA obligations will alter accordingly.
- » Price considerations: The price of power paid by a utility under a PPA can be substantially above or below the market price of electricity. A below-market price will motivate the utility to purchase power from the IPP in excess of its retail requirements, and to sell excess electricity in the spot market. This can be a significant source of cash flow for some utilities. On the other hand, utilities that are compelled to pay capacity payments to IPPs when they have no demand for the power or at an above-market price may suffer a financial burden if they do not get full recovery in retail rates. We will focus particularly on PPAs that have mark-to-market losses, which typically indicates that they have a material impact on the utility's cash flow.
- » Excess Reserve Capacity: In some jurisdictions there is substantial reserve capacity and thus a significant probability that the electricity available to a utility under PPAs will not be required by the market. This increases the risk to the utility that capacity payments will need to be made when there is no demand for the power. We may determine that all of a utility's PPAs represent excess capacity, or that a portion of PPAs are needed for the utility's supply obligations plus a normal reserve margin, while the remaining portion represents excess capacity. In the latter case, we may impute debt to specific PPAs that are excess or take a proportional approach to all of the utility's PPAs.
- » Risk-sharing: Utilities that own power plants bear the associated operational, fuel procurement and other risks. These must be balanced against the financial and liquidity risk of contracting for the purchase of power under a PPA. We will examine on a case-by case basis the relative credit risk associated with PPAs in comparison to plant ownership.
- » Purchase requirements: Some PPAs are structured with either options or requirements to purchase the asset at the end of the PPA term. If the utility has an economically meaningful requirement to purchase, we would most likely consider it to be a debt obligation. In most such cases, the obligation would already receive on-balance sheet treatment under relevant accounting standards.
- » Default provisions: In most cases, the remedies for default under a PPA do not include acceleration of amounts due, and in many cases PPAs would not be considered as debt in a bankruptcy scenario and could potentially be cancelled. Thus, PPAs may not materially increase Loss Given Default for the utility.

In addition, PPAs are not typically considered debt for cross-default provisions under a utility's debt and liquidity arrangements. However, the existence of non-standard default provisions that are debt-like would have a large impact on our treatment of a PPA. In addition, payments due under PPAs are senior unsecured obligations, and any inability of the utility to make them materially increases default risk.

Each of these factors will be considered by our analysts and a decision will be made as to the importance of the PPA to the risk analysis of the utility.

Methods for estimating a liability amount for PPAs

According to the weighting and importance of the PPA to each utility and the level of disclosure, we may approximate a debt obligation equivalent for PPAs using one or more of the methods discussed below. In each case we look holistically at the PPA's credit impact on the utility, including the ability to pass through costs and curtail payments, the materiality of the PPA obligation to the overall business risk and cash flows of the utility, operational constraints that the PPA imposes, the maturity of the PPA obligation, the impact of purchased power on market-based power sales (if any) that the utility will engage in, and our view of future market conditions and volatility.

- » Operating Cost: If a utility enters into a PPA for the purpose of providing an assured supply and there is reasonable assurance that regulators will allow the costs to be recovered in regulated rates, we may view the PPA as being most akin to an operating cost. Provided that the accounting treatment for the PPA is, in this circumstance, off-balance sheet, we will most likely make no adjustment to bring the obligation onto the utility's balance sheet.
- » Annual Obligation x 6: In some situations, the PPA obligation may be estimated by multiplying the annual payments by a factor of six (in most cases). This method is sometimes used in the capitalization of operating leases. This method may be used as an approximation where the analyst determines that the obligation is significant but cannot otherwise be quantified due to limited information.
- » Net Present Value: Where the analyst has sufficient information, we may add the NPV of the stream of PPA payments to the debt obligations of the utility. The discount rate used will be our estimate of the cost of capital of the utility.
- » Debt Look-Through: In some circumstances, where the debt incurred by the IPP is directly related to the off-taking utility, there may be reason to allocate the entire debt (or a proportional part related to share of power dedicated to the utility) of the IPP to that of the utility.
- » Mark-to-Market: In situations in which we believe that the PPA prices exceed the market price and thus will create an ongoing liability for the utility, we may use a net mark-to-market method, in which the NPV of the utility's future out-of-the-money net payments will be added to its total debt obligations.
- » Consolidation: In some instances where the IPP is wholly dedicated to the utility, it may be appropriate to consolidate the debt and cash flows of the IPP with that of the utility. If the utility purchases only a portion of the power from the IPP, then that proportion of debt might be consolidated with the utility.

If we have determined to impute debt to a PPA for which the accounting treatment is not on-balance sheet, we will in some circumstances use more than one method to estimate the debt equivalent obligations imposed by the PPA, and compare results. If circumstances (including regulatory treatment or market conditions) change over time, the approach that is used may also vary.

Moody's Related Research

The credit ratings assigned in this sector are primarily determined by this credit rating methodology. Certain broad methodological considerations (described in one or more credit rating methodologies) may also be relevant to the determination of credit ratings of issuers and instruments in this sector. Potentially related sector and cross-sector credit rating methodologies can be found [here](#).

For data summarizing the historical robustness and predictive power of credit ratings assigned using this credit rating methodology, see [link](#).

Please refer to Moody's Rating Symbols & Definitions, which is available [here](#), for further information. Definitions of Moody's most common ratio terms can be found in "Moody's Basic Definitions for Credit Statistics, User's Guide", accessible via this [link](#).

» contacts continued from page 1

Analyst Contacts:

BUENOS AIRES +54.11.5129.2600

Daniela Cuan +54.11.5129.2617
Vice President - Senior Analyst
 daniela.cuan@moodys.com

TORONTO +1.416.214.1635

Gavin MacFarlane +1.416.214.3864
Vice President - Senior Credit Officer
 gavin.macfarlane@moodys.com

LONDON +44.20.7772.5454

Douglas Segars +44.20.7772.1584
Managing Director - Infrastructure Finance
 douglas.segars@moodys.com

Helen Francis +44.20.7772.5422
Vice President - Senior Credit Officer
 helen.francis@moodys.com

HONG KONG +852.3551.3077

Vivian Tsang +852.375.815.38
Associate Managing Director
 vivian.tsang@moodys.com

SINGAPORE +65.6398.8308

Ray Tay +65.6398.8306
Vice President - Senior Credit Officer
 ray.tay@moodys.com

TOKYO +81.3.5408.4100

Mihoko Manabe +81.354.084.033
Associate Managing Director
 mihoko.manabe@moodys.com

Mariko Semetko +81.354.084.209
Vice President - Senior Credit Officer
 mariko.semetko@moodys.com

Report Number: 1072530

Author

Michael G. Haggarty

Production Associate

Masaki Shiomi

© 2017 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

CREDIT RATINGS ISSUED BY MOODY'S INVESTORS SERVICE, INC. AND ITS RATINGS AFFILIATES ("MIS") ARE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND MOODY'S PUBLICATIONS MAY INCLUDE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL, FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS AND MOODY'S OPINIONS INCLUDED IN MOODY'S PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S PUBLICATIONS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. CREDIT RATINGS AND MOODY'S PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. NEITHER CREDIT RATINGS NOR MOODY'S PUBLICATIONS COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS AND PUBLISHES MOODY'S PUBLICATIONS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.

MOODY'S CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS AND INAPPROPRIATE FOR RETAIL INVESTORS TO USE MOODY'S CREDIT RATINGS OR MOODY'S PUBLICATIONS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER.

ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the rating process or in preparing the Moody's publications.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY SUCH RATING OR OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any rating, agreed to pay to Moody's Investors Service, Inc. for appraisal and rating services rendered by it fees ranging from \$1,500 to approximately \$2,500,000. MCO and MIS also maintain policies and procedures to address the independence of MIS's ratings and rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold ratings from MIS and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at www.moody.com under the heading "Investor Relations — Corporate Governance — Director and Shareholder Affiliation Policy."

Additional terms for Australia only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of MOODY'S affiliate, Moody's Investors Service Pty Limited ABN 61 003 399 657 AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 383569 (as applicable). This document is intended to be provided only to "wholesale clients" within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY'S that you are, or are accessing the document as a representative of, a "wholesale client" and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to "retail clients" within the meaning of section 761G of the Corporations Act 2001. MOODY'S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail investors. It would be reckless and inappropriate for retail investors to use MOODY'S credit ratings or publications when making an investment decision. If in doubt you should contact your financial or other professional adviser.

Additional terms for Japan only: Moody's Japan K.K. ("MJKK") is a wholly-owned credit rating agency subsidiary of Moody's Group Japan G.K., which is wholly-owned by Moody's Overseas Holdings Inc., a wholly-owned subsidiary of MCO. Moody's SF Japan K.K. ("MSFJ") is a wholly-owned credit rating agency subsidiary of MJKK. MSFJ is not a Nationally Recognized Statistical Rating Organization ("NRSRO"). Therefore, credit ratings assigned by MSFJ are Non-NRSRO Credit Ratings. Non-NRSRO Credit Ratings are assigned by an entity that is not a NRSRO and, consequently, the rated obligation will not qualify for certain types of treatment under U.S. laws. MJKK and MSFJ are credit rating agencies registered with the Japan Financial Services Agency and their registration numbers are FSA Commissioner (Ratings) No. 2 and 3 respectively.

MJKK or MSFJ (as applicable) hereby disclose that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MJKK or MSFJ (as applicable) have, prior to assignment of any rating, agreed to pay to MJKK or MSFJ (as applicable) for appraisal and rating services rendered by it fees ranging from JPY200,000 to approximately JPY350,000,000.

MJKK and MSFJ also maintain policies and procedures to address Japanese regulatory requirements.



RatingsDirect®

Criteria | Corporates | General: Corporate Methodology

Global Criteria Officer, Corporate Ratings:

Mark Puccia, New York (1) 212-438-7233; mark.puccia@standardandpoors.com

Chief Credit Officer, Americas:

Lucy A Collett, New York (1) 212-438-6627; lucy.collett@standardandpoors.com

European Corporate Ratings Criteria Officer:

Peter Kernan, London (44) 20-7176-3618; peter.kernan@standardandpoors.com

Criteria Officer, Asia Pacific:

Andrew D Palmer, Melbourne (61) 3-9631-2052; andrew.palmer@standardandpoors.com

Criteria Officer, Corporate Ratings:

Gregoire Buet, New York (1) 212-438-4122; gregoire.buet@standardandpoors.com

Primary Credit Analysts:

Mark S Mettrick, CFA, Toronto (1) 416-507-2584; mark.mettrick@standardandpoors.com

Guy Deslondes, Milan (39) 02-72111-213; guy.deslondes@standardandpoors.com

Secondary Contacts:

Michael P Altberg, New York (1) 212-438-3950; michael.altberg@standardandpoors.com

David C Lundberg, CFA, New York (1) 212-438-7551; david.lundberg@standardandpoors.com

Anthony J Flintoff, Melbourne (61) 3-9631-2038; anthony.flintoff@standardandpoors.com

Pablo F Lutereau, Buenos Aires (54) 114-891-2125; pablo.lutereau@standardandpoors.com

Table Of Contents

SUMMARY OF THE CRITERIA

SCOPE OF THE CRITERIA

IMPACT ON OUTSTANDING RATINGS

EFFECTIVE DATE AND TRANSITION

METHODOLOGY

Table Of Contents (cont.)

A. Corporate Ratings Framework

B. Industry Risk

C. Country Risk

D. Competitive Position

E. Cash Flow/Leverage

F. Diversification/Portfolio Effect

G. Capital Structure

H. Financial Policy

I. Liquidity

J. Management And Governance

K. Comparable Ratings Analysis

SUPERSEDED CRITERIA FOR ISSUERS WITHIN THE SCOPE OF THESE
CRITERIA

RELATED CRITERIA

APPENDIXES

A. Country Risk

B. Competitive Position

C. Cash Flow/Leverage Analysis

D. Diversification/Portfolio Effect

E. Financial Policy

F. Corporate Criteria Glossary

Criteria | Corporates | General:

Corporate Methodology

(Editor's Note: We've republished this article on Dec. 16, 2013 to make some adjustments to language. These adjustments have no impact on our ratings or the effective date of the criteria.)

1. Standard & Poor's Ratings Services is updating its criteria for rating corporate industrial companies and utilities. The criteria organize the analytical process according to a common framework and articulate the steps in developing the stand-alone credit profile (SACP) and issuer credit rating (ICR) for a corporate entity.
2. This article is related to our criteria article "Principles Of Credit Ratings," which we published on Feb. 16, 2011.

SUMMARY OF THE CRITERIA

3. The criteria describe the methodology we use to determine the SACP and ICR for corporate industrial companies and utilities. Our assessment reflects these companies' business risk profiles, their financial risk profiles, and other factors that may modify the SACP outcome (see "General Criteria: Stand-Alone Credit Profiles: One Component Of A Rating," published Oct. 1, 2010, for the definition of SACP). The criteria provide clarity on how we determine an issuer's SACP and ICR and are more specific in detailing the various factors of the analysis. The criteria also provide clear guidance on how we use these factors as part of determining an issuer's ICR. Standard & Poor's intends for these criteria to provide the market with a framework that clarifies our approach to fundamental analysis of corporate credit risks.
4. The business risk profile comprises the risk and return potential for a company in the markets in which it participates, the competitive climate within those markets (its industry risk), the country risks within those markets, and the competitive advantages and disadvantages the company has within those markets (its competitive position). The business risk profile affects the amount of financial risk that a company can bear at a given SACP level and constitutes the foundation for a company's expected economic success. We combine our assessments of industry risk, country risk, and competitive position to determine the assessment for a corporation's business risk profile.
5. The financial risk profile is the outcome of decisions that management makes in the context of its business risk profile and its financial risk tolerances. This includes decisions about the manner in which management seeks funding for the company and how it constructs its balance sheet. It also reflects the relationship of the cash flows the organization can achieve, given its business risk profile, to the company's financial obligations. The criteria use cash flow/leverage analysis to determine a corporate issuer's financial risk profile assessment.
6. We then combine an issuer's business risk profile assessment and its financial risk profile assessment to determine its anchor (see table 3). Additional rating factors can modify the anchor. These are: diversification/portfolio effect, capital structure, financial policy, liquidity, and management and governance. Comparable ratings analysis is the last analytical factor under the criteria to determine the final SACP on a company.
7. These criteria are complemented by industry-specific criteria called Key Credit Factors (KCFs). The KCFs describe the industry risk assessments associated with each sector and may identify sector-specific criteria that supersede certain

sections of these criteria. As an example, the liquidity criteria state that the relevant KCF article may specify different standards than those stated within the liquidity criteria to evaluate companies that are part of exceptionally stable or volatile industries. The KCFs may also define sector-specific criteria for one or more of the factors in the analysis. For example, the analysis of a regulated utility's competitive position is different from the methodology to evaluate the competitive position of an industrial company. The regulated utility KCF will describe the criteria we use to evaluate those companies' competitive positions (see "Key Credit Factors For The Regulated Utility Industry," published Nov. 19, 2013).

SCOPE OF THE CRITERIA

8. This methodology applies to nonfinancial corporate issuer credit ratings globally. Please see "Criteria Guidelines For Recovery Ratings On Global Industrial Issuers' Speculative-Grade Debt," published Aug. 10, 2009, and "2008 Corporate Criteria: Rating Each Issue," published April 15, 2008, for further information on our methodology for determining issue ratings. This methodology does not apply to the following sectors, based on the unique characteristics of these sectors, which require either a different framework of analysis or substantial modifications to one or more factors of analysis: project finance entities, project developers, transportation equipment leasing, auto rentals, commodities trading, investment holding companies and companies that maximize their returns by buying and selling equity holdings over time, Japanese general trading companies, corporate securitizations, nonprofit and cooperative organizations, master limited partnerships, general partnerships of master limited partnerships, and other entities whose cash flows are primarily derived from partially owned equity holdings.

IMPACT ON OUTSTANDING RATINGS

9. We expect about 5% of corporate industrial companies and utilities ratings within the scope of the criteria to change. Of that number, we expect approximately 90% to receive a one-notch change, with the majority of the remainder receiving a two-notch change. We expect the ratio of upgrades to downgrades to be around 3:1.

EFFECTIVE DATE AND TRANSITION

10. These criteria are effective immediately on the date of publication. We intend to complete our review of all affected ratings within the next six months.

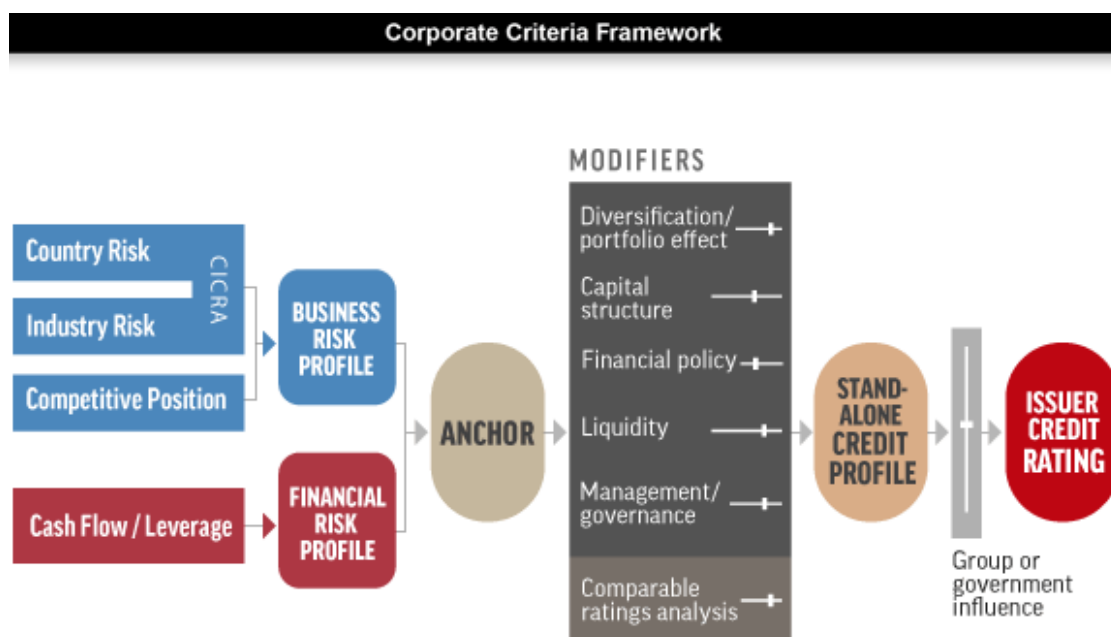
METHODOLOGY

A. Corporate Ratings Framework

11. The corporate analytical methodology organizes the analytical process according to a common framework, and it divides the task into several factors so that Standard & Poor's considers all salient issues. First we analyze the company's business risk profile, then evaluate its financial risk profile, then combine those to determine an issuer's

anchor. We then analyze six factors that could potentially modify our anchor conclusion.

12. To determine the assessment for a corporate issuer's business risk profile, the criteria combine our assessments of industry risk, country risk, and competitive position. Cash flow/leverage analysis determines a company's financial risk profile assessment. The analysis then combines the corporate issuer's business risk profile assessment and its financial risk profile assessment to determine its anchor. In general, the analysis weighs the business risk profile more heavily for investment-grade anchors, while the financial risk profile carries more weight for speculative-grade anchors.
13. After we determine the anchor, we use additional factors to modify the anchor. These factors are: diversification/portfolio effect, capital structure, financial policy, liquidity, and management and governance. The assessment of each factor can raise or lower the anchor by one or more notches--or have no effect. These conclusions take the form of assessments and descriptors for each factor that determine the number of notches to apply to the anchor.
14. The last analytical factor the criteria call for is comparable ratings analysis, which may raise or lower the anchor by one notch based on a holistic view of the company's credit characteristics.



15. The three analytic factors within the business risk profile generally are a blend of qualitative assessments and quantitative information. Qualitative assessments distinguish risk factors, such as a company's competitive advantages, that we use to assess its competitive position. Quantitative information includes, for example, historical cyclicality of revenues and profits that we review when assessing industry risk. It can also include the volatility and level of profitability we consider in order to assess a company's competitive position. The assessments for business risk profile

are: 1, excellent; 2, strong; 3, satisfactory; 4, fair; 5, weak; and 6, vulnerable.

16. In assessing cash flow/leverage to determine the financial risk profile, the analysis focuses on quantitative measures. The assessments for financial risk profile are: 1, minimal; 2, modest; 3, intermediate; 4, significant; 5, aggressive; and 6, highly leveraged.
17. The ICR results from the combination of the SACP and the support framework, which determines the extent of the difference between the SACP and the ICR, if any, for group or government influence. Extraordinary influence is then captured in the ICR. Please see "Group Rating Methodology," published Nov. 19, 2013, and "Rating Government-Related Entities: Methodology And Assumptions," published Dec. 9, 2010, for our methodology on group and government influence.
18. Ongoing support or negative influence from a government (for government-related entities), or from a group, is factored into the SACP (see "SACP criteria"). While such ongoing support/negative influence does not affect the industry or country risk assessment, it can affect any other factor in business or financial risk. For example, such support or negative influence can affect: national industry analysis, other elements of competitive position, financial risk profile, the liquidity assessment, and comparable ratings analysis.
19. The application of these criteria will result in an SACP that could then be constrained by the relevant sovereign rating and transfer and convertibility (T&C) assessment affecting the entity when determining the ICR. In order for the final ICR to be higher than the applicable sovereign rating or T&C assessment, the entity will have to meet the conditions established in "Ratings Above The Sovereign--Corporate And Government Ratings: Methodology And Assumptions," published Nov. 19, 2013.

1. Determining the business risk profile assessment

20. Under the criteria, the combined assessments for country risk, industry risk, and competitive position determine a company's business risk profile assessment. A company's strengths or weaknesses in the marketplace are vital to its credit assessment. These strengths and weaknesses determine an issuer's capacity to generate cash flows in order to service its obligations in a timely fashion.
21. Industry risk, an integral part of the credit analysis, addresses the relative health and stability of the markets in which a company operates. The range of industry risk assessments is: 1, very low risk; 2, low risk; 3, intermediate risk; 4, moderately high risk; 5, high risk; and 6, very high risk. The treatment of industry risk is in section B.
22. Country risk addresses the economic risk, institutional and governance effectiveness risk, financial system risk, and payment culture or rule of law risk in the countries in which a company operates. The range of country risk assessments is: 1, very low risk; 2, low risk; 3, intermediate risk; 4, moderately high risk; 5, high risk; and 6, very high risk. The treatment of country risk is in section C.
23. The evaluation of an enterprise's competitive position identifies entities that are best positioned to take advantage of key industry drivers or to mitigate associated risks more effectively--and achieve a competitive advantage and a stronger business risk profile than that of entities that lack a strong value proposition or are more vulnerable to industry risks. The range of competitive position assessments is: 1, excellent; 2, strong; 3, satisfactory; 4, fair; 5, weak;

and 6, vulnerable. The full treatment of competitive position is in section D.

24. The combined assessment for country risk and industry risk is known as the issuer's Corporate Industry and Country Risk Assessment (CICRA). Table 1 shows how to determine the combined assessment for country risk and industry risk.

Table 1

Determining The CICRA						
--Country risk assessment--						
Industry risk assessment	1 (very low risk)	2 (low risk)	3 (intermediate risk)	4 (moderately high risk)	5 (high risk)	6 (very high risk)
1 (very low risk)	1	1	1	2	4	5
2 (low risk)	2	2	2	3	4	5
3 (intermediate risk)	3	3	3	3	4	6
4 (moderately high risk)	4	4	4	4	5	6
5 (high risk)	5	5	5	5	5	6
6 (very high risk)	6	6	6	6	6	6

25. The CICRA is combined with a company's competitive position assessment in order to create the issuer's business risk profile assessment. Table 2 shows how we combine these assessments.

Table 2

Determining The Business Risk Profile Assessment						
--CICRA--						
Competitive position assessment	1	2	3	4	5	6
1 (excellent)	1	1	1	2	3*	5
2 (strong)	1	2	2	3	4	5
3 (satisfactory)	2	3	3	3	4	6
4 (fair)	3	4	4	4	5	6
5 (weak)	4	5	5	5	5	6
6 (vulnerable)	5	6	6	6	6	6

*See paragraph 26.

26. A small number of companies with a CICRA of 5 may be assigned a business risk profile assessment of 2 if all of the following conditions are met:
- The company's competitive position assessment is 1.
 - The company's country risk assessment is no riskier than 3.
 - The company produces significantly better-than-average industry profitability, as measured by the level and volatility of profits.
 - The company's competitive position within its sector transcends its industry risks due to unique competitive advantages with its customers, strong operating efficiencies not enjoyed by the large majority of the industry, or scale/scope/diversity advantages that are well beyond the large majority of the industry.
27. For issuers with multiple business lines, the business risk profile assessment is based on our assessment of each of the factors--country risk, industry risk, and competitive position--as follows:

- Country risk: We use the weighted average of the country risk assessments for the company across all countries where companies generate more than 5% of sales or EBITDA, or where more than 5% of fixed assets are located.
- Industry risk: We use the weighted average of the industry risk assessments for all business lines representing more than 20% of the company's forecasted earnings, revenues or fixed assets, or other appropriate financial measures if earnings, revenue, or fixed assets do not accurately reflect the exposure to an industry.
- Competitive position: We assess all business lines identified above for the components competitive advantage, scope/scale/diversity, and operating efficiency (see section D). They are then blended using a weighted average of revenues, earnings, or assets to form the preliminary competitive position assessment. The level of profitability and volatility of profitability are then assessed based on the consolidated financials for the enterprise. The preliminary competitive position assessment is then blended with the profitability assessment, as per section D.5, to assess competitive position for the enterprise.

2. Determining the financial risk profile assessment

28. Under the criteria, cash flow/leverage analysis is the foundation for assessing a company's financial risk profile. The range of assessments for a company's cash flow/leverage is 1, minimal; 2, modest; 3, intermediate; 4, significant; 5, aggressive; and 6, highly leveraged. The full treatment of cash flow/leverage analysis is the subject of section E.

3. Merger of financial risk profile and business risk profile assessments

29. An issuer's business risk profile assessment and its financial risk profile assessment are combined to determine its anchor (see table 3). If we view an issuer's capital structure as unsustainable or if its obligations are currently vulnerable to nonpayment, and if the obligor is dependent upon favorable business, financial, and economic conditions to meet its commitments on its obligations, then we will determine the issuer's SACP using "Criteria For Assigning 'CCC+', 'CCC', 'CCC-', And 'CC' Ratings," published Oct. 1, 2012. If the issuer meets the conditions for assigning 'CCC+', 'CCC', 'CCC-', and 'CC' ratings, we will not apply Table 3.

Table 3

Combining The Business And Financial Risk Profiles To Determine The Anchor

Business risk profile	--Financial risk profile--					
	1 (minimal)	2 (modest)	3 (intermediate)	4 (significant)	5 (aggressive)	6 (highly leveraged)
1 (excellent)	aaa/aa+	aa	a+/a	a-	bbb	bbb-/bb+
2 (strong)	aa/aa-	a+/a	a-/bbb+	bbb	bb+	bb
3 (satisfactory)	a/a-	bbb+	bbb/bbb-	bbb-/bb+	bb	b+
4 (fair)	bbb/bbb-	bbb-	bb+	bb	bb-	b
5 (weak)	bb+	bb+	bb	bb-	b+	b/b-
6 (vulnerable)	bb-	bb-	bb-/b+	b+	b	b-

30. When two anchor outcomes are listed for a given combination of business risk profile assessment and financial risk profile assessment, an issuer's anchor is determined as follows:
- When a company's financial risk profile is 4 or stronger (meaning, 1-4), its anchor is based on the comparative strength of its business risk profile. We consider our assessment of the business risk profile for corporate issuers to be points along a possible range. Consequently, each of these assessments that ultimately generate the business risk profile for a specific issuer can be at the upper or lower end of such a range. Issuers with stronger business risk profiles for the range of anchor outcomes will be assigned the higher anchor. Those with a weaker business risk profile for the range of anchor outcomes will be assigned the lower anchor.

- When a company's financial risk profile is 5 or 6, its anchor is based on the comparative strength of its financial risk profile. Issuers with stronger cash flow/leverage ratios for the range of anchor outcomes will be assigned the higher anchor. Issuers with weaker cash flow/leverage ratios for the range of anchor outcomes will be assigned the lower anchor. For example, a company with a business risk profile of (1) excellent and a financial risk profile of (6) highly leveraged would generally be assigned an anchor of 'bb+' if its ratio of debt to EBITDA was 8x or greater and there were no offsetting factors to such a high level of leverage.

4. Building on the anchor

31. The analysis of diversification/portfolio effect, capital structure, financial policy, liquidity, and management and governance may raise or lower a company's anchor. The assessment of each modifier can raise or lower the anchor by one or more notches--or have no effect in some cases (see tables 4 and 5). We express these conclusions using specific assessments and descriptors that determine the number of notches to apply to the anchor. However, this notching in aggregate can't lower an issuer's anchor below 'b-' (see "Criteria For Assigning 'CCC+', 'CCC', 'CCC-', And 'CC' Ratings," published Oct. 1, 2012, for the methodology we use to assign 'CCC' and 'CC' category SACPs and ICRs to issuers).
32. The analysis of the modifier diversification/portfolio effect identifies the benefits of diversification across business lines. The diversification/portfolio effect assessments are 1, significant diversification; 2, moderate diversification; and 3, neutral. The impact of this factor on an issuer's anchor is based on the company's business risk profile assessment and is described in Table 4. Multiple earnings streams (which are evaluated within a firm's business risk profile) that are less-than-perfectly correlated reduce the risk of default of an issuer (see Appendix D). We determine the impact of this factor based on the business risk profile assessment because the benefits of diversification are significantly reduced with poor business prospects. The full treatment of diversification/portfolio effect analysis is the subject of section F.

Table 4

Modifier Step 1: Impact Of Diversification/Portfolio Effect On The Anchor

Diversification/portfolio effect	--Business risk profile assessment--					
	1 (excellent)	2 (strong)	3 (satisfactory)	4 (fair)	5 (weak)	6 (vulnerable)
1 (significant diversification)	+2 notches	+2 notches	+2 notches	+1 notch	+1 notch	0 notches
2 (moderate diversification)	+1 notch	+1 notch	+1 notch	+1 notch	0 notches	0 notches
3 (neutral)	0 notches	0 notches	0 notches	0 notches	0 notches	0 notches

33. After we adjust for the diversification/portfolio effect, we determine the impact of the other modifiers: capital structure, financial policy, liquidity, and management and governance. We apply these four modifiers in the order listed in Table 5. As we go down the list, a modifier may (or may not) change the anchor to a new range (one of the ranges in the four right-hand columns in the table). We'll choose the appropriate value from the new range, or column, to determine the next modifier's effect on the anchor. And so on, until we get to the last modifier on the list--management and governance. For example, let's assume that the anchor, after adjustment for diversification/portfolio effect but before adjusting for the other modifiers, is 'a'. If the capital structure assessment is very negative, the indicated anchor drops two notches, to 'bbb+'. So, to determine the impact of the next modifier--financial policy--we go to the column 'bbb+ to bbb-' and find the appropriate assessment--in this theoretical example, positive. Applying that assessment moves the anchor up one notch, to the 'a- and higher' category. In our example, liquidity is strong, so the impact is zero notches and the anchor remains unchanged. Management and

governance is satisfactory, and thus the anchor remains 'a-' (see chart following table 5).

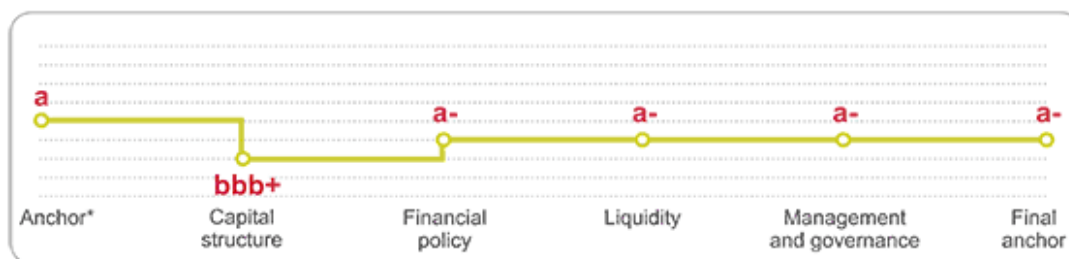
Table 5

Modifier Step 2: Impact Of Remaining Modifier Factors On The Anchor

Factor/Assessment	--Anchor range--			
	'a-' and higher	'bbb+' to 'bbb-'	'bb+' to 'bb-'	'b+' and lower
Capital structure (see section G)				
1 (Very positive)	2 notches	2 notches	2 notches	2 notches
2 (Positive)	1 notch	1 notch	1 notch	1 notch
3 (Neutral)	0 notches	0 notches	0 notches	0 notches
4 (Negative)	-1 notch	-1 notch	-1 notch	-1 notch
5 (Very negative)	-2 or more notches	-2 or more notches	-2 or more notches	-2 notches
Financial policy (FP; see section H)				
1 (Positive)	+1 notch if M&G is at least satisfactory	+1 notch if M&G is at least satisfactory	+1 notch if liquidity is at least adequate and M&G is at least satisfactory	+1 notch if liquidity is at least adequate and M&G is at least satisfactory
2 (Neutral)	0 notches	0 notches	0 notches	0 notches
3 (Negative)	-1 to -3 notches(1)	-1 to -3 notches(1)	-1 to -2 notches(1)	-1 notch
4 (FS-4, FS-5, FS-6, FS-6 [minus])	N/A(2)	N/A(2)	N/A(2)	N/A(2)
Liquidity (see section I)				
1 (Exceptional)	0 notches	0 notches	0 notches	+1 notch if FP is positive, neutral, FS-4, or FS-5 (3)
2 (Strong)	0 notches	0 notches	0 notches	+1 notch if FP is positive, neutral, FS-4, or FS-5 (3)
3 (Adequate)	0 notches	0 notches	0 notches	0 notches
4 (Less than adequate [4])	N/A	N/A	-1 notch(5)	0 notches
5 (Weak)	N/A	N/A	N/A	'b-' cap on SACP
Management and governance (M&G; see section J)				
1 (Strong)	0 notches	0 notches	0, +1 notches(6)	0, +1 notches(6)
2 (Satisfactory)	0 notches	0 notches	0 notches	0 notches
3 (Fair)	-1 notch	0 notches	0 notches	0 notches
4 (Weak)	-2 or more notches(7)	-2 or more notches(7)	-1 or more notches(7)	-1 or more notches(7)

(1) Number of notches depends on potential incremental leverage. (2) See "Financial Policy," section H.2. (3) Additional notch applies only if we expect liquidity to remain exceptional or strong. (4) See "Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers," published Nov. 19, 2013. SACP is capped at 'bb+'. (5) If issuer SACP is 'bb+' due to cap, there is no further notching. (6) This adjustment is one notch if we have not already captured benefits of strong management and governance in the analysis of the issuer's competitive position. (7) Number of notches depends upon the degree of negative effect to the enterprise's risk profile.

Example: How Remaining Modifiers Can Change The Anchor



*After adjusting for diversification/portfolio effect. See paragraph 33.

34. Our analysis of a firm's capital structure assesses risks in the firm's capital structure that may not arise in the review of its cash flow/leverage. These risks include the currency risk of debt, debt maturity profile, interest rate risk of debt, and an investments subfactor. We assess a corporate issuer's capital structure on a scale of 1, very positive; 2, positive; 3, neutral; 4, negative; and 5, very negative. The full treatment of capital structure is the subject of section G.
35. Financial policy serves to refine the view of a company's risks beyond the conclusions arising from the standard assumptions in the cash flow/leverage, capital structure, and liquidity analyses. Those assumptions do not always reflect or adequately capture the long-term risks of a firm's financial policy. The financial policy assessment is, therefore, a measure of the degree to which owner/managerial decision-making can affect the predictability of a company's financial risk profile. We assess financial policy as 1) positive, 2) neutral, 3) negative, or as being owned by a financial sponsor. We further identify financial sponsor-owned companies as "FS-4", "FS-5", "FS-6", or "FS-6 (minus)." The full treatment of financial policy analysis is the subject of section H.
36. Our assessment of liquidity focuses on the monetary flows--the sources and uses of cash--that are the key indicators of a company's liquidity cushion. The analysis also assesses the potential for a company to breach covenant tests tied to declines in earnings before interest, taxes, depreciation, and amortization (EBITDA). The methodology incorporates a qualitative analysis that addresses such factors as the ability to absorb high-impact, low-probability events, the nature of bank relationships, the level of standing in credit markets, and the degree of prudence of the company's financial risk management. The liquidity assessments are 1, exceptional; 2, strong; 3, adequate; 4, less than adequate; and 5, weak. An SACP is capped at 'bb+' for issuers whose liquidity is less than adequate and 'b-' for issuers whose liquidity is weak, regardless of the assessment of any modifiers or comparable ratings analysis. (For the complete methodology on assessing corporate issuers' liquidity, see "Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers," published Nov. 19, 2013.)
37. The analysis of management and governance addresses how management's strategic competence, organizational effectiveness, risk management, and governance practices shape the company's competitiveness in the marketplace, the strength of its financial risk management, and the robustness of its governance. The range of management and governance assessments is: 1, strong; 2, satisfactory; 3, fair; and 4, weak. Typically, investment-grade anchor outcomes reflect strong or satisfactory management and governance, so there is no incremental benefit. Alternatively, a fair or weak assessment of management and governance can lead to a lower anchor. Also, a strong assessment for management and governance for a weaker entity is viewed as a favorable factor, under the criteria, and can have a

positive impact on the final SACP outcome. For the full treatment of management and governance, see "Methodology: Management And Governance Credit Factors For Corporate Entities And Insurers," published Nov. 13, 2012.

5. Comparable ratings analysis

38. The anchor, after adjusting for the modifiers, could change one notch up or down in order to arrive at an issuer's SACP based on our comparable ratings analysis, which is a holistic review of a company's stand-alone credit risk profile, in which we evaluate an issuer's credit characteristics in aggregate. A positive assessment leads to a one-notch improvement, a negative assessment leads to a one-notch reduction, and a neutral assessment indicates no change to the anchor. The application of comparable ratings analysis reflects the need to 'fine-tune' ratings outcomes, even after the use of each of the other modifiers. A positive or negative assessment is therefore likely to be common rather than exceptional.

B. Industry Risk

39. The analysis of industry risk addresses the major factors that Standard & Poor's believes affect the risks that entities face in their respective industries. (See "Methodology: Industry Risk," published Nov. 19, 2013.)

C. Country Risk

40. The analysis of country risk addresses the major factors that Standard & Poor's believes affect the country where entities operate. Country risks, which include economic, institutional and governance effectiveness, financial system, and payment culture/rule of law risks, influence overall credit risks for every rated corporate entity. (See "Country Risk Assessment Methodology And Assumptions," published Nov. 19, 2013.)

1. Assessing country risk for corporate issuers

41. The following paragraphs explain how the criteria determine the country risk assessment for a corporate entity. Once it's determined, we combine the country risk assessment with the issuer's industry risk assessment to calculate the issuer's CICRA (see section A, table 1). The CICRA is one of the factors of the issuer's business risk profile. If an issuer has very low to intermediate exposure to country risk, as represented by a country risk assessment of 1, 2, or 3, country risk is neutral to an issuer's CICRA. But if an issuer has moderately high to very high exposure to country risk, as represented by a country risk assessment of 4, 5, or 6, the issuer's CICRA could be influenced by its country risk assessment.
42. Corporate entities operating within a single country will receive a country risk assessment for that jurisdiction. For entities with exposure to more than one country, the criteria prospectively measure the proportion of exposure to each country based on forecasted EBITDA, revenues, or fixed assets, or other appropriate financial measures if EBITDA, revenue, or fixed assets do not accurately reflect the exposure to that jurisdiction.
43. Arriving at a company's blended country risk assessment involves multiplying its weighted-average exposures for each country by each country's risk assessment and then adding those numbers. For the weighted-average calculation, the criteria consider countries where the company generates more than 5% of its sales or where more than 5% of its fixed assets are located, and all weightings are rounded to the nearest 5% before averaging. We round the assessment to the

nearest integer, so a weighted assessment of 2.2 rounds to 2, and a weighted assessment of 2.6 rounds to 3 (see table 6).

Table 6

Hypothetical Example Of Weighted-Average Country Risk For A Corporate Entity

Country	Weighting (% of business*)	Country risk§	Weighted country risk
Country A	45	1	0.45
Country B	20	2	0.4
Country C	15	1	0.15
Country D	10	4	0.4
Country E	10	2	0.2
Weighted-average country risk assessment (rounded to the nearest whole number)	--	--	2

*Using EBITDA, revenues, fixed assets, or other financial measures as appropriate. §On a scale from 1-6, lowest to highest risk.

44. A weak link approach, which helps us calculate a blended country risk assessment for companies with exposure to more than one country, works as follows: If fixed assets are based in a higher-risk country but products are exported to a lower-risk country, the company's exposure would be to the higher-risk country. Similarly, if fixed assets are based in a lower-risk country but export revenues are generated from a higher-risk country and cannot be easily redirected elsewhere, we measure exposure to the higher-risk country. If a company's supplier is located in a higher-risk country, and its supply needs cannot be easily redirected elsewhere, we measure exposure to the higher-risk country. Conversely, if the supply chain can be re-sourced easily to another country, we would not measure exposure to the higher risk country.
45. Country risk can be mitigated for a company located in a single jurisdiction in the following narrow case. For a company that exports the majority of its products overseas and has no direct exposure to a country's banking system that would affect its funding, debt servicing, liquidity, or ability to transfer payments from or to its key counterparties, we could reduce the country risk assessment by one category (e.g., 5 to 4) to determine the adjusted country risk assessment. This would only apply for countries where we considered the financial system risk subfactor a constraint on the overall country risk assessment for that country. For such a company, other country risks are not mitigated: Economic risk still applies, albeit less of a risk than for a company that sells domestically (potential currency volatility remains a risk for exporters); institutional and governance effectiveness risk still applies (political risk may place assets at risk); and payment culture/rule of law risk still applies (legal risks may place assets and cross-border contracts at risk).
46. Companies will often disclose aggregated information for blocks of countries, rather than disclosing individual country information. If the information we need to estimate exposure for all countries is not available, we use regional risk assessments. Regional risk assessments are calculated as averages of the unadjusted country risk assessments, weighted by gross domestic product of each country in a defined region. The criteria assess regional risk on a 1-6 scale (strongest to weakest). Please see Appendix A, Table 26, which lists the constituent countries of the regions.
47. If an issuer does not disclose its country-level exposure or regional-level exposure, individual country risk exposures or regional exposures will be estimated.

2. Adjusting the country risk assessment for diversity

48. We will adjust the country risk assessment for a company that operates in multiple jurisdictions and demonstrates a high degree of diversity of country risk exposures. As a result of this diversification, the company could have less exposure to country risk than the rounded weighted average of its exposures might indicate. Accordingly, the country risk assessment for a corporate entity could be adjusted if an issuer meets the conditions outlined in paragraph 49.
49. The preliminary country risk assessment is raised by one category to reflect diversity if all of the following four conditions are met:
- If the company's head office, as defined in paragraph 51, is located in a country with a risk assessment stronger than the preliminary country risk assessment;
 - If no country, with a country risk assessment equal to or weaker than the company's preliminary country risk assessment, represents or is expected to represent more than 20% of revenues, EBITDA, fixed assets, or other appropriate financial measures;
 - If the company is primarily funded at the holding level, or through a finance subsidiary in a similar or stronger country risk environment than the holding company, or if any local funding could be very rapidly substituted at the holding level; and
 - If the company's industry risk assessment is '4' or stronger.
50. The country risk assessment for companies that have 75% or more exposure to one jurisdiction cannot be improved and will, in most instances, equal the country risk assessment of that jurisdiction. But the country risk assessment for companies that have 75% or more exposure to one jurisdiction can be weakened if the balance of exposure is to higher risk jurisdictions.
51. We consider the location of a corporate head office relevant to overall risk exposure because it influences the perception of a company and its reputation--and can affect the company's access to capital. We determine the location of the head office on the basis of 'de facto' head office operations rather than just considering the jurisdiction of incorporation or stock market listing for public companies. De facto head office operations refers to the country where executive management and centralized high-level corporate activities occur, including strategic planning and capital raising. If such activities occur in different countries, we take the weakest country risk assessment applicable for the countries in which those activities take place.

D. Competitive Position

52. Competitive position encompasses company-specific factors that can add to, or partly offset, industry risk and country risk--the two other major factors of a company's business risk profile.
53. Competitive position takes into account a company's: 1) competitive advantage, 2) scale, scope, and diversity, 3) operating efficiency, and 4) profitability. A company's strengths and weaknesses on the first three components shape its competitiveness in the marketplace and the sustainability or vulnerability of its revenues and profit. Profitability can either confirm our initial assessment of competitive position or modify it, positively or negatively. A stronger-than-industry-average set of competitive position characteristics will strengthen a company's business risk profile. Conversely, a weaker-than-industry-average set of competitive position characteristics will weaken a

company's business risk profile.

54. These criteria describe how we develop a competitive position assessment. They provide guidance on how we assess each component based on a number of subfactors. The criteria define the weighting rules applied to derive a preliminary competitive position assessment. And they outline how this preliminary assessment can be maintained, raised, or lowered based on a company's profitability. Standard & Poor's competitive position analysis is both qualitative and quantitative.

1. The components of competitive position

55. A company's competitive position assessment can be: 1, excellent; 2, strong; 3, satisfactory; 4, fair; 5, weak; or 6, vulnerable.
56. The analysis of competitive position includes a review of:
- Competitive advantage;
 - Scale, scope, and diversity;
 - Operating efficiency; and
 - Profitability.
57. We follow four steps to arrive at the competitive position assessment. First, we separately assess competitive advantage; scale, scope, and diversity; and operating efficiency (excluding any benefits or risks already captured in the issuer's CICRA assessment). Second, we apply weighting factors to these three components to derive a weighted-average assessment that translates into a preliminary competitive position assessment. Third, we assess profitability. Finally, we combine the preliminary competitive position assessment and the profitability assessment to determine the final competitive position assessment. Profitability can confirm, or influence positively or negatively, the competitive position assessment.
58. We assess the relative strength of each of the first three components by reviewing a variety of subfactors (see table 7). When quantitative metrics are relevant and available, we use them to evaluate these subfactors. However, our overall assessment of each component is qualitative. Our evaluation is forward-looking; we use historical data only to the extent that they provide insight into future trends.
59. We evaluate profitability by assessing two subcomponents: level of profitability (measured by historical and projected nominal levels of return on capital, EBITDA margin, and/or sector-specific metrics) and volatility of profitability (measured by historically observed and expected fluctuations in EBITDA, return on capital, EBITDA margin, or sector specific metrics). We assess both subcomponents in the context of the company's industry.

Table 7

Competitive Position Components And Subfactors		
Component	Explanation	Subfactors
1. Competitive advantage (see Appendix B, section 1)	The strategic positioning and attractiveness to customers of a company's products or services, and the fragility or sustainability of its business model	<ul style="list-style-type: none"> • Strategy • Differentiation/uniqueness/product positioning/bundling • Brand reputation and marketing • Product and/or service quality • Barriers to entry and customers' switching costs • Technological advantage and capabilities and vulnerability to/ability to drive technological displacement • Asset base characteristics
2. Scale, scope, and diversity (see Appendix B, section 2)	The concentration or diversification of business activities	<ul style="list-style-type: none"> • Diversity of products or services • Geographic diversity • Volumes, size of markets and revenues, and market share • Maturity of products or services
3. Operating efficiency (see Appendix B, section 3)	The quality and flexibility of a company's asset base and its cost management and structure	<ul style="list-style-type: none"> • Cost structure • Manufacturing processes • Working capital management • Technology
4. Profitability		<ul style="list-style-type: none"> • Level of profitability (historical and projected return on capital, EBITDA margin, and/or sector-relevant measure) • Volatility of profitability

© Standard & Poor's 2013.

2. Assessing competitive advantage, scale, scope, and diversity, and operating efficiency

60. We assess competitive advantage; scale, scope, and diversity; and operating efficiency as: 1, strong; 2, strong/adequate; 3, adequate; 4, adequate/weak; or 5, weak. Tables 8, 9, and 10 provide guidance for assessing each component.
61. In assessing the components' relative strength, we place significant emphasis on comparative analysis. Peer comparisons provide context for evaluating the subfactors and the resulting component assessment. We review company-specific characteristics in the context of the company's industry, not just its narrower subsector. (See list of industries and subsectors in Appendix B, table 27.) For example, when evaluating an airline, we will benchmark the assessment against peers in the broader transportation-cyclical industry (including the marine and trucking subsectors), and not just against other airlines. Likewise, we will compare a home furnishing manufacturer with other companies in the consumer durables industry, including makers of appliances or leisure products. We might occasionally extend the comparison to other industries if, for instance, a company's business lines cross several industries, or if there are a limited number of rated peers in an industry, subsector, or region.

62. An assessment of strong means that the company's strengths on that component outweigh its weaknesses, and that the combination of relevant subfactors results in lower-than-average business risk in the industry. An assessment of adequate means that the company's strengths and weaknesses with respect to that component are balanced and that the relevant subfactors add up to average business risk in the industry. A weak assessment means that the company's weaknesses on that component override any strengths and that its subfactors, in total, reveal higher-than-average business risk in the industry.
63. Where a component is not clearly strong or adequate, we may assess it as strong/adequate. A component that is not clearly adequate or weak may end up as adequate/weak.
64. Although we review each subfactor, we don't assess each individually--and we seek to understand how they may reinforce or weaken each other. A component's assessment combines the relative strengths and importance of its subfactors. For any company, one or more subfactors can be unusually important--even factors that aren't common in the industry. Industry KCF articles identify subfactors that are consistently more important, or happen not to be relevant, in a given industry.
65. Not all subfactors may be equally important, and a single one's strength or weakness may outweigh all the others. For example, if notwithstanding a track record of successful product launches and its strong brand equity, a company's strategy doesn't appear adaptable, in our view, to changing competitive dynamics in the industry, we will likely not assess its competitive advantage as strong. Similarly, if its revenues came disproportionately from a narrow product line, we might view this as compounding its risk of exposure to a small geographic market and, thus, assess its scale, scope, and diversity component as weak.
66. From time to time companies will, as a result of shifting industry dynamics or strategies, expand or shrink their product or service lineups, alter their cost structures, encounter new competition, or have to adapt to new regulatory environments. In such instances, we will reevaluate all relevant subfactors (and component assessments).

Table 8

Competitive Advantage Assessment

Qualifier	What it means	Guidance
Strong	<ul style="list-style-type: none"> The company has a major competitive advantage due to one or a combination of factors that supports revenue and profit growth, combined with lower-than-average volatility of profits. There are strong prospects that the company can sustain this advantage over the long term. This should enable the company to withstand economic downturns and competitive and technological threats better than its competitors can. Any weaknesses in one or more subfactors are more than offset by strengths in other subfactors that produce sustainable and profitable revenue growth. 	<ul style="list-style-type: none"> The company's business strategy is highly consistent with, and adaptable to, industry trends and conditions and supports its leadership in the marketplace. It consistently develops and markets well-differentiated products or services, aligns products with market demand, and enhances the attractiveness or uniqueness of its value proposition through bundling. Its superior track record of product development, service quality, and customer satisfaction and retention support its ability to maintain or improve its market share. Its products or services command a clear price premium relative to its competitors' thanks to its brand equity, technological leadership, or quality of service; it is able to sustain this advantage with innovation and effective marketing. It benefits from barriers to entry from regulation, market characteristics, or intrinsic benefits (such as patents, technology, or customer relationships) that effectively reduce the threat of new competition. It has demonstrated a commitment and ability to effectively reinvest in its asset base, as evidenced by a continuous pipeline of new products and/or improvement in key capabilities, such as employee retention, customer care, distribution, and supplier relations. These tangible and intangible assets support long term prospects of sustainable and profitable growth.
Adequate	<ul style="list-style-type: none"> The company has some competitive advantages, but not so large as to create a superior business model or durable benefit compared to its peers'. It has some but not all drivers of competitiveness. Certain factors support the business' long-term viability and should result in average profitability and average profit volatility during recessions or periods of increased competition. However, these drivers are partially offset by the company's disadvantages or lack of sustainability of other factors. 	<ul style="list-style-type: none"> The company's strategy is well adapted to marketplace conditions, but it is not necessarily a leader in setting industry trends. It exhibits neither superior nor subpar abilities with respect to product or service differentiation and positioning. Its products command no price premium or advantage relative to competing brands as a result of its brand equity or its technological positioning. It may enjoy some barriers to entry that provide some defense against competitors but don't overpower them. It faces some risk of product/service displacement or substitution longer term. Its metrics of product or service quality and customer satisfaction or retention are in line with its industry's average. The company could lose customers to competitors if it makes operational missteps. Its asset profile does not exhibit particularly superior or inferior characteristics compared to other industry participants. These assets generate consistent revenue and profit growth although long-term prospects are subject to some uncertainty.

Weak	<ul style="list-style-type: none"> The company has few, if any, competitive advantages and a number of competitive disadvantages. Because the company lacks many competitive advantages, its long-term prospects are uncertain, and its profit volatility is likely to be higher than average for its industry. The company is less likely than its competitors to withstand economic, competitive, or technological threats. Alternatively, the company has weaknesses in one or more subfactors that could keep its profitability below average and its profit volatility above average during economic downturns or periods of increased competition. 	<ul style="list-style-type: none"> The company's strategy is inconsistent with, or not well adapted to, marketplace trends and conditions. There is evidence of little innovation, slowness in developing and marketing new products, an inability to raise prices, and/or ineffective bundling. Its products generally enjoy no price premium relative to competing brands and it often has to sell its products at a lower price than its peers can command. It has suffered or is at risk of suffering customer defections due to falling quality and because customers perceive its products or services to be less valuable than those of its competitors. Its revenues and market shares are vulnerable to aggressive pricing by existing or new competitors or to technological displacement risks over the near to medium term. Its metrics of product or service quality and customer satisfaction or retention are weaker than the industry average. Its reinvestment in its business is lower than its peers', its ability to retain operational talent is limited, its distribution network is inefficient, and its revenue could stagnate or decline as result.
------	--	---

© Standard & Poor's 2013.

Table 9

Scale, Scope, And Diversity		
Qualifier	What it means	Guidance
Strong	<ul style="list-style-type: none"> The company's overall scale, scope, and diversity supports stable revenues and profits by rendering it essentially invulnerable to all but the most disruptive combinations of adverse factors, events, or trends. Its significant advantages in scale, scope, and diversity enable it to withstand economic, regional, competitive, and technological threats better than its competitors can. 	<ul style="list-style-type: none"> The company's range of products or services is among the most comprehensive in its sector. It derives its revenue and profits from a broader set of products or services than the industry average. Its products and services enjoy industry-leading market shares relative to other participants in its industry. It does not rely on a particular customer or small group of customers. If it does, the customer(s) is/are of high credit quality, their demand is highly sustainable, or the company and its customer(s) have significant interdependence. It does not depend on any particular supplier or related group of suppliers that it could not easily replace. If it does, the supplier(s) is/are of high credit quality, or the company and its supplier(s) have significant interdependence. It enjoys broader geographic diversity than its peers and doesn't overly depend on a single regional or local market. If it does, the market is local, often for regulatory reasons. The company's production or service centers are diversified across several locations. It holds a strategic investment that provides positive business diversification.
Adequate	<ul style="list-style-type: none"> The company's overall scale, scope, and diversity is comparable to its peers'. Its ability to withstand economic, competitive, or technological threats is comparable to the ability of others within its sector. 	<ul style="list-style-type: none"> The company has a broad range of products or services compared with its competitors and doesn't depend on a particular product or service for the majority of its revenues and profits. Its market share is average compared with that of its competitors. Its dependence on or concentration of key customers is no higher than the industry average, and the loss of a top customer would be unlikely to pose a high risk to its business stability. It isn't overly dependent on any supplier or regional group of suppliers that it couldn't easily replace. It doesn't depend excessively on a single local or regional market, and its geographic footprint of production and revenue compares with that of other industry participants.

Weak	<ul style="list-style-type: none"> The company's lack of scale, scope, and diversity compromises the stability and sustainability of its revenues and profits. The company's vulnerability to, or reliance on, various elements of scale, scope, and diversity leaves it less likely than its competitors to withstand economic, competitive, or technological threats. 	<ul style="list-style-type: none"> The company's product or service lineup is somewhat limited compared to those of its sector peers. The company derives its profits from a narrow group of products or services, and has not achieved significant market share compared with its peers. Demand for its products or services is lower than for its competitors', and this trend isn't improving. It relies heavily on a particular customer or small group of customers, and the characteristics of the customer base do not mitigate this risk. It depends on a particular supplier or group of suppliers, which it would not be able to easily replace without incurring high switching costs. It depends disproportionately on a single local or regional economy for selling its goods or services, and the company's industry is global. Key production assets are concentrated by location, and the company has limited ability to quickly replace them without incurring high costs relative to its profits.
-------------	---	--

© Standard & Poor's 2013.

Table 10

Operating Efficiency Assessment

Qualifier	What it means	Guidance
Strong	<ul style="list-style-type: none"> The company maximizes revenues and profits via intelligent use of assets and by minimizing costs and increasing efficiency. The company's cost structure should enable it to withstand economic downturns better than its peers. 	<ul style="list-style-type: none"> The company has a lower cost structure than its peers resulting in higher profits or margins even if capacity utilization or demand are well below ideal levels and during down economic and industry cycles. It has demonstrated its ability to efficiently manage fixed and variable costs in cyclical downturns, and has a history of successful and often ongoing cost reductions programs. Its capacity utilization is close to optimal at the peak of the industry cycle and outperforms the industry average over the cycle. It has demonstrated that it can pass along increases in input costs and we expect this will continue. It has a very high ability to adjust production and labor costs in response to changes in demand without repercussions for product quality, or has demonstrated the ability to operate very profitably in a more costly or less flexible labor environment. Its suppliers have demonstrated an ability to meet swings in demand without causing bottlenecks or quality issues, and can absorb all but the most severe supply chain disruptions. It has superior working capital management, as evidenced by a consistently better-than-average "cash conversion cycle" and other working capital metrics, supporting higher cash flow and lower funding costs. Its investments in technology are likely to increase revenue growth and/or improve its cost structure and operating efficiency.

- Adequate**
- A combination of cost structure and efficiency should support sustainable profits with average profit volatility relative to the company's peers. Its cost structure is similar to its peers'.
 - The company has demonstrated the ability to manage some fixed and most variable costs except during periods of extremely weak demand, and has some history of cutting costs in good and bad times.
 - Its cost structure permits some profitability even if capacity utilization or customer demand is well below ideal levels. The company can at least break even during most of the industry/demand cycle.
 - Its cost structure is in line with its peers'. For example, its selling, general, and administrative (SG&A) expense as a percent of revenue is similar to its peers' and is likely to be stable.
 - It has demonstrated an ability to adjust labor costs in most scenarios without hurting product output and quality, or can operate profitably in a more costly or less flexible labor environment; it has some success passing on input cost increases, although perhaps only partially or with time lag.
 - Its suppliers have met typical swings in demand without causing widespread bottlenecks or quality issues, and the company has some capacity to withstand limited supply chain disruptions.
 - It has good working capital management, evidenced by its cash conversion cycle and working capital metrics that are on par with its peers'.
 - Its investments in technology are likely to help it at least maintain its cost structure and current level of operating efficiency.

- Weak**
- The company's operating efficiency leaves it with lower profitability than its peers' due to lower asset utilization and/or a higher, less flexible cost structure.
 - The company's cost structure permits better-than-marginal profitability only if capacity utilization is at the top of the cycle or during periods of strong demand. The company needs solid and sustained industry conditions to generate fair profitability.
 - It has limited success or capability of managing fixed costs and even most typically variable costs are fixed in the next two to three years.
 - It has a limited track record of successful cost reductions, such as reducing labor costs in the face of swings in demand, or it has limited ability to pass along increases in input costs.
 - Its costs are higher than its peers'. For example, the company's SG&A expense as a percent of revenue is above that of its peers, and likely to remain so.
 - Its suppliers may face bottlenecks or quality issues in the event of modest swings in demand, or have limited technological capabilities. There is evidence that a limited supply chain disruption would make it difficult for suppliers to meet their commitments to the company.
 - Its working capital management is weak, as evidenced by working capital metrics that are significantly worse than those of its peers, resulting in lower cash flow and higher funding costs.
 - It lacks investments in technology, which could hurt its revenue growth and/or result in a higher cost structure and less efficient operations relative to its peers'.

© Standard & Poor's 2013.

3. Determining the preliminary competitive position assessment: Competitive position group profile and category weightings

67. After assessing competitive advantage; scale, scope, and diversity; and operating efficiency, we determine a company's preliminary competitive position assessment by ascribing a specific weight to each component. The weightings depend on the company's Competitive Position Group Profile (CPGP).
68. There are six possible CPGPs: 1) services and product focus, 2) product focus/scale driven, 3) capital or asset focus, 4) commodity focus/cost driven, 5) commodity focus/scale driven, and 6) national industry and utilities (see table 11 for definitions and characteristics).

Table 11

Competitive Position Group Profile (CPGP)

	Definition and characteristics	Examples
Services and product focus	Brands, product quality or technology, and service reputation are typically key differentiating factors for competing in the industry. Capital intensity is typically low to moderate, although supporting the brand often requires ongoing reinvestment in the asset base.	Typically, these are companies in consumer-facing light manufacturing or service industries. Examples include branded drug manufacturers, software companies, and packaged food.
Product focus/scale driven	Product and geographic diversity, as well as scale and market position are key differentiating factors. Sophisticated technology and stringent quality controls heighten risk of product concentration. Product preferences or sales relationships are more important than branding or pricing. Cost structure is relatively unimportant.	The sector most applicable is medical device/equipment manufacturers, particularly at the higher end of the technology scale. These companies largely sell through intermediaries, as opposed to directly to the consumer.
Capital or asset focus	Sizable capital investments are generally required to sustain market position in the industry. Brand identification is of limited importance, although product and service quality often remain differentiating factors.	Heavy manufacturing industries typically fall into this category. Examples include telecom infrastructure manufacturers and semiconductor makers.
Commodity focus/cost driven	Cost position and efficiency of production assets are more important than size, scope, and diversification. Brand identification is of limited importance	Typically, these are companies that manufacture products from natural resources that are used as raw materials by other industries. Examples include forest and paper products companies that harvest timber or produce pulp, packaging paper, or wood products.
Commodity focus/scale driven	Pure commodity companies have little product differentiation, and tend to compete on price and availability. Where present, brand recognition or product differences are secondary or of less importance.	Examples range from pure commodity producers and most oil and gas upstream producers, to some producers with modest product or brand differentiation, such as commodity foods.
National industries and utilities	Government policy or control, regulation, and taxation and tariff policies significantly affect the competitive dynamics of the industry (see paragraphs 72-73).	An example is a water-utility company in an emerging market.

69. The nature of competition and key success factors are generally prescribed by industry characteristics, but vary by company. Where service, product quality, or brand equity are important competitive factors, we'll give the competitive advantage component of our overall assessment a higher weighting. Conversely, if the company produces a commodity product, differentiation comes less into play, and we will more heavily weight scale, scope, and diversity as well as operating efficiency (see table 12).

Table 12**Competitive Position Group Profiles (CPGPs) And Category Weightings**

Component	--(%)--					
	Services and product focus	Product focus/scale driven	Capital or asset focus	Commodity focus/cost driven	Commodity focus/scale driven	National industries and utilities
1. Competitive advantage	45	35	30	15	10	60
2. Scale, scope, and diversity	30	50	30	35	55	20
3. Operating efficiency	25	15	40	50	35	20
Total	100	100	100	100	100	100
Weighted-average assessment*	1.0-5.0	1.0-5.0	1.0-5.0	1.0-5.0	1.0-5.0	1.0-5.0

*1 (strong), 2 (strong/adequate), 3 (adequate), 4 (adequate/weak), 5 (weak).

70. We place each of the defined industries (see Appendix B, table 27) into one of the six CPGPs (see above and Appendix B, table 27). This is merely a starting point for the analysis, since we recognize that some industries are less homogenous than others, and that company-specific strategies do affect the basis of competition.
71. In fact, the criteria allow for flexibility in selecting a company's group profile (with its category weightings). Reasons for selecting a profile different than the one suggested in the guidance table could include:
- The industry is heterogeneous, meaning that the nature of competition differs from one subsector to the next, and possibly even within subsectors. The KCF article for the industry will identify such circumstances.
 - A company's strategy could affect the relative importance of its key factors of competition.
72. For example, the standard CPGP for the telecom and cable industry is services and product focus. While this may be an appropriate group profile for carriers and service providers, an infrastructure provider may be better analyzed under the capital or asset focus group profile. Other examples: In the capital goods industry, a construction equipment rental company may be analyzed under the capital or asset focus group profile, owing to the importance of efficiently managing the capital spending cycle in this segment of the industry, whereas a provider of hardware, software, and services for industrial automation might be analyzed under the services and product focus group profile, if we believe it can achieve differentiation in the marketplace based on product performance, technology innovation, and service.
73. In some industries, the effects of government policy, regulation, government control, and taxation and tariff policies can significantly alter the competitive dynamics, depending on the country in which a company operates. That can alter our assessment of a company's competitive advantage; scale, size, and diversity; or operating efficiency. When industries in given countries have risks that differ materially from those captured in our global industry risk profile and assessment (see "Methodology: Industry Risk," published Nov. 19, 2013, section B), we will weight competitive advantage more heavily to capture the effect, positive or negative, on competitive dynamics. The assessment of competitive advantage; scale, size, and diversity; and operating efficiency will reflect advantages or disadvantages based on these national industry risk factors. Table 13 identifies the circumstances under which national industry risk factors are positive or negative.

Table 13

National Industry Risk Factors	
National industry risk factors are positive	<ul style="list-style-type: none">• Government policy including regulation, ownership, and taxation is supportive and has a good track record of mitigating risks to the stability of industry margins.• Any government ownership, tariff, and taxation policy supports growth prospects for revenues and profit generation.• There is very little discernible risk of negative policy, regulatory, ownership, or taxation changes that could threaten business stability.
National industry risk factors are negative	<ul style="list-style-type: none">• Government policy and regulation has a weak track record of stabilizing margins and reducing industry risks.• Any government ownership, tariff, and taxation policy undermine growth prospects for revenues and profit generation.• There is an increasing risk of negative policy, ownership, and taxation changes that could undermine industry stability.

© Standard & Poor's 2013.

74. When national industry risk factors are positive for a company, typically they support revenue growth, profit growth, higher EBITDA margins, and/or lower-than-average volatility of profits. Often, these benefits provide barriers to entry that impede or even bar new market entrants, which should be reflected in the competitive advantage assessment. These benefits may also include risk mitigants that enable a company to withstand economic downturns and competitive and technological threats better in its local markets than its global competitors can. The scale, scope, and diversity assessment might also benefit from these policies if the company is able to withstand economic, regional, competitive, and technological threats better than its global competitors can. Likewise, the company's operating efficiency assessment may improve if, as a result, it is better able than its global competitors to withstand economic downturns, taking into account its cost structure.
75. Conversely, when national industry risk factors are negative for a company, typically they detract from revenue growth and profit growth, shrink EBITDA margins, and/or increase the average volatility of profits. The company may also have less protection against economic downturns and competitive and technological threats within its local markets than its global competitors do. We may also adjust the company's scale, scope, and diversity assessment lower if, as a result of these policies, it is less able to withstand economic, regional, competitive, and technological threats than its global competitors can. Likewise, we may adjust its operating efficiency assessment lower if, as a result of these policies, it is less able to withstand economic downturns, taking into account the company's cost structure.
76. An example of when we might use a national industry risk factor would be for a telecommunications network owner that benefits from a monopoly network position, supported by substantial capital barriers to entry, and as a result is subject to regulated pricing for its services. Accordingly, in contrast to a typical telecommunications company, our analysis of the company's competitive position would focus more heavily on the monopoly nature of its operations, as well as the nature and reliability of the operator's regulatory framework in supporting future revenue and earnings. If we viewed the regulatory framework as being supportive of the group's future earnings stability, and we considered its

monopoly position to be sustainable, we would assess these national industry risk factors as positive in our assessment of the group's competitive position.

77. The weighted average assessment translates into the preliminary competitive position assessment on a scale of 1 to 6, where one is best. Table 14 describes the matrix we use to translate the weighted average assessment of the three components into the preliminary competitive position assessment.

Table 14

Translation Table For Converting Weighted-Average Assessments Into Preliminary Competitive Position Assessments

Weighted average assessment range	Preliminary competitive position assessment
1.00 – 1.50	1
>1.50 – 2.25	2
>2.25 – 3.00	3
>3.00 – 3.75	4
>3.75 – 4.50	5
>4.50 – 5.00	6

4. Assessing profitability

78. We assess profitability on the same scale of 1 to 6 as the competitive position assessment.
79. The profitability assessment consists of two subcomponents: level of profitability and the volatility of profitability, which we assess separately. We use a matrix to combine these into the final profitability assessment.

a) Level of profitability

80. The level of profitability is assessed in the context of the company's industry. We most commonly measure profitability using return on capital (ROC) and EBITDA margins, but we may also use sector-specific ratios. Importantly, as with the other components of competitive position, we review profitability in the context of the industry in which the company operates, not just in its narrower subsector. (See list of industries and subsectors in Appendix B, table 27.)
81. We assess level of profitability on a three-point scale: above average, average, and below average. Industry KCF articles may establish numeric guidance, for instance by stating that an ROC above 12% is considered above average, between 8%-12% is average, and below 8% is below average for the industry, or by differentiating between subsectors in the industry. In the absence of numeric guidance, we compare a company against its peers across the industry.
82. We calculate profitability ratios generally based on a five-year average, consisting of two years of historical data, our projections for the current year (incorporating any reported year-to-date results and estimates for the remainder of the year), and the next two financial years. There may be situations where we consider longer or shorter historical results or forecasts, depending on such factors as availability of financials, transformational events (such as mergers or acquisitions [M&A]), cyclical distortion (such as peak or bottom of the cycle metrics that we do not deem fully representative of the company's level of profitability), and we take into account improving or deteriorating trends in profitability ratios in our assessment.

b) Volatility of profitability

83. We base the volatility of profitability on the standard error of the regression (SER) for a company's historical EBITDA, EBITDA margins, or return on capital. The KCF articles provide guidance on which measures are most appropriate for a given industry or set of companies. For each of these measures, we divide the standard error by the average of that measure over the time period in order to ensure better comparability across companies.
84. The SER is a statistical measure that is an estimate of the deviation around a 'best fit' linear trend line. We regress the company's EBITDA, EBITDA margins, or return on capital against time. A key advantage of SER over standard deviation or coefficient of variation is that it doesn't view upwardly trending data as inherently more volatile. At the same time, we recognize that SER, like any statistical measure, may understate or overstate expected volatility and thus we will make qualitative adjustments where appropriate (see paragraphs 86-90). Furthermore, we only calculate SER when companies have at least seven years of historical annual data and have not significantly changed their line of business during the timeframe, to ensure that the results are meaningful.
85. As with the level of profitability, we evaluate a company's SER in the context of its industry group. For most industries, we establish a six-point scale with 1 capturing the least volatile companies, i.e., those with the lowest SERs, and 6 identifying companies whose profits are most volatile. We have established industry-specific SER parameters using the most recent seven years of data for companies within each sector. We believe that seven years is generally an adequate number of years to capture a business cycle. (See Appendix B, section 4 for industry-specific SER parameters.) For companies whose business segments cross multiple industries, we evaluate the SER in the context of the organization's most dominant industry--if that industry represents at least two-thirds of the organization's EBITDA, sales, or other relevant metric. If the company is a conglomerate and no dominant industry can be identified, we will evaluate its profit volatility in the context of SER guidelines for all nonfinancial companies.
86. In certain circumstances, the SER derived from historical information may understate--or overstate--expected future volatility, and we may adjust the assessment downward or upward. The scope of possible adjustments depends on certain conditions being met as described below.
87. We might adjust the SER-derived volatility assessment to a worse assessment (i.e., to a higher assessment for greater volatility) by up to two categories if the expected level of volatility isn't apparent in historical numbers, and the company either:
- Has a weighted country risk assessment of 4 or worse, which may, notwithstanding past performance, result in a less stable business environment going forward;
 - Operates in a subsector of the industry that may be prone to higher technology or regulation changes, or other potential disruptive risks that have not emerged over the seven year period;
 - Is of limited size and scope, which will often result in inherently greater vulnerability to external changes; or
 - Has pursued material M&A or internal growth projects that obscure the company's underlying performance trend line. As an example, a company may have consummated an acquisition during the trough of the cycle, masking what would otherwise be a significant decline in performance.
88. The choice of one or two categories depends on the degree of likelihood that the related risks will materialize and our view of the likely severity of these risks.

89. Conversely, we may adjust the SER-derived volatility assessment to a better assessment (i.e., to a lower assessment reflecting lower volatility) by up to two categories if we observe that the conditions historically leading to greater volatility have receded and are misrepresentative. This will be the case when:
- The company grew at a moderately faster, albeit more uneven, pace relative to the industry. Since we measure volatility around a linear trend line, a company growing at a constant percentage of moderate increase (relative to the industry) or an uneven pace (e.g., due to "lumpy" capital spending programs) could receive a relatively unfavorable assessment on an unadjusted basis, which would not be reflective of the company's performance in a steady state. (Alternatively, those companies that grow at a significantly higher-than-average industry rate often do so on unsustainable rates of growth or by taking on high-risk strategies. Companies with these high-risk growth strategies would not receive a better assessment and could be adjusted to a worse assessment;)
 - The company's geographic, customer, or product diversification has increased in scope as a result of an acquisition or rapid expansion (e.g. large, long-term contracts wins), leading to more stability in future earnings in our view; or
 - The company's business model is undergoing material change that we expect will benefit earnings stability, such as a new regulatory framework or major technology shift that is expected to provide a significant competitive hedge and margin protection over time.
90. The choice of one or two categories depends on the degree of likelihood that the related risks will materialize and our view of the likely severity of these risks.
91. If the company either does not have at least seven years of annual data or has materially changed its business lines or undertaken abnormally high levels of M&A during this time period, then we do not use its SER to assess the volatility of profitability. In these cases, we use a proxy to establish the volatility assessment. If there is a peer company that has, and is expected to continue having, very similar profitability volatility characteristics, we use the SER of that peer entity as a proxy.
92. If no such matching peer exists, or one cannot be identified with enough confidence, we perform an assessment of expected volatility based on the following rules:
- An assessment of 3 if we expect the company's profitability, supported by available historical evidence, will exhibit a volatility pattern in line with, or somewhat less volatile than, the industry average.
 - An assessment of 2 based on our confidence, supported by available historical evidence, that the company will exhibit lower volatility in profitability metrics than the industry's average. This could be underpinned by some of the factors listed in paragraph 89, whereas those listed in paragraph 87 would typically not apply.
 - An assessment of 4 or 5 based on our expectation that profitability metrics will exhibit somewhat higher (4), or meaningfully higher (5) volatility than the industry, supported by available historical evidence, or because of the applicability of possible adjustment factors listed in paragraph 87.
 - Assessments of either 1 or 6 are rarely assigned and can only be achieved based on a combination of data evidence and very high confidence tests. For an assessment of 1, we require strong evidence of minimal volatility in profitability metrics compared with the industry, supported by at least five years of historical information, combined with a very high degree of confidence that this will continue in the future, including no country risk, subsector risk or size considerations that could otherwise warrant a worse assessment as per paragraph 87. For an assessment of 6 we require strong evidence of very high volatility in profitability metrics compared with the industry, supported by at least five years of historical information and very high confidence that this will continue in the future.
93. Next, we combine the level of profitability assessment with the volatility assessment to determine the final profitability

assessment using the matrix in Table 15.

Table 15

Profitability Assessment						
	--Volatility of profitability assessment--					
Level of profitability assessment	1	2	3	4	5	6
Above average	1	1	2	3	4	5
Average	1	2	3	4	5	6
Below average	2	3	4	5	6	6

5. Combining the preliminary competitive position assessment with profitability

94. The fourth and final step in arriving at a competitive position assessment is to combine the preliminary competitive position assessment with the profitability assessment. We use the combination matrix in Table 16, which shows how the profitability assessment can confirm, strengthen, or weaken (by up to one category) the overall competitive position assessment.

Table 16

Combining The Preliminary Competitive Position Assessment And Profitability Assessment						
	--Preliminary competitive position assessment--					
Profitability assessment	1	2	3	4	5	6
1	1	2	2	3	4	5
2	1	2	3	3	4	5
3	2	2	3	4	4	5
4	2	3	3	4	5	5
5	2	3	4	4	5	6
6	2	3	4	5	5	6

95. We generally expect companies with a strong preliminary competitive position assessment to exhibit strong and less volatile profitability metrics. Conversely, companies with a relatively weaker preliminary competitive position assessment will generally have weaker and/or more volatile profitability metrics. Our analysis of profitability helps substantiate whether management is translating any perceived competitive advantages, diversity benefits, and cost management measures into higher earnings and more stable return on capital and return on sales ratios than the averages for the industry. When profitability differs markedly from what the preliminary/anchor competitive position assessment would otherwise imply, we adjust the competitive position assessment accordingly.
96. Our method of adjustment is biased toward the preliminary competitive position assessment rather than toward the profitability assessment (e.g., a preliminary competitive assessment of 6 and a profitability assessment of 1 will result in a final assessment of 5).

E. Cash Flow/Leverage

97. The pattern of cash flow generation, current and future, in relation to cash obligations is often the best indicator of a company's financial risk. The criteria assess a variety of credit ratios, predominately cash flow-based, which

complement each other by focusing on the different levels of a company's cash flow waterfall in relation to its obligations (i.e., before and after working capital investment, before and after capital expenditures, before and after dividends), to develop a thorough perspective. Moreover, the criteria identify the ratios that we think are most relevant to measuring a company's credit risk based on its individual characteristics and its business cycle.

98. For the analysis of companies with intermediate or stronger cash flow/leverage assessments (a measure of the relationship between the company's cash flows and its debt obligations as identified in paragraphs 106 and 124), we primarily evaluate cash flows that reflect the considerable flexibility and discretion over outlays that such companies typically possess. For these entities, the starting point in the analysis is cash flows before working capital changes plus capital investments in relation to the size of a company's debt obligations in order to assess the relative ability of a company to repay its debt. These "leverage" or "payback" cash flow ratios are a measure of how much flexibility and capacity the company has to pay its obligations.
99. For entities with significant or weaker cash flow/leverage assessments (as identified in paragraphs 105 and 124), the criteria also call for an evaluation of cash flows in relation to the carrying cost or interest burden of a company's debt. This will help us assess a company's relative and absolute ability to service its debt. These "coverage"- or "debt service"-based cash flow ratios are a measure of a company's ability to pay obligations from cash earnings and the cushion the company possesses through stress periods. These ratios, particularly interest coverage ratios, become more important the further a company is down the credit spectrum.

1. Assessing cash flow/leverage

100. Under the criteria, we assess cash flow/leverage as 1, minimal; 2, modest; 3, intermediate; 4, significant; 5, aggressive; or 6, highly leveraged. To arrive at these assessments, the criteria combine the assessments of a variety of credit ratios, predominately cash flow-based, which complement each other by focusing attention on the different levels of a company's cash flow waterfall in relation to its obligations. For each ratio, there is an indicative cash flow/leverage assessment that corresponds to a specified range of values in one of three given benchmark tables (see tables 17, 18, and 19). We derive the final cash flow/leverage assessment for a company by determining the relevant core ratios, anchoring a preliminary cash flow assessment based on the relevant core ratios, determining the relevant supplemental ratio(s), adjusting the preliminary cash flow assessment according to the relevant supplemental ratio(s), and, finally, modifying the adjusted cash flow/leverage assessment for any material volatility.

2. Core and supplemental ratios

a) Core ratios

101. For each company, we calculate two core credit ratios--funds from operations (FFO) to debt and debt to EBITDA--in accordance with Standard & Poor's ratios and adjustments criteria (see "Corporate Methodology: Ratios And Adjustments," published Nov. 19, 2013). We compare these payback ratios against benchmarks to derive the preliminary cash flow/leverage assessment for a company. These ratios are also useful in determining the relative ranking of the financial risk of companies.

b) Supplemental ratios

102. The criteria also consider one or more supplemental ratios (in addition to the core ratios) to help develop a fuller understanding of a company's financial risk profile and fine-tune our cash flow/leverage analysis. Supplemental ratios

could either confirm or adjust the preliminary cash flow/leverage assessment. The confirmation or adjustment of the preliminary cash flow/leverage assessment will depend on the importance of the supplemental ratios as well as any difference in indicative cash flow/leverage assessment between the core and supplemental ratios as described in section E.3.b.

103. The criteria typically consider five standard supplemental ratios, although the relevant KCF criteria may introduce additional supplemental ratios or focus attention on one or more of the standard supplemental ratios. The standard supplemental ratios include three payback ratios--cash flow from operations (CFO) to debt, free operating cash flow (FOCF) to debt, and discretionary cash flow (DCF) to debt--and two coverage ratios, FFO plus interest to cash interest and EBITDA to interest.
104. The criteria provide guidelines as to the relative importance of certain ratios if a company exhibits characteristics such as high leverage, working capital intensity, capital intensity, or high growth.
105. If the preliminary cash flow/leverage assessment is significant or weaker (see section E.3), then two coverage ratios, FFO plus interest to cash interest and EBITDA to interest, will be given greater importance as supplemental ratios. For the purposes of calculating the coverage ratios, "cash interest" includes only cash interest payments (i.e., interest excludes noncash interest payable on, for example, payment-in-kind [PIK] instruments) and does not include any Standard & Poor's adjusted interest on such items as leases, while "interest" is the income statement figure plus Standard & Poor's adjustments to interest (see "Corporate Methodology: Ratios And Adjustments," published Nov. 19, 2013).
106. If the preliminary cash flow/leverage assessment is intermediate or stronger, the criteria first apply the three standard supplemental ratios of CFO to debt, FOCF to debt, and DCF to debt. When FOCF to debt and DCF to debt indicate a cash flow/leverage assessment that is lower than the other payback-ratio-derived cash flow/leverage assessments, it signals that the company has either larger than average capital spending or other non-operating cash distributions (including dividends). If these differences persist and are consistent with a negative trend in overall ratio levels, which we believe is not temporary, then these supplemental leverage ratios will take on more importance in the analysis.
107. If the supplemental ratios indicate a cash flow/leverage assessment that is different than the preliminary cash flow/leverage assessment, it could suggest an unusual debt service or fixed charge burden, working capital or capital expenditure profile, or unusual financial activity or policies. In such cases, we assess the sustainability or persistence of these differences. For example, if either working capital or capital expenditures are unusually low, leading to better indicated assessments, we examine the sustainability of such lower spending in the context of its impact on the company's longer term competitive position. If there is a deteriorating trend in the company's asset base, we give these supplemental ratios less weight. If either working capital or capital expenditures are unusually high, leading to weaker indicated assessments, we examine the persistence and need for such higher spending. If elevated spending levels are required to maintain a company's competitive position, for example to maintain the company's asset base, we give more weight to these supplemental ratios.
108. For capital-intensive companies, EBITDA and FFO may overstate financial strength, whereas FOCF may be a more accurate reflection of their cash flow in relation to their financial obligations. The criteria generally consider a

capital-intensive company as having ongoing capital spending to sales of greater than 10%, or depreciation to sales of greater than 8%. For these companies, the criteria place more weight on the supplementary ratio of FOCF to debt. Where we place more analytic weight on FOCF to debt, we also seek to estimate the amount of maintenance or full cycle capital required (see Appendix C) under normal conditions (we estimate maintenance or full-cycle capital expenditure required because this is not a reported number). The FOCF figure may be adjusted by adding back estimated discretionary capital expenditures. The adjusted FOCF to debt based on maintenance or full cycle capital expenditures often helps determine how much importance to place on this ratio. If both the FOCF to debt and the adjusted (for estimated discretionary capital spending) FOCF to debt derived assessments are different from the preliminary cash/flow leverage assessment, then these supplemental leverage ratios take on more importance in the analysis.

109. For working-capital-intensive companies, EBITDA and FFO may also overstate financial strength, and CFO may be a more accurate measure of the company's cash flow in relation to its financial risk profile. Under the criteria, if a company has a working capital-to-sales ratio that exceeds 25% or if there are significant seasonal swings in working capital, we generally consider it to be working-capital-intensive. For these companies, the criteria place more emphasis on the supplementary ratio of CFO to debt. Examples of companies that have working-capital-intensive characteristics can be found in the capital goods, metals and mining downstream, or the retail and restaurants industries. The need for working capital in those industries reduces financial flexibility and, therefore, these supplemental leverage ratios take on more importance in the analysis.
110. For all companies, when FOCF to debt or DCF to debt is negative or indicates materially lower cash flow/leverage assessments, the criteria call for an examination of management's capital spending and cash distribution strategies. For high-growth companies, typically the focus is on FFO to debt instead of FOCF to debt because the latter ratio can vary greatly depending on the growth investment the company is undergoing. The criteria generally consider a high-growth company one that exhibits real revenue growth in excess of 8% per year. Real revenue growth excludes price or foreign exchange related growth, under these criteria. In cases where FOCF or DCF is low, there is a greater emphasis on monitoring the sustainability of margins and return on capital and the overall financing mix to assess the likely trend of future debt ratios. In addition, debt service ratio analysis will be important in such situations. For companies with more moderate growth, the focus is typically on FOCF to debt unless the capital spending is short term or is not funded with debt.
111. For companies that have ongoing and well entrenched banking relationships we can reflect these relationships in our cash flow/leverage analysis through the use of the interest coverage ratios as supplemental ratios. These companies generally have historical links and a strong ongoing relationship with their main banks, as well as shareholdings by the main banks, and management influence and interaction between the main banks and the company. Based on their bank relationships, these companies often have lower interest servicing costs than peers, even if the macro economy worsens. In such cases, we generally use the interest coverage ratios as supplemental ratios. This type of banking relationship occurs in Japan, for example, where companies that have the type of bank relationship described in this paragraph tend to have a high socioeconomic influence within their country by way of their revenue size, total debt quantum, number of employees, and the relative importance of the industry.

c) Time horizon and ratio calculation

112. A company's credit ratios may vary, often materially, over time due to economic, competitive, technological, or investment cycles, the life stage of the company, and corporate or strategic actions. Thus, we evaluate credit ratios on a time series basis with a clear forward-looking bias. The length of the time series is dependent on the relative credit risk of the company and other qualitative factors and the weighting of the time series varies according to transformational events. A transformational event is any event that could cause a material change in a company's financial profile, whether caused by changes to the company's capital base, capital structure, earnings, cash flow profile, or financial policies. Transformational events can include mergers, acquisitions, divestitures, management changes, structural changes to the industry or competitive environment, and/or product development and capital programs. This section provides guidance on the timeframe and weightings the criteria apply to calculate the indicative ratios.
113. The criteria generally consider the company's credit ratios for the previous one to two years, current-year forecast, and the two subsequent forecasted financial years. There may be situations where longer--or even shorter--historical results or forecasts are appropriate, depending on such factors as availability of financials, transformational events, or relevance. For example, a utility company with a long-term capital spending program may lend itself to a longer-term forecast, whereas for a company experiencing a near-term liquidity squeeze even a two-year forecast will have limited value. Alternatively, for most commodities-based companies we emphasize credit ratios based on our forward-looking view of market conditions, which may differ materially from the historical period.
114. Historical patterns in cash flow ratios are informative, particularly in understanding past volatility, capital spending, growth, accounting policies, financial policies, and business trends. Our analysis starts with a review of these historical patterns in order to assess future expected credit quality. Historical patterns can also provide an indication of potential future volatility in ratios, including that which results from seasonality or cyclicity. A history of volatility could result in a more conservative assessment of future cash flow generation if we believe cash flow will continue to be volatile.
115. The forecast ratios are based on an expected base-case scenario developed by Standard & Poor's, incorporating current and near-term economic conditions, industry assumptions, and financial policies. The prospective cyclical and longer-term volatility associated with the industry in which the issuer operates is addressed in the industry risk criteria (see section B) and the longer-term directional influence or event risk of financial policies is addressed in our financial policy criteria (see section H).
116. The criteria generally place greater emphasis on forecasted years than historical years in the time series of credit ratios when calculating the indicative credit ratio. For companies where we have five years of ratios as described in section E.3, generally we calculate the indicative ratio by weighting the previous two years, the current year, and the forecasted two years as 10%, 15%, 25%, 25%, and 25%, respectively.
117. This weighting changes, however, to place even greater emphasis on the current and forecast years when:
 - The issuer meets the characteristics described in paragraph 113, and either shorter- or longer-term forecasts are applicable. The weights applied will generally be quite forward weighted, particularly if a company is undergoing a transformational event and there is moderate or better cash flow certainty.
 - The issuer is forecast to generate negative cash flow available for debt repayment, which we believe could lead to

deteriorating credit metrics. Forecast negative cash flows could be generated from operating activities as well as capital expenditures, share buybacks, dividends, or acquisitions, as we forecast these uses of cash based on the company's track record, market conditions, or financial policy. The weights applied will generally be 30%, 40%, and 30% for the current and two subsequent years, respectively.

- The issuer is in an industry that is prospectively volatile or that has a high degree of cash flow uncertainty. Industries that are prospectively volatile are industries whose competitive risk and growth assessments are either high risk (5) or very high risk (6) or whose overall industry risk assessments are either high risk (5) or very high risk (6). The weights applied will generally be 50% for the current year and 50% for the first subsequent forecast year.

118. When the indicative ratio(s) is borderline (i.e., less than 10% different from the threshold in relative terms) between two assessment thresholds (as described in section E.3 and tables 17, 18, and 19) and the forecast points to a switch in the ratio between categories during the rating timeframe, we will weigh the forecast even more heavily in order to prospectively capture the trend.
119. For companies undergoing a transformational event, the weighting of the time series could vary significantly.
120. For companies undergoing a transformational event and with significant or weaker cash flow/leverage assessments, we place greater weight on near-term risk factors. That's because overemphasis on longer-term (inherently less predictable) issues could lead to some distortion when assessing the risk level of a speculative-grade company. We generally analyze a company using the arithmetic mean of the credit ratios expected according to our forecasts for the current year (or pro forma current year) and the subsequent financial year. A common example of this is when a private equity firm acquires a company using additional debt leverage, which makes historical financial ratios meaningless. In this scenario, we weight or focus the majority of our analysis on the next one or two years of projected credit measures.

3. Determining the cash flow/leverage assessment

a) Identifying the benchmark table

121. Tables 17, 18, and 19 provide benchmark ranges for various cash flow ratios we associate with different cash flow/leverage assessments for standard volatility, medial volatility, and low volatility industries. The tables of benchmark ratios differ for a given ratio and cash flow/leverage assessment along two dimensions: the starting point for the ratio range and the width of the ratio range.
122. If an industry exhibits low volatility, the threshold levels for the applicable ratios to achieve a given cash flow/leverage assessment are less stringent than those in the medial or standard volatility tables, although the range of the ratios is narrower. Conversely, if an industry exhibits medial or standard levels of volatility, the threshold for the applicable ratios to achieve a given cash flow/leverage assessment are elevated, albeit with a wider range of values.
123. The relevant benchmark table for a given company is based on our assessment of the company's associated industry and country risk volatility, or the CICRA (see section A, table 1). The low volatility table (table 19) will generally apply when a company's CICRA is 1, unless otherwise indicated in a sector's KCF criteria. The medial volatility table (table 18) will be used under certain circumstances for companies with a CICRA of 1 or 2. Those circumstances are described in the respective sectors' KCF criteria. The standard volatility table (table 17) serves as the relevant benchmark table for companies with a CICRA of 2 or worse, and we will always use it for companies with a CICRA of 1 or 2 and whose competitive position is assessed 5 or 6. Although infrequent, we will use the low volatility table when

a company's CICRA is 2 for companies that exhibit or are expected to exhibit low levels of volatility. The choice of volatility tables for companies with a CICRA of 2 is addressed in the respective sector's KCF article.

Table 17

Cash Flow/Leverage Analysis Ratios--Standard Volatility							
	--Core ratios--		--Supplementary coverage ratios--		--Supplementary payback ratios--		
	FFO/debt (%)	Debt/EBITDA (x)	FFO/cash interest(x)	EBITDA/interest (x)	CFO/debt (%)	FOCF/debt (%)	DCF/debt (%)
Minimal	60+	Less than 1.5	More than 13	More than 15	More than 50	40+	25+
Modest	45-60	1.5-2	9-13	10-15	35-50	25-40	15-25
Intermediate	30-45	2-3	6-9	6-10	25-35	15-25	10-15
Significant	20-30	3-4	4-6	3-6	15-25	10-15	5-10
Aggressive	12-20	4-5	2-4	2-3	10-15	5-10	2-5
Highly leveraged	Less than 12	Greater than 5	Less than 2	Less than 2	Less than 10	Less than 5	Less than 2

Table 18

Cash Flow/Leverage Analysis Ratios--Medial Volatility							
	--Core ratios--		--Supplementary coverage ratios--		--Supplementary payback ratios--		
	FFO/debt (%)	Debt/EBITDA (x)	FFO/cash interest (x)	EBITDA/interest (x)	CFO/debt (%)	FOCF/debt (%)	DCF/debt (%)
Minimal	50+	less than 1.75	10.5+	14+	40+	30+	18+
Modest	35-50	1.75-2.5	7.5-10.5	9-14	27.5-40	17.5-30	11-18
Intermediate	23-35	2.5-3.5	5-7.5	5-9	18.5-27.5	9.5-17.5	6.5-11
Significant	13-23	3.5-4.5	3-5	2.75-5	10.5-18.5	5-9.5	2.5-6.5
Aggressive	9-13	4.5-5.5	1.75-3	1.75-2.75	7-10.5	0-5	(11)-2.5
Highly leveraged	Less than 9	Greater than 5.5	Less than 1.75	Less than 1.75	Less than 7	Less than 0	Less than (11)

Table 19

Cash Flow/Leverage Analysis Ratios--Low Volatility							
	--Core ratios--		--Supplementary coverage ratios--		--Supplementary payback ratios--		
	FFO/debt (%)	Debt/EBITDA (x)	FFO/cash interest (x)	EBITDA/interest (x)	CFO/debt (%)	FOCF/debt (%)	DCF/debt (%)
Minimal	35+	Less than 2	More than 8	More than 13	More than 30	20+	11+
Modest	23-35	2-3	5-8	7-13	20-30	10-20	7-11
Intermediate	13-23	3-4	3-5	4-7	12-20	4-10	3-7
Significant	9-13	4-5	2-3	2.5-4	8-12	0-4	0-3
Aggressive	6-9	5-6	1.5-2	1.5-2.5	5-8	(10)-0	(20)-0
Highly leveraged	Less than 6	Greater than 6	Less than 1.5	Less than 1.5	Less than 5	Less than (10)	Less than (20)

b) Aggregating the credit ratio assessments

124. To determine the final cash flow/leverage assessment, we make these calculations:
- 1) First, calculate a time series of standard core and supplemental credit ratios, select the relevant benchmark table, and determine the appropriate time weighting of the credit ratios.

- Calculate the two standard core credit ratios and the five standard supplemental credit ratios over a five-year time horizon.
 - Consult the relevant industry KCF article (if applicable), which may identify additional supplemental ratio(s). The relevant benchmark table for a given company is based on our assessment of the company's associated industry and country risk volatility, or the CICRA.
 - Calculate the appropriate weighted average cash flow/leverage ratios. If the company is undergoing a transformational event, then the core and supplemental ratios will typically be calculated based on Standard & Poor's projections for the current and next one or two financial years.
- 2) Second, we use the core ratios to determine the preliminary cash flow assessment.
 - Compare the core ratios (FFO to debt and debt to EBITDA) to the ratio ranges in the relevant benchmark table.
 - If the core ratios result in different cash flow/leverage assessments, we will select the relevant core ratio based on which provides the best indicator of a company's future leverage.
 - 3) Third, we review the supplemental ratio(s).
 - Determine the importance of standard or KCF supplemental ratios based on company-specific characteristics, namely, leverage, capital intensity, working capital intensity, growth rate, or industry.
 - 4) Fourth, we calculate the adjusted cash flow/leverage assessment.
 - If the cash flow/leverage assessment(s) indicated by the important supplemental ratio(s) differs from the preliminary cash flow/leverage assessment, we might adjust the preliminary cash flow/leverage assessment by one category in the direction of the cash flow/leverage assessment indicated by the supplemental ratio(s) to derive the adjusted cash flow/leverage assessment. We will make this adjustment if, in our view, the supplemental ratio provides the best indicator of a company's future leverage.
 - If there is more than one important supplemental ratio and they result in different directional deviations from the preliminary cash flow/leverage assessment, we will select one as the relevant supplemental ratio based on which, in our opinion, provides the best indicator of a company's future leverage. We will then make the adjustment outlined above if the selected supplemental ratio differs from the preliminary cash flow/leverage assessment and the selected supplemental ratio provides the best overall indicator of a company's future leverage.
 - 5) Lastly, we determine the final cash flow/leverage assessment based on the volatility adjustment.
 - We classify companies as stable for these cash flow criteria if cash flow/leverage ratios are expected to move up by one category during periods of stress based on their business risk profile. The final cash flow/leverage assessment for these companies will not be modified from the adjusted cash flow/leverage assessment.
 - We classify companies as volatile for these cash flow criteria if cash flow/leverage ratios are expected to move one or two categories worse during periods of stress based on their business risk profiles. Typically, this is equivalent to EBITDA declining about 30% from its current level. The final cash flow/leverage assessment for these companies will be modified to one category weaker than the adjusted cash flow/leverage assessment; the adjustment will be eliminated if cash flow/leverage ratios, as evaluated, include a moderate to high level of stress already.
 - We classify companies as highly volatile for these cash flow criteria if cash flow/leverage ratios are expected to move two or three categories worse during periods of stress, based on their business risk profiles. Typically, this is equivalent to EBITDA declining about 50% from its current level. The final cash flow/leverage assessment for these companies will be modified to two categories weaker than the adjusted cash flow/leverage assessment; the adjustment will be eliminated or reduced to one category if cash flow/leverage ratios, as evaluated, include a moderate to high level of stress already.
125. The volatility adjustment is the mechanism by which we factor a "cushion" of medium-term variance to current financial performance not otherwise captured in either the near-term base-case forecast or the long-term business risk

assessment. We make this adjustment based on the following:

- The expectation of any potential cash flow/leverage ratio movement is both prospective and dependent on the current business or economic conditions.
- Stress scenarios include, but are not limited to, a recessionary economic environment, technology or competitive shifts, loss or renegotiation of major contracts or customers, and key product or input price movements, as typically defined in the company's industry risk profile and competitive position assessment.
- The volatility adjustment is not static and is company specific. At the bottom of an economic cycle or during periods of stressed business conditions, already reflected in the general industry risk or specific competitive risk profile, the prospect of weakening ratios is far less than at the peak of an economic cycle or business conditions.
- The expectation of prospective ratio changes may be formed by observed historical performance over an economic, business, or product cycle by the company or by peers.
- The assessment of which classification to use when evaluating the prospective number of scoring category moves will be guided by how close the current ratios are to the transition point (i.e. "buffer" in the current scoring category) and the corresponding amount of EBITDA movement at each scoring transition.

F. Diversification/Portfolio Effect

126. Under the criteria, diversification/portfolio effect applies to companies that we regard as conglomerates. They are companies that have multiple core business lines that may be operated as separate legal entities. For the purpose of these criteria, a conglomerate would have at least three business lines, each contributing a material source of earnings and cash flow.
127. The criteria aim to measure how diversification or the portfolio effect could improve the anchor of a company with multiple business lines. This approach helps us determine how the credit strength of a corporate entity with a given mix of business lines could improve based on its diversity. The competitive position factor assesses the benefits of diversity within individual lines of business. This factor also assesses how poorly performing businesses within a conglomerate affect the organization's overall business risk profile.
128. Diversification/portfolio effect could modify the anchor depending on how meaningful we think the diversification is, and on the degree of correlation we find in each business line's sensitivity to economic cycles. This assessment will have either a positive or neutral impact on the anchor. We capture any potential factor that weakens a company's diversification, including poor management, in our management and governance assessment.
129. We define a conglomerate as a diversified company that is involved in several industry sectors. Usually the smallest of at least three distinct business segments/lines would contribute at least 10% of either EBITDA or FOCF and the largest would contribute no more than 50% of EBITDA or FOCF, with the long-term aim of increasing shareholder value by generating cash flow. Industrial conglomerates usually hold a controlling stake in their core businesses, have highly identifiable holdings, are deeply involved in the strategy and management of their operating companies, generally do not frequently roll over or reshuffle their holdings by buying and selling companies, and therefore have high long-term exposure to the operating risks of their subsidiaries.
130. In rating a conglomerate, we first assess management's commitment to maintain the diversified portfolio over a

longer-term horizon. These criteria apply only if the company falls within our definition of a conglomerate.

1. Assessing diversification/portfolio effect

131. A conglomerate's diversification/portfolio effect is assessed as 1, significant diversification; 2, moderate diversification; or 3, neutral. An assessment of moderate diversification or significant diversification potentially raises the issuer's anchor. To achieve an assessment of significant diversification, an issuer should have uncorrelated diversified businesses whose breadth is among the most comprehensive of all conglomerates'. This assessment indicates that we expect the conglomerate's earnings volatility to be much lower through an economic cycle than an undiversified company's. To achieve an assessment of moderate diversification, an issuer typically has a range of uncorrelated diversified businesses that provide meaningful benefits of diversification with the expectation of lower earnings volatility through an economic cycle than an undiversified company's.
132. We expect that a conglomerate will also benefit from diversification if its core assets consistently produce positive cash flows over our rating horizon. This supports our assertion that the company diversifies to take advantage of allocating capital among its business lines. To this end, our analysis focuses on a conglomerate's track record of successfully deploying positive discretionary cash flow into new business lines or expanding capital-hungry business lines. We assess companies that we do not expect to achieve these benefits as neutral.

2. Components of correlation and how it is incorporated into our analysis

133. We determine the assessment for this factor based on the number of business lines in separate industries (as described in table 27) and the degree of correlation between these business lines as described in table 20. There is no rating uplift for an issuer with a small number of business lines that are highly correlated. By contrast, a larger number of business lines that are not closely correlated provide the maximum rating uplift.

Table 20

Assessing Diversification/Portfolio Effect			
Degree of correlation of business lines	--Number of business lines--		
	3	4	5 or more
High	Neutral	Neutral	Neutral
Medium	Neutral	Moderately diversified	Moderately diversified
Low	Moderately diversified	Significantly diversified	Significantly diversified

134. The degree of correlation of business lines is high if the business lines operate within the same industry, as defined by the industry designations in Appendix B, table 27. The degree of correlation of business lines is medium if the business lines operate within different industries, but operate within the same geographic region (for further guidance on defining geographic regions, see Appendix A, table 26). An issuer has a low degree of correlation across its business lines if these business lines are both a) in different industries and b) either operate in different regions or operate in multiple regions.
135. If we believe that a conglomerate's various industry exposures fail to provide a partial hedge against the consolidated entity's volatility because they are highly correlated through an economic cycle, then we assess the diversification/portfolio effect as neutral.

G. Capital Structure

136. Standard & Poor's uses its capital structure criteria to assess risks in a company's capital structure that may not show up in our standard analysis of cash flow/leverage. These risks may exist as a result of maturity date or currency mismatches between a company's sources of financing and its assets or cash flows. These can be compounded by outside risks, such as volatile interest rates or currency exchange rates.

1. Assessing capital structure

137. Capital structure is a modifier category, which adjusts the initial anchor for a company after any modification due to diversification/portfolio effect. We assess a number of subfactors to determine the capital structure assessment, which can then raise or lower the initial anchor by one or more notches--or have no effect in some cases. We assess capital structure as 1, very positive; 2, positive; 3, neutral; 4, negative; or 5, very negative. In the large majority of cases, we believe that a firm's capital structure will be assessed as neutral. To assess a company's capital structure, we analyze four subfactors:

- Currency risk associated with debt,
- Debt maturity profile (or schedule),
- Interest rate risk associated with debt, and
- Investments.

138. Any of these subfactors can influence a firm's capital structure assessment, although some carry greater weight than others, based on a tiered approach:

- Tier one risk subfactors: Currency risk of debt and debt maturity profile, and
- Tier two risk subfactor: Interest rate risk of debt.

139. The initial capital structure assessment is based on the first three subfactors (see table 21). We may then adjust the preliminary assessment based on our assessment of the fourth subfactor, investments.

Table 21

Preliminary Capital Structure Assessment	
Preliminary capital structure assessment	Subfactor assessments
Neutral	No tier one subfactor is negative.
Negative	One tier one subfactor is negative, and the tier two subfactor is neutral.
Very negative	Both tier one subfactors are negative, or one tier one subfactor is negative and the tier two subfactor is negative.

140. Tier one subfactors carry the greatest risks, in our view, and, thus, could have a significant impact on the capital structure assessment. This is because, in our opinion, these factors have a greater likelihood of affecting credit metrics and potentially causing liquidity and refinancing risk. The tier two subfactor is important in and of itself, but typically less so than the tier one subfactors. In our view, in the majority of cases, the tier two subfactor in isolation has a lower likelihood of leading to liquidity and default risk than do tier one subfactors.

141. The fourth subfactor, investments, as defined in paragraph 153, quantifies the impact of a company's investments on

its overall financial risk profile. Although not directly related to a firm's capital structure decisions, certain investments could provide a degree of asset protection and potential financial flexibility if they are monetized. Thus, the fourth subfactor could modify the preliminary capital structure assessment (see table 22). If the subfactor is assessed as neutral, then the preliminary capital structure assessment will stand. If investments is assessed as positive or very positive, we adjust the preliminary capital structure assessment upward (as per table 22) to arrive at the final assessment.

Table 22

Final Capital Structure Assessment			
	--Investments subfactor assessment--		
Preliminary capital structure assessment	Neutral	Positive	Very positive
Neutral	Neutral	Positive	Very positive
Negative	Negative	Neutral	Positive
Very negative	Very negative	Negative	Negative

2. Capital structure analysis: Assessing the subfactors

a) Subfactor 1: Currency risk of debt

142. Currency risk arises when a company borrows without hedging in a currency other than the currency in which it generates revenues. Such an unhedged position makes the company potentially vulnerable to fluctuations in the exchange rate between the two currencies, in the absence of mitigating factors. We determine the materiality of any mismatch by identifying situations where adverse exchange-rate movements could weaken cash flow and/or leverage ratios. We do not include currency mismatches under the following scenarios:
- The country where a company generates its cash flows has its currency pegged to the currency in which the company has borrowed, or vice versa (or the currency of cash flows has a strong track record and government policy of stability with the currency of borrowings), examples being the Hong Kong dollar which is pegged to the U.S. dollar, and the Chinese renminbi which is managed in a narrow band to the U.S. dollar (and China's foreign currency reserves are mainly in U.S. dollars). Moreover, we expect such a scenario to continue for the foreseeable future;
 - A company has the proven ability, through regulation or contract, to pass through changes in debt servicing costs to its customers; or
 - A company has a natural hedge, such as where it may sell its product in a foreign currency and has matched its debt in that same currency.
143. We also recognize that even if an entity generates insufficient same-currency cash flow to meet foreign currency-denominated debt obligations, it could have substantial other currency cash flows it can convert to meet these obligations. Therefore, the relative amount of foreign denominated debt as a proportion of total debt is an important factor in our analysis. If foreign denominated debt, excluding fully hedged debt principal, is 15% or less of total debt, we assess the company as neutral on currency risk of debt. If foreign-denominated debt, excluding fully hedged debt principal, is greater than 15% of total debt, and debt to EBITDA is greater than 3.0x, we evaluate currency risks through further analysis.
144. If an entity's foreign-denominated debt in a particular currency represents more than 15% of total debt, and if its debt to EBITDA ratio is greater than 3.0x, we identify whether a currency-specific interest coverage ratio indicates potential

currency risk. The coverage ratio divides forecasted operating cash flow in each currency by interest payments over the coming 12 months for that same currency. It is often easier to ascertain the geographic breakdown of EBITDA as opposed to operating cash flow. So in situations where we don't have sufficient cash flow information, we may calculate an EBITDA to interest expense coverage ratio in the relevant currencies. If neither cash flow nor EBITDA information is disclosed, we estimate the relevant exposures based on available information.

145. In such an instance, our assessment of this subfactor is negative if we believe any appropriate interest coverage ratio will fall below 1.2x over the next 12 months.

b) Subfactor 2: Debt maturity profile

146. A firm's debt maturity profile shows when its debt needs to be repaid, or refinanced if possible, and helps determine the firm's refinancing risk. Lengthier and more evenly spread out debt maturity schedules reduce refinancing risk, compared with front-ended and compressed ones, since the former give an entity more time to manage business- or financial market-related setbacks.
147. In evaluating debt maturity profiles, we measure the weighted average maturity (WAM) of bank debt and debt securities (including hybrid debt) within a capital structure, and make simplifying assumptions that debt maturing beyond year five matures in year six. $WAM = (Maturity1/Total\ Debt)*tenor1 + (Maturity2/Total\ Debt)*\ tenor2 + \dots (Thereafter/Total\ Debt)*\ tenor6$
148. In evaluating refinancing risk, we consider risks in addition to those captured under the 12-month to 24-month time-horizons factored in our liquidity criteria (see "Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers," published Nov. 19, 2013). While we recognize that investment-grade companies may have more certain future business prospects and greater access to capital than speculative-grade companies, all else being equal, we view a company with a shorter maturity schedule as having greater refinancing risk compared to a company with a longer one. In all cases, we assess a company's debt maturity profile in conjunction with its liquidity and potential funding availability. Thus, a short-dated maturity schedule alone is not a negative if we believe the company can maintain enough liquidity to pay off debt that comes due in the near term.
149. Our assessment of this subfactor is negative if the WAM is two years or less, and the amount of these near-term maturities is material in relation to the issuer's liquidity so that under our base-case forecast, we believe the company's liquidity assessment will become less than adequate or weak over the next two years due to these maturities. In certain cases, we may assess a debt maturity profile as negative regardless of whether or not the company passes the aforementioned test. We expect such instances to be rare, and will include scenarios where we believed a concentration of debt maturities within a five-year time horizon poses meaningful refinancing risk, either due to the size of the maturities in relation to the company's liquidity sources, the company's leverage profile, its operating trends, lender relationships, and/or credit market standings.

c) Subfactor 3: Interest rate risk of debt

150. The interest rate risk of debt subfactor analyzes the company's mix of fixed-rate and floating-rate debt. Generally, a higher proportion of fixed-rate debt leads to greater predictability and stability of interest expense and therefore cash flows. The exception would be companies whose operating cash flows are to some degree correlated with interest rate movements--for example, a regulated utility whose revenues are indexed to inflation--given the typical correlation

between nominal interest rates and inflation.

151. The mix of fixed versus floating-rate debt is usually not a significant risk factor for companies with intermediate or better financial profiles, strong profitability, and high interest coverage. In addition, the interest rate environment at a given point in time will play a role in determining the impact of interest rate movements. Our assessment of this subcategory will be negative if a 25% upward shift (e.g., from 2.0% to 2.5%) or a 100 basis-point upward shift (e.g., 2% to 3%) in the base interest rate of the floating rate debt will result in a breach of interest coverage covenants or interest coverage rating thresholds identified in the cash flow/leverage criteria (see section E.3).
152. Many loan agreements for speculative-grade companies contain a clause requiring a percentage of floating-rate debt to be hedged for a period of two to three years to mitigate this risk. However, in many cases the loan matures after the hedge expires, creating a mismatched hedge. We consider only loans with hedges that match the life of the loan to be--effectively--fixed-rate debt.

d) Subfactor 4: Investments

153. For the purposes of the criteria, investments refer to investments in unconsolidated equity affiliates, other assets where the realizable value isn't currently reflected in the cash flows generated from those assets (e.g. underutilized real-estate property), we do not expect any additional investment or support to be provided to the affiliate, and the investment is not included within Standard & Poor's consolidation scope and so is not incorporated in the company's business and financial risk profile analysis. If equity affiliate companies are consolidated, then the financial benefits and costs of these investments will be captured in our cash flow and leverage analysis. Similarly, where the company's ownership stake does not qualify for consolidation under accounting rules, we may choose to consolidate on a pro rata basis if we believe that the equity affiliates' operating and financing strategy is influenced by the rated entity. If equity investments are strategic and provide the company with a competitive advantage, or benefit a company's scale, scope, and diversity, these factors will be captured in our competitive position criteria and will not be used to assess the subfactor investments as positive. Within the capital structure criteria, we aim to assess nonstrategic financial investments that could provide a degree of asset protection and financial flexibility in the event they are monetized. These investments must be noncore and separable, meaning that a potential divestiture, in our view, has no impact on the company's existing operations.
154. In many instances, the cash flows generated by an equity affiliate, or the proportional share of the associate company's net income, might not accurately reflect the asset's value. This could occur if the equity affiliate is in high growth mode and is currently generating minimal cash flow or net losses. This could also be true of a physical asset, such as real estate. From a valuation standpoint, we recognize the subjective nature of this analysis and the potential for information gaps. As a result, in the absence of a market valuation or a market valuation of comparable companies in the case of minority interests in private entities, we will not ascribe value to these assets.
155. We assess this subfactor as positive or very positive if three key characteristics are met. First, an estimated value can be ascribed to these investments based on the presence of an existing market value for the firm or comparable firms in the same industry. Second, there is strong evidence that the investment can be monetized over an intermediate timeframe--in the case of an equity investment, our opinion of the marketability of the investment would be enhanced by the presence of an existing market value for the firm or comparable firms, as well as our view of market liquidity.

Third, monetization of the investment, assuming proceeds would be used to repay debt, would be material enough to positively move existing cash flow and leverage ratios by at least one category and our view on the company's financial policy, specifically related to financial discipline, supports the assessment that the potential proceeds would be used to pay down debt. This subfactor is assessed as positive if debt repayment from the investment sale has the potential to improve cash flow and leverage ratios by one category. We assess investments as very positive if proceeds upon sale of the investment have the potential to improve cash flow and leverage ratios by two or more categories. If the three characteristics are not met, this subfactor will be assessed as neutral and the preliminary capital structure assessment will stand.

156. We will not assess the investments subfactor as positive or very positive when the anchor is 'b+' or lower unless the three conditions described in paragraph 155 are met, and:
- For issuers with less than adequate or weak liquidity, the company has provided a credible near-term plan to sell the investment.
 - For issuers with adequate or better liquidity, we believe that the company, if needed, could sell the investment in a relatively short timeframe.

H. Financial Policy

157. Financial policy refines the view of a company's risks beyond the conclusions arising from the standard assumptions in the cash flow/leverage assessment (see section E). Those assumptions do not always reflect or entirely capture the short-to-medium term event risks or the longer-term risks stemming from a company's financial policy. To the extent movements in one of these factors cannot be confidently predicted within our forward-looking evaluation, we capture that risk within our evaluation of financial policy. The cash flow/leverage assessment will typically factor in operating and cash flows metrics we observed during the past two years and the trends we expect to see for the coming two years based on operating assumptions and predictable financial policy elements, such as ordinary dividend payments or recurring acquisition spending. However, over that period and, generally, over a longer time horizon, the firm's financial policies can change its financial risk profile based on management's or, if applicable, the company's controlling shareholder's (see Appendix E, paragraphs 254-257) appetite for incremental risk or, conversely, plans to reduce leverage. We assess financial policy as 1) positive, 2) neutral, 3) negative, or as being owned by a financial sponsor. We further identify financial sponsor-owned companies as "FS-4", "FS-5", "FS-6", or "FS-6 (minus)" (see section H.2).

1. Assessing financial policy

158. First, we determine if a company is owned by a financial sponsor. Given the intrinsic characteristics and aggressive nature of financial sponsor's strategies (i.e. short- to intermediate-term holding periods and the use of debt or debt-like instruments to maximize shareholder returns), we assign a financial risk profile assessment to a firm controlled by a financial sponsor that reflects the likely impact on leverage due to these strategies and we do not separately analyze management's financial discipline or financial policy framework.
159. If a company is not controlled by a financial sponsor, we evaluate management's financial discipline and financial policy framework. Management's financial discipline measures its tolerance for incremental financial risk or,

conversely, its willingness to maintain the same degree of financial risk or to lower it compared with recent cash flow/leverage metrics and our projected ratios for the next two years. The company's financial policy framework assesses the comprehensiveness, transparency, and sustainability of the entity's financial policies. We do not assess these factors for financial sponsor controlled firms.

160. The financial discipline assessments can have a positive or negative influence on an enterprise's overall financial policy assessment, or can have no net effect. Conversely, the financial policy framework assessment cannot positively influence the overall financial policy assessment. It can constrain the overall financial policy assessment to no greater than neutral.
161. The separate assessments of a company's financial policy framework and financial discipline determine the financial policy adjustment.
162. We assess management's financial discipline as 1, positive; 2, neutral; or 3, negative. We determine the assessment by evaluating the predictability of an entity's expansion plans and shareholder return strategies. We take into account, generally, management's tolerance for material and unexpected negative changes in credit ratios or, instead, its plans to rapidly decrease leverage and keep credit ratios within stated boundaries.
163. A company's financial policy framework assessment is: 1, supportive or 2, non-supportive. We make the determination by assessing the comprehensiveness of a company's financial policy framework and whether financial targets are clearly communicated to a large number of stakeholders, and are well defined, achievable, and sustainable.

Table 23

Financial Policy Assessments

Assessment	What it means	Guidance
Positive	Indicates that we expect management's financial policy decisions to have a positive impact on credit ratios over the time horizon, beyond what can be reasonably built in our forecasts on the basis of normalized operating and cash flow assumptions. An example would be when a credible management team commits to dispose of assets or raise equity over the short to medium term in order to reduce leverage. A company with a 1 financial risk profile will not be assigned a positive assessment.	If financial discipline is positive, and the financial policy framework is supportive
Neutral	Indicates that, in our opinion, future credit ratios won't differ materially over the time horizon beyond what we have projected, based on our assessment of management's financial policy, recent track record, and operating forecasts for the company. A neutral financial policy assessment effectively reflects a low probability of "event risk," in our view.	If financial discipline is positive, and the financial policy framework is non-supportive. Or when financial discipline is neutral, regardless of the financial policy framework assessment.
Negative	Indicates our view of a lower degree of predictability in credit ratios, beyond what can be reasonably built in our forecasts, as a result of management's financial discipline (or lack of it). It points to high event risk that management's financial policy decisions may depress credit metrics over the time horizon, compared with what we have already built in our forecasts based on normalized operating and cash flow assumptions.	If financial discipline is negative, regardless of the financial policy framework assessment
Financial Sponsor*	We define a financial sponsor as an entity that follows an aggressive financial strategy in using debt and debt-like instruments to maximize shareholder returns. Typically, these sponsors dispose of assets within a short to intermediate time frame. Accordingly, the financial risk profile we assign to companies that are controlled by financial sponsors ordinarily reflects our presumption of some deterioration in credit quality in the medium term. Financial sponsors include private equity firms, but not infrastructure and asset-management funds, which maintain longer investment horizons.	We define financial sponsor-owned companies as companies that are owned 40% or more by a financial sponsor or a group of three or less financial sponsors and where we consider that the sponsor(s) exercise control of the company solely or together.

*Assessed as FS-4, FS-5, FS-6, or FS-6 (minus).

2. Financial sponsor-controlled companies

164. We define a financial sponsor as an entity that follows an aggressive financial strategy in using debt and debt-like instruments to maximize shareholder returns. Typically, these sponsors dispose of assets within a short-to-intermediate time frame. Financial sponsors include private equity firms, but not infrastructure and asset-management funds, which maintain longer investment horizons.
165. We define financial sponsor-owned companies as companies that are owned 40% or more by a financial sponsor or a group of three or less financial sponsors and where we consider that the sponsor(s) exercise control of the company solely or together.
166. We differentiate between financial sponsors and other types of controlling shareholders and companies that do not have controlling shareholders based on our belief that short-term ownership--such as exists in private equity sponsor-owned companies--generally entails financial policies aimed at achieving rapid returns for shareholders typically through aggressive debt leverage.
167. Financial sponsors often dictate policies regarding risk-taking, financial management, and corporate governance for the companies that they control. There is a common pattern of these investors extracting cash in ways that increase the companies' financial risk by utilizing debt or debt like instruments. Accordingly, the financial risk profile we assign to companies that are controlled by financial sponsors ordinarily reflect our presumption of some deterioration in credit quality or steadily high leverage in the medium term.
168. We assess the influence of financial sponsor ownership as "FS-4", "FS-5", "FS-6", and "FS-6 (minus)" depending on how aggressive we assume the sponsor will be and assign a financial risk profile accordingly (see table 24).
169. Generally, financial sponsor-owned issuers will receive an assessment of "FS-6" or "FS-6 (minus)", leading to a financial risk profile assessment of '6', under the criteria. A "FS-6" assessment indicates that, in our opinion, forecasted credit ratios in the medium term are likely to be consistent with a '6' financial risk profile, based on our assessment of the financial sponsor's financial policy and track record. A "FS-6 (minus)" will likely be applied to companies that we forecast to have near-term credit ratios consistent with a '6' financial risk profile, but we believe the financial sponsor to be very aggressive and that leverage could increase materially even further from our forecasted levels.
170. In a small minority of cases, a financial sponsor-owned entity could receive an assessment of "FS-5". This assessment will apply only when we project that the company's leverage will be consistent with a '5' (aggressive) financial risk profile (see tables 17, 18, and 19), we perceive that the risk of releveraging is low based on the company's financial policy and our view of the owner's financial risk appetite, and liquidity is at least adequate.
171. In even rarer cases, we could assess the financial policy of a financial sponsor-owned entity as "FS-4". This assessment will apply only when all of the following conditions are met: other shareholders own a material (generally, at least 20%) stake, we expect the sponsor to relinquish control over the intermediate term, we project that leverage is currently consistent with a '4' (significant) financial risk profile (see tables 17, 18, and 19), the company has said it will maintain leverage at or below this level, and liquidity is at least adequate.

Table 24

Financial Risk Profile Implications For Sponsor-Owned Issuers		
Assessment	What it Means	Guidance
FS-4	Financial risk profile set at '4'	<p>Issuer must meet all of the following conditions:</p> <ul style="list-style-type: none"> • Other shareholders must own a material (no less than 20%) stake; • We anticipate that the sponsor will relinquish control over the medium term; • For issuers subject to Table 17 (standard volatility), debt to EBITDA is less than 4x, and we estimate that it will remain less than 4x. For issuers that are subject to Table 18 (medial volatility), debt to EBITDA is below 4.5x and we forecast it to remain below that level. Or for issuers subject to Table 19 (low volatility), debt to EBITDA is less than 5x and our estimation is it will remain below that level; • The company has indicated a financial policy stipulating a level of leverage consistent with a significant or better financial risk profile (that is, debt to EBITDA of less than 4x when applying standard volatility tables, 4.5x when applying medial volatility tables, or less than 5x when applying low volatility tables) and • We assess liquidity to be at least adequate, with adequate covenant headroom.
FS-5	Financial risk profile set at '5'	<p>Issuer must meet all of the following conditions:</p> <ul style="list-style-type: none"> • For issuers subject to the standard volatility table, debt to EBITDA is less than 5x, and we estimate that it will remain less than 5x. For issuers that are subject to the medial volatility table, debt to EBITDA is below 5.5x and we forecast it to remain below that level. Or for issuers subject to the low volatility table, debt to EBITDA is less than 6x and our estimation is it will remain below that level; • We believe the risk of releveraging beyond 5x (standard volatility issuer), 5.5x (medial volatility issuer), or 6x (low volatility issuer) is low; and • We assess liquidity to be at least adequate, with adequate covenant headroom.
FS-6	Financial risk profile set at '6'	Standard & Poor's debt to EBITDA is greater than 5x (when applying the standard volatility table), greater than 5.5x (when applying the medial volatility table), or greater than 6x (when applying the low volatility table). However, we believe leverage is unlikely to increase meaningfully beyond these levels.
FS-6 (minus)	Financial risk profile set at '6', and anchor reduced by one notch (unless this results in a final rating below 'B-')	In determining the anchor the financial risk profile is a '6', but we believe the track record of the financial sponsor indicates that leverage could increase materially from already high levels.

© Standard & Poor's 2013.

3. Companies not controlled by a financial sponsor

172. For companies not controlled by a financial sponsor we evaluate management's financial discipline and financial policy framework to determine the influence on an entity's financial risk profile beyond what is implied by recent credit ratios and our cash flow and leverage forecasts. This influence can be positive, neutral, or negative.
173. We do not distinguish between management and a controlling shareholder that is not a financial sponsor when assessing these subfactors, as the controlling shareholder usually has the final say on financial policy.

a) Financial discipline

174. The financial discipline assessment is based on management's leverage tolerance and the likelihood of event risk. The criteria evaluate management's potential appetite to incur unforeseen, higher financial risk over a prolonged period and the associated impact on credit measures. We also assess management's capacity and commitment to rapidly decrease debt leverage to levels consistent with its credit ratio targets.
175. This assessment therefore seeks to determine whether unforeseen actions by management to increase, maintain, or reduce financial risk are likely to occur during the next two to three years, with either a negative or positive effect, or none at all, on our baseline forecasts for the period.
176. This assessment is based on the leverage tolerance of a company's management, as reflected in its plans or history of acquisitions, shareholder remuneration, and organic growth strategies (see Appendix E, paragraphs 258 to 263).
177. We assess financial discipline as positive, neutral, or negative, based on its potential impact on our forward-looking assessment of a firm's cash flow/leverage, as detailed in table 25. For example, a neutral assessment for leverage tolerance reflects our expectation that management's financial policy will unlikely lead to significant deviation from current and forecasted credit ratios. A negative assessment acknowledges a significant degree of event risk of increased leverage relative to our base-case forecast, resulting from the company's acquisition policy, its shareholder remuneration policy, or its organic growth strategy. A positive assessment indicates that the company is likely to take actions to reduce leverage, but we cannot confidently incorporate these actions into our baseline forward-looking assessment of cash flow/leverage.
178. A positive assessment indicates that management is committed and has the capacity to reduce debt leverage through the rapid implementation of credit enhancing measures, such as asset disposals, rights issues, or reductions in shareholder returns. In addition, management's track record over the past five years shows that it has taken actions to rapidly reduce unforeseen increases in debt leverage and that there have not been any prolonged periods when credit ratios were weaker than our expectations for the rating. Management, even if new, also has a track record of successful execution. Conversely, a negative assessment indicates management's financial policy allows for significant increase in leverage compared with both current levels and our forward-looking forecast under normal operating/financial conditions or does not have observable time limits or stated boundaries. Management has a track record of allowing for significant and prolonged peaks in leverage and there is no commitment or track record of management using mitigating measures to rapidly return to credit ratios consistent with our expectations.
179. As evidence of management's leverage tolerance, we evaluate its track record and plans regarding acquisitions, shareholder remuneration, and organic growth strategies (see Appendix E, paragraphs 258 to 263). Acquisitions could increase the risk that leverage will be higher than our base-case forecast if we view management's strategy as opportunistic or if its financial policy (if it exists) provides significant headroom for debt-financed acquisitions. Shareholder remuneration could also increase the risk of leverage being higher than our base-case forecast if management's shareholder reward policies are not particularly well defined or have no clear limits, management has a tolerance for shareholder returns exceeding operating cash flow, or has a track record of sustained cash returns despite weakening operating performance or credit ratios. Organic growth strategies can also result in leverage higher than our base-case forecast if these plans have no clear focus or investment philosophy, capital spending is fairly unpredictable,

or there is a track record of overspending or unexpected or rapid shifts in plans for new markets or products.

180. We also take into account management's track record and level of commitment to its stated financial policies, to the extent a company has a stated policy. Historical evidence and any deviations from stated policies are key elements in analyzing a company's leverage tolerance. Where material and unexpected deviation in leverage may occur (for example, on the back of operating weakness or acquisitions), we also assess management's plan to restore credit ratios to levels consistent with previous expectations through rapid and proactive non-organic measures. Management's track record to execute its deleveraging plan, its level of commitment, and the scope and timeframe of debt mitigating measures will be key differentiators in assessing a company's financial policy discipline.

Table 25

Assessing Financial Discipline		
Descriptor	What it means	Guidance
Positive	Management is likely to take actions that result in leverage that is lower than our base-case forecast, but can't be confidently included in our base-case assumptions. Event risk is low.	Management is committed and has capacity to reduce debt leverage and increase financial headroom through the rapid implementation of credit enhancing measures, in line with its stated financial policy, if any. This relates primarily to management's careful and moderate policy with regard to acquisitions and shareholder remuneration as well as to its organic growth strategy. The assessments are supported by historical evidence over the past five years of not showing any prolonged weakening in the company's credit ratios, or relative to our base-case credit metrics' assumptions. Management, even if new, has a track record of successful execution.
Neutral	Leverage is not expected to deviate materially from our base-case forecast. Event risk is moderate.	Management's financial discipline with regard to acquisitions, shareholder remuneration, as well as its organic growth strategy does not result in significantly different leverage as defined in its stated financial policy framework.
Negative	Leverage could become materially higher than our base-case forecast. Event risk is high.	Management's financial policy framework does not explicitly rule out a significant increase in leverage compared to our base-case assumptions, possibly reflecting a greater event risk with regard to its M&A and shareholder remuneration policy as well as to its organic growth strategy. These points are supported by historical evidence over the past five years of allowing for significant and prolonged peaks in leverage, which remained unmitigated by credit supporting measures by management.

b) Financial policy framework

181. The company's financial policy framework assesses the comprehensiveness, transparency, and sustainability of the entity's financial policies (see Appendix E, paragraphs 264-268). This will help determine whether there is a satisfactory degree of visibility into the issuer's future financial risk profile. Companies that have developed and sustained a comprehensive set of financial policies are more likely to build long-term, sustainable credit quality than those that do not.
182. We will assess a company's financial policy framework as supportive or non-supportive based on evidence that supports the characteristics listed below. In order for an entity to receive a supportive assessment for financial policy framework, there must be sufficient evidence of management's financial policies to back that assessment.
183. A company assessed as supportive will generally exhibit the following characteristics:
- Management has a comprehensive set of financial policies covering key areas of financial risk, including debt leverage and liability management. Financial targets are well defined and quantifiable.
 - Management's financial policies are clearly articulated in public forums (such as public listing disclosures and investor presentations) or are disclosed to a limited number of key stakeholders such as main creditors or to the credit rating agencies. The company's adherence to these policies is satisfactory.

- Management's articulated financial policies are considered achievable and sustainable. This assessment takes into consideration historical adherence to articulated policies, existing financial risk profile, capacity to sustain capital structure through nonorganic means, demands of key stakeholders, and the stability of financial policy parameters over time.

184. A company receives a non-supportive assessment if it does not meet all the conditions for a supportive assessment. We expect a non-supportive assessment to be uncommon.

I. Liquidity

185. Our assessment of liquidity focuses on monetary flows--the sources and uses of cash--that are the key indicators of a company's liquidity cushion. The analysis assesses the potential for a company to breach covenant tests related to declines in EBITDA, as well as its ability to absorb high-impact, low-probability events, the nature of the company's bank relationships, its standing in credit markets, and how prudent (or not) we believe its financial risk management to be (see "Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers," published Nov. 19, 2013).

J. Management And Governance

186. The analysis of management and governance addresses how management's strategic competence, organizational effectiveness, risk management, and governance practices shape the issuer's competitiveness in the marketplace, the strength of its financial risk management, and the robustness of its governance. Stronger management of important strategic and financial risks may enhance creditworthiness (see "Methodology: Management And Governance Credit Factors For Corporate Entities And Insurers," published Nov. 13, 2012).

K. Comparable Ratings Analysis

187. The comparable ratings analysis is our last step in determining a SACP on a company. This analysis can lead us to raise or lower our anchor, after adjusting for the modifiers, on a company by one notch based on our overall assessment of its credit characteristics for all subfactors considered in arriving at the SACP. This involves taking a holistic review of a company's stand-alone credit risk profile, in which we evaluate an issuer's credit characteristics in aggregate. A positive assessment leads to a one-notch upgrade, a negative assessment leads to a one-notch downgrade, and a neutral assessment indicates no change to the anchor.
188. The application of comparable ratings analysis reflects the need to "fine-tune" ratings outcomes, even after the use of each of the other modifiers. A positive or negative assessment is therefore likely to be common rather than exceptional.
189. We consider our assessments of each of the underlying subfactors to be points within a possible range. Consequently, each of these assessments that ultimately generate the SACP can be at the upper or lower end, or at the mid-point, of such a range:

- A company receives a positive assessment if we believe, in aggregate, its relative ranking across the subfactors typically to be at the higher end of the range;
 - A company receives a negative assessment if we believe, in aggregate, its relative ranking across the subfactors typically to be at the lower end of the range;
 - A company receives a neutral assessment if we believe, in aggregate, its relative ranking across the subfactors typically to be in line with the middle of the range.
190. The most direct application of the comparable ratings analysis is in the following circumstances:
- Business risk assessment. If we expect a company to sustain a position at the higher or lower end of the ranges for the business risk category assessment, the company could receive a positive or negative assessment, respectively.
 - Financial risk assessment and financial metrics. If a company's actual and forecasted metrics are just above (or just below) the financial risk profile range, as indicated in its cash flow/leverage assessment, we could assign a positive or negative assessment.
191. We also consider additional factors not already covered, or existing factors not fully captured, in arriving at the SACP. Such factors will generally reflect less frequently observed credit characteristics, may be unique, or may reflect unpredictability or uncertain risk attributes, both positive and negative.
192. Some examples that we typically expect could lead to a positive or negative assessment using comparable ratings analysis include:
- Short operating track record. For newly formed companies or companies that have experienced transformational events, such as a significant acquisition, a lack of an established track record of operating and financial performance could lead to a negative assessment until such a track record is established.
 - Entities in transition. A company in the midst of changes that we anticipate will strengthen or weaken its creditworthiness and that are not already fully captured elsewhere in the criteria could receive a positive or negative assessment. Such a transition could occur following major divestitures or acquisitions, or during a significant overhaul of its strategy, business, or financial structure.
 - Industry or macroeconomic trends. When industry or macroeconomic trends indicate a strengthening or weakening of the company's financial condition that is not already fully captured elsewhere in the criteria, the company could receive a positive or negative assessment, respectively.
 - Unusual funding structures. A company with exceptional financial resources that the criteria do not capture in the traditional ratio or liquidity analysis, or in capital structure analysis, could receive a positive assessment.
 - Contingent risk exposures. How well (or not) a company identifies, manages, and reserves for contingent risk exposures that can arise if guarantees are called, derivative contract break clauses are activated, or substantial lawsuits are lost could lead to a negative assessment.

SUPERSEDED CRITERIA FOR ISSUERS WITHIN THE SCOPE OF THESE CRITERIA

- Companies Owned By Financial Sponsors: Rating Methodology, March 21, 2013
- Methodology: Business Risk/Financial Risk Matrix Expanded, Sept. 18, 2012
- How Stock Prices Can Affect An Issuer's Credit Rating, Sept. 26, 2008
- 2008 Corporate Criteria: Analytical Methodology, April 15, 2008
- Credit FAQ: Knowing The Investors In A Company's Debt And Equity, April 4, 2006

RELATED CRITERIA

- Methodology: Industry Risk, Nov. 19, 2013
- Corporate Criteria: Ratios And Adjustments, Nov. 19, 2013
- Country Risk Assessment Methodology And Assumptions, Nov. 19, 2013
- Ratings Above The Sovereign--Corporate And Government Ratings: Methodology And Assumptions, Nov. 19, 2013
- Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers, Nov. 19, 2013
- Methodology: Management And Governance Credit Factors For Corporate Entities And Insurers, Nov. 13, 2012
- Criteria For Assigning 'CCC+', 'CCC', 'CCC-', And 'CC' Ratings, Oct. 1, 2012
- Principles Of Credit Ratings, published Feb. 16, 2011
- Stand-Alone Credit Profiles: One Component Of A Rating, Oct. 1, 2010
- Criteria Guidelines For Recovery Ratings On Global Industrial Issuers' Speculative-Grade Debt, Aug. 10, 2009
- 2008 Corporate Criteria: Rating Each Issue, April 15, 2008

APPENDIXES

A. Country Risk

Table 26

Country And Regional Risk		
Region		
Western Europe		
Southern Europe		
Western + Southern Europe		
East Europe		
Central Europe		
Eastern Europe and Central Asia		
Middle East		
Africa		
North America		
Central America		
Latin America		
The Caribbean		
Asia-Pacific		
Central Asia		
East Asia		
Australia NZ		
Country	Region	GDP weighting (%)
South Africa	Africa	30.2
Egypt	Africa	28.0
Nigeria	Africa	23.5
Morocco	Africa	8.9

Table 26

Country And Regional Risk (cont.)		
Tunisia	Africa	5.4
Senegal	Africa	1.4
Mozambique	Africa	1.4
Zambia	Africa	1.2
Indonesia	Asia-Pacific	27.1
Taiwan	Asia-Pacific	20.1
Thailand	Asia-Pacific	14.4
Malaysia	Asia-Pacific	11.0
Philippines	Asia-Pacific	9.5
Vietnam	Asia-Pacific	7.1
Bangladesh	Asia-Pacific	6.8
Sri Lanka	Asia-Pacific	2.8
Laos	Asia-Pacific	0.4
Papua New Guinea	Asia-Pacific	0.4
Mongolia	Asia-Pacific	0.3
Australia	Australia NZ	88.2
New Zealand	Australia NZ	11.8
Guatemala	Central America	40.5
Costa Rica	Central America	30.2
Panama	Central America	29.3
India	Central Asia	86.5
Pakistan	Central Asia	9.3
Kazakhstan	Central Asia	4.2
Poland	Central Europe	46.3
Czech Republic	Central Europe	16.6
Hungary	Central Europe	11.3
Slovakia	Central Europe	7.7
Bulgaria	Central Europe	6.0
Croatia	Central Europe	4.6
Lithuania	Central Europe	3.8
Latvia	Central Europe	2.1
Estonia	Central Europe	1.6
China	East Asia	64.5
Japan	East Asia	23.6
Korea	East Asia	8.4
Hong Kong	East Asia	1.9
Singapore	East Asia	1.7
Greece	East Europe	77.5
Slovenia	East Europe	16.0
Cyprus	East Europe	6.5
Russia	Eastern Europe and Central Asia	80.4
Ukraine	Eastern Europe and Central Asia	10.8

Table 26

Country And Regional Risk (cont.)		
Belarus	Eastern Europe and Central Asia	4.8
Azerbaijan	Eastern Europe and Central Asia	3.2
Georgia	Eastern Europe and Central Asia	0.9
Brazil	Latin America	35.3
Mexico	Latin America	26.3
Argentina	Latin America	11.1
Colombia	Latin America	7.5
Venezuela	Latin America	6.0
Peru	Latin America	4.9
Chile	Latin America	4.8
Ecuador	Latin America	2.0
Uruguay	Latin America	0.8
El Salvador	Latin America	0.7
Paraguay	Latin America	0.6
Belize	Latin America	0.0
Turkey	Middle East	42.8
Saudi Arabia	Middle East	28.2
Israel	Middle East	9.4
Qatar	Middle East	7.2
Kuwait	Middle East	6.3
Oman	Middle East	3.4
Jordan	Middle East	1.5
Bahrain	Middle East	1.2
United States	North America	91.5
Canada	North America	8.5
Italy	Southern Europe	52.6
Spain	Southern Europe	40.4
Portugal	Southern Europe	7.0
Dominican Republic	The Caribbean	75.4
Jamaica	The Caribbean	19.2
Barbados	The Caribbean	5.4
Germany	Western Europe	28.7
United Kingdom	Western Europe	21.3
France	Western Europe	20.7
Netherlands	Western Europe	6.5
Belgium	Western Europe	3.9
Sweden	Western Europe	3.6
Switzerland	Western Europe	3.3
Austria	Western Europe	3.3
Norway	Western Europe	2.6
Denmark	Western Europe	1.9
Finland	Western Europe	1.8

Table 26

Country And Regional Risk (cont.)		
Ireland	Western Europe	1.8
Luxembourg	Western Europe	0.4
Iceland	Western Europe	0.1
Malta	Western Europe	0.1

B. Competitive Position

Table 27

List Of Industries, Subsectors, And Standard Competitive Position Group Profiles			
Industry	Subsector	Competitive position group profile	
Transportation cyclical	Airlines	Capital or asset focus	
	Marine	Capital or asset focus	
	Trucking	Capital or asset focus	
Auto OEM	Automobile and truck manufacturers	Capital or asset focus	
Metals and mining downstream	Aluminum	Commodity focus/cost driven	
	Steel	Commodity focus/cost driven	
	Coal and consumable fuels	Commodity focus/cost driven	
	Diversified metals and mining	Commodity focus/cost driven	
Metals and mining upstream	Gold	Commodity focus/cost driven	
	Precious metals and minerals	Commodity focus/cost driven	
	Homebuilders and developers	Homebuilding	Capital or asset focus
	Oil and gas refining and marketing	Oil and gas refining and marketing	Commodity focus/scale driven
Forest and paper products	Forest products	Commodity focus/cost driven	
	Paper products	Commodity focus/cost driven	
Building Materials	Construction materials	Capital or asset focus	
Oil and gas integrated, exploration and production	Integrated oil and gas	Commodity focus/scale driven	
	Oil and gas exploration and production	Commodity focus/scale driven	
Agribusiness and commodity foods	Agricultural products	Commodity focus/scale driven	
Real estate investment trusts (REITs)	Diversified REITs	Real-estate specific*	
	Health care REITs	Real-estate specific*	
	Industrial REITs	Real-estate specific*	
	Office REITs	Real-estate specific*	
	Residential REITs	Real-estate specific*	
	Retail REITs	Real-estate specific*	
	Specialized REITs	Not applicable**	
	Self-storage REITs	Real-estate specific*	
	Net lease REITs	Real-estate specific*	
	Real estate operating companies	Real-estate specific*	
Leisure and sports	Casinos and gaming	Services and product focus	
	Hotels, resorts, and cruise lines	Services and product focus	

Table 27

List Of Industries, Subsectors, And Standard Competitive Position Group Profiles (cont.)			
	Leisure facilities	Services and product focus	
Commodity chemicals	Commodity chemicals	Commodity focus/cost driven	
	Diversified chemicals	Commodity focus/cost driven	
	Fertilizers and agricultural chemicals	Commodity focus/cost driven	
Auto suppliers	Auto parts and equipment	Capital or asset focus	
	Tires and rubber	Capital or asset focus	
	Vehicle-related suppliers	Capital or asset focus	
Aerospace and defense	Aerospace and defense	Services and product focus	
Technology hardware and semiconductors	Communications equipment	Capital or asset focus	
	Computer hardware	Capital or asset focus	
	Computer storage and peripherals	Capital or asset focus	
	Consumer electronics	Capital or asset focus	
	Electronic equipment and instruments	Capital or asset focus	
	Electronic components	Capital or asset focus	
	Electronic manufacturing services	Capital or asset focus	
	Technology distributors	Capital or asset focus	
	Office electronics	Capital or asset focus	
	Semiconductor equipment	Capital or asset focus	
	Semiconductors	Capital or asset focus	
	Specialty Chemicals	Industrial gases	Capital or asset focus
		Specialty chemicals	Capital or asset focus
Capital Goods	Electrical components and equipment	Capital or asset focus	
	Heavy equipment and machinery	Capital or asset focus	
	Industrial componentry and consumables	Capital or asset focus	
	Construction equipment rental	Capital or asset focus	
	Industrial distributors	Services and product focus	
Engineering and construction	Construction and engineering	Services and product focus	
Railroads and package express	Railroads	Capital or asset focus	
	Package express	Services and product focus	
	Logistics	Services and product focus	
Business and consumer services	Consumer services	Services and product focus	
	Distributors	Services and product focus	
	Facilities services	Services and product focus	
	General support services	Services and product focus	
	Professional services	Services and product focus	
Midstream energy	Oil and gas storage and transportation	Commodity focus/scale driven	
Technology software and services	Internet software and services	Services and product focus	
	IT consulting and other services	Services and product focus	
	Data processing and outsourced services	Services and product focus	
	Application software	Services and product focus	
	Systems software	Services and product focus	
	Consumer software	Services and product focus	

Table 27

List Of Industries, Subsectors, And Standard Competitive Position Group Profiles (cont.)

Consumer durables	Home furnishings	Services and product focus
	Household appliances	Services and product focus
	Housewares and specialties	Services and product focus
	Leisure products	Services and product focus
	Photographic products	Services and product focus
	Small appliances	Services and product focus
Containers and packaging	Metal and glass containers	Capital or asset focus
	Paper packaging	Capital or asset focus
Media and entertainment	Ad agencies and marketing services companies	Services and product focus
	Ad-supported internet content platforms	Services and product focus
	Broadcast TV networks	Services and product focus
	Cable TV networks	Services and product focus
	Consumer and trade magazines	Services and product focus
	Data/professional publishing	Services and product focus
	Directories	Services and product focus
	E-Commerce (services)	Services and product focus
	Educational publishing	Services and product focus
	Film and TV programming production	Capital or asset focus
	Miscellaneous media and entertainment	Services and product focus
	Motion picture exhibitors	Services and product focus
	Music publishing	Services and product focus
	Music recording	Services and product focus
	Newspapers	Services and product focus
	Outdoor advertising	Services and product focus
	Printing	Commodity focus/scale driven
	Radio broadcasters	Services and product focus
	Trade shows	Services and product focus
	TV stations	Services and product focus
Oil and gas drilling, equipment and services	Onshore contract drilling	Commodity focus/scale driven
	Offshore contract drilling	Capital or Asset Focus
	Oil and gas equipment and services (oilfield services)	Commodity focus/scale driven
Retail and restaurants	Catalog retail	Services and product focus
	Internet retail	Services and product focus
	Department stores	Services and product focus
	General merchandise stores	Services and product focus
	Apparel retail	Services and product focus
	Computer and electronics retail	Services and product focus
	Home improvement retail	Services and product focus
	Specialty stores	Services and product focus
	Automotive retail	Services and product focus
	Home furnishing retail	Services and product focus

Table 27

List Of Industries, Subsectors, And Standard Competitive Position Group Profiles (cont.)		
Health care services	Health care services	Commodity focus/scale driven
Transportation infrastructure	Airport services	National industries and utilities
	Highways	National industries and utilities
	Railtracks	National industries and utilities
	Marine ports and services	National industries and utilities
Environmental services	Environmental and facilities services	Services and product focus
Regulated utilities	Electric utilities	National industries and utilities
	Gas utilities	National industries and utilities
	Multi-utilities	National industries and utilities
	Water utilities	National industries and utilities
Unregulated power and gas	Independent power producers and energy traders	Capital or asset focus
	Merchant power	Capital or asset focus
Pharmaceuticals	Branded pharmaceuticals	Services and product focus
	Generic pharmaceuticals	Commodity focus/scale driven
Health care equipment	High-tech health care equipment	Product focus/scale driven
	Low-tech health care equipment	Commodity focus/scale driven
Branded nondurables	Brewers	Services and product focus
	Distillers and vintners	Services and product focus
	Soft drinks	Services and product focus
	Packaged foods and meats	Services and product focus
	Tobacco	Services and product focus
	Household products	Services and product focus
	Apparel, footwear, accessories, and luxury goods	Services and product focus
	Personal products	Services and product focus
Telecommunications and cable	Cable and satellite	Services and product focus
	Alternative carriers	Services and product focus
	Integrated telecommunication services	Services and product focus
	Wireless towers	Capital or asset focus
	Data center operators	Capital or asset focus
	Fiber-optic carriers	Capital or asset focus
	Wireless telecommunication services	Services and product focus

*See "Key Credit Factors For The Real Estate Industry," published Nov. 19, 2013. **For specialized REITs, there is no standard CPGP, as the CPGP will vary based on the underlying industry exposure (e.g. a forest and paper products REIT).

1. Analyzing subfactors for competitive advantage

193. Competitive advantage is the first component of our competitive position analysis. Companies that possess a sustainable competitive advantage are able to capitalize on key industry factors or mitigate associated risks more effectively. When a company operates in more than one business, we analyze each segment separately to form an overall view of its competitive advantage. In assessing competitive advantage, we evaluate the following subfactors:

- Strategy;
- Differentiation/uniqueness, product positioning/bundling;

- Brand reputation and marketing;
- Product/service quality;
- Barriers to entry, switching costs;
- Technological advantage and capabilities, technological displacement; and
- Asset profile.

a) Strategy

194. A company's business strategy will enhance or undermine its market entrenchment and business stability. Compelling business strategies can create a durable competitive advantage and thus a relatively stronger competitive position. We form an opinion as to the source and sustainability (if any) of the company's competitive advantage relative to its peers'. The company may have a differentiation advantage (i.e., brand, technology, regulatory) or a cost advantage (i.e., lower cost producer/servicer at the same quality level), or a combination.
195. Our assessment of a company's strategy is informed by a company's historical performance and how realistic we view its forward-looking business objectives to be. These may include targets for market shares, the percentage of revenues derived from new products, price versus the competition's, sales or profit growth, and required investment levels. We evaluate these objectives in the context of industry dynamics and the attractiveness of the markets in which the company participates.

b) Differentiation/ uniqueness, product positioning/bundling

196. The attributes of product or service differentiation vary by sector, and may include product or services features, performance, durability, reliability, delivery, and comprehensiveness, among other measures. The intensity of competition may be lower where buyers perceive the product or service to be highly differentiated or to have few substitutes. Conversely, products and services that lack differentiation, or offer little value-added in the eyes of customers, are generally commodity-type products that primarily compete on price. Competition intensity will often be highest where limited or moderate investment (R&D, capital expenditures, or advertising) or low employee skill levels (for service businesses) are required to compete. Independent market surveys, media commentaries, market share trends, and evidence of leading or lagging when it comes to raising or lowering prices can indicate varying degrees of product differentiation.
197. Product positioning influences how companies are able to extend or protect market shares by offering popular products or services. A company's abilities to replace aging products with new ones, or to launch product extensions, are important elements of product positioning. In addition, the ability to sell multiple products or services to the same customer, known as bundling or cross-selling, (for instance, offering an aftermarket servicing contract together with the sale of a new appliance) can create a competitive advantage by increasing customers' switching costs and fostering loyalty.

c) Brand reputation and marketing

198. Brand equity measures the price premium a company receives based on its brand relative to the generic equivalent. High brand equity typically translates into customer loyalty, built partially via marketing campaigns. One measure of advertising effectiveness can be revenue growth compared with the increase in advertising expenses.
199. We also analyze re-investment and advertising strategies to anticipate potential strengthening or weakening of a

company's brand. A company's track record of boosting market share and delivering attractive margins could indicate its ability to build and maintain brand reputation.

d) Product/service level quality

200. The strength and consistency of a value proposition is an important factor contributing to a sustainable competitive advantage. Value proposition encompasses the key features of a product or a service that convince customers that their purchase has the right balance between price and quality. Customers generally perceive a product or a service to be good if their expectations are consistently met. Quality, both actual and perceived, can help a company attract and retain customers. Conversely, poor product and service quality may lead to product recalls, higher-than-normal product warnings, or service interruptions, which may reduce demand. Measures of customer satisfaction and retention, such as attrition rates and contract renewal rates, can help trace trends in product/service quality.
201. Maintaining the value proposition requires consistency and adaptability around product design, marketing, and quality-related operating controls. This is pertinent where product differentiation matters, as is the case in most noncommodity industries, and especially so where environmental or human health (concerns for the chemical, food, and pharmaceutical industries) adds a liability dimension to the quality and value proposition. Similarly, regulated utilities (which often do not set their own prices) typically focus on delivering uninterrupted service, often to meet the standards set by their regulator.

e) Barriers to entry, switching costs

202. Barriers to entry can reduce or eliminate the threat of new market entrants. Where they are effective, these barriers can lead to more predictable revenues and profits, by limiting pricing pressures and customer losses, lowering marketing costs, and improving operating efficiency. While barriers to entry may enable premium pricing, a dominant player may rationally choose pricing restraint to further discourage new entrants.
203. Barriers to entry can be one or more of: a natural or regulatory monopoly; supportive regulation; high transportation costs; an embedded customer base that would incur high switching costs; a proprietary product or service; capital or technological intensiveness.
204. A natural monopoly may result from unusually high requirements for capital and operating expenditures that make it uneconomic for a market to support more than a single, dominant provider. The ultimate barrier to entry is found among regulated utilities, which provide an essential service in their 'de jure' monopolies and receive a guaranteed rate of return on their investments. A supportive regulatory regime can include rules and regulations with high hurdles that discourage competitors, or mandate so many obligations for a new entrant as to make market entry financially unviable.
205. In certain industrial sectors, proprietary access to a limited supply of key raw materials or skilled labor, or zoning laws that effectively preclude a new entrant, can provide a strong barrier to entry. Factors such as relationships, long-term contracts or maintenance agreements, or exclusive distribution agreements can result in a high degree of customer stickiness. A proprietary product or service that's protected by a copyright or patent can pose a significant hurdle to new competitors.

f) Technological advantage and capabilities, technological displacement

206. A company may benefit from a proprietary technology that enables it to offer either a superior product or a commodity-type product at a materially lower cost. Proven research and development (R&D) capabilities can deliver a differentiated, superior product or service, as in the pharmaceutical or high tech sectors. However, optimal R&D strategies or the importance or effectiveness of patent protection differ by industry, stage of product development, and product lifecycle.
207. Technological displacement can be a threat in many industries; new technologies or extensions of current ones can effectively displace a significant portion of a company's products or services.

g) Asset profile

208. A company's asset profile is a reflection of its reinvestment, which creates tangible or intangible assets, or both. Companies in similar sectors and industries usually have similar reinvestment options and, thus, their asset profiles tend to be comparable. The reinvestment in "heavy" industries, such as oil and gas, metals and mining, and automotive, tends to produce more tangible assets, whereas the reinvestment in certain "light" industries, such as services, media and entertainment, and retail, tends to produce more intangible assets.
209. We evaluate how a company's asset profile supports or undermines its competitive advantage by reviewing its manufacturing or service creation capabilities and investment requirements, its distribution capabilities, and its track record and commitment to reinvesting in its asset base. This may include a review of the company's ability to attract and retain a talented workforce; its degree of vertical integration and how that may help or hinder its ability to secure supply sources, control the value-added part of its production chain, or adjust to technological developments; or its ability develop a broad and strong distribution network.

2. Analyzing subfactors for scale, scope, and diversity

210. In assessing the relative strength of this component, we evaluate four subfactors:
- Diversity of product or service range;
 - Geographic diversity;
 - Volumes, size of markets and revenues, and market shares; and
 - Maturity of products or services.
211. In a given industry, entities with a broader mix of business activities are typically lower risk, and entities with a narrower mix are higher risk. High concentration of business volumes by product, customer, or geography, or a concentration in the production footprint or supplier base, can lead to less stable and predictable revenues and profits. Comparatively broader diversity helps a company withstand economic, competitive, or technological threats better than its peers.
212. There is no minimum size criterion, although size often provides a measure of diversification. Size and scope of operations is important relative to those of industry peers, though not in absolute terms. While relatively smaller companies can enjoy a high degree of diversification, they will likely be, almost by definition, more concentrated in terms of product, number of customers, or geography than their larger peers in the same industry.
213. Successful and continuing diversification supports a stronger competitive position. Conversely, poor diversification

weakens overall competitive position. For example, a company will weaken its overall business position if it enters new product lines and countries where it has limited expertise and lacks critical mass to be a real competitor to the incumbent market leaders. The weakness is greater when the new products or markets are riskier than the traditional core business.

214. Where applicable, we also include under scale, scope, and diversity an assessment of the potential benefits derived from unconsolidated (or partially consolidated) investments in strategic assets. The relative significance of such an investment and whether it is in an industry that exhibits high or, conversely, low correlation with the issuer's businesses would be considered in determining its potential benefits to scale, scope, and diversity. This excludes nonstrategic, financial investments, the analysis of which does not fall under the competitive position criteria but, instead, under the capital structure criteria.

a) Diversity of product or service range

215. The concentration of business volumes or revenues in a particular or comparatively small set of products or services can lead to less stable revenues and profits. Even if this concentration is in an attractive product or service, it may be a weakness. Likewise, the concentration of business volumes with a particular customer or a small group of customers, or the reliance on one or a few suppliers, can expose the company to a potentially greater risk of losing and having to replace related revenues and profits. On the other hand, successful diversification across products, customers, and/or suppliers can lead to more stable and predictable revenues and profits, which supports a stronger assessment of scale, scope, and diversity.
216. The relative contribution of different products or services to a company's revenues or profits helps us gauge its diversity. We also evaluate the correlation of demand between product or services lines. High correlation in demand between seemingly different product or service lines will accentuate volume declines during a weak part of the business cycle.
217. In most sectors, the share of revenue a company receives from its largest five to 10 customers or counterparties reveals how diversified its customer base is. However, other considerations such as the stability and credit quality of that customer base, and the company's ability to retain significant customers, can be mitigating or accentuating factors in our overall evaluation. Likewise, supplier dependency can often be measured based on a supplier's share of a company's operating or capital costs. However, other factors, such as the degree of interdependence between the company and its supplier(s), the substitutability of key supply sources, and the company's presumed ability to secure alternative supply without incurring substantial switching costs, are important considerations. Low switching costs (i.e. limited impact on input price, quality, or delivery times as a result of having to adapt to a new supply chain partner) can mitigate a high level of concentration.

b) Geographic diversity

218. We assess geographic diversity both from the standpoint of the breadth of the company's served or addressable markets, and from the standpoint of how geographically concentrated its facilities are.
219. The concentration of business volumes and revenues within a particular region can lead to greater exposure to economic factors affecting demand for a company's goods or services in that region. Even if the company's volumes and revenues are concentrated in an attractive region, it may still be vulnerable to a significant drop in demand for its

goods and services. Conversely, a company that serves multiple regions may benefit from different demand conditions in each, possibly resulting in greater revenue stability and more consistent profitability than a more focused peer's. That said, we consider geographic diversification in the context of the industry and the size of the local or regional economy. For instance, companies operating in local industries (such as food retailers) may benefit from a well-entrenched local position.

220. Generally, though, geographically concentrated production or service operations can expose a company to the risk of disruption, and damage revenues and profitability. Even when country risks don't appear significant, a company's vulnerability to exogenous factors (for example, natural disasters, labor or political unrest) increases with geographic concentration.

c) Volumes, size of markets and revenues, market share

221. Absolute sales or unit volumes and market share do not, by themselves, support a strong assessment of scale, scope, and diversity. Yet superior market share is a positive, since it may indicate a broad range of operations, products, or services.
222. We view volume stability (relative to peers') as a positive especially when: a company has demonstrated it during an economic downturn; if it has been achieved without relying on greater price concessions than competitors have made; and when it is likely to be sustained in the future. However, volume stability combined with shrinking market share could be evidence of a company's diminishing prospects for future profitability. We assess the predictability of business volumes and the likely degree of future volume stability by analyzing the company's performance relative to peers' on several industry factors: cyclical; ability to adapt to technological and regulatory threats; the profile of the customer base (stickiness); and the potential life cycle of the company's products or services.
223. Depending on the industry sector, we measure a company's relative size and market share based on unit sales; the absolute amount of revenues; and the percentage of revenues captured from total industry revenues. We also adjust for industry and company specific qualitative considerations. For example, if an industry is particularly fragmented and has a number of similarly sized participants, none may have a particular advantage or disadvantage with respect to market share.

d) Maturity of products or services

224. The degree of maturity and the relative position on the lifecycle curve of the company's product or service portfolio affect the stability and sustainability of its revenues and margins. It is important to identify the stage of development of a company's products or services in order to measure the life cycle risks that may be associated with key products or services.
225. Mature products or services (e.g. consumer products or broadcast programming) are not necessarily a negative, in our view, if they still contribute reliable profits. If demand is declining for a company's product or service, we examine its track record on introducing new products with staying power. Similarly, a company's track record with product launches is particularly relevant.

3. Analyzing subfactors for operating efficiency

226. In assessing the relative strength of this component, we consider four subfactors:

- Cost structure,
- Manufacturing processes,
- Working capital management, and
- Technology.

227. To the extent a company has high operating efficiency, it should be able to generate better profit margins than peers that compete in the same markets, whatever the prevailing market conditions. The ability to minimize manufacturing and other operational costs and thus maximize margins and cash flow—for example, through manufacturing excellence, cost control, and diligent working capital management—will provide the funds for research and development, marketing, and customer service.

a) Cost structure

228. Companies that are well positioned from a cost standpoint will typically enjoy higher capacity utilization and be more profitable over the course of the business cycle. Cost structure and cost control are keys to generating strong profits and cash flow, particularly for companies that produce commodities, operate in mature industries, or face pricing pressures. It is important to consider whether a company or any of its competitors has a sustainable cost advantage, which can be based on access to cheaper energy, favorable manufacturing locations, or lower and more flexible labor costs, for example.

229. Where information is available, we examine a company's fixed versus variable cost mix as an indication of operating leverage, a measure of how revenue growth translates into growth in operating income. A company with significant operating leverage may witness dramatic declines in operating profit if unit volumes fall, as during cyclical downturns. Conversely, in an upturn, once revenues pass the breakeven point, a substantial percentage of incremental revenues typically becomes profit.

b) Manufacturing process

230. Capital intensity characterizes many heavy manufacturing sectors that require minimum volumes to produce acceptable profits, cash flow, and return on assets. We view capacity utilization through the business cycle (combined with the cost base) as a good indication of manufacturers' ability to maintain profits in varying economic scenarios. Our capacity utilization assessment is based on a company's production capacity across its manufacturing footprint. In addition, we consider the direction of a company's capacity utilization in light of our unit sales expectations, as opposed to analyzing it plant-by-plant.

231. Labor relations remain an important focus in our analysis of operating efficiency for manufacturers. Often, a company's labor cost structure is driven by its history of contractual negotiations and the countries in which it operates. We examine the rigidity or flexibility of a company's labor costs and the extent to which it relies on labor rather than automation. We analyze labor cost structure by assessing the extent of union representation, wage and benefit costs as a share of cost of goods sold (when available), and by assessing the balance of capital equipment vs. labor input in the manufacturing process. We also incorporate trends in a company's efforts to transfer labor costs from high-cost to low-cost regions.

c) Working capital management

232. Working capital management--of current or short-term assets and liabilities--is a key factor in our evaluation of operating efficiency. In general, companies with solid working capital management skills exhibit shorter cash conversion cycles (defined as days' investment in inventory and receivables less days' investment in accounts payable) than their lower-skilled peers. Short cash-conversion cycles could, for instance, demonstrate that a company has a stronger position in the supply chain (for example, requiring suppliers or dealers to hold more of its inventory). This allows a company to direct more capital than its peers can to other areas of investment.

d) Technology

233. Technology can play an important role in achieving superior operating efficiency through effective yield management (by improving input/output ratios), supply chain automation, and cost optimization.
234. Achieving high yield management is particularly important in industries with limited inventory and high fixed costs, such as transportation, lodging, media, and retail. The most efficient airlines can achieve higher revenue per available seat mile than their peers, while the most efficient lodging companies can achieve a higher revenue per available room than their peers. Both industries rely heavily on technology to effectively allocate inventory (seats and rooms) to maximize sales and profitability.
235. Effective supply chain automation systems enable companies to reduce investments in inventory and better forecast future orders based on current trends. By enabling electronic data interchange between supplier and retailer, such systems help speed orders and reorders for goods by quickly pinpointing which merchandise is selling well and needs restocking. They also identify slow moving inventory that needs to be marked down, making space available for fresh merchandise.
236. Effective use of technology can also help hold down costs by improving productivity via automation and workflow management. This can reduce selling, general, and administrative costs, which usually represent a substantial portion of expenditures for industries with high fixed costs, thus boosting earnings.

4. Industry-specific SER parameters

Table 28

SER Calibration By Industry Based On EBITDA						
	--Volatility of profitability assessment*--					
	1	2	3	4	5	6
Transportation cyclical	=<10%	>10%-14%	>14%-22%	>22%-33%	>33%-76%	>76%
Auto OEM	=<25%	>25%-33%	>33%-35%	>35%-40%	>40%-46%	>46%
Metals and mining downstream	=<16%	>16%-31%	>31%-42%	>42%-53%	>53%-82%	>82%
Metals and mining upstream	=<16%	>16%-23%	>23%-28%	>28%-34%	>34%-59%	>59%
Homebuilders and developers	=<19%	>19%-33%	>33%-46%	>46%-65%	>65%-95%	>95%
Oil and gas refining and marketing	=<14%	>14%-21%	>21%-35%	>35%-46%	>46%-82%	>82%
Forest and paper products	=<9%	>9%-18%	>18%-26%	>26%-51%	>51%-114%	>114%
Building materials	=<9%	>9%-16%	>16%-19%	>19%-24%	>24%-33%	>33%
Oil and gas integrated, exploration and production	=<12%	>12%-19%	>19%-22%	>22%-28%	>28%-38%	>38%
Agribusiness and commodity foods	=<12%	>12%-19%	>19%-25%	>25%-39%	>39%-57%	>57%

Table 28

SER Calibration By Industry Based On EBITDA (cont.)						
Real estate investment trusts (REITs)	=<5%	>5%-9%	>9%-13%	>13%-20%	>20%-32%	>32%
Leisure and sports	=<5%	>5%-9%	>9%-12%	>12%-16%	>16%-24%	>24%
Commodity chemicals	=<14%	>14%-19%	>19%-28%	>28%-37%	>37%-51%	>51%
Auto suppliers	=<15%	>15%-20%	>20%-26%	>26%-32%	>32%-45%	>45%
Aerospace and defense	=<6%	>6%-9%	>9%-15%	>15%-24%	>24%-41%	>41%
Technology hardware and semiconductors	=<11%	>11%-15%	>15%-22%	>22%-31%	>31%-58%	>58%
Specialty chemicals	=<5%	>5%-10%	>10%-14%	>14%-23%	>23%-36%	>36%
Capital goods	=<12%	>12%-16%	>16%-21%	>21%-30%	>30%-45%	>45%
Engineering and construction	=<9%	>9%-14%	>14%-20%	>20%-28%	>28%-39%	>39%
Railroads and package express	=<5%	>5%-8%	>8%-10%	>10%-13%	>13%-22%	>22%
Business and consumer services	=<4%	>4%-8%	>8%-11%	>11%-16%	>16%-30%	>30%
Midstream energy	=<5%	>5%-9%	>9%-11%	>11%-15%	>15%-31%	>31%
Technology software and services	=<4%	>4%-9%	>9%-14%	>14%-19%	>19%-33%	>33%
Consumer durables	=<7%	>7%-10%	>10%-13%	>13%-19%	>19%-35%	>35%
Containers and packaging	=<5%	>5%-7%	>7%-12%	>12%-18%	>18%-26%	>26%
Media and entertainment	=<6%	>6%-10%	>10%-14%	>14%-20%	>20%-29%	>29%
Oil and gas drilling, equipment and services	=<16%	>16%-22%	>22%-28%	>28%-44%	>44%-62%	>62%
Retail and restaurants	=<4%	>4%-8%	>8%-11%	>11%-16%	>16%-26%	>26%
Health care services	=<4%	>4%-5%	>5%-9%	>9%-12%	>12%-19%	>19%
Transportation infrastructure	=<2%	>2%-4%	>4%-7%	>7%-12%	>12%-19%	>19%
Environmental services	=<5%	>5%-9%	>9%-13%	>13%-22%	>22%-29%	>29%
Regulated utilities	=<4%	>4%-7%	>7%-9%	>9%-14%	>14%-26%	>26%
Unregulated power and gas	=<7%	>7%-16%	>16%-20%	>20%-29%	>29%-47%	>47%
Pharmaceuticals	=<5%	>5%-8%	>8%-11%	>11%-17%	>17%-32%	>32%
Health care equipment	=<3%	>3%-5%	>5%-6%	>6%-10%	>10%-25%	>25%
Branded nondurables	=<4%	>4%-7%	>7%-10%	>10%-15%	>15%-43%	>43%
Telecommunications and cable	=<3%	>3%-6%	>6%-9%	>9%-13%	>13%-23%	>23%
Overall	=<5%	>5%-9%	>9%-15%	>15%-23%	>23%-43%	>43%

*The data ranges include the values up to and including the upper bound. As an example, for a range of 5%-9%, a value of 5% is excluded, while a value of 9% is included; the numbers are rounded to the nearest whole number for presentation purposes.

Table 29

SER Calibration By Industry Based On EBITDA Margin						
--Volatility of profitability assessment*--						
	1	2	3	4	5	6
Transportation cyclical	=<4%	>4%-8%	>8%-16%	>16%-28%	>28%-69%	>69%
Auto OEM	=<15%	>15%-19%	>19%-29%	>29%-31%	>31%-45%	>45%
Metals and mining downstream	=<10%	>10%-18%	>18%-26%	>26%-36%	>36%-56%	>56%
Metals and mining upstream	=<8%	>8%-10%	>10%-14%	>14%-19%	>19%-31%	>31%
Homebuilders and developers	=<10%	>10%-18%	>18%-30%	>30%-56%	>56%-114%	>114%
Oil and gas refining and marketing	=<12%	>12%-22%	>22%-28%	>28%-42%	>42%-71%	>71%
Forest and paper products	=<8%	>8%-13%	>13%-21%	>21%-41%	>41%-117%	>117%
Building materials	=<4%	>4%-8%	>8%-13%	>13%-18%	>18%-23%	>23%

Table 29

SER Calibration By Industry Based On EBITDA Margin (cont.)						
Oil and gas integrated, exploration and production	=<4%	>4%-6%	>6%-8%	>8%-13%	>13%-22%	>22%
Agribusiness and commodity foods	=<9%	>9%-14%	>14%-18%	>18%-27%	>27%-100%	>100%
Real estate investment trusts (REITs)	=<2%	>2%-5%	>5%-8%	>8%-13%	>13%-34%	>34%
Leisure and sports	=<3%	>3%-5%	>5%-6%	>6%-9%	>9%-18%	>18%
Commodity chemicals	=<9%	>9%-14%	>14%-18%	>18%-25%	>25%-37%	>37%
Auto suppliers	=<9%	>9%-13%	>13%-18%	>18%-23%	>23%-40%	>40%
Aerospace and defense	=<3%	>3%-6%	>6%-7%	>7%-12%	>12%-24%	>24%
Technology hardware and semiconductors	=<7%	>7%-10%	>10%-15%	>15%-21%	>21%-62%	>62%
Specialty chemicals	=<3%	>3%-6%	>6%-10%	>10%-19%	>19%-28%	>28%
Capital goods	=<6%	>6%-9%	>9%-13%	>13%-20%	>20%-33%	>33%
Engineering and construction	=<6%	>6%-8%	>8%-12%	>12%-17%	>17%-26%	>26%
Railroads and package express	=<2%	>2%-6%	>6%-8%	>8%-10%	>10%-17%	>17%
Business and consumer services	=<3%	>3%-5%	>5%-7%	>7%-12%	>12%-22%	>22%
Midstream energy	=<3%	>3%-6%	>6%-9%	>9%-14%	>14%-28%	>28%
Technology software and services	=<3%	>3%-6%	>6%-10%	>10%-15%	>15%-30%	>30%
Consumer durables	=<4%	>4%-8%	>8%-11%	>11%-15%	>15%-26%	>26%
Containers and packaging	=<5%	>5%-7%	>7%-9%	>9%-15%	>15%-22%	>22%
Media and entertainment	=<4%	>4%-6%	>6%-9%	>9%-14%	>14%-24%	>24%
Oil and gas drilling, equipment and services	=<6%	>6%-12%	>12%-16%	>16%-22%	>22%-32%	>32%
Retail and restaurants	=<3%	>3%-5%	>5%-7%	>7%-12%	>12%-21%	>21%
Health care services	=<3%	>3%-5%	>5%-6%	>6%-8%	>8%-15%	>15%
Transportation infrastructure	=<1%	>1%-3%	>3%-5%	>5%-7%	>7%-15%	>15%
Environmental services	=<3%	>3%-4%	>4%-6%	>6%-10%	>10%-24%	>24%
Regulated utilities	=<4%	>4%-7%	>7%-9%	>9%-14%	>14%-24%	>24%
Unregulated power and gas	=<6%	>6%-10%	>10%-15%	>15%-23%	>23%-41%	>41%
Pharmaceuticals	=<4%	>4%-5%	>5%-7%	>7%-10%	>10%-21%	>21%
Health care equipment	=<2%	>2%-4%	>4%-5%	>5%-10%	>10%-16%	>16%
Branded nondurables	=<3%	>3%-6%	>6%-9%	>9%-13%	>13%-28%	>28%
Telecommunications and cable	=<2%	>2%-4%	>4%-5%	>5%-7%	>7%-13%	>13%
Overall	=<3%	>3%-6%	>6%-10%	>10%-16%	>16%-32%	>32%

*The data ranges include the values up to and including the upper bound. As an example, for a range of 5%-9%, a value of 5% is excluded, while a value of 9% is included; the numbers are rounded to the nearest whole number for presentation purposes.

Table 30

SER Calibration By Industry Based On Return On Capital						
--Volatility of profitability assessment*--						
	1	2	3	4	5	6
Transportation cyclical	=<14%	>14%-28%	>28%-39%	>39%-53%	>53%-156%	>156%
Auto OEM	=<42%	>42%-64%	>64%-74%	>74%-86%	>86%-180%	>180%
Metals and mining downstream	=<25%	>25%-32%	>32%-43%	>43%-53%	>53%-92%	>92%
Metals and mining upstream	=<22%	>22%-30%	>30%-38%	>38%-45%	>45%-93%	>93%
Homebuilders and developers	=<12%	>12%-31%	>31%-50%	>50%-70%	>70%-88%	>88%

Table 30

SER Calibration By Industry Based On Return On Capital (cont.)						
Oil and gas refining and marketing	=<14%	>14%-30%	>30%-48%	>48%-67%	>67%-136%	>136%
Forest and paper products	=<10%	>10%-22%	>22%-40%	>40%-89%	>89%-304%	>304%
Building materials	=<13%	>13%-20%	>20%-26%	>26%-36%	>36%-62%	>62%
Oil and gas integrated, exploration and production	=<16%	>16%-22%	>22%-31%	>31%-43%	>43%-89%	>89%
Agribusiness and commodity foods	=<12%	>12%-15%	>15%-29%	>29%-55%	>55%-111%	>111%
Real estate investment trusts (REITs)	=<8%	>8%-14%	>14%-20%	>20%-26%	>26%-116%	>116%
Leisure and sports	=<11%	>11%-17%	>17%-26%	>26%-34%	>34%-64%	>64%
Commodity chemicals	=<19%	>19%-28%	>28%-41%	>41%-50%	>50%-73%	>73%
Auto suppliers	=<20%	>20%-39%	>39%-50%	>50%-67%	>67%-111%	>111%
Aerospace and defense	=<7%	>7%-13%	>13%-19%	>19%-27%	>27%-61%	>61%
Technology hardware and semiconductors	=<8%	>8%-21%	>21%-34%	>34%-49%	>49%-113%	>113%
Specialty chemicals	=<5%	>5%-18%	>18%-28%	>28%-43%	>43%-64%	>64%
Capital goods	=<15%	>15%-24%	>24%-31%	>31%-45%	>45%-121%	>121%
Engineering and construction	=<12%	>12%-21%	>21%-23%	>23%-33%	>33%-54%	>54%
Railroads and package express	=<3%	>3%-11%	>11%-17%	>17%-20%	>20%-27%	>27%
Business and consumer services	=<9%	>9%-17%	>17%-23%	>23%-40%	>40%-87%	>87%
Midstream energy	=<5%	>5%-11%	>11%-17%	>17%-22%	>22%-34%	>34%
Technology software and services	=<8%	>8%-21%	>21%-35%	>35%-65%	>65%-105%	>105%
Consumer durables	=<8%	>8%-13%	>13%-20%	>20%-35%	>35%-60%	>60%
Containers and packaging	=<6%	>6%-14%	>14%-23%	>23%-35%	>35%-52%	>52%
Media and entertainment	=<9%	>9%-17%	>17%-26%	>26%-40%	>40%-86%	>86%
Oil and gas drilling, equipment and services	=<25%	>25%-33%	>33%-45%	>45%-65%	>65%-90%	>90%
Retail and restaurants	=<6%	>6%-14%	>14%-18%	>18%-26%	>26%-69%	>69%
Health care services	=<6%	>6%-10%	>10%-15%	>15%-25%	>25%-44%	>44%
Transportation infrastructure	=<5%	>5%-9%	>9%-12%	>12%-16%	>16%-27%	>27%
Environmental Services	=<7%	>7%-12%	>12%-24%	>24%-35%	>35%-72%	>72%
Regulated utilities	=<6%	>6%-9%	>9%-13%	>13%-20%	>20%-36%	>36%
Unregulated power and gas	=<14%	>14%-19%	>19%-29%	>29%-55%	>55%-117%	>117%
Pharmaceuticals	=<6%	>6%-8%	>8%-15%	>15%-20%	>20%-33%	>33%
Health care equipment	=<4%	>4%-8%	>8%-19%	>19%-31%	>31%-81%	>81%
Branded nondurables	=<6%	>6%-10%	>10%-17%	>17%-29%	>29%-63%	>63%
Telecommunications and cable	=<7%	>7%-13%	>13%-19%	>19%-26%	>26%-60%	>60%
Overall	=<7%	>7%-15%	>15%-23%	>23%-38%	>38%-81%	>81%

*The data ranges include the values up to and including the upper bound. As an example, for a range of 5%-9%, a value of 5% is excluded, while a value of 9% is included; the numbers are rounded to the nearest whole number for presentation purposes.

C. Cash Flow/Leverage Analysis

1. The merits and drawbacks of each cash flow measure

a) EBITDA

237. EBITDA is a widely used, and therefore a highly comparable, indicator of cash flow, although it has significant limitations. Because EBITDA derives from the income statement entries, it can be distorted by the same accounting issues that limit the use of earnings as a basis of cash flow. In addition, interest can be a substantial cash outflow for speculative-grade companies and therefore EBITDA can materially overstate cash flow in some cases. Nevertheless, it serves as a useful and common starting point for cash flow analysis and is useful in ranking the financial strength of different companies.

b) Funds from operations (FFO)

238. FFO is a hybrid cash flow measure that estimates a company's inherent ability to generate recurring cash flow from its operations independent of working capital fluctuations. FFO estimates the cash flow available to the company before working capital, capital spending, and discretionary items such as dividends, acquisitions, etc.
239. Because cash flow from operations tends to be more volatile than FFO, FFO is often used to smooth period-over-period variation in working capital. We consider it a better proxy of recurring cash flow generation because management can more easily manipulate working capital depending on its liquidity or accounting needs. However, we do not generally rely on FFO as a guiding cash flow measure in situations where assessing working capital changes is important to judge a company's cash flow generating ability and general creditworthiness. For example, for working-capital-intensive industries such as retailing, operating cash flow may be a better indicator than FFO of the firm's actual cash generation.
240. FFO is a good measure of cash flow for well-established companies whose long-term viability is relatively certain (i.e., for highly rated companies). For such companies, there can be greater analytical reliance on FFO and its relation to the total debt burden. FFO remains very helpful in the relative ranking of companies. In addition, more established, healthier companies usually have a wider array of financing possibilities to cover potential short-term liquidity needs and to refinance upcoming maturities. For marginal credit situations, the focus shifts more to free operating cash flow--after deducting the various fixed uses such as working capital investment and capital expenditures--as this measure is more directly related to current debt service capability.

c) Cash flow from operations (CFO)

241. The measurement and analysis of CFO forms an important part of our ratings assessment, in particular for companies that operate in working-capital-intensive industries or industries in which working capital flows can be volatile. CFO is distinct from FFO as it is a pure measure of cash flow calculated after accounting for the impact on earnings of changes in operating assets and liabilities. CFO is cash flow that is available to finance items such as capital expenditures, repay borrowing, and pay for dividends and share buybacks.
242. In many industries, companies shift their focus to cash flow generation in a downturn. As a result, even though they typically generate less cash from ordinary business activities because of low capacity utilization and relatively low fixed-cost absorption, they may generate cash by reducing inventories and receivables. Therefore, although FFO is likely to be lower in a downturn, the impact on CFO may not be as great. In times of strong growth the opposite will be true, and consistently lower CFO compared to FFO without a corresponding increase in revenue and profitability can indicate an untenable situation.

243. Working capital is a key element of a company's cash flow generation. While there tends to be a need to build up working capital and therefore to consume cash in a growth or expansion phase, changes in working capital can also act as a buffer in case of a downturn. Many companies will sell off inventories and invest a lower amount in raw materials because of weaker business activities, both of which reduce the amount of capital and cash that is tied up in working capital. Therefore, working capital fluctuations can occur both in periods of revenue growth and contraction and analyzing a company's near-term working capital needs is crucial for estimating future cash flow developments.
244. Often, businesses that are capital intensive are not working-capital-intensive: most of the capital commitment is upfront in equipment and machinery, while asset-light businesses may have to invest proportionally more in inventories and receivables. That also affects margins, because capital-intensive businesses tend to have proportionally lower operating expenses (and therefore higher EBITDA margins), while working-capital-intensive businesses usually report lower EBITDA margins. The resulting cash flow volatility can be significant: because all investment is made upfront in a capital-intensive business, there is usually more room to absorb subsequent EBITDA volatility because margins are higher. For example, a capital-intensive company may remain reasonably profitable even if its EBITDA margin declines from 30% to 20%. By contrast, a working-capital-intensive business with a lower EBITDA margin (due to higher operating expenses) of 8% can post a negative EBITDA margin if EBITDA volatility is large.

d) Free operating cash flow (FOCF)

245. By deducting capital expenditures from CFO, we arrive at FOCF, which can be used as a proxy for a company's cash generated from core operations. We may exclude discretionary capital expenditures for capacity growth from the FOCF calculation, but in practice it is often difficult to discriminate between spending for expansion and replacement. And, while companies have some flexibility to manage their capital budgets to weather down cycles, such flexibility is generally temporary and unsustainable in light of intrinsic requirements of the business. For example, companies can be compelled to increase their investment programs because of strong demand growth or technological changes. Regulated entities (for example, telecommunications companies) might also face significant investment requirements related to their concession contracts (the understanding between a company and the host government that specifies the rules under which the company can operate locally).
246. Positive FOCF is a sign of strength and helpful in distinguishing between two companies with the same FFO. In addition, FOCF is helpful in differentiating between the cash flows generated by more and less capital-intensive companies and industries.
247. In highly capital-intensive industries (where maintenance capital expenditure requirements tend to be high) or in other situations in which companies have little flexibility to postpone capital expenditures, measures such as FFO to debt and debt to EBITDA may provide less valuable insight into relative creditworthiness because they fail to capture potentially meaningful capital expenditures. In such cases, a ratio such as FOCF to debt provides greater analytical insight.
248. A company serving a low-growth or declining market may exhibit relatively strong FOCF because of diminishing fixed and working capital needs. Growth companies, in contrast, exhibit thin or even negative FOCF because of the investment needed to support growth. For the low-growth company, credit analysis weighs the positive, strong current cash flow against the danger that this high level of cash flow might not be sustainable. For the high-growth company,

the opposite is true: weighing the negatives of a current cash deficit against prospects of enhanced cash flow once current investments begin yielding cash benefits. In the latter case, if we view the growth investment as temporary and not likely to lead to increased leverage over the long-term, we'll place greater analytical importance on FFO to debt rather than on FOCF to debt. In any event, we also consider the impact of a company's growth environment in our business risk analysis, specifically in a company's industry risk analysis (see section B).

e) Discretionary cash flow (DCF)

249. For corporate issuers primarily rated in the investment-grade universe, DCF to debt can be an important barometer of future cash flow adequacy as it more fully reflects a company's financial policy, including decisions regarding dividend payouts. In addition, share buybacks and potential M&A, both of which can represent very significant uses of cash, are important components in cash flow analysis.
250. The level of dividends depends on a company's financial strategy. Companies with aggressive dividend payout targets might be reluctant to reduce dividends even under some liquidity pressure. In addition, investment-grade companies are less likely to reduce dividend payments following some reversals--although dividends ultimately are discretionary. DCF is the truest reflection of excess cash flow, but it is also the most affected by management decisions and, therefore, does not necessarily reflect the potential cash flow available.

D. Diversification/Portfolio Effect

1. Academic research

251. Academic research recently concluded that, during the global financial crisis of 2007-2009, conglomerates had the advantage over single sector-focused firms because they had better access to the credit markets as a result of their debt co-insurance and used the internal capital markets more efficiently (i.e., their core businesses had stronger cash flows). Debt co-insurance is the view that the joining-together of two or more firms whose earnings streams are less-than-perfectly correlated reduces the risk of default of the merged firms (i.e., the co-insurance effect) and thereby increases the "debt capacity" or "borrowing ability" of the combined enterprise. These financing alternatives became more valuable during the crisis. (Source: "Does Diversification Create Value In The Presence Of External Financing Constraints? Evidence From The 2007-2009 Financial Crisis," Venkat Kuppaswamy and Belen Villalonga, Harvard Business School, Aug. 19, 2011.)
252. In addition, fully diversified, focused companies saw more narrow credit default swap spreads from 2004-2010 vs. less diversified firms. This highlighted that lenders were differentiating for risk and providing these companies with easier and cheaper access to capital. (Source: "The Power of Diversified Companies During Crises," The Boston Consulting Group and Leipzig Graduate School of Management, January 2012.)
253. Many rated conglomerates are either country- or region-specific; only a small percentage are truly global. The difference is important when assessing the country and macroeconomic risk factors. Historical measures for each region, based on volatility and correlation, reflect regional trends that are likely to change over time.

E. Financial Policy

1. Controlling shareholders

254. Controlling shareholder(s)--if they exist--exert significant influence over a company's financial risk profile, given their ability to use their direct or indirect control of the company's financial policies for their own benefit. Although the criteria do not associate the presence of controlling shareholder(s) to any predefined negative or positive impact, we assess the potential medium- to long-term implications for a company's credit standing of these strategies. Long-term ownership--such as exists in many family-run businesses--is often accompanied by financial discipline and reluctance to incur aggressive leverage. Conversely, short-term ownership--such as exists in private equity sponsor-owned companies--generally entails financial policies aimed at achieving rapid returns for shareholders typically through aggressive debt leverage.
255. The criteria define controlling shareholder(s) as:
- A private shareholder (an individual or a family) with majority ownership or control of the board of directors;
 - A group of shareholders holding joint control over the company's board of directors through a shareholder agreement. The shareholder agreement may be comprehensive in scope or limited only to certain financial aspects; and
 - A private equity firm or a group of private equity firms holding at least 40% in a company or with majority control of its board of directors.
256. A company is not considered to have a controlling shareholder if it is publicly listed with more than 50% of voting interest listed or when there is no evidence of a particular shareholder or group of shareholders exerting 'de facto' control over a company.
257. Companies that have as their controlling shareholder governments or government-related entities, infrastructure and asset-management funds, and diversified holding companies and conglomerates are assessed in separate criteria.

2. Financial discipline

a) Leverage influence from acquisitions

258. Companies may employ more or less acquisitive growth strategies based on industry dynamics, regulatory changes, market opportunities, and other factors. We consider management teams with disciplined, transparent acquisition strategies that are consistent with their financial policy framework as providing a high degree of visibility into the projected evolution of cash flow and credit measures. Our assessment takes into account management's track record in terms of acquisition strategy and the related impact on the company's financial risk profile. Historical evidence of limited management tolerance for significant debt-funded acquisitions provides meaningful support for the view that projected credit ratios would not significantly weaken as a result of the company's acquisition policy. Conversely, management teams that pursue opportunistic acquisition strategies, without well-defined parameters, increase the risks that the company's financial risk profile may deteriorate well beyond our forecasts.
259. Acquisition funding policies and management's track record in this respect also provide meaningful insight in terms of credit ratio stability. In the criteria, we take into account management's willingness and capacity to mobilize all funding resources to restore credit quality, such as issuing equity or disposing of assets, to mitigate the impact of sizable

acquisitions on credit ratios. The financial policy framework and related historical evidence are key considerations in our assessment.

b) Leverage influence from shareholder remuneration policies

260. A company's approach to rewarding shareholders demonstrates how it balances the interests of its various stakeholders over time. Companies that are consistent and transparent in their shareholder remuneration policies, and exhibit a willingness to adjust shareholder returns to mitigate adverse operating conditions, provide greater support to their long-term credit quality than other companies. Conversely, companies that prioritize cash returns to shareholders in periods of deteriorating economic, operating, or share price performance can significantly undermine long-term credit quality and exacerbate the credit impact of adverse business conditions. In assessing a company's shareholder remuneration policies, the criteria focus on the predictability of shareholder remuneration plans, including how a company builds shareholder expectations, its track record in executing shareholder return policies over time, and how shareholder returns compare with industry peers'.
261. Shareholder remuneration policies that lack transparency or deviate meaningfully from those of industry peers introduce a higher degree of event risk and volatility and will be assessed as less predictable under the criteria. Dividend and capital return policies that function primarily as a means to distribute surplus capital to shareholders based on transparent and stable payout ratios--after satisfying all capital requirements and leverage objectives of the company, and that support stable to improving leverage ratios--are considered the most supportive of long term credit quality.

c) Leverage influence from plans regarding investment decisions or organic growth strategies

262. The process by which a company identifies, funds, and executes organic growth, such as expansion into new products and/or new markets, can have a significant impact on its long-term credit quality. Companies that have a disciplined, coherent, and manageable organic growth strategy, and have a track record of successful execution are better positioned to continue to attract third-party capital and maintain long-term credit quality. By contrast, companies that allocate significant amounts of capital to numerous, unrelated, large and/or complex projects and often incur material overspending against the original budget can significantly increase their credit risk.
263. The criteria assess whether management's organic growth strategies are transparent, comprehensive, and measurable. We seek to evaluate the company's mid- to long-term growth objectives--including strategic rationales and associated execution risks--as well as the criteria it uses to allocate capital. Effective capital allocation is likely to include guidelines for capital deployment, including minimum return hurdles, competitor activity analysis, and demand forecasting. The company's track record will provide key data for this assessment, including how well it executes large and/or complex projects against initial budgets, cost overruns, and timelines.

3. Financial policy framework

a) Comprehensiveness of financial policy framework

264. Financial policies that are clearly defined, unambiguous, and provide a tight framework around management behavior are the most reliable in determining an issuer's future financial risk profile. We assess as consistent with a supportive assessment, policies that are clear, measurable, and well understood by all key stakeholders. Accordingly, the financial policy framework must include well-defined parameters regarding how the issuer will manage its cash flow protection

strategies and debt leverage profile. This includes at least one key or a combination of financial ratio constraints (such as maximum debt to EBITDA threshold) and the latter must be relevant with respect to the issuer's industry and/or capital structure characteristics.

265. By contrast, the absence of established financial policies, policies that are vague or not quantifiable, or historical evidence of significant and unexpected variation in management's long-term financial targets could contribute to an overall assessment of a non-supportive financial policy framework.

b) Transparency of financial policies

266. We assess as supportive financial policy objectives that are transparent and well understood by all key stakeholders and we view them as likely to influence an issuer's financial risk profile over time. Alternatively, financial policies, if they exist, that are not communicated to key stakeholders and/or where there is limited historical evidence to support the company's commitment to these policies, are non-supportive, in our view. We consider the variety of ways in which a company communicates its financial policy objectives, including public disclosures, investor presentation materials, and public commentary.
267. In some cases, however, a company may articulate its financial policy objectives to a limited number of key stakeholders, such as its main creditors or to credit rating agencies. In these situations, a company may still receive a supportive classification if we assess that there is a sufficient track record (more than three years) to demonstrate a commitment to its financial policy objectives.

c) Achievability and sustainability of financial policies

268. To assess the achievability and sustainability of a company's financial policies, we consider a variety of factors, including the entity's current and historical financial risk profile; the demands of its key stakeholders (including dividend and capital return expectations of equity holders); and the stability of the company's financial policies that we have observed over time. If there is evidence that the company is willing to alter its financial policy framework because of adverse business conditions or growth opportunities (including M&A), this could support an overall assessment of non-supportive.

4. Financial policy adjustments--examples

269. Example 1: A moderately leveraged company has just been sold to a new financial sponsor. The financial sponsor has not leveraged the company yet and there is no stated financial policy at the outset. We expect debt leverage to increase upon refinancing, but we are not able to factor it precisely in our forecasts yet. Likely outcome: FS-6 financial policy assessment, implying that we expect the new owner to implement an aggressive financial policy in the absence of any other evidence.
270. Example 2: A company has two owners—a family owns 75%, a strategic owner holds the remaining 25%. Although the company has provided Standard & Poor's with some guidance on long-term financial objectives, the overall financial policy framework is not sufficiently structured nor disclosed to a sufficient number of stakeholders to qualify for a supportive assessment. Recent history, however, does not provide any evidence of unexpected, aggressive financial transactions and we believe event risk is moderate. Likely outcome: Neutral financial policy impact, including an assessment of neutral for financial discipline. Although the company's financial framework does not support long-term visibility, historical evidence and stability of management suggest that event risk is not significant. The unsupportive financial framework assessment, however,

prevents the company from qualifying for an overall positive financial policy assessment, should the conditions for positive financial discipline be met.

271. Example 3: A company (not owned by financial sponsors) has stated leverage targets equivalent to a significant financial risk profile assessment. The company continues to make debt-financed acquisitions yet remains within its leverage targets, albeit at the weaker end of these. Our forecasts are essentially built on expectations that excess cash flow will be fully used to fund M&A or, possibly pay share repurchases, but that management will overall remain within its leverage targets.
Likely outcome: Neutral financial policy impact. Although management is fairly aggressive, the company consistently stays within its financial policy targets. We think our forecasts provide a realistic view of the evolution of the company's credit metrics over the next two years. No event risk adjustment is needed.
272. Example 4: A company (not owned by a financial sponsor) has just made a sizable acquisition (consistent with its long-term business strategy) that has brought its credit ratios out of line. Management expressed its commitment to rapidly improve credit ratios back to its long-term ratio targets—representing an acceptable range for the SACP—through asset disposals or a rights issue. We see their disposal plan (or rights issue) as realistic but precise value and timing are uncertain. At the same time, management has a supportive financial policy framework, a positive track record of five years, and assets are viewed as fairly easily tradable.
Likely outcome: Positive financial policy impact. Although forecast credit ratios will remain temporarily depressed, as we cannot fully factor in asset disposals (or rights issue) due to uncertainty on timing/value, or without leaking confidential information, the company's credit risk should benefit from management's positive track record and a supportive financial policy framework. The anchor will be better by one notch if management and governance is at least satisfactory and liquidity is at least adequate.
273. Example 5: A company (not owned by a financial sponsor) has very solid financial ratios, providing it with meaningful flexibility for M&A when compared with management's long-term stated financial policy. Also, its stock price performance is somewhat below that of its closest industry peers. Although we have no recent evidence of any aggressive financial policy steps, we fundamentally believe that, over the long-term term, the company will end up using its financial flexibility for the right M&A opportunity, or alternatively return cash to shareholders.
Likely outcome: Negative financial policy impact. Long-term event risk derived from M&A cannot be built into forecasts nor shareholder returns (share buybacks or one-off dividends) be built into forecasts to attempt aligning projected ratios with stated long-term financial policy levels. This is because our forecasts are based on realistic and reasonably predictable assumptions for the medium term. The anchor will be adjusted down, by one notch or more, because of the negative financial policy assessment.

F. Corporate Criteria Glossary

Anchor: The combination of an issuer's business risk profile assessment and its financial risk profile assessment determine the anchor. Additional rating factors can then modify the anchor to determine the final rating or SACP.

Asset profile: A descriptive way to look at the types and quality of assets that comprise a company (examples can include tangible versus intangible assets, those assets that require large and continuing maintenance, upkeep, or

reinvestment, etc.).

Business risk profile: This measure comprises the risk and return potential for a company in the market in which it participates, the country risks within those markets, the competitive climate, and the competitive advantages and disadvantages the company has. The criteria combine the assessments for Corporate Industry and Country Risk Assessment (CICRA), and competitive position to determine a company's business risk profile assessment.

Capital-intensive company: A company exhibiting large ongoing capital spending to sales, or a large amount of depreciation to sales. Examples of capital-intensive sectors include oil production and refining, telecommunications, and transportation sectors such as railways and airlines.

Cash available for debt repayment: Forecast cash available for debt repayment is defined as the net change in cash for the period before debt borrowings and debt repayments. This includes forecast discretionary cash flow adjusted for our expectations of: share buybacks, net of any share issuance, and M&A. Discretionary cash flow is defined as cash flow from operating activities less capital expenditures and total dividends.

Competitive position: Our assessment of a company's: 1) competitive advantage; 2) operating efficiency; 3) scale, scope, and diversity; and 4) profitability.

- **Competitive advantage**--The strategic positioning and attractiveness to customers of the company's products or services, and the fragility or sustainability of its business model.
- **Operating efficiency**--The quality and flexibility of the company's asset base and its cost management and structure.
- **Scale, scope, and diversity**--The concentration or diversification of business activities.
- **Profitability**--Our assessment of both the company's level of profitability and volatility of profitability.

Competitive Position Group Profile (CPGP): Used to determine the weights to be assigned to the three components of competitive position other than profitability. While industries are assigned to one of the six profiles, individual companies and industry subsectors can be classified into another CPGP because of unique characteristics. Similarly, national industry risk factors can affect the weighing. The six CPGPs are:

- Services and product focus,
- Product focus/scale driven,
- Capital or asset focus,
- Commodity focus/cost driven,
- Commodity focus/scale driven, and
- National industry and utilities.

Conglomerate: Companies that have at least three distinct business segments, each contributing between 10%-50% of EBITDA or FOCF. Such companies may benefit from the diversification/portfolio effect.

Controlling shareholders: Equity owners who are able to affect decisions of varying effect on operations, leverage, and shareholder reward without necessarily being a majority of shareholders.

Corporate Industry and Country Risk Assessment (CICRA): The result of the combination of an issuer's country risk assessment and industry risk assessment.

Debt co-insurance: The view that the joining-together of two or more firms whose earnings streams are less-than-perfectly correlated reduces the risk of default of the merged firms (i.e., the co-insurance effect) and thereby increases the "debt capacity" or "borrowing ability" of the combined enterprise. These financing alternatives became more valuable during the global financial crisis of 2007-2009.

Financial headroom: Measure of deviation tolerated in financial metrics without moving outside or above a pre-designated band or limit typically found in loan covenants (as in a debt to EBITDA multiple that places a constraint on leverage). Significant headroom would allow for larger deviations.

Financial risk profile: The outcome of decisions that management makes in the context of its business risk profile and its financial risk tolerances. This includes decisions about the manner in which management seeks funding for the company and how it constructs its balance sheet. It also reflects the relationship of the cash flows the organization can achieve, given its business risk profile, to its financial obligations. The criteria use cash flow/leverage analysis to determine a corporate issuer's financial risk profile assessment.

Financial sponsor: An entity that follows an aggressive financial strategy in using debt and debt-like instruments to maximize shareholder returns. Typically, these sponsors dispose of assets within a short to intermediate time frame. Financial sponsors include private equity firms, but not infrastructure and asset-management funds, which maintain longer investment horizons.

Profitability ratio: Commonly measured using return on capital and EBITDA margins but can be measured using sector-specific ratios. Generally calculated based on a five-year average, consisting of two years of historical data, and our projections for the current year and the next two financial years.

Shareholder remuneration policies: Management's stated shareholder reward plans (such as a buyback or dividend amount, or targeted payout ratios).

Stand-alone credit profile (SACP): Standard & Poor's opinion of an issue's or issuer's creditworthiness, in the absence of extraordinary intervention or support from its parent, affiliate, or related government or from a third-party entity such as an insurer.

Transfer and convertibility assessment: Standard & Poor's view of the likelihood of a sovereign restricting nonsovereign access to foreign exchange needed to satisfy the nonsovereign's debt service obligations.

Unconsolidated equity affiliates: Companies in which an issuer has an investment, but which are not consolidated in an issuer's financial statements. Therefore, the earnings and cash flows of the investees are not included in our primary metrics unless dividends are received from the investees.

Upstream/midstream/downstream: Referring to exploration and production, transport and storage, and refining and distributing, respectively, of natural resources and commodities (such as metals, oil, gas, etc.).

Volatility of profitability/SER: We base the volatility of profitability on the standard error of the regression (SER) for a company's historical EBITDA. The SER is a statistical measure that is an estimate of the deviation around a 'best fit' trend line. We combine it with the profitability ratio to determine the final profitability assessment. We only calculate

Criteria | Corporates | General: Corporate Methodology

SER when companies have at least seven years of historical annual data, to ensure that the results are meaningful.

Working-capital-intensive companies: Generally a company with large levels of working capital in relation to its sales in order to meet seasonal swings in working capital. Examples of working-capital-intensive sectors include retail, auto manufacturing, and capital goods.

These criteria represent the specific application of fundamental principles that define credit risk and ratings opinions. Their use is determined by issuer- or issue-specific attributes as well as Standard & Poor's Ratings Services' assessment of the credit and, if applicable, structural risks for a given issuer or issue rating. Methodology and assumptions may change from time to time as a result of market and economic conditions, issuer- or issue-specific factors, or new empirical evidence that would affect our credit judgment.

(Watch the related CreditMatters TV segment titled, "Standard & Poor's Launches Its New Corporate Ratings Criteria," dated Nov. 19, 2013.)

Copyright © 2014 by Standard & Poor's Financial Services LLC. All rights reserved.

No content (including ratings, credit-related analyses and data, valuations, model, software, or other application or output therefrom) or any part thereof (Content) may be modified, reverse engineered, reproduced or distributed in any form by any means, or stored in a database or retrieval system, without the prior written permission of Standard & Poor's Financial Services LLC or its affiliates (collectively, S&P). The Content shall not be used for any unlawful or unauthorized purposes. S&P and any third-party providers, as well as their directors, officers, shareholders, employees or agents (collectively S&P Parties) do not guarantee the accuracy, completeness, timeliness or availability of the Content. S&P Parties are not responsible for any errors or omissions (negligent or otherwise), regardless of the cause, for the results obtained from the use of the Content, or for the security or maintenance of any data input by the user. The Content is provided on an "as is" basis. S&P PARTIES DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, FREEDOM FROM BUGS, SOFTWARE ERRORS OR DEFECTS, THAT THE CONTENT'S FUNCTIONING WILL BE UNINTERRUPTED, OR THAT THE CONTENT WILL OPERATE WITH ANY SOFTWARE OR HARDWARE CONFIGURATION. In no event shall S&P Parties be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs or losses caused by negligence) in connection with any use of the Content even if advised of the possibility of such damages.

Credit-related and other analyses, including ratings, and statements in the Content are statements of opinion as of the date they are expressed and not statements of fact. S&P's opinions, analyses, and rating acknowledgment decisions (described below) are not recommendations to purchase, hold, or sell any securities or to make any investment decisions, and do not address the suitability of any security. S&P assumes no obligation to update the Content following publication in any form or format. The Content should not be relied on and is not a substitute for the skill, judgment and experience of the user, its management, employees, advisors and/or clients when making investment and other business decisions. S&P does not act as a fiduciary or an investment advisor except where registered as such. While S&P has obtained information from sources it believes to be reliable, S&P does not perform an audit and undertakes no duty of due diligence or independent verification of any information it receives.

To the extent that regulatory authorities allow a rating agency to acknowledge in one jurisdiction a rating issued in another jurisdiction for certain regulatory purposes, S&P reserves the right to assign, withdraw, or suspend such acknowledgment at any time and in its sole discretion. S&P Parties disclaim any duty whatsoever arising out of the assignment, withdrawal, or suspension of an acknowledgment as well as any liability for any damage alleged to have been suffered on account thereof.

S&P keeps certain activities of its business units separate from each other in order to preserve the independence and objectivity of their respective activities. As a result, certain business units of S&P may have information that is not available to other S&P business units. S&P has established policies and procedures to maintain the confidentiality of certain nonpublic information received in connection with each analytical process.

S&P may receive compensation for its ratings and certain analyses, normally from issuers or underwriters of securities or from obligors. S&P reserves the right to disseminate its opinions and analyses. S&P's public ratings and analyses are made available on its Web sites, www.standardandpoors.com (free of charge), and www.ratingsdirect.com and www.globalcreditportal.com and www.spcapitaliq.com (subscription), and may be distributed through other means, including via S&P publications and third-party redistributors. Additional information about our ratings fees is available at www.standardandpoors.com/usratingsfees.

**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2021-00185**

**SECOND PSC DATA REQUEST
DATED JULY 12, 2021**

25. Refer to the Moul Testimony, page 8, lines 15–22, and page 9, lines 1–8. Explain why the weather normalization adjustment does not lower Delta’s risk.

Response:

Please see response to PSC 2-23, which notes that the cost of capital is a comparative exercise. As such, as noted on page 9, lines 1-8 of Mr. Moul’s Testimony, all of the Gas Group companies have some form of a WNA mechanism, which indicates that the presence of Delta’s weather normalization adjustment does not make the Company any less risky than its peers.

Sponsoring Witness: Dylan D’Ascendis

**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2021-00185**

**SECOND PSC DATA REQUEST
DATED JULY 12, 2021**

26. Refer to the Moul Testimony, page 10, lines 3–19. For the last two-year period, provide a copy of any Value Line reports and any credit rating agency reports regarding Delta including any that discuss the merger of Delta with its current parent. If no Value Line or credit rating agency reports exist within the requested period for Delta, provide them for Delta’s parent, PNG Companies, LLC.

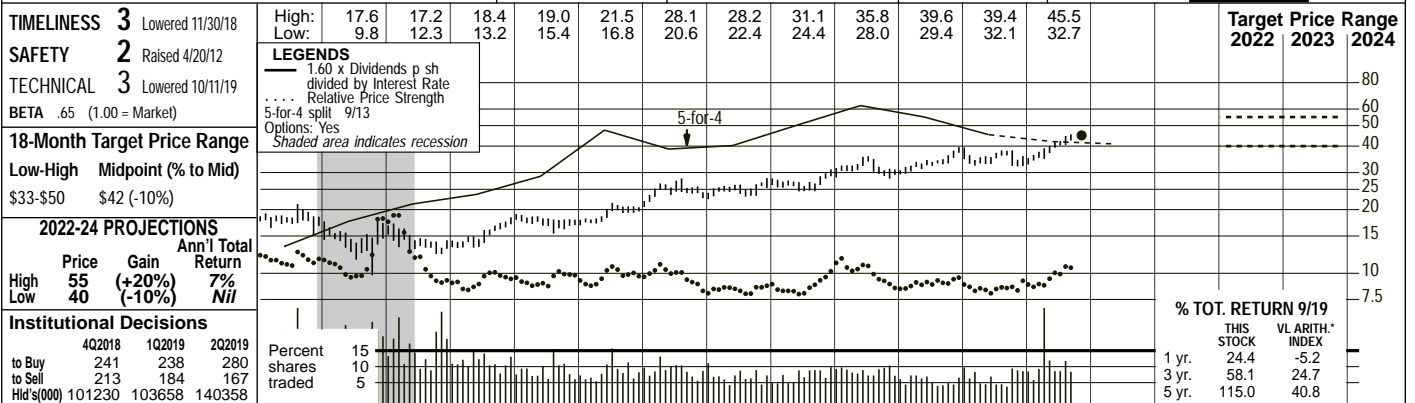
Response:

Credit rating agencies nor Value Line cover Delta or PNG Companies. Please see Attachments PSC 2-26 Attachments 1 through 8 for Value Line reports on Essential Utilities (previously Aqua America, Inc.), Delta’s ultimate parent.

Sponsoring Witness: Dylan D’Ascendis

AQUA AMERICA NYSE-WTR

RECENT PRICE **44.92** P/E RATIO **35.7** (Trailing: NMF Median: 22.0) RELATIVE P/E RATIO **2.15** DIV'D YLD **2.1%** VALUE LINE



2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	© VALUE LINE PUB. LLC	22-24
2.38	2.78	3.08	3.23	3.61	3.71	3.93	4.21	4.10	4.32	4.32	4.37	4.61	4.62	4.56	4.71	4.15	4.35	Revenues per sh	5.70
.77	.87	.97	1.01	1.10	1.14	1.29	1.42	1.45	1.51	1.82	1.89	1.87	2.07	2.12	1.90	1.70	2.20	"Cash Flow" per sh	2.95
.46	.51	.57	.56	.57	.58	.62	.72	.83	.87	1.16	1.20	1.14	1.32	1.35	1.08	1.00	1.40	Earnings per sh ^A	2.00
.28	.29	.32	.35	.38	.41	.44	.47	.50	.54	.58	.63	.69	.74	.79	.85	.91	.96	Div'd Decl'd per sh ^B	1.25
1.06	1.23	1.47	1.64	1.43	1.58	1.66	1.89	1.90	1.98	1.73	1.84	2.07	2.16	2.69	2.78	2.55	2.50	Cap'l Spending per sh	2.75
4.27	4.71	5.04	5.57	5.85	6.26	6.50	6.81	7.21	7.90	8.63	9.27	9.78	10.43	11.02	11.28	15.30	16.15	Book Value per sh	18.20
154.31	158.97	161.21	165.41	166.75	169.21	170.61	172.46	173.60	175.43	177.93	178.59	176.54	177.39	177.71	178.09	216.00	217.00	Common Shs Outst'g ^C	220.00
24.5	25.1	31.8	34.7	32.0	24.9	23.1	21.1	21.3	21.9	21.2	20.8	23.5	23.9	24.7	32.6	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	24.0
1.40	1.33	1.69	1.87	1.70	1.50	1.54	1.34	1.34	1.39	1.19	1.09	1.18	1.25	1.24	1.76			Relative P/E Ratio	1.35
2.5%	2.3%	1.8%	1.8%	2.1%	2.8%	3.1%	3.1%	2.8%	2.8%	2.4%	2.5%	2.6%	2.3%	2.4%	2.4%			Avg Ann'l Div'd Yield	2.6%

CAPITAL STRUCTURE as of 6/30/19		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total Debt \$2976.7 mill. Due in 5 Yrs \$698.8 mill.		670.5	726.1	712.0	757.8	768.6	779.9	814.2	819.9	809.5	838.1	900	940	Revenues (\$mill)	1250				
LT Debt \$2749.2 mill. LT Interest \$91.0 mill. (42% of Cap'l)		104.4	124.0	144.8	153.1	205.0	213.9	201.8	234.2	239.7	192.0	205	305	Net Profit (\$mill)	445				
Pension Assets-12/18 \$239.0 mill. Oblig. \$282.0 mill.		39.4%	39.2%	32.9%	39.0%	10.0%	10.5%	6.9%	8.2%	6.6%	6.6%	NMF	5.0%	Income Tax Rate	50.0%				
Pfd Stock None		--	--	--	--	1.1%	2.4%	3.1%	3.8%	6.3%	6.8%	12.5%	10.0%	AFUDC % to Net Profit	10.0%				
Common Stock 215,776,908 shares as of 7/24/19		55.6%	56.6%	52.7%	52.7%	48.9%	48.5%	50.3%	48.4%	50.6%	54.4%	51.5%	52.5%	Long-Term Debt Ratio	54.5%				
MARKET CAP: \$9.7 billion (Large Cap)		44.4%	43.4%	47.3%	47.3%	51.1%	51.5%	49.7%	51.6%	49.4%	45.6%	48.5%	47.5%	Common Equity Ratio	45.5%				
CURRENT POSITION (SMILL.)		2495.5	2706.2	2646.8	2929.7	3003.6	3216.0	3469.5	3587.7	3965.4	4407.8	7200	7400	Total Capital (\$mill)	8800				
Cash Assets		3227.3	3469.3	3612.9	3936.2	4167.3	4402.0	4688.9	5001.6	5399.9	5930.3	6200	6400	Net Plant (\$mill)	7200				
Receivables		5.6%	5.9%	6.9%	6.6%	8.0%	7.8%	6.9%	7.6%	7.1%	5.5%	2.5%	2.5%	Return on Total Cap'l	6.5%				
Inventory (AvgCst)		9.4%	10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	7.5%	8.5%	Return on Shr. Equity	11.0%				
Other		9.4%	10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	7.5%	8.5%	Return on Com Equity	11.0%				
Current Assets		2.7%	3.7%	4.6%	4.3%	6.7%	6.1%	4.7%	5.6%	5.1%	2.1%	2.0%	3.0%	Retained to Com Eq	4.0%				
Accts Payable		72%	65%	60%	61%	50%	52%	60%	56%	59%	79%	73%	63%	All Div'ds to Net Prof	68%				
Debt Due																			
Other																			
Current Liab.																			

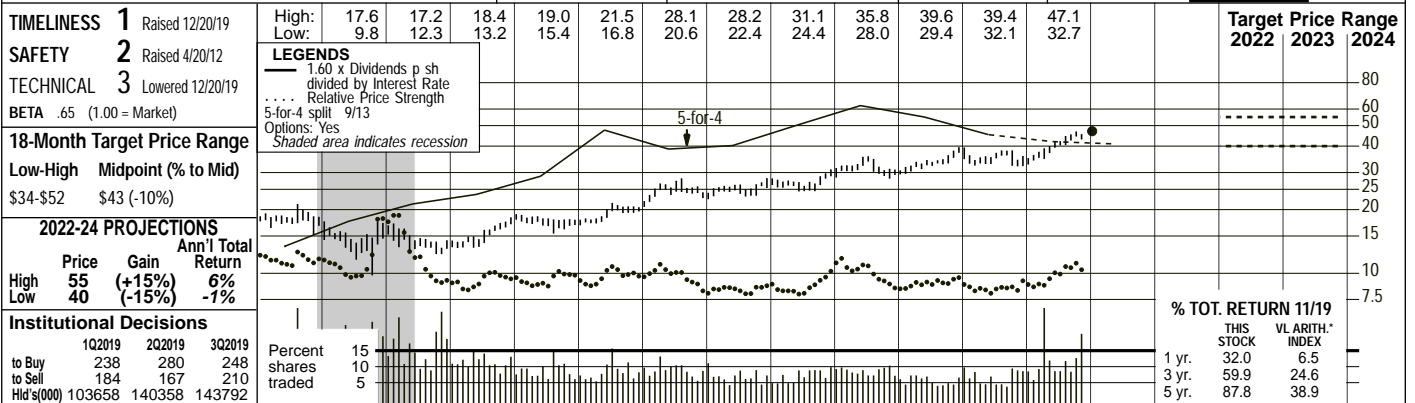
BUSINESS: Aqua America, Inc. is the holding company for water and wastewater utilities that serve approximately three million residents in Pennsylvania (responsible for 53% of 2018 revenues), Ohio, Texas, Illinois, North Carolina, New Jersey, Indiana, and Virginia. Has 1,570 employees. Acquired AquaSource, 7/13; North Maine Utilities, 7/15; and others. Water supply revenues 2018: residential, 58%; commercial, 16%; industrial, wastewater & other, 26%. Off. & dir. own less than 1% of the common stock; Vanguard Group, 10.7%; Blackrock, Inc, 9.5%; State Street Capital, 4.9% (3/19 Proxy). President & Chief Executive Officer: Christopher Franklin, Inc.: PA Addr.: 762 West Lancaster Avenue, Bryn Mawr, PA 19010. Tel.: 610-525-1400. Internet: www.aquaamerica.com.

Final approval of Aqua America's acquisition of Peoples Natural Gas seems imminent. The water utility agreed to purchase the regulated gas company late last year for \$4.3 billion in cash and the assumption of \$1.4 billion of debt. The Federal Trade Commission and a couple of states have already given the deal their approbation, but a few regulatory hurdles remain. We expect them to be cleared in the very near future. **Once the deal is completed, Aqua will be a very different company.** For starters, water utilities generally have constructive relationships with state authorities. Both parties realize that the nation's aging water infrastructure is in urgent need of being upgraded. Regulation for gas utilities isn't as conflict free, however. Environmentalists' aversion to expanding and building new pipelines is one problem. Receiving a decent return on investment is another. Aqua probably believes that the goodwill it has already established with state regulators will help it in negotiations for higher rates in the gas business. (Please note: Our earnings presentation will not include Peoples Natural Gas until the transaction is finalized.) **Aqua has made another acquisition.** The company agreed in September to pay \$277 million for DELCOR, a Delaware-based municipal waste entity that serves 165,000 retail customers. Like American Water Works, Aqua has been active in purchasing smaller municipally run water districts. (Due to the fragmentation of the domestic water industry, meaningful cost synergies can be achieved via mergers.) **The balance sheet is in transition.** Though the Peoples deal has not been completed, the company has already issued debt and equity to fund the transaction. However, Peoples' assets and liabilities are not yet reflected in American Water's financial statements. **These shares continue to perform well.** Indeed, like most stocks in the water group, WTR continues to beat the S&P 500 Index by a wide margin. So, despite all of the company's positive attributes, the equity is only neutrally ranked for the year ahead. Moreover, total return prospects over the next 18-month and three-to-five-year periods are very unattractive. *James A. Flood* *October 11, 2019*

Cal-endar	QUARTERLY REVENUES (\$ mill.)	Full Year	Cal-endar	EARNINGS PER SHARE ^A	Full Year	Cal-endar	QUARTERLY DIVIDENDS PAID ^B	Full Year			
Mar.31	Jun.30	Sep.30	Dec.31	Mar.31	Jun.30	Sep.30	Dec.31				
2016	192.6	203.9	226.6	196.8	819.9	2016	.165	.165	.178	.178	.69
2017	187.8	203.4	215.0	203.3	809.5	2017	.178	.178	.1913	.1913	.74
2018	194.3	211.9	226.2	205.7	838.1	2018	.2047	.2047	.219	.219	.85
2019	201.1	218.9	245	235	900	2019	.219	.219	.234		
2020	215	235	250	240	940						

(A) Diluted eqs. Excl. nonrec. gains: '03, 3¢; '12, 18¢. Excl. gain from disc. operations: '12, 7¢; '13, 9¢; '14, 11¢. May not sum due to rounding. Next earnings report due early November. (B) Dividends historically paid in early March, June, Sept. & Dec. ■ Div'd reinvestment plan available (5% discount). (C) In millions, adjusted for stock splits. (D) Includes intangibles: 6/30/19, \$52.7 mill./\$.024 a share.

AQUA AMERICA NYSE-WTR **RECENT PRICE 47.08** **P/E RATIO 35.9** (Trailing: 67.3 Median: 22.0) **RELATIVE P/E RATIO 1.95** **DIV'D YLD 2.1%** **VALUE LINE**



2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	© VALUE LINE PUB. LLC	22-24
2.38	2.78	3.08	3.23	3.61	3.71	3.93	4.21	4.10	4.32	4.32	4.37	4.61	4.62	4.56	4.71	4.10	4.30	Revenues per sh	5.70
.77	.87	.97	1.01	1.10	1.14	1.29	1.42	1.45	1.51	1.82	1.89	1.87	2.07	2.12	1.90	1.80	2.15	"Cash Flow" per sh	2.85
.46	.51	.57	.56	.57	.58	.62	.72	.83	.87	1.16	1.20	1.14	1.32	1.35	1.08	1.05	1.40	Earnings per sh ^A	2.00
.28	.29	.32	.35	.38	.41	.44	.47	.50	.54	.58	.63	.69	.74	.79	.85	.91	.96	Div'd Decl'd per sh ^B	1.25
1.06	1.23	1.47	1.64	1.43	1.58	1.66	1.89	1.90	1.98	1.73	1.84	2.07	2.16	2.69	2.78	2.40	2.50	Cap'l Spending per sh	2.75
4.27	4.71	5.04	5.57	5.85	6.26	6.50	6.81	7.21	7.90	8.63	9.27	9.78	10.43	11.02	11.28	18.00	18.50	Book Value per sh	18.40
154.31	158.97	161.21	165.41	166.75	169.21	170.61	172.46	173.60	175.43	177.93	178.59	176.54	177.39	177.71	178.09	216.00	217.00	Common Shs Outst'g ^C	220.00
24.5	25.1	31.8	34.7	32.0	24.9	23.1	21.1	21.3	21.9	21.2	20.8	23.5	23.9	24.7	32.6	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	24.0
1.40	1.33	1.69	1.87	1.70	1.50	1.54	1.34	1.34	1.39	1.19	1.09	1.18	1.25	1.24	1.76			Relative P/E Ratio	1.35
2.5%	2.3%	1.8%	1.8%	2.1%	2.8%	3.1%	3.1%	2.8%	2.8%	2.4%	2.5%	2.6%	2.3%	2.4%	2.4%			Avg Ann'l Div'd Yield	2.6%

CAPITAL STRUCTURE as of 9/30/19		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total Debt \$3086.4 mill. Due in 5 Yrs \$698.8 mill.		670.5	726.1	712.0	757.8	768.6	779.9	814.2	819.9	809.5	838.1	890	930	Revenues (\$mill)	1250				
LT Debt \$2898.3 mill. LT Interest \$122.0 mill. (43% of Cap'l)		104.4	124.0	144.8	153.1	205.0	213.9	201.8	234.2	239.7	192.0	230	305	Net Profit (\$mill)	440				
Pension Assets-12/18 \$239.0 mill. Oblig. \$282.0 mill.		39.4%	39.2%	32.9%	39.0%	10.0%	10.5%	6.9%	8.2%	6.6%	6.6%	NMF	5.0%	Income Tax Rate	7.0%				
Pfd Stock None		--	--	--	--	1.1%	2.4%	3.1%	3.8%	6.3%	6.8%	12.5%	10.0%	AFUDC % to Net Profit	10.0%				
Common Stock 215,840,774 shares as of 10/23/19		55.6%	56.6%	52.7%	52.7%	48.9%	48.5%	50.3%	48.4%	50.6%	54.4%	42.5%	43.5%	Long-Term Debt Ratio	53.0%				
MARKET CAP: \$10.2 billion (Large Cap)		44.4%	43.4%	47.3%	47.3%	51.1%	51.5%	49.7%	51.6%	49.4%	45.6%	57.5%	56.5%	Common Equity Ratio	47.0%				
CURRENT POSITION (SMILL.)		2495.5	2706.2	2646.8	2929.7	3003.6	3216.0	3469.5	3587.7	3965.4	4407.8	6800	7100	Total Capital (\$mill)	7600				
Cash Assets		3227.3	3469.3	3612.9	3936.2	4167.3	4402.0	4688.9	5001.6	5399.9	5930.3	6250	6525	Net Plant (\$mill)	7600				
Receivables		5.6%	5.9%	6.9%	6.6%	8.0%	7.8%	6.9%	7.6%	7.1%	5.5%	5.0%	5.0%	Return on Total Cap'l	7.0%				
Inventory (AvgCst)		9.4%	10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	6.0%	8.5%	Return on Shr. Equity	11.0%				
Other		9.4%	10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	6.0%	8.5%	Return on Com Equity	11.0%				
Current Assets		2.7%	3.7%	4.6%	4.3%	6.7%	6.1%	4.7%	5.6%	5.1%	2.1%	4.0%	3.0%	Retained to Com Eq	4.0%				
Accts Payable		72%	65%	60%	61%	50%	52%	60%	56%	59%	79%	87%	63%	All Div'ds to Net Prof	63%				
Debt Due		BUSINESS: Aqua America, Inc. is the holding company for water and wastewater utilities that serve approximately three million residents in Pennsylvania (responsible for 53% of 2018 revenues), Ohio, Texas, Illinois, North Carolina, New Jersey, Indiana, and Virginia. Has 1,570 employees. Acquired AquaSource, 7/13; North Maine Utilities, 7/15; and others. Water supply revenues 2018: residential, 58%; commercial, 16%; industrial, wastewater & other, 26%. Off. & dir. own less than 1% of the common stock; Vanguard Group, 10.7%; Blackrock, Inc, 9.5%; State Street Capital, 4.9% (3/19 Proxy). President & Chief Executive Officer: Christopher Franklin, Inc.: PA Addr.: 762 West Lancaster Avenue, Bryn Mawr, PA 19010. Tel.: 610-525-1400. Internet: www.aquaamerica.com.																	

Aqua America is still awaiting final approval of its acquisition of Peoples Gas. The water utility reached an agreement to buy the regulated Pittsburgh-based natural gas company in 2018 for \$4.3 billion in cash, and the assumption of \$1.4 billion of debt. Because both entities operate in many different states, a host of regulators must provide permission for the transaction to be completed. Currently, our best estimate is that the purchase will close in the early part of this year.

The company will have a new profile. The natural gas distributor has almost 750,000 customers. Though this is in a sector also overseen by state authorities, the gas sector has historically had a much more adversarial relationship with regulators. In the water segment, both utilities and regulators realize that large amounts of investment are needed to modernize the country's antiquated infrastructure. Cooperation between companies and their overseers has been very constructive. By comparison, in the gas arena, there is much resistance to construction programs such as expanding existing pipelines to meet the needs of a service area.

The balance sheet partially reflects the acquisition. To finance the transaction, a large equity offering was completed last year. More than \$1.3 billion was raised in the transaction, which increased shares outstanding by about 20% (37.3 million). Proceed from the sale of tangible equity units also raised approximately \$700 million. About \$900 million of debt due in 2029 and 2049 was also sold last April. The remaining funds should come from existing credit facilities.

Meanwhile, another rate hike was granted. On October 29th, about \$60 million in higher rates went into effect in Pennsylvania. During 2019, New Jersey, North Carolina, and Ohio also increased tariffs.

Only short-term investors should take a look here. By most financial metrics, including the P/E ratio and its yield relative to the average equity, WTR is highly overvalued. It is ranked 1 (Highest) for year-ahead performance, but our 18-month model predicts the stock will post a negative performance. In addition, total return prospects to 2022-2024 are poor.

Cal-endar	QUARTERLY REVENUES (\$ mill.)	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2016	192.6 203.9 226.6 196.8	819.9
2017	187.8 203.4 215.0 203.3	809.5
2018	194.3 211.9 226.2 205.7	838.1
2019	201.1 218.9 243.6 226.4	890
2020	215 235 250 230	930

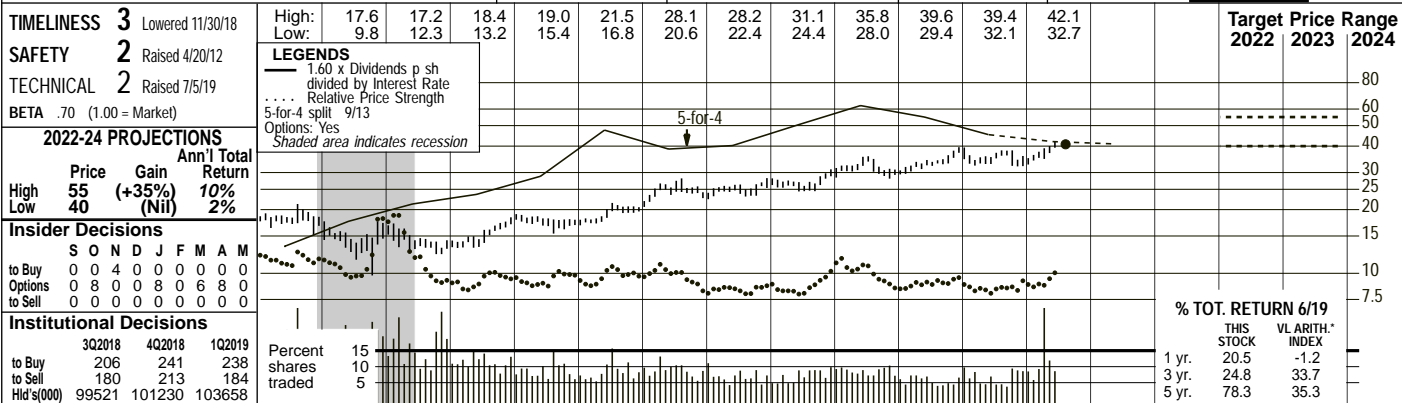
Cal-endar	EARNINGS PER SHARE ^A	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2016	.29 .34 .41 .28	1.32
2017	.28 .34 .43 .30	1.35
2018	.29 .37 .44 d.02	1.08
2019	.09 .25 .38 .33	1.05
2020	.25 .35 .47 .33	1.40

Cal-endar	QUARTERLY DIVIDENDS PAID ^B	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2016	.178 .178 .1913 1913	.74
2017	.1913 .1913 .2047 2047	.79
2018	.2047 .2047 .219 219	.85
2019	.219 .219 .2343 2343	.91
2020		

(A) Diluted egs. Excl. nonrec. gains: '03, 3¢; '12, 18¢. Excl. gain from disc. operations: '12, 7¢; '13, 9¢; '14, 11¢. May not sum due to rounding. Next earnings report due mid-February.
 (B) Dividends historically paid in early March, June, Sept. & Dec. ■ Div'd. reinvestment plan available (5% discount).
 (C) In millions, adjusted for stock splits.
 (D) Includes intangibles: 9/30/19, \$52.7 mill./\$.024 a share.

Company's Financial Strength A
Stock's Price Stability 95
Price Growth Persistence 75
Earnings Predictability 65

AQUA AMERICA NYSE-WTR **RECENT PRICE 40.86** **P/E RATIO 34.1** (Trailing: 46.4 Median: 22.0) **RELATIVE P/E RATIO 1.99** **DIV'D YLD 2.2%** **VALUE LINE**



2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	© VALUE LINE PUB. LLC	22-24
2.38	2.78	3.08	3.23	3.61	3.71	3.93	4.21	4.10	4.32	4.32	4.37	4.61	4.62	4.56	4.71	4.15	4.35	Revenues per sh	5.70
.77	.87	.97	1.01	1.10	1.14	1.29	1.42	1.45	1.51	1.82	1.89	1.87	2.07	2.12	1.90	1.90	2.20	"Cash Flow" per sh	2.95
.46	.51	.57	.56	.57	.58	.62	.72	.83	.87	1.16	1.20	1.14	1.32	1.35	1.08	1.20	1.40	Earnings per sh ^A	2.00
.28	.29	.32	.35	.38	.41	.44	.47	.50	.54	.58	.63	.69	.74	.79	.85	.88	.88	Div'd Decl'd per sh ^B	1.25
1.06	1.23	1.47	1.64	1.43	1.58	1.66	1.89	1.90	1.98	1.73	1.84	2.07	2.16	2.69	2.78	2.55	2.50	Cap'l Spending per sh	2.75
4.27	4.71	5.04	5.57	5.85	6.26	6.50	6.81	7.21	7.90	8.63	9.27	9.78	10.43	11.02	11.28	15.30	16.15	Book Value per sh	18.20
154.31	158.97	161.21	165.41	166.75	169.21	170.61	172.46	173.60	175.43	177.93	178.59	176.54	177.39	177.71	178.09	216.00	217.00	Common Shs Outst'g ^C	220.00
24.5	25.1	31.8	34.7	32.0	24.9	23.1	21.1	21.3	21.9	21.2	20.8	23.5	23.9	24.7	32.6	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	24.0
1.40	1.33	1.69	1.87	1.70	1.50	1.54	1.34	1.34	1.39	1.19	1.09	1.18	1.25	1.24	1.76			Relative P/E Ratio	1.35
2.5%	2.3%	1.8%	1.8%	2.1%	2.8%	3.1%	3.1%	2.8%	2.8%	2.4%	2.5%	2.6%	2.3%	2.4%	2.4%			Avg Ann'l Div'd Yield	2.6%

CAPITAL STRUCTURE as of 3/31/19				2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Total Debt \$2652.0 mill. Due in 5 Yrs \$698.8 mill.				670.5	726.1	712.0	757.8	768.6	779.9	814.2	819.9	809.5	838.1	900	940	Revenues (\$mill)	1250					
LT Debt \$2463.0 mill. LT Interest \$96.0 mill. (55% of Cap'l)				104.4	124.0	144.8	153.1	205.0	213.9	201.8	234.2	239.7	192.0	245	305	Net Profit (\$mill)	445					
Pension Assets-12/18 \$239.0 mill. Oblig. \$282.0 mill.				39.4%	39.2%	32.9%	39.0%	10.0%	10.5%	6.9%	8.2%	6.6%	6.6%	NMF	5.0%	Income Tax Rate	50.0%					
Pfd Stock None				--	--	--	--	--	1.1%	2.4%	3.1%	3.8%	6.3%	6.8%	12.5%	10.0%	AFUDC % to Net Profit	10.0%				
Common Stock 215,739,266 shares as of 4/24/19				55.6%	56.6%	52.7%	52.7%	48.9%	48.5%	50.3%	48.4%	50.6%	54.4%	51.5%	52.5%	50.6%	54.4%	51.5%	52.5%	Long-Term Debt Ratio	54.5%	
MARKET CAP: \$8.8 billion (Large Cap)				44.4%	43.4%	47.3%	47.3%	51.1%	51.5%	49.7%	51.6%	49.4%	45.6%	48.5%	47.5%	48.5%	47.5%	48.5%	47.5%	Common Equity Ratio	45.5%	
CURRENT POSITION (SMILL.)				2495.5	2706.2	2646.8	2929.7	3003.6	3216.0	3469.5	3587.7	3965.4	4407.8	7200	7400	Total Capital (\$mill)	8800					
Cash Assets				3227.3	3469.3	3612.9	3936.2	4167.3	4402.0	4688.9	5001.6	5399.9	5930.3	6200	6400	Net Plant (\$mill)	7200					
Receivables				5.6%	5.9%	6.9%	6.6%	8.0%	7.8%	6.9%	7.6%	7.1%	5.5%	2.5%	5.0%	Return on Total Cap'l	6.5%					
Inventory (AvgCst)				9.4%	10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	7.5%	8.5%	Return on Shr. Equity	11.0%					
Other				9.4%	10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	7.5%	8.5%	Return on Com Equity	11.0%					
Current Assets				2.7%	3.7%	4.6%	4.3%	6.7%	6.1%	4.7%	5.6%	5.1%	2.1%	2.0%	3.0%	Retained to Com Eq	4.0%					
Accts Payable				72%	65%	60%	61%	50%	52%	60%	56%	59%	79%	73%	63%	All Div'ds to Net Prof	68%					
Debt Due				BUSINESS: Aqua America, Inc. is the holding company for water and wastewater utilities that serve approximately three million residents in Pennsylvania (responsible for 53% of 2018 revenues), Ohio, Texas, Illinois, North Carolina, New Jersey, Indiana, and Virginia. Has 1,570 employees. Acquired AquaSource, 7/13; North Maine Utilities, 7/15; and others. Water supply revenues 2018: residential, 58%; commercial, 16%; industrial, wastewater & other, 26%. Off. & dir. own less than 1% of the common stock; Vanguard Group, 10.7%; Blackrock, Inc, 9.5%; State Street Capital, 4.9% (3/19 Proxy). President & Chief Executive Officer: Christopher Franklin, Inc.: PA Addr.: 762 West Lancaster Avenue, Bryn Mawr, PA 19010. Tel.: 610-525-1400. Internet: www.aquaamerica.com.																		

Aqua America ought to receive final approval soon for a large acquisition. Last October, the water utility announced that it would purchase all of People's Natural Gas for \$4.275 billion in cash as well as assume about \$1.4 billion in debt. The Federal Trade Commission and regulators in Kentucky and West Virginia have already provided their consent. Permission from authorities in Pennsylvania is the final hurdle. **The balance sheet has already started to change.** In the second quarter, Aqua issued over 37 million new shares, increasing the share count by 20%. (The Canadian Pension Plan agreed to take 21.7 million of them.) Also, \$900 million in 10- and 30-year bonds were sold with coupon rates that averaged below 4%. Too, \$690 million was raised selling "tangible equity units." (Please note that our earnings presentation will not reflect the Peoples Gas purchase until the deal closes. Our figures do include recent financing activities, however.) **The new entity has good, but less well-defined, prospects.** When the deal is completed, the company will have 1.75 million connections and a rate base of about \$11 billion. With continued upgrades and expansion to both the water and natural gas businesses, management believes the rate base could grow 7%-10% annually. **Treatment by regulators could be different.** Most state authorities are working together with water utilities to improve the nation's water infrastructure, which is badly in need of repair. Gas and electric utilities have a more complicated relationship with their overseers. One positive is that most of both operations are in Pennsylvania where the water company has a solid relationship with the state. **Investor sentiment has turned very positive for the stock.** The value of WTR increased 15% in the second quarter compared to the S&P 500's 4% gain. This out-performance is even more impressive considering the dilution caused by the substantial increase in shares outstanding. In any case, the equity is only expected to be a market performer in the year ahead. And accounts that only want exposure to the water sector may find better alternatives elsewhere in the group. *James A. Flood July 12, 2019*

ANNUAL RATES		Past 10 Yrs.	Past 5 Yrs.	Est'd '16-'18 to '22-'24
of change (per sh)		3.0%	1.5%	3.5%
Revenues		6.5%	5.0%	6.5%
"Cash Flow"		8.0%	5.5%	8.0%
Earnings		7.5%	8.0%	8.0%
Dividends		6.5%	6.5%	9.0%
Book Value				

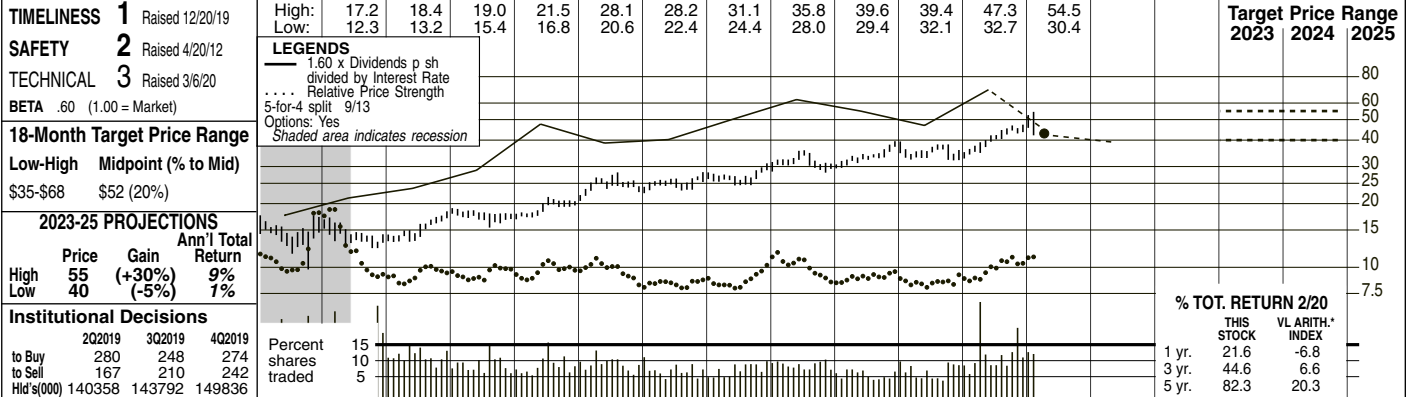
Cal-endar	QUARTERLY REVENUES (\$ mill.)	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2016	192.6 203.9 226.6 196.8	819.9
2017	187.8 203.4 215.0 203.3	809.5
2018	194.3 211.9 226.2 205.7	838.1
2019	201.1 223.9 245 230	900
2020	215 235 250 240	940

Cal-endar	EARNINGS PER SHARE ^A	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2016	.29 .34 .41 .28	1.32
2017	.28 .34 .43 .30	1.35
2018	.29 .37 .44 d.02	1.08
2019	.09 .41 .48 .22	1.20
2020	.25 .45 .50 .20	1.40

Cal-endar	QUARTERLY DIVIDENDS PAID ^B	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2015	.165 .165 .178 .178	.69
2016	.178 .178 .1913 .1913	.74
2017	.1913 .1913 .2047 .2047	.79
2018	.2047 .2047 .219 .219	.85
2019	.219 .219	

(A) Diluted eqs. Excl. nonrec. gains: '03, 3c; '12, 13c. Excl. gain from disc. operations: '12, 7c; '13, 9c; '14, 11c. May not sum due to rounding. Next earnings report due August 6th. (B) Dividends historically paid in early March, June, Sept. & Dec. Div'd reinvestment plan available (5% discount). (C) In millions, adjusted for stock splits. (D) Includes intangibles: 3/31/19, \$53.1 mill./\$.025 a share.

ESSENTIAL UTIL. NYSE-WTRG RECENT PRICE **43.05** P/E RATIO **32.4** (Trailing: 43.1, Median: 23.0) RELATIVE P/E RATIO **2.45** DIV'D YLD **2.3%** **VALUE LINE**



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
2.78	3.08	3.23	3.61	3.71	3.93	4.21	4.10	4.32	4.32	4.37	4.61	4.62	4.56	4.71	4.03	6.50	7.70	Revenues per sh	8.70
.87	.97	1.01	1.10	1.14	1.29	1.42	1.45	1.51	1.82	1.89	1.87	2.07	2.12	1.90	1.73	2.40	2.65	"Cash Flow" per sh	3.50
.51	.57	.56	.57	.58	.62	.72	.83	.87	1.16	1.20	1.14	1.32	1.35	1.08	1.04	1.45	1.55	Earnings per sh ^A	2.05
.29	.32	.35	.38	.41	.44	.47	.50	.54	.58	.63	.69	.74	.79	.85	.91	.97	1.05	Div'd Decl'd per sh ^B	1.30
1.23	1.47	1.64	1.43	1.58	1.66	1.89	1.90	1.98	1.73	1.84	2.07	2.16	2.69	2.78	2.49	3.75	4.45	Cap'l Spending per sh	4.75
4.71	5.04	5.57	5.85	6.26	6.50	6.81	7.21	7.90	8.63	9.27	9.78	10.43	11.02	11.28	17.58	17.35	17.60	Book Value per sh	19.55
158.97	161.21	165.41	166.75	169.21	170.61	172.46	173.60	175.43	177.93	178.59	176.54	177.39	177.71	178.09	220.76	225.00	227.00	Common Shs Outst'g ^C	230.00
25.1	31.8	34.7	32.0	24.9	23.1	21.1	21.3	21.9	21.2	20.8	23.5	23.9	24.7	32.6	39.1	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	24.0
1.33	1.69	1.87	1.70	1.50	1.54	1.34	1.34	1.39	1.19	1.09	1.18	1.25	1.24	1.76	2.12			Relative P/E Ratio	1.35
2.3%	1.8%	1.8%	2.1%	2.8%	3.1%	3.1%	2.8%	2.8%	2.4%	2.5%	2.6%	2.3%	2.4%	2.4%	2.2%			Avg Ann'l Div'd Yield	2.6%

CAPITAL STRUCTURE as of 12/31/19				2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
Total Debt \$3074.1 mill. Due in 5 Yrs \$252.0 mill.				726.1	712.0	757.8	768.6	779.9	814.2	819.9	809.5	838.1	889.7	1460	1750	Revenues (\$mill)	2000					
LT Debt \$2943.3 mill. LT Interest \$123.5 mill. (43% of Cap'l)				124.0	144.8	153.1	205.0	213.9	201.8	234.2	239.7	192.0	224.5	325	350	Net Profit (\$mill)	470					
Pension Assets-12/19 \$266.4 mill. Oblig. \$310.5 mill.				39.2%	32.9%	39.0%	10.0%	10.5%	6.9%	8.2%	6.6%	6.6%	7.0%	7.5%	Income Tax Rate	9.0%						
Pfd Stock None				--	--	--	1.1%	2.4%	3.1%	3.8%	6.3%	6.8%	7.2%	7.0%	7.0%	AFUDC % to Net Profit	8.0%					
Common Stock 222,781,536 shares as of 2/19/20				56.6%	52.7%	52.7%	48.9%	48.5%	50.3%	48.4%	50.6%	54.4%	43.1%	49.0%	51.0%	Long-Term Debt Ratio	55.0%					
MARKET CAP: \$9.6 billion (Large Cap)				43.4%	47.3%	47.3%	51.1%	51.5%	49.7%	51.6%	49.4%	45.6%	56.9%	51.0%	49.0%	Common Equity Ratio	45.0%					
CURRENT POSITION (SMILL.)				2706.2	2646.8	2929.7	3003.6	3216.0	3469.5	3587.7	3965.4	4407.8	6824.2	7600	8000	Total Capital (\$mill)	9800					
Cash Assets				3469.3	3612.9	3936.2	4167.3	4402.0	4688.9	5001.6	5399.9	5930.3	6345.8	8200	8350	Net Plant (\$mill)	10900					
Receivables				5.9%	6.9%	6.6%	8.0%	7.8%	6.9%	7.6%	7.1%	5.5%	4.2%	6.5%	5.5%	Return on Total Cap'l	7.0%					
Inventory (AvgCst)				10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	5.8%	8.5%	9.0%	Return on Shr. Equity	10.5%					
Other				10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	5.8%	8.5%	9.0%	Return on Com Equity	10.5%					
Current Assets				3.7%	4.6%	4.3%	6.7%	6.1%	4.7%	5.6%	5.1%	2.1%	9%	2.5%	3.0%	Retained to Com Eq	4.0%					
Accts Payable				65%	60%	61%	50%	52%	60%	56%	59%	79%	84%	67%	68%	All Div'ds to Net Prof	63%					
Debt Due				BUSINESS: Essential Utilities, Inc. became the new name for Aqua America on Feb. 3, 2020, to reflect the acquisition of Peoples, a natural gas utility, which occurred in 3/20. In 2019, Aqua Amer. provided water and wastewater services to about three million people in PA, OH, TX, IL, NC, NJ, IN, and VA. Employed 1,583. Acquired AquaSource, 7/13; North Maine Utilities, 7/15; and others.																		
Other				Water supply revenues 2019: residential, 58%; commercial, 16%; industrial, wastewater & other, 26%. Off. & dir. own less than 1% of the common stock; BlackRock, Inc. 10.5%; Vanguard Grp., 10.4%; State St. Capital, 5.0% (3/20 Pre 14A). Pres. & CEO: Christopher H. Franklin, Inc.: PA Address: 762 West Lancaster Ave., Bryn Mawr, PA 19010. Tel.: 610-525-1400. Internet: www.essential.co.																		
Current Liab.				Essential Utilities is the new name for Aqua America. The water company officially made the change in February, six weeks before the completion of the acquisition of Peoples, a Pittsburgh-based natural gas utility. The cost of the transaction was \$4.275 billion in cash, including the assumption of \$1.1 billion of debt. In connection with the deal, Essential closed on the previously announced \$750 million investment from the Canadian Pension Plan, which received 21.7 million shares of newly issued stock. The equity is also trading with a new ticker: WTRG.																		

ny's customer base is now in the Keystone state. Since Aqua had done business there for a long time, we assume that management was very aware of what the expectations are from the state's regulators. (It has promised to replace 3,000 miles of old gas lines over the next 15-year period.)

Our initial estimates for the new entity are tentative. Not much guidance on Essential's operating and financial outlook has been made public. The utility's rate base will be \$2.3 billion larger, but as far as the amount of the capital budget and what revenues may total, have not been discussed. As for the bottom line, much will depend on acquisition costs. Peoples is in a different business, so we don't look for much overlap, except in dealing with regulators. Moreover, since the purchase was only just approved, we won't have a good idea about quarterly earnings until after the June period, though the March interim balance sheet should provide some insight.

This stock is timely. However, like most members of this industry, long-term total return potential is unappealing.

James A Flood *April 10, 2020*

ANNUAL RATES	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25	
of change (per sh)	10 Yrs.	5 Yrs.		
Revenues	1.5%	.5%	12.0%	
"Cash Flow"	5.0%	2.0%	10.5%	
Earnings	7.0%	1.5%	10.0%	
Dividends	7.5%	8.0%	7.5%	
Book Value	8.0%	9.0%	6.5%	

Cal-endar	QUARTERLY REVENUES (\$ mill.)	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2017	187.8 203.4 215.0 203.3	809.5
2018	194.3 211.9 226.2 205.7	838.1
2019	201.1 218.9 243.6 226.1	889.7
2020	215 385 410 450	1460
2021	390 410 450 500	1750

Cal-endar	EARNINGS PER SHARE ^A	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2017	.28 .34 .43 .30	1.35
2018	.29 .37 .44 d.02	1.08
2019	.09 .25 .38 .28	1.04
2020	.25 .35 .45 .40	1.45
2021	.28 .40 .45 .42	1.55

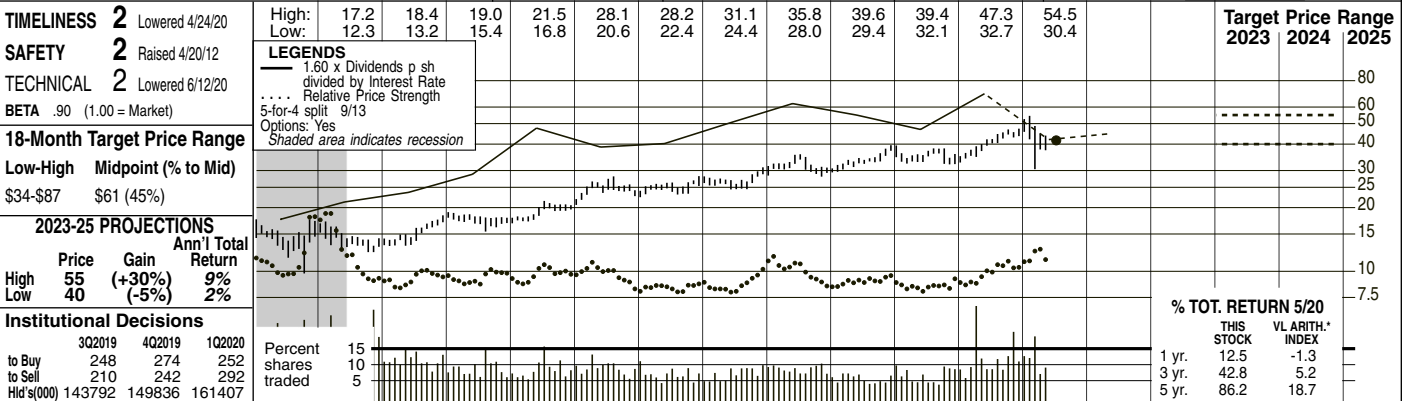
Cal-endar	QUARTERLY DIVIDENDS PAID ^B	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2016	.178 .178 .1913 .1913	.74
2017	.1913 .1913 .2047 .2047	.79
2018	.2047 .2047 .219 .219	.85
2019	.219 .219 .2343 .2343	.91
2020	.2343	

(A) Diluted eqs. Excl. nonrec. gains: '12, 18c. Excl. gain from disc. operations: '12, 7c; '13, 9c; '14, 11c. Quarterly EPS do not add in '19 due to a large change in the number of shares outstanding in the Dec. period. Next earnings report due mid-May. (B) Dividends historically paid in early March, June, Sept. & Dec. ■ Div'd reinvestment plan available (5% discount). (C) In millions, adjusted for stock splits. (D) Includes intangibles: 12/31/19, \$63.8 mill./\$.029 a share.

ESSENTIAL UTIL. NYSE-WTRG

RECENT PRICE **41.67** P/E RATIO **41.7** (Trailing: 37.5 Median: 23.0) RELATIVE P/E RATIO **2.03** DIV'D YLD **2.4%**

VALUE LINE



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
2.78	3.08	3.23	3.61	3.71	3.93	4.21	4.10	4.32	4.32	4.37	4.61	4.62	4.56	4.71	4.03	7.00	8.15	Revenues per sh	8.45
.87	.97	1.01	1.10	1.14	1.29	1.42	1.45	1.51	1.82	1.89	1.87	2.07	2.12	1.90	1.73	1.75	2.00	"Cash Flow" per sh	2.65
.51	.57	.56	.57	.58	.62	.72	.83	.87	1.16	1.20	1.14	1.32	1.35	1.08	1.04	1.00	1.20	Earnings per sh ^A	1.75
.29	.32	.35	.38	.41	.44	.47	.50	.54	.58	.63	.69	.74	.79	.85	.91	.97	1.03	Div'd Decl'd per sh ^B	1.30
1.23	1.47	1.64	1.43	1.58	1.66	1.89	1.90	1.98	1.73	1.84	2.07	2.16	2.69	2.78	2.49	3.80	3.80	Cap'l Spending per sh	4.75
4.71	5.04	5.57	5.85	6.26	6.50	6.81	7.21	7.90	8.63	9.27	9.78	10.43	11.02	11.28	17.58	18.60	18.85	Book Value per sh	20.00
158.97	161.21	165.41	166.75	169.21	170.61	172.46	173.60	175.43	177.93	178.59	176.54	177.39	177.71	178.09	220.76	250.00	252.00	Common Shs Outst'g ^C	260.00
25.1	31.8	34.7	32.0	24.9	23.1	21.1	21.3	21.9	21.2	20.8	23.5	23.9	24.7	32.6	39.1	<i>Bold figures are Value Line estimates</i>		Avg Ann'l P/E Ratio	27.0
1.33	1.69	1.87	1.70	1.50	1.54	1.34	1.34	1.39	1.19	1.09	1.18	1.25	1.24	1.76	2.12			Relative P/E Ratio	1.50
2.3%	1.8%	1.8%	2.1%	2.8%	3.1%	3.1%	2.8%	2.8%	2.4%	2.5%	2.6%	2.3%	2.4%	2.4%	2.2%			Avg Ann'l Div'd Yield	2.7%

CAPITAL STRUCTURE as of 3/31/20
 Total Debt \$5225.0 mill. Due in 5 Yrs \$496.0 mill.
 LT Debt \$4729.0 mill. LT Interest \$145.0 mill. (49% of Cap'l)

Pension Assets-12/19 \$266.4 mill. Oblig. \$310.5 mill.

Pfd Stock None
 Common Stock 245,041,284 shares as of 4/27/20

MARKET CAP: \$10.2 billion (Large Cap)

CURRENT POSITION (\$MILL.)	2018	2019	3/31/20
Cash Assets	3.6	1868.9	31.8
Receivables	101.2	67.1	179.6
Inventory (AvgCst)	15.8	18.4	33.9
Other	26.6	58.3	122.7
Current Assets	147.2	2012.7	368.0
Accts Payable	77.3	74.9	115.6
Debt Due	160.0	130.8	496.0
Other	161.7	113.1	215.8
Current Liab.	399.0	318.4	827.4

726.1	712.0	757.8	768.6	779.9	814.2	819.9	809.5	838.1	889.7	1745	2055	Revenues (\$mill)	2200
124.0	144.8	153.1	205.0	213.9	201.8	234.2	239.7	192.0	224.5	250	300	Net Profit (\$mill)	455
39.2%	32.9%	39.0%	10.0%	10.5%	6.9%	8.2%	6.6%	6.6%	6.6%	2.0%	3.5%	Income Tax Rate	8.0%
--	--	--	1.1%	2.4%	3.1%	3.8%	6.3%	6.8%	7.2%	7.0%	7.0%	AFUDC % to Net Profit	7.0%
56.6%	52.7%	52.7%	48.9%	48.5%	50.3%	48.4%	50.6%	54.4%	43.1%	56.5%	57.5%	Long-Term Debt Ratio	40.5%
43.4%	47.3%	47.3%	51.1%	51.5%	49.7%	51.6%	49.4%	45.6%	56.9%	43.5%	42.5%	Common Equity Ratio	59.5%
2706.2	2646.8	2929.7	3003.6	3216.0	3469.5	3587.7	3965.4	4407.8	6824.2	10650	11250	Total Capital (\$mill)	12800
3469.3	3612.9	3936.2	4167.3	4402.0	4688.9	5001.6	5399.9	5930.3	6345.8	9500	10150	Net Plant (\$mill)	12000
5.9%	6.9%	6.6%	8.0%	7.8%	6.9%	7.6%	7.1%	5.5%	4.2%	3.0%	3.5%	Return on Total Cap'l	4.5%
10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	5.8%	5.5%	6.5%	Return on Shr. Equity	9.0%
10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	5.8%	NMF	6.5%	Return on Com Equity	9.0%
3.7%	4.6%	4.3%	6.7%	6.1%	4.7%	5.6%	5.1%	2.1%	.9%	NMF	1.0%	Retained to Com Eq	2.5%
65%	60%	61%	50%	52%	60%	56%	59%	79%	84%	97%	86%	All Div'ds to Net Prof	74%

BUSINESS: Essential Utilities, Inc. became the new name for Aqua America on Feb. 3, 2020, to reflect the acquisition of Peoples, a natural gas utility, which occurred in 3/20. In 2019, Aqua Amer. provided water and wastewater services to about three million people in PA, OH, TX, IL, NC, NJ, IN, and VA. Employed 1,583. Acquired AquaSource, 7/13; North Maine Utilities, 7/15; and others.

Water supply revenues 2019: residential, 58%; commercial, 16%; industrial, wastewater & other, 26%. Off. & dir. own less than 1% of the common stock; BlackRock, 10.5%; Vanguard, 10.4%; (4/20 proxy). Canadian Pension Plan about 8.8%. Pres. & CEO: Christopher Franklin, Inc.; PA Addr.: 762 West Lancaster Ave., Bryn Mawr, PA 19010. Tel.: 610-525-1400. Int.: www.essential.co.

ANNUAL RATES Past 10 Yrs. Past 5 Yrs. Est'd '17-'19 to '23-'25

Revenues	1.5%	.5%	11.5%
"Cash Flow"	5.0%	2.0%	5.5%
Earnings	7.0%	1.5%	7.0%
Dividends	7.5%	8.0%	7.5%
Book Value	8.0%	9.0%	7.0%

Essential Utilities will probably not be affected much by the coronavirus. The demand for water and natural gas will likely increase from the residential sector as stay-at-home mandates were in effect for most of the company's service area. Sales here should easily offset declines in the commercial and industrial segments. Barring a considerable move in prices, consumer demand for water and natural gas is relatively inelastic.

Integrating a recent large acquisition into existing operations ought to remain the primary focus this year. In mid-March, the company spent \$4.3 billion (including the assumption of \$1.1 billion in debt) to buy Peoples gas utility. Though the businesses will operate as separate entities, Essential is trying to cut administrative and regulatory costs where functions overlap. Our presentation now includes both companies. The one area we still don't have a solid handle on is revenues, as they were included in just two weeks of the first quarter.

Earnings should probably be subdued in the near term. Expenses related to the merger will most likely put a damper on

the bottom line both this year and next. In addition, since we use GAAP accounting in our estimates, much will have to do with how management chooses to write off its intangible assets. These soared from \$64 million at yearend, to \$2.35 billion in the first quarter. It is important to note, however, that these charges to the bottom line won't impact the company's cash balance.

The construction budget is considerable. As part of the deal to gain regulatory approval for the purchase of Peoples, Essential agreed to repair about 3,000 miles of antiquated gas pipelines. The company's water business is also in the midst of a major rebuilding program (as are almost all of its peers). Thus, capital expenditures are expected to total \$2.8 billion through 2022. In 2020, about \$550 million and \$400 million will be spent on the water and gas operations, respectively.

Cal-endar	QUARTERLY REVENUES (\$ mill.)	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2017	187.8 203.4 215.0 203.3	809.5
2018	194.3 211.9 226.2 205.7	838.1
2019	201.1 218.9 243.6 226.1	889.7
2020	255.6 475 515 499.4	1745
2021	520 490 530 515	2055

Cal-endar	EARNINGS PER SHARE ^A	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2017	.28 .34 .43 .30	1.35
2018	.29 .37 .44 d.02	1.08
2019	.09 .25 .38 .28	1.04
2020	.20 .23 .30 .27	1.00
2021	.22 .27 .33 .38	1.20

Cal-endar	QUARTERLY DIVIDENDS PAID ^B	Full Year
	Mar.31 Jun.30 Sep.30 Dec.31	
2016	.178 .178 .1913 .1913	.74
2017	.1913 .1913 .2047 .2047	.79
2018	.2047 .2047 .219 .219	.85
2019	.219 .219 .2343 .2343	.91
2020	.2343 .2343	

These shares are appropriate for short-term conservative accounts. The equity is pegged to outperform the market in the year ahead. However, total return potential out to 2023-2025 is well below the Value Line median.

James A. Flood July 10, 2020

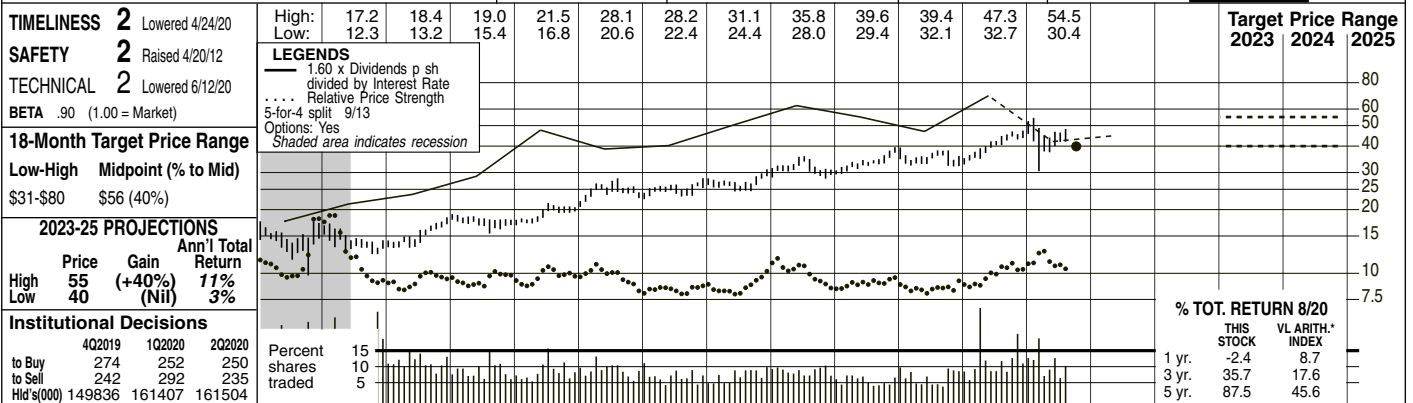
Company's Financial Strength A
Stock's Price Stability 90
Price Growth Persistence 75
Earnings Predictability 60

(A) Diluted eqs. Excl. nonrec. gains: '12, 18c. Excl. gain from disc. operations: '12, 7c; '13, 9c; '14, 11c. Quarterly EPS do not add in '19 due to a large change in the number of shares outstanding in the Dec. period. Next earnings report August 5th. (B) Dividends historically paid in early March, June, Sept. & Dec. ■ Div'd reinvestment plan available (5% discount). (C) In millions, adjusted for stock splits. (D) Includes intangibles: 3/31/20, \$2.352 bill./\$9.60 a share.

© 2020 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.

To subscribe call 1-800-VALUELINE

ESSENTIAL UTIL. NYSE-WTRG RECENT PRICE **39.93** P/E RATIO **39.1** (Trailing: 34.7, Median: 23.0) RELATIVE P/E RATIO **1.87** DIV'D YLD **2.6%** **VALUE LINE**



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC		23-25
2.78	3.08	3.23	3.61	3.71	3.93	4.21	4.10	4.32	4.32	4.37	4.61	4.62	4.56	4.71	4.03	6.35	7.55	Revenues per sh		8.45
.87	.97	1.01	1.10	1.14	1.29	1.42	1.45	1.51	1.82	1.89	1.87	2.07	2.12	1.90	1.73	1.95	2.30	"Cash Flow" per sh		2.65
.51	.57	.56	.57	.58	.62	.72	.83	.87	1.16	1.20	1.14	1.32	1.35	1.08	1.04	1.00	1.20	Earnings per sh ^A		1.75
.29	.32	.35	.38	.41	.44	.47	.50	.54	.58	.63	.69	.74	.79	.85	.91	.97	1.04	Div'd Decl'd per sh ^B		1.30
1.23	1.47	1.64	1.43	1.58	1.66	1.89	1.90	1.98	1.73	1.84	2.07	2.16	2.69	2.78	2.49	2.20	3.80	Cap'l Spending per sh		4.75
4.71	5.04	5.57	5.85	6.26	6.50	6.81	7.21	7.90	8.63	9.27	9.78	10.43	11.02	11.28	17.58	19.00	19.05	Book Value per sh		20.00
158.97	161.21	165.41	166.75	169.21	170.61	172.46	173.60	175.43	177.93	178.59	176.54	177.39	177.71	178.09	220.76	251.25	252.00	Common Shs Outst'g ^C		260.00
25.1	31.8	34.7	32.0	24.9	23.1	21.1	21.3	21.9	21.2	20.8	23.5	23.9	24.7	32.6	39.1	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio		27.0
1.33	1.69	1.87	1.70	1.50	1.54	1.34	1.34	1.39	1.19	1.09	1.18	1.25	1.24	1.76	2.12			Relative P/E Ratio		1.50
2.3%	1.8%	1.8%	2.1%	2.8%	3.1%	3.1%	2.8%	2.8%	2.4%	2.5%	2.6%	2.3%	2.4%	2.4%	2.2%			Avg Ann'l Div'd Yield		2.7%

CAPITAL STRUCTURE as of 6/30/20				2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC		23-25	
Total Debt \$5277.4 mill. Due in 5 Yrs \$496.0 mill.				726.1	712.0	757.8	768.6	779.9	814.2	819.9	809.5	838.1	889.7	1600	1900	Revenues (\$mill)		2200			
LT Debt \$5174.6 mill. LT Interest \$200.0 mill. (53% of Cap'l)				124.0	144.8	153.1	205.0	213.9	201.8	234.2	239.7	192.0	224.5	250	300	Net Profit (\$mill)		455			
Pension Assets-12/19 \$266.4 mill. Oblig. \$310.5 mill.				39.2%	32.9%	39.0%	10.0%	10.5%	6.9%	8.2%	6.6%	6.6%	2.0%	3.5%	Income Tax Rate		8.0%				
Pfd Stock None				--	--	--	1.1%	2.4%	3.1%	3.8%	6.3%	6.8%	7.0%	7.0%	AFUDC % to Net Profit		7.0%				
Common Stock 245,151,093 shares as of 7/27/20				56.6%	52.7%	52.7%	48.9%	48.5%	50.3%	48.4%	50.6%	54.4%	43.1%	53.5%	Long-Term Debt Ratio		40.5%				
MARKET CAP: \$9.8 billion (Large Cap)				43.4%	47.3%	47.3%	51.1%	51.5%	49.7%	51.6%	49.4%	45.6%	56.9%	46.5%	43.0%	Common Equity Ratio		59.5%			
CURRENT POSITION (SMILL.)				2706.2	2646.8	2929.7	3003.6	3216.0	3469.5	3587.7	3965.4	4407.8	6824.2	10300	11000	Total Capital (\$mill)		12800			
Cash Assets				3469.3	3612.9	3936.2	4167.3	4402.0	4688.9	5001.6	5399.9	5930.3	6345.8	9500	10150	Net Plant (\$mill)		12000			
Receivables				5.9%	6.9%	6.6%	8.0%	7.8%	6.9%	7.6%	7.1%	5.5%	4.2%	3.0%	4.0%	Return on Total Cap'l		4.5%			
Inventory (AvgCst)				10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	5.8%	5.0%	6.5%	Return on Shr. Equity		9.0%			
Other				10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	5.8%	5.0%	6.5%	Return on Com Equity		9.0%			
Current Assets				3.7%	4.6%	4.3%	6.7%	6.1%	4.7%	5.6%	5.1%	2.1%	9%	NMF	1.0%	Retained to Com Eq		2.5%			
Accts Payable				65%	60%	61%	50%	52%	60%	56%	59%	79%	84%	97%	87%	All Div'ds to Net Prof		74%			

BUSINESS: Essential Utilities, Inc. became the new name for Aqua America on Feb. 3, 2020, to reflect the acquisition of Peoples, a natural gas utility, which occurred in 3/20. In 2019, Aqua Amer. provided water and wastewater services to about three million people in PA, OH, TX, IL, NC, NJ, IN, and VA. Employed 1,583. Acquired AquaSource, 7/13; North Maine Utilities, 7/15; and others. Water supply revenues 2019: residential, 58%; commercial, 16%; industrial, wastewater & other, 26%. Off. & dir. own less than 1% of the common stock; BlackRock, 10.5%; Vanguard, 10.4%; (4/20 proxy). Canadian Pension Plan about 8.8%. Pres. & CEO: Christopher Franklin, Inc.; PA Addr.: 762 West Lancaster Ave., Bryn Mawr, PA 19010. Tel.: 610-525-1400. Int.: www.essential.co.

Essential Utilities raised its dividend a solid 7% last quarter. The company increased the share payout from \$0.2343 to \$0.2507. This rate of increase ought to be maintained to mid-decade. **Earnings comparisons should be flat in 2020.** Even though the second quarter surpassed our expectations, the company will probably be hindered by the costs associated with the large acquisition it made earlier this year. Recall that it (then known as Aqua America), paid \$4.3 billion and assumed over \$1 billion in debt to purchase Peoples gas utility. All told, Essential's share net should be around \$1.00, which isn't bad considering the amount of unusual charges. It also should be noted that both of the company's two key segments are much less vulnerable to the economic slowdown caused by the coronavirus. With the exception of industrial customers, the demand for water and gas is relatively inelastic. **In 2021, we expect the bottom line to get back on track.** Management is estimating that the regulated water and segments will grow 6% to 7.0%, and 8% to 10%, annually through 2022. This, along with some rate relief and cost savings, should enable Essential's share net to reach \$1.20. **The construction budget is large.** This year, the company plans on spending only \$550 million to upgrade its water pipelines and other assets. However, capital expenditures have been projected to total about \$2.8 billion through 2022. Thus, spending ought to average over a \$1 billion annually in 2021 and 2020. **Finances are more than decent.** True, debt levels have increased as a result of the Peoples merger. In addition, external funds will be required to fund the massive building program discussed above. Nevertheless, the balance sheet is still better than average, and will likely remain so. **These shares are ranked 2 (Above Average) for year-ahead performance.** So short-term investors looking for well-defined prospects should find the stock of interest. For those looking out to 2023-2025, however, total return potential remains well below the Value Line median, as is the case with most members in this group.

Cal-ender	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	187.8	203.4	215.0	203.3	809.5
2018	194.3	211.9	226.2	205.7	838.1
2019	201.1	218.9	243.6	226.1	889.7
2020	255.6	384.5	395	564.9	1600
2021	395	450	430	625	1900

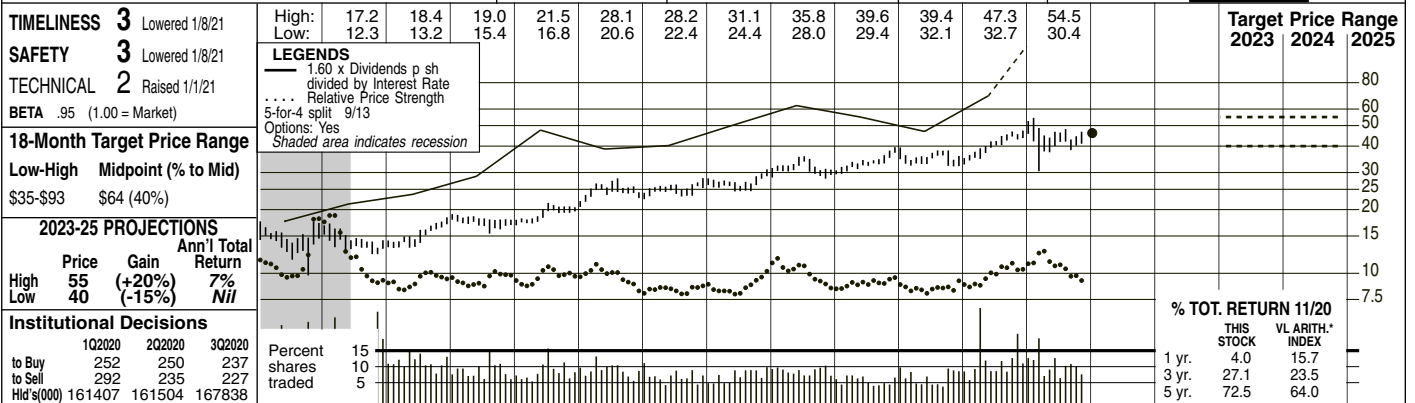
Cal-ender	EARNINGS PER SHARE ^A				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	.28	.34	.43	.30	1.35
2018	.29	.37	.44	d.02	1.08
2019	.09	.25	.38	.28	1.04
2020	.20	.29	.23	.28	1.00
2021	.22	.33	.33	.32	1.20

Cal-ender	QUARTERLY DIVIDENDS PAID ^B				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2016	.178	.178	.1913	.1913	.74
2017	.1913	.1913	.2047	.2047	.79
2018	.2047	.2047	.219	.219	.85
2019	.219	.219	.2343	.2343	.91
2020	.2343	.2343	.2507		

(A) Diluted egs. Excl. nonrec. gains: '12, 18c. Excl. gain from disc. operations: '12, 7c; '13, 9c; '14, 11c. Quarterly EPS do not add in '19 due to a large change in the number of shares outstanding in the Dec. period. Next earnings report early Nov. (B) Dividends historically paid in early March, June, Sept., & Dec. ^C Div'd. reinvestment plan available (5% discount). (C) In millions, adjusted for stock splits. (D) Includes intangibles: 6/30/20, \$2.342 bil./\$9.55 a share. **Company's Financial Strength** A **Stock's Price Stability** 90 **Price Growth Persistence** 95 **Earnings Predictability** 60

James A. Flood October 9, 2020

ESSENTIAL UTIL. NYSE-WTRG RECENT PRICE **46.08** P/E RATIO **41.5** (Trailing: 46.5; Median: 23.0) RELATIVE P/E RATIO **1.95** DIV'D YLD **2.3%** VALUE LINE



2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
2.78	3.08	3.23	3.61	3.71	3.93	4.21	4.10	4.32	4.32	4.37	4.61	4.62	4.56	4.71	4.03	6.15	8.15	Revenues per sh	8.45
.87	.97	1.01	1.10	1.14	1.29	1.42	1.45	1.51	1.82	1.89	1.87	2.07	2.12	1.90	1.73	2.05	2.30	"Cash Flow" per sh	2.65
.51	.57	.56	.57	.58	.62	.72	.83	.87	1.16	1.20	1.14	1.32	1.35	1.08	1.04	1.05	1.20	Earnings per sh ^A	1.75
.29	.32	.35	.38	.41	.44	.47	.50	.54	.58	.63	.69	.74	.79	.85	.91	.97	1.04	Div'd Decl'd per sh ^B	1.30
1.23	1.47	1.64	1.43	1.58	1.66	1.89	1.90	1.98	1.73	1.84	2.07	2.16	2.69	2.78	2.49	2.75	4.00	Cap'l Spending per sh	4.75
4.71	5.04	5.57	5.85	6.26	6.50	6.81	7.21	7.90	8.63	9.27	9.78	10.43	11.02	11.28	17.58	18.55	18.75	Book Value per sh	20.00
158.97	161.21	165.41	166.75	169.21	170.61	172.46	173.60	175.43	177.93	178.59	176.54	177.39	177.71	178.09	220.76	251.25	252.00	Common Shs Outst'g ^C	260.00
25.1	31.8	34.7	32.0	24.9	23.1	21.1	21.3	21.9	21.2	20.8	23.5	23.9	24.7	32.6	39.1	42.2		Avg Ann'l P/E Ratio	27.0
1.33	1.69	1.87	1.70	1.50	1.54	1.34	1.34	1.39	1.19	1.09	1.18	1.25	1.24	1.76	2.12	2.13		Relative P/E Ratio	1.50
2.3%	1.8%	1.8%	2.1%	2.8%	3.1%	3.1%	2.8%	2.8%	2.4%	2.5%	2.6%	2.3%	2.4%	2.4%	2.2%	2.2%		Avg Ann'l Div'd Yield	2.7%

CAPITAL STRUCTURE as of 9/30/20				2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC		23-25
Total Debt \$5444.0 mill. Due in 5 Yrs \$496.0 mill.				726.1	712.0	757.8	768.6	779.9	814.2	819.9	809.5	838.1	889.7	1550	2050	2050	2050	2050	Revenues (\$mill)	2200
LT Debt \$5191.0 mill. LT Interest \$196.0 mill. (53% of Cap'l)				124.0	144.8	153.1	205.0	213.9	201.8	234.2	239.7	192.0	224.5	265	300	300	300	300	Net Profit (\$mill)	455
Pension Assets-12/19 \$266.4 mill. Oblig. \$310.5 mill.				39.2%	32.9%	39.0%	10.0%	10.5%	6.9%	8.2%	6.6%	6.6%	6.6%	1.5%	3.5%	7.0%	7.0%	7.0%	Income Tax Rate	8.0%
Pfd Stock None				--	--	--	1.1%	2.4%	3.1%	3.8%	6.3%	6.8%	7.2%	4.5%	7.2%	4.5%	7.2%	AFUDC % to Net Profit	7.0%	
Common Stock 245,271,727 shares as of 10/23/20				56.6%	52.7%	52.7%	48.9%	48.5%	50.3%	48.4%	50.6%	54.4%	43.1%	53.0%	57.0%	57.0%	57.0%	Long-Term Debt Ratio	40.5%	
MARKET CAP: \$11.3 billion (Large Cap)				43.4%	47.3%	47.3%	51.1%	51.5%	49.7%	51.6%	49.4%	45.6%	56.9%	47.0%	43.0%	43.0%	43.0%	Common Equity Ratio	59.5%	
CURRENT POSITION (SMILL.)				2706.2	2646.8	2929.7	3003.6	3216.0	3469.5	3587.7	3965.4	4407.8	6824.2	9880	10370	10370	10370	Total Capital (\$mill)	12800	
Cash Assets				3469.3	3612.9	3936.2	4167.3	4402.0	4688.9	5001.6	5399.9	5930.3	6345.8	9525	10160	10160	10160	Net Plant (\$mill)	12000	
Receivables				5.9%	6.9%	6.6%	8.0%	7.8%	6.9%	7.6%	7.1%	5.5%	4.2%	3.5%	4.0%	4.0%	4.0%	Return on Total Cap'l	4.5%	
Inventory (AvgCst)				10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	5.8%	5.5%	6.5%	6.5%	6.5%	Return on Shr. Equity	9.0%	
Other				10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	5.8%	5.5%	6.5%	6.5%	6.5%	Return on Com Equity	9.0%	
Current Assets				3.7%	4.6%	4.3%	6.7%	6.1%	4.7%	5.6%	5.1%	2.1%	.9%	NMF	1.0%	1.0%	1.0%	Retained to Com Eq	2.5%	
Accts Payable				65%	60%	61%	50%	52%	60%	56%	59%	79%	84%	92%	87%	87%	87%	All Div'ds to Net Prof	74%	
Debt Due				BUSINESS: Essential Utilities, Inc. became the new name for Aqua America on Feb. 3, 2020, to reflect the acquisition of Peoples, a natural gas utility, which occurred in 3/20. In 2019, Aqua Amer. provided water and wastewater services to about three million people in PA, OH, TX, IL, NC, NJ, IN, and VA. Employed 1,583. Acquired AquaSource, 7/13; North Maine Utilities, 7/15; and others. Water supply revenues 2019: residential, 58%; commercial, 16%; industrial, wastewater & other, 26%. Off. & dir. own less than 1% of the common stock; BlackRock, 10.5%; Vanguard, 10.4%; (4/20 proxy). Canadian Pension Plan about 8.8%. Pres. & CEO: Christopher Franklin, Inc.; PA Addr.: 762 West Lancaster Ave., Bryn Mawr, PA 19010. Tel.: 610-525-1400. Int.: www.essential.co.																

Essential Utilities' prospects should be better defined going forward. The basic makeup of the company was greatly altered last March when the water company (formerly know as Aqua America), paid \$4.3 billion, and assumed over \$1 billion in debt, to acquire Peoples, a large natural gas concern. Due to the transaction, Essential had to absorb a number of one-time charges related to the acquisition. Following this year's first quarter, year-over-year comparisons will become more meaningful. All told, eliminating some of the costs incurred in 2020, we estimate that Essential's share net can climb 14%, to \$1.20, in 2021. (Please note: Management was scheduled to hold a conference call providing guidance for 2021 shortly after this report was made public.)

Dividend growth prospects are good. Following the merger, the board raised the quarterly payout 7%. We expect this rate to be maintained over the next three-to-five-year period.

The company has an ambitious capital spending program. On the water side of the business, like almost all of its peers, Essential is in the midst of spending heavily to replace aging pipelines. It's also making outlays to modernize the natural gas infrastructure. Overall, the construction budget should total close to \$3.0 billion over the 2020-2022 period.

Finances have weakened. Despite the large acquisition and assumption of debt, the balance sheet is in decent shape with long-term debt accounting for slightly over half of total capital. Nevertheless, we are lowering its Financial Strength two notches to B+, which is an average rating.

Regulation will continue to have a huge impact on operations. In the water utility sector, state authorities treat companies under their domain relatively constructively. In the gas business, the same cannot be said, as regulators and gas utilities seem to clash more often regarding rate hikes and allowed returns.

Shares of Essential have done well since our October report. They are ranked to only perform in line with the market averages in the coming year, though. Moreover, as is the case with most members of this group, CWCO's total return prospects to 2023-2025 are subpar.

James A. Flood *January 8, 2021*

ANNUAL RATES		Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
of change (per sh)		10 Yrs.	5 Yrs.	to '23-'25
Revenues		1.5%	.5%	11.5%
"Cash Flow"		5.0%	2.0%	5.5%
Earnings		7.0%	1.5%	7.0%
Dividends		7.5%	8.0%	7.5%
Book Value		8.0%	9.0%	7.0%

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	187.8	203.4	215.0	203.3	809.5
2018	194.3	211.9	226.2	205.7	838.1
2019	201.1	218.9	243.6	226.1	889.7
2020	255.6	384.5	348.6	561.3	1550
2021	550	450	450	600	2050

Cal-endar	EARNINGS PER SHARE ^A				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	.28	.34	.43	.30	1.35
2018	.29	.37	.44	d.02	1.08
2019	.09	.25	.38	.28	1.04
2020	.20	.29	.22	.34	1.05
2021	.22	.33	.33	.32	1.20

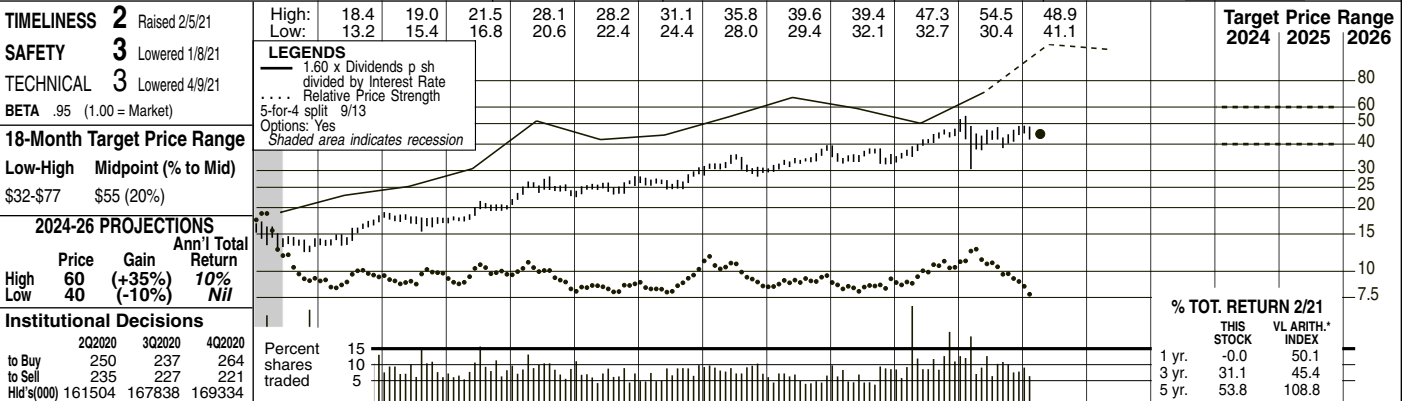
Cal-endar	QUARTERLY DIVIDENDS PAID ^B				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2017	.1913	.1913	.2047	.2047	.79
2018	.2047	.2047	.219	.219	.85
2019	.219	.219	.2343	.2343	.91
2020	.2343	.2343	.2507	.2507	
2021					

(A) Diluted eps. Excl. nonrec. gains: '12, 18c. Excl. gain from disc. operations: '12, 7c; '13, 9c; '14, 11c. Quarterly EPS do not add in '19 due to a large change in the number of shares outstanding in the Dec. period. Next earnings report mid-February. (B) Dividends historically paid in early March, June, Sept., & Dec. Div'd. reinvestment plan available (5% discount). (C) In millions, adjusted for stock splits. (D) Includes intangibles: 9/30/20, \$2,342.5 bill./\$.95 a share.

ESSENTIAL UTIL. NYSE-WTRG

RECENT PRICE **44.64** P/E RATIO **27.4** (Trailing: 39.9 Median: 23.0) RELATIVE P/E RATIO **1.25** DIV'D YLD **2.4%**

VALUE LINE



2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
3.08	3.23	3.61	3.71	3.93	4.21	4.10	4.32	4.37	4.61	4.62	4.56	4.71	4.03	5.96	8.00	8.50	Revenues per sh	8.60	
.97	1.01	1.10	1.14	1.29	1.42	1.45	1.51	1.82	1.89	1.87	2.07	2.12	1.90	1.73	2.21	2.40	"Cash Flow" per sh	2.85	
.57	.56	.57	.58	.62	.72	.83	.87	1.16	1.20	1.14	1.32	1.35	1.08	1.04	1.12	1.65	Earnings per sh ^A	1.90	
.32	.35	.38	.41	.44	.47	.50	.54	.58	.63	.69	.74	.79	.85	.91	.97	1.03	1.10	Div'd Decl'd per sh ^B	1.40
1.47	1.64	1.43	1.58	1.66	1.89	1.90	1.98	1.73	1.84	2.07	2.16	2.69	2.78	2.49	3.41	4.00	4.00	Cap'l Spending per sh	3.75
5.04	5.57	5.85	6.26	6.50	6.81	7.21	7.90	8.63	9.27	9.78	10.43	11.02	11.28	17.58	19.09	19.70	20.30	Book Value per sh	23.35
161.21	165.41	166.75	169.21	170.61	172.46	173.60	175.43	177.93	178.59	176.54	177.39	177.71	178.09	220.76	245.39	250.00	252.50	Common Shs Outst'g ^C	270.00
31.8	34.7	32.0	24.9	23.1	21.1	21.3	21.9	21.2	20.8	23.5	23.9	24.7	32.6	39.1	39.6	<i>Bold figures are Value Line estimates</i>		Avg Ann'l P/E Ratio	27.0
1.69	1.87	1.70	1.50	1.54	1.34	1.34	1.39	1.19	1.09	1.18	1.25	1.24	1.76	2.08	2.06			Relative P/E Ratio	1.50
1.8%	1.8%	2.1%	2.8%	3.1%	3.1%	2.8%	2.8%	2.4%	2.5%	2.6%	2.3%	2.4%	2.4%	2.2%	2.2%			Avg Ann'l Div'd Yield	2.8%

CAPITAL STRUCTURE as of 12/31/20				2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Revenues (\$mill)	2320
Total Debt \$5670.3 mill. Due in 5 Yrs \$1032 mill.				712.0	757.8	768.6	779.9	814.2	819.9	809.5	838.1	889.7	1462.7	2000	2150	Revenues (\$mill)	2320						
LT Debt \$5507.7 mill. LT Interest \$185.0 mill. (54% of Cap'l)				144.8	153.1	205.0	213.9	201.8	234.2	239.7	192.0	224.5	284.8	310	365	Net Profit (\$mill)	515						
Pension Assets-12/20 \$426.8 mill. Oblig. \$486.2 mill.				32.9%	39.0%	10.0%	10.5%	6.9%	8.2%	6.6%	--	6.6%	6.6%	5.0%	6.0%	Income Tax Rate	8.0%						
Pfd Stock None				--	--	1.1%	2.4%	3.1%	3.8%	6.3%	6.8%	7.2%	4.5%	7.0%	7.5%	AFUDC % to Net Profit	7.0%						
Common Stock 245,393,761 shares as of 2/15/21				52.7%	52.7%	48.9%	48.5%	50.3%	48.4%	50.6%	54.4%	43.1%	54.0%	55.0%	56.0%	Long-Term Debt Ratio	56.0%						
MARKET CAP: \$11.0 billion (Large Cap)				47.3%	47.3%	51.1%	51.5%	49.7%	51.6%	49.4%	45.6%	56.9%	46.0%	45.0%	44.0%	Common Equity Ratio	44.0%						
CURRENT POSITION (SMILL.)				2646.8	2929.7	3003.6	3216.0	3469.5	3587.7	3965.4	4407.8	6824.2	10192	11000	11775	Total Capital (\$mill)	14300						
Cash Assets				3612.9	3936.2	4167.3	4402.0	4688.9	5001.6	5399.9	5930.3	6345.8	9512.9	10175	10800	Net Plant (\$mill)	12100						
Receivables				6.9%	6.6%	8.0%	7.8%	6.9%	7.6%	7.1%	5.5%	4.2%	3.7%	3.5%	4.5%	Return on Total Cap'l	5.5%						
Inventory (AvgCst)				11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	5.8%	6.1%	6.0%	7.0%	Return on Shr. Equity	9.5%						
Other				11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	5.8%	6.1%	6.0%	7.0%	Return on Com Equity	9.5%						
Current Assets				4.6%	4.3%	6.7%	6.1%	4.7%	5.6%	5.1%	2.1%	.9%	1.1%	1.5%	1.5%	Retained to Com Eq	2.0%						
Accts Payable				60%	61%	50%	52%	60%	56%	59%	79%	84%	82%	76%	76%	All Div'ds to Net Prof	74%						
Debt Due				<p>BUSINESS: Essential Utilities, Inc. became the new name for Aqua America on Feb. 3, 2020, to reflect the acquisition of Peoples, a natural gas utility, which occurred in 3/20. In 2020, Aqua Amer. provided water and wastewater services to about 5 million people in PA, OH, TX, IL, NC, NJ, IN, VA NS WS. Employed 3,180 Acquired AquaSource, 7/13; North Maine Utilities, 7/15; and others. Water</p>																			
Other				<p>respn. for 65% of revenues in 2020; residential, 39%; commercial, 10%; industrial, wastewater & other, 26%. Gas 35%. Off. & dir. own less than 1% of the common stock; BlackRock, 10.5%; Vanguard, 10.4%; (4/20 proxy). Canadian Pension Plan about 8.8%. Pres. & CEO: Christopher Franklin, Inc.: PA Addr.: 762 W Lancaster Ave., Bryn Mawr, PA 19010. Tel.: 610-525-1400. Int.: www.essential.co.</p>																			
Current Liab.				<p>Starting in the June quarter, Essential Utilities' figures ought to be comparable to 2020's. In mid-March of last year, Essential became a much different company (including taking on a new name), when it made the large acquisition of Peoples Gas for total consideration of about \$5.3 billion. The purchase turned the new entity into one that is not totally water based. Despite not generating revenues for almost 85% of the first quarter, which is usually an important period for a gas entity, Peoples still accounted for 35% of Essential's revenues last year.</p>																			

Cal-endar	QUARTERLY REVENUES (\$ mill.)	Full Year	Cal-endar	EARNINGS PER SHARE ^A	Full Year	Cal-endar	QUARTERLY DIVIDENDS PAID ^B	Full Year			
Mar.31	Jun.30	Sep.30	Dec.31	Mar.31	Jun.30	Sep.30	Dec.31	Mar.31	Jun.30	Sep.30	Dec.31
2018	194.3	211.9	226.2	205.7	838.1	.29	.37	.44	d.02	1.08	
2019	201.1	218.9	243.6	226.1	889.7	.09	.25	.38	.28	1.04	
2020	255.6	384.5	348.6	474.0	1462.7	.21	.29	.22	.40	1.12	
2021	650	385	430	535	2000	.63	.30	.30	.42	1.65	
2022	690	415	460	585	2150	.67	.33	.35	.45	1.80	

The outlook for earnings is positive. The company was able to increase its share net last year even though it had to absorb many merger-related charges. The process is mostly completed now. So, aided by cost-containment efforts, we expect WTRG to have a very strong share-net showing in 2021 and 2022.

The balance sheet is more leveraged. As a result of the merger, Essential's debt load increased significantly. As can be seen in the numbers array, long-term debt-to-equity rose from 43% to 54% during 2020. Capital expenditures are estimated to be \$1 billion this year, which means that more borrowing will be required. Following 2022, we think the situation will likely stabilize, and Essential's finances should remain average for a water utility.

Essential's regulatory treatment will probably not be on par with other members of the group. Gas and electric utilities have historically not had great relations with the authorities that determine the rates they can charge customers. On the other hand, water utilities and the authorities have worked well together. Part of this is due to water regulators' understanding that there has been under investment in the domestic infrastructure and large amounts of capital spending are required to make upgrades.

These share have moved up a notch in rank, to 2 (Above Average), since our January report. The equity is pegged to outperform the market averages in the year ahead. Long-term total return potential is still unattractive even though WTRG has trailed the S&P 500 Index significantly over the past three months.

James A. Flood *April 9, 2021*

(A) Diluted egs. Excl. nonrec. gains: '12, 18c. Excl. gain from disc. operations: '12, 7c; '13, 9c; '14, 11c. Quarterly EPS do not add in '19 due to a large change in the number of shares	outstanding in the Dec. period. Next earnings report May 5th. (B) Dividends historically paid in early March, June, Sept., & Dec. ■ Div'd. reinvestment plan available (5% discount).	(C) In millions, adjusted for stock splits. (D) Includes intangibles: 12/31/20, \$2.325 bil./\$.97 a share.	Company's Financial Strength B+ Stock's Price Stability 90 Price Growth Persistence 70 Earnings Predictability 60
---	---	---	--

**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2021-00185**

**SECOND PSC DATA REQUEST
DATED JULY 12, 2021**

29. Refer to the Moul Testimony, page 19, lines 19–21, and page 20, lines 1–2.
- a. Explain how the month end stock prices were adjusted.
 - b. Provide the average three, six, and 12 month dividend yields using the average monthly stock price as opposed to the adjusted month end stock price.
 - c. Provide further explanation as to how the historic six month average dividend yield is a better reflection of current capital costs rather than the three month average yield. Include in the explanation how the historic three month yield does not avoid spot yields, but the six month average yield does.

Response:

- a. As noted on page 19, lines 15-19, the month-end prices were adjusted to reflect the buildup of the dividend that has occurred since the last ex-dividend date. Please also see previously provided “DELTA_R_PSCDR1_NUM054_061121_MOUL_PRM-07p1” tab “Adj. Prices”.
- b. Please see PSC 2-29 Attachment 1.
- c. Mr. Moul is not implying that a six-month average divided yield avoids spot yields while a three-month yield does not. Instead, Mr. Moul’s position is that his use of adjusted stock prices in calculating the average dividend yield avoids spot yields, while unadjusted prices would reflect spot yields.

Sponsoring Witness: Dylan D’Ascendis

**Monthly Dividend Yields for
Natural Gas Group
for the Twelve Months Ending March 2021**

<u>Company</u>	<u>Apr-20</u>	<u>May-20</u>	<u>Jun-20</u>	<u>Jul-20</u>	<u>Aug-20</u>	<u>Sep-20</u>	<u>Oct-20</u>	<u>Nov-20</u>	<u>Dec-20</u>	<u>Jan-21</u>	<u>Feb-21</u>	<u>Mar-21</u>	<u>12-Month Average</u>	<u>6-Month Average</u>	<u>3-Month Average</u>
Atmos Energy Corp (ATO)	2.26%	2.24%	2.31%	2.17%	2.30%	2.41%	2.73%	2.61%	2.62%	2.81%	2.95%	2.53%			
Chesapeake Utilities Corp (CPK)	2.00%	1.95%	2.10%	2.08%	2.15%	2.09%	1.81%	1.69%	1.63%	1.74%	1.66%	1.52%			
New Jersey Resources Corporation (NJR)	3.70%	3.56%	3.83%	4.28%	4.41%	4.92%	4.56%	4.03%	3.74%	3.80%	3.39%	3.34%			
Northwest Natural Holding Company (NWN)	2.93%	2.98%	3.42%	3.57%	3.74%	4.21%	4.32%	4.01%	4.17%	4.11%	4.00%	3.56%			
ONE Gas Inc (OGS)	2.71%	2.57%	2.80%	2.85%	2.91%	3.13%	3.13%	2.73%	2.81%	3.17%	3.46%	3.02%			
South Jersey Industries Inc (SJI)	4.13%	4.16%	4.72%	5.06%	5.33%	6.12%	6.28%	5.26%	5.61%	5.24%	4.82%	5.36%			
Southwest Gas Holdings Inc (SWX)	3.01%	3.00%	3.30%	3.27%	3.63%	3.61%	3.47%	3.55%	3.75%	3.80%	3.66%	3.32%			
Spire Inc. (SR)	3.41%	3.41%	3.79%	4.04%	4.28%	4.68%	4.64%	4.07%	4.06%	4.25%	3.91%	3.52%			
Average	3.02%	2.98%	3.28%	3.42%	3.59%	3.90%	3.87%	3.49%	3.55%	3.62%	3.48%	3.27%	3.46%	3.55%	3.46%

Note: Monthly dividend yields are calculated by dividing the annualized quarterly dividend by the month-end closing stock price adjusted by the fraction of the ex-dividend.

Source of Information: <https://finance.yahoo.com/quote>
<https://www.nasdaq.com/market-activity/stocks>

Forward-looking Dividend Yield	1/2 Growth	D_0/P_0	(.5g)	D_1/P_0	$K = \frac{D_0(1+g)^1 + D_0(1+g)^2 + D_0(1+g)^3 + D_0(1+g)^4}{P_0} + g$
		3.55%	1.033750	3.67%	
	Discrete	D_0/P_0	Adj.	D_1/P_0	$K = \frac{D_0(1+g)^{25} + D_0(1+g)^{50} + D_0(1+g)^{75} + D_0(1+g)^{100}}{P_0} + g$
		3.55%	1.041843	3.70%	
	Quarterly	D_0/P_0	Adj.	D_1/P_0	$K = \left[\left(1 + \frac{D_0(1+g)^{25}}{P_0} \right)^4 - 1 \right] + g$
		0.8867%	1.016464	3.65%	
	Average			3.67%	
	Growth rate			<u>6.75%</u>	
	K			<u>10.42%</u>	

Month-End Closing Prices

	<u>Apr-20</u>	<u>May-20</u>	<u>Jun-20</u>	<u>Jul-20</u>	<u>Aug-20</u>	<u>Sep-20</u>	<u>Oct-20</u>	<u>Nov-20</u>	<u>Dec-20</u>	<u>Jan-21</u>	<u>Feb-21</u>	<u>Mar-21</u>
Atmos Energy Corp (ATO)	\$101.97	\$102.78	\$99.58	\$105.99	\$99.82	\$95.59	\$91.67	\$95.89	\$95.43	\$89.00	\$84.61	\$98.85
Chesapeake Utilities Corp (CPK)	\$87.88	\$90.34	\$84.00	\$84.49	\$81.80	\$84.30	\$97.21	\$104.01	\$108.21	\$101.43	\$105.73	\$116.08
New Jersey Resources Corporation (NJR)	\$33.78	\$35.12	\$32.65	\$31.06	\$30.14	\$27.02	\$29.18	\$33.03	\$35.55	\$35.01	\$39.29	\$39.87
Northwest Natural Gas (NWN)	\$65.10	\$64.11	\$55.79	\$53.49	\$51.11	\$45.39	\$44.44	\$47.92	\$45.99	\$46.71	\$47.99	\$53.95
ONE Gas Inc (OGS)	\$79.71	\$83.97	\$77.05	\$75.70	\$74.12	\$69.01	\$69.04	\$79.18	\$76.77	\$73.13	\$66.97	\$76.91
South Jersey Industries Inc (SJI)	\$28.59	\$28.36	\$24.99	\$23.33	\$22.15	\$19.27	\$19.27	\$23.02	\$21.55	\$23.10	\$25.11	\$22.58
Southwest Gas Holdings Inc (SWX)	\$75.80	\$75.95	\$69.05	\$69.64	\$62.87	\$63.10	\$65.72	\$64.25	\$60.75	\$59.96	\$62.35	\$68.71
Spire Inc. (SR)	\$72.96	\$72.92	\$65.71	\$61.66	\$58.21	\$53.20	\$56.04	\$63.96	\$64.04	\$61.19	\$66.42	\$73.89

Quarterly Dividend Payment

	<u>Apr-20</u>	<u>May-20</u>	<u>Jun-20</u>	<u>Jul-20</u>	<u>Aug-20</u>	<u>Sep-20</u>	<u>Oct-20</u>	<u>Nov-20</u>	<u>Dec-20</u>	<u>Jan-21</u>	<u>Feb-21</u>	<u>Mar-21</u>
Atmos Energy Corp (ATO)	\$0.58	\$0.58	\$0.58	\$0.58	\$0.58	\$0.58	\$0.63	\$0.63	\$0.63	\$0.63	\$0.63	\$0.63
Chesapeake Utilities Corp (CPK)	\$0.44	\$0.44	\$0.44	\$0.44	\$0.44	\$0.44	\$0.44	\$0.44	\$0.44	\$0.44	\$0.44	\$0.44
New Jersey Resources Corporation (NJR)	\$0.31	\$0.31	\$0.31	\$0.33	\$0.33	\$0.33	\$0.33	\$0.33	\$0.33	\$0.33	\$0.33	\$0.33
Northwest Natural Gas (NWN)	\$0.48	\$0.48	\$0.48	\$0.48	\$0.48	\$0.48	\$0.48	\$0.48	\$0.48	\$0.48	\$0.48	\$0.48
ONE Gas Inc (OGS)	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54	\$0.54	\$0.58	\$0.58	\$0.58
South Jersey Industries Inc (SJI)	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30
Southwest Gas Holdings Inc (SWX)	\$0.57	\$0.57	\$0.57	\$0.57	\$0.57	\$0.57	\$0.57	\$0.57	\$0.57	\$0.57	\$0.57	\$0.57
Spire Inc. (SR)	\$0.62	\$0.62	\$0.62	\$0.62	\$0.62	\$0.62	\$0.65	\$0.65	\$0.65	\$0.65	\$0.65	\$0.65

Ex-Dividend Dates

	<u>Apr-20</u>	<u>May-20</u>	<u>Jun-20</u>	<u>Jul-20</u>	<u>Aug-20</u>	<u>Sep-20</u>	<u>Oct-20</u>	<u>Nov-20</u>	<u>Dec-20</u>	<u>Jan-21</u>	<u>Feb-21</u>	<u>Mar-21</u>
Atmos Energy Corp (ATO)	21-Feb-20	22-May-20	22-May-20	22-May-20	21-Aug-20	21-Aug-20	21-Aug-20	27-Nov-20	27-Nov-20	27-Nov-20	19-Feb-21	19-Feb-21
Chesapeake Utilities Corp (CPK)	12-Mar-20	12-Mar-20	12-Jun-20	12-Jun-20	12-Jun-20	14-Sep-20	14-Sep-20	14-Sep-20	14-Dec-20	14-Dec-20	14-Dec-20	12-Mar-21
New Jersey Resources Corporation (NJR)	16-Mar-20	16-Mar-20	15-Jun-20	15-Jun-20	15-Jun-20	21-Sep-20	21-Sep-20	21-Sep-20	15-Dec-20	15-Dec-20	15-Dec-20	16-Mar-21
Northwest Natural Gas (NWN)	29-Apr-20	29-Apr-20	29-Apr-20	30-Jul-20	30-Jul-20	30-Jul-20	29-Oct-20	29-Oct-20	29-Oct-20	28-Jan-21	28-Jan-21	28-Jan-21
ONE Gas Inc (OGS)	20-Feb-20	12-May-20	12-May-20	12-May-20	13-Aug-20	13-Aug-20	13-Aug-20	13-Nov-20	13-Nov-20	13-Nov-20	18-Feb-21	18-Feb-21
South Jersey Industries Inc (SJI)	17-Mar-20	17-Mar-20	09-Jun-20	09-Jun-20	09-Jun-20	09-Sep-20	09-Sep-20	09-Sep-20	09-Dec-20	09-Dec-20	09-Dec-20	16-Mar-21
Southwest Gas Holdings Inc (SWX)	14-Feb-20	14-May-20	14-May-20	14-May-20	14-Aug-20	14-Aug-20	14-Aug-20	13-Nov-20	13-Nov-20	13-Nov-20	12-Feb-21	12-Feb-21
Spire Inc. (SR)	10-Mar-20	10-Mar-20	10-Jun-20	10-Jun-20	10-Jun-20	10-Sep-20	10-Sep-20	10-Sep-20	10-Dec-20	10-Dec-20	10-Dec-20	10-Mar-21

Days from Ex-Dividend Date

	<u>Apr-20</u>	<u>May-20</u>	<u>Jun-20</u>	<u>Jul-20</u>	<u>Aug-20</u>	<u>Sep-20</u>	<u>Oct-20</u>	<u>Nov-20</u>	<u>Dec-20</u>	<u>Jan-21</u>	<u>Feb-21</u>	<u>Mar-21</u>
Atmos Energy Corp (ATO)	69	9	39	70	10	40	71	3	34	65	9	40
Chesapeake Utilities Corp (CPK)	49	80	18	49	80	16	47	77	17	48	76	19
New Jersey Resources Corporation (NJR)	45	76	15	46	77	9	40	70	16	47	75	15
Northwest Natural Gas (NWN)	1	32	62	1	32	62	2	32	63	3	31	62
ONE Gas Inc (OGS)	70	19	49	80	18	48	79	17	48	79	10	41
South Jersey Industries Inc (SJI)	44	75	21	52	83	21	52	82	22	53	81	15
Southwest Gas Holdings Inc (SWX)	76	17	47	78	17	47	78	17	48	79	16	47
Spire Inc. (SR)	51	82	20	51	82	20	51	81	21	52	80	21

Adjusted Prices

	<u>Apr-20</u>	<u>May-20</u>	<u>Jun-20</u>	<u>Jul-20</u>	<u>Aug-20</u>	<u>Sep-20</u>	<u>Oct-20</u>	<u>Nov-20</u>	<u>Dec-20</u>	<u>Jan-21</u>	<u>Feb-21</u>	<u>Mar-21</u>
Atmos Energy Corp (ATO)	\$101.53	\$102.72	\$99.33	\$105.55	\$99.76	\$95.34	\$91.18	\$95.87	\$95.20	\$88.55	\$84.55	\$98.58
Chesapeake Utilities Corp (CPK)	\$87.64	\$89.95	\$83.91	\$84.25	\$81.41	\$84.22	\$96.98	\$103.64	\$108.13	\$101.20	\$105.36	\$115.99
New Jersey Resources Corporation (NJR)	\$33.63	\$34.86	\$32.60	\$30.89	\$29.86	\$26.99	\$29.03	\$32.77	\$35.49	\$34.84	\$39.02	\$39.82
Northwest Natural Gas (NWN)	\$65.10	\$63.94	\$55.47	\$53.49	\$50.94	\$45.07	\$44.43	\$47.75	\$45.66	\$46.69	\$47.83	\$53.62
ONE Gas Inc (OGS)	\$79.30	\$83.86	\$76.76	\$75.23	\$74.01	\$68.73	\$68.57	\$79.08	\$76.49	\$72.63	\$66.91	\$76.65
South Jersey Industries Inc (SJI)	\$28.45	\$28.12	\$24.92	\$23.16	\$21.88	\$19.20	\$19.10	\$22.75	\$21.48	\$22.92	\$24.84	\$22.53
Southwest Gas Holdings Inc (SWX)	\$75.32	\$75.84	\$68.76	\$69.15	\$62.76	\$62.81	\$65.23	\$64.14	\$60.45	\$59.47	\$62.25	\$68.42
Spire Inc. (SR)	\$72.61	\$72.36	\$65.57	\$61.31	\$57.65	\$53.06	\$55.68	\$63.38	\$63.89	\$60.82	\$65.85	\$73.74

**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2021-00185**

**SECOND PSC DATA REQUEST
DATED JULY 12, 2021**

30. Refer to the Moul Testimony, page 20, lines 5–8 and to Attachment PRM-7. Provide an explanation for each of three methods utilized to make a forward adjustment to the dividend yield, and the strengths and shortfalls of the each method.

Response:

The half-growth adjustment shown in Attachment PRM-7 reflects that companies raise their quarterly dividends at various times throughout the year. Given that, the adjustment reflects one-half the annual dividend growth rate in the dividend yield. The discrete adjustment grows the current dividend by the expected growth rate, which reflects the fact that each dividend is typically received quarterly throughout the year. Lastly, the quarterly adjustment reflects the fact that companies typically pay their dividends quarterly throughout the year (as reflected in the discrete adjustment), but also takes into account that those dividends might be raised at different times across companies.

No individual adjustment method is stronger or weaker than the others, thus Mr. Moul elected to average the results of the three methods. Please note that the range of the results produced by the three adjustment models is four basis points.

Sponsoring Witness: Dylan D'Ascendis

**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2021-00185**

**SECOND PSC DATA REQUEST
DATED JULY 12, 2021**

31. Refer to the Moul Testimony, page 25, lines 17–21. The average of the three earnings per share growth estimates from IBES/First Call, Zacks, and Value Line is 5.82 percent. Provide further explanation of why 6.75 percent is reasonable.

Response:

As noted on page 25, line 19, Mr. Moul arrived at his 6.75% earnings per share growth rate based on his expert judgement and not a mathematical formulation. As further noted on page 25, the 6.75% earnings per share growth rate estimate is within the range of analyst growth rates for the Gas Group. In selecting this growth rate, Mr. Moul considered the continuation of elevated gas utility infrastructure spending as noted on page 26, lines 1-2 of his Direct Testimony, as well as on page 6, lines 11-13. Mr. Moul also took into consideration many of the economic factors mentioned on page 2, lines 1-14.

Sponsoring Witness: Dylan D'Ascendis

**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2021-00185**

**SECOND PSC DATA REQUEST
DATED JULY 12, 2021**

32. Refer to the Moul Testimony, pages 2–26, lines 18–22 and 1–2 respectively, and to Attachment PRM-9.

a. Explain and provide support for the statement that DCF growth rates should not be established by mathematical formulation.

b. Explain how the midpoint of the growth rate forecasts was determined.

Response:

a. As noted on page 22 of Mr. Moul’s Testimony, investors review company-specific variable and overall market sentiment in determining their growth expectations. That relevant data is then evaluated by investors in forming their expectation, but not necessarily done so formulaically, as at any point in time one variable may be more or less relevant than another.

b. The midpoint of the growth rate forecasts was determined based on the high and low earnings per share growth rates of 7.06% and 4.99%, respectively.

Sponsoring Witness: Dylan D’Ascendis

**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2021-00185**

**SECOND PSC DATA REQUEST
DATED JULY 12, 2021**

33. Refer to the Moul Testimony, page 31. Explain whether Delta is aware of this Commission's recent rate case Orders and whether a leverage or a flotation cost adjustments has been accepted in DCF analyses.

Response:

Although Mr. D'Ascendis has not conducted an exhaustive review, Mr. D'Ascendis has reviewed this Commission's recent rate case Orders and has not observed an explicit leverage or flotation cost adjustment in DCF analyses. However, Mr. D'Ascendis notes that of the 18 completed natural gas or electric rate cases since 2016, 13 have been settled, making it difficult to determine exactly how the parties arrived at their stipulated ROEs in those proceedings. Please see PSC 2-33 Attachment 1.

Sponsoring Witness: Dylan D'Ascendis

S&P Global Market Intelligence												
Rate Case History (Past Rate Cases)												
List None												# of Rate Cases
Company List All												# of Settled Rate Cases
States Kentucky												# of Fully Litigated Rate Cases
Years 2021, 2020, 2019, 2018, 2017, 2016												
Service Type All												
State	Company	Parent Company Ticker	Docket	Rate Case Service Type	Case Type	Increase Requested						Date
						Date	Rate Increase (\$M)	Return on Original Cost Rate (%)	Return on Equity (%)	Common Equity to Total Capital (%)	Rate Base (\$M)	
Kentucky	Atmos Energy Corp.	ATO	C-2018-00281	Natural Gas	Distribution	9/28/2018	14.4	7.93	10.40	58.06	496.01	5/7/2019
Kentucky	Atmos Energy Corp.	ATO	C-2017-00349	Natural Gas	Distribution	9/28/2017	1.8	7.72	10.30	52.57	427.15	5/3/2018
Kentucky	Atmos Energy Corp.	ATO	C-2015-00343	Natural Gas	Distribution	11/23/2015	3.3	8.12	10.50	55.32	335.83	8/4/2016
Kentucky	Columbia Gas of Kentucky Inc	NI	C-2016-00162	Natural Gas	Distribution	5/27/2016	25.4	8.41	11.00	52.42	253.36	12/22/2016
Kentucky	Duke Energy Kentucky Inc.	DUK	C-2019-00271	Electric	Vertically Integrated	9/3/2019	45.6	6.71	9.80	48.23	946.43	4/27/2020
Kentucky	Duke Energy Kentucky Inc.	DUK	C-2018-00261	Natural Gas	Distribution	8/31/2018	10.5	7.18	9.90	50.76	313.68	3/27/2019
Kentucky	Duke Energy Kentucky Inc.	DUK	C-2017-00321	Electric	Vertically Integrated	9/1/2017	48.6	7.08	10.30	48.89	705.05	4/13/2018
Kentucky	Kentucky Power Co.	AEP	C-2020-00174	Electric	Vertically Integrated	6/29/2020	70.1	6.58	10.00	43.25	1,399.89	1/13/2021
Kentucky	Kentucky Power Co.	AEP	C-2017-00179	Electric	Vertically Integrated	6/28/2017	60.4	6.75	10.31	41.68	1,191.79	1/18/2018
Kentucky	Kentucky Utilities Co.	PPL	C-2020-00349	Electric	Vertically Integrated	11/25/2020	170.3	7.21	10.00	53.14	5,233.29	6/30/2021
Kentucky	Kentucky Utilities Co.	PPL	C-2018-00294	Electric	Vertically Integrated	9/28/2018	112.5	7.56	10.42	52.84	4,099.14	4/30/2019
Kentucky	Kentucky Utilities Co.	PPL	C-2016-00370	Electric	Vertically Integrated	11/23/2016	103.1	7.29	10.23	53.28	3,638.80	6/22/2017
Kentucky	Louisville Gas & Electric Co.	PPL	C-2020-00350 (elec.)	Electric	Vertically Integrated	11/25/2020	128.5	7.17	10.00	53.13	3,449.57	6/30/2021
Kentucky	Louisville Gas & Electric Co.	PPL	C-2020-00350 (gas)	Natural Gas	Distribution	11/25/2020	32.9	7.17	10.00	53.13	1,081.74	6/30/2021
Kentucky	Louisville Gas & Electric Co.	PPL	C-2018-00295 (elec.)	Electric	Vertically Integrated	9/28/2018	34.9	7.62	10.42	52.84	2,593.43	4/30/2019
Kentucky	Louisville Gas & Electric Co.	PPL	C-2018-00295 (gas)	Natural Gas	Distribution	9/28/2018	24.9	7.62	10.42	52.84	788.38	4/30/2019
Kentucky	Louisville Gas & Electric Co.	PPL	C-2016-00371 (elec.)	Electric	Vertically Integrated	11/23/2016	93.6	7.24	10.23	53.27	2,404.58	6/22/2017
Kentucky	Louisville Gas & Electric Co.	PPL	C-2016-00371 (gas)	Natural Gas	Distribution	11/23/2016	13.8	7.24	10.23	53.27	706.90	6/22/2017

	18									
	13									
	5									
<i>Increase Authorized</i>										
<i>Decision Type</i>	<i>Rate Increase (\$M)</i>	<i>Phase-In?</i>	<i>Interim Authorized?</i>	<i>Return on Original Cost Rate (%)</i>	<i>Return on Equity (%)</i>	<i>Common Equity to Total Capital (%)</i>	<i>Rate Case Test Year End Date</i>	<i>Rate Base (\$M)</i>	<i>Rate Base Valuation Method</i>	<i>Rate Case Duration (months)</i>
Fully Litigated	(0.3)	No	No	7.49	9.65	58.06	03/2020	424.93	Average	7
Fully Litigated	(1.9)	No	No	7.41	9.70	52.57	03/2019	427.65	Average	7
Settled	0.5	No	No	NA	NA	NA	05/2017	NA	NA	8
Settled	18.1	No	No	NA	NA	NA	NA	NA	NA	6
Fully Litigated	24.1	No	No	6.41	9.25	48.23	03/2021	881.00	Average	7
Settled	7.4	No	No	7.07	9.70	50.76	03/2020	313.42	Average	6
Fully Litigated	8.4	No	No	6.83	9.73	49.25	03/2019	647.81	Average	7
Fully Litigated	52.4	No	No	6.19	9.30	43.25	03/2020	1,314.31	Year-end	6
Settled	12.3	No	No	6.44	9.70	41.68	02/2017	1,191.79	Year-end	6
Settled	106.3	No	No	NA	9.43	NA	06/2022	NA	NA	7
Settled	55.9	No	No	NA	9.73	NA	04/2020	NA	NA	7
Settled	51.6	No	No	NA	9.70	NA	NA	NA	NA	7
Settled	72.7	No	No	NA	9.43	NA	06/2022	NA	NA	7
Settled	20.4	No	No	NA	9.43	NA	06/2022	NA	NA	7
Settled	2.1	No	No	NA	9.73	NA	04/2020	NA	NA	7
Settled	18.6	No	No	NA	9.73	NA	04/2020	NA	NA	7
Settled	57.1	No	No	NA	9.70	NA	NA	NA	NA	7
Settled	6.8	No	No	NA	9.70	NA	NA	NA	NA	7

DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2021-00185

SECOND PSC DATA REQUEST
DATED JULY 12, 2021

34. Refer to the Moul Testimony, page 34, lines 1–15 and 35 lines 1–12. The discussion indicates that interest rates are expected to rise per the Blue Chip Financial Forecasts.

a. Explain why it is reasonable to accept a 6.75 percent equity risk premium which is even higher than the stated low interest rate 6.63 percent premium and explain in greater detail how the 6.75% equity risk premium was derived from the data and the current low-interest environment considerations.

b. Since interest rates are expected to rise per the Blue Chip Financial Forecasts, explain why a 5.67 percent would be an unreasonable equity risk premium.

c. Explain why current interest rates on long term Treasuries do not embody an investor's expectations of the future and, therefore, would also be appropriate for use in the model.

d. Explain the cutoff for what is considered a "low interest rate" and a "high interest rate".

Response:

a. As shown on Attachment PRM-13, page 2, an equity risk premium of 6.63% corresponds with long-term corporate bonds of 5.43%, which exceeds the forecasted corporate yields shown on Attachment PRM-14. Further, because there is an inverse relationship between the equity risk premium and interest rates as noted on page 34 of Mr. Moul's Testimony, an equity risk premium of 6.75% is reasonable given the forecasted corporate yields.

b. Please see response to part (a).

**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2021-00185**

**SECOND PSC DATA REQUEST
DATED JULY 12, 2021**

c. The cost of capital, including the cost of common equity, is expectational in nature in that it reflects investors' expectations of future capital markets, including an expectation of interest rate levels, as well as future risks. Ratemaking is also prospective in that the rates set in this proceeding will be in effect for a period in the future. Because this is the case, projected interest rates, not current interest rates, are appropriate for ratemaking purposes.

d. As shown in DELTA_R_PSCDR1_NUM045_061121_MOUL_PRM-13p1&2, page 1, and as noted on page 34, line 15 and page 35, lines 1-2, Mr Moul considers a "low interest rate" to be long-term government bond yields of 2.85% on average, and a "high interest rate" to be a long-term government bond yield of 7.09% on average. Further, as shown in DELTA_R_PSCDR1_NUM045_061121_MOUL_PRM-13p1&2, page 2, Mr. Moul found the high-end of the range of "low interest rates" to be 4.15%, and 4.17% to be the low-end of the range of "high interest rates".

Sponsoring Witness: Dylan D'Ascendis

**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2021-00185**

**SECOND PSC DATA REQUEST
DATED JULY 12, 2021**

35. Refer to the Moul Testimony, page 36, lines 6–21. Explain whether Delta is aware of this Commission’s recent rate case Orders and whether leverage adjustments to Value Line Betas have been accepted.

Response:

Please see response to PSC 2-33.

Sponsoring Witness: Dylan D’Ascendis

**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2021-00185**

**SECOND PSC DATA REQUEST
DATED JULY 12, 2021**

36. Refer to the Moul Testimony, page 36, lines 9–11. Provide support that the Betas published by Value Line are not formulated on the basis of book-value capital structure.

Response:

Please refer to PSC 2-36 Attachment 1 for an overview of how Value Line Betas are calculated. As noted in the attachment, Value Line Betas are derived using market prices, not book-values.

Sponsoring Witness: Dylan D'Ascendis

[Individual Investors](#)

[Institutions & Advisors](#)

Search or Get Quote

Search

[My Value Line](#)

[Sign In](#)

[Subscribe](#)



[RESEARCH HUB](#)

[MARKETS](#)

[PRODUCTS](#)

[INVESTMENT EDUCATION](#)

Andrew J. Cueter | October 02, 2012



Using Beta



In finance, the Beta of a security (or portfolio) is used as an indicator of its historical volatility in regards to a benchmark, generally the New York Stock Exchange (NYSE) Composite Index or the S&P 500 Index. At Value Line, we derive the Beta coefficient from a regression analysis of the relationship between weekly percentage changes in the price of a stock and weekly percentage changes in the NYSE Composite Index over a period of five years. In the case of shorter price histories, a shorter time period is used, but two years is the minimum. Value Line then adjusts these Betas to account for their long-term tendency to converge toward 1.00. (Though the scope of this convergence is beyond our purposes here, readers can refer to M. Blume, "On the Assessment of Risk," Journal of Finance,

March 1971 for further details.)

Now that we have our Beta number, what does it mean? If an equity mirrors the benchmark, then it carries a Beta of 1.00. If Stock X has a Beta of 2.00, it is expected to rise (or fall) twice as much as the movement of the benchmark. For example, if the NYSE Composite Index rises (falls) 10%, Stock X will likely rise (fall) 20%. (For a more detailed overview, see [Understanding Beta](#).) Beta can also be negative (infrequent but possible), which would mean that the equity's return tends to move in the opposite direction from the market's move. Moreover, there is no upper or lower bound to Beta, although it typically does not stray too far from 1.00. Finally, a Beta of zero does not mean the asset is risk-free, just that the correlation of that asset's return to the market's return is zero.

Now that we know what Beta is and its implications, how can we use it? If we were able to predict the movements of the overall market, we would simply buy high Beta stocks while the market rises, and low Beta stocks while the market is falling. However, no one is capable of timing the market over the long term. So, what should we do?

If we define a high risk asset in terms of the movement of its price, we can look towards Beta as one indicator of this riskiness. Though Beta by itself does not give a perfect indication of volatility, it does imply the direction and magnitude of movements. Using Beta as a measure of risk, we can relate this to a basic tenet of finance theory, which states that investors demand a return in exchange for assuming risk. Therefore, high-risk (or high-Beta) investments should provide a higher payout, and conversely, low-risk (or low-Beta) investments should provide a lower payout. This proposition seems reasonable and intuitive, but it may not always hold.


In a paper entitled "Re-Thinking Risk: What the Beta Puzzle Tells Us about Investing," written by David Cowan and Sam Wilderman of GMO LLC, they show just the opposite. For the paper, Beta was measured using 250-day returns of a universe of 1,000 stocks, regressed against 250-day returns of that universe. Low- and high-Beta Portfolios were then formed monthly and weighted by market capitalization, with the universe used as the benchmark. Their results present data starting in December, 1969 and show that high-Beta stocks have significantly underperformed the market (average annualized return of 7.2% vs. 10.6% for low-Beta and 9.8% for the universe), and done so with substantially higher annualized volatility (24.5% vs. 12.5% and 16.0%, respectively) and larger drawdown (-84.4% vs. -39.5% and -50.3%, respectively).

Though low-Beta may trump high-Beta over longer periods, there are some problems with solely relying on the Beta coefficient. It is a backward looking metric, and therefore may not be an accurate predictor of the future. The markets change all the time and just because a relationship held in the past does not mean it is certain to continue into the future. Also, since it is solely a statistical measure, it fails to consider underlying business fundamentals or economic developments. Consider [Altria Group \(MO\)](#). This stock has a Beta of 0.55 and the company primarily sells cigarettes. Due to the low Beta, we may say this is a low-risk stock. However, if for some reason cigarettes were deemed illegal to sell, this company would probably not stick around very long and any investment in the stock will likely become worthless. Solely looking at a stock's Beta will not uncover this risk.

So, back to our question posed earlier; what should we do? We propose Beta should be used as one factor in the equity analysis framework. Investors should also look at our Safety rank and Price Stability score when making investment decisions. Considered in conjunction with Value Line's fundamental research and valuation ratios, we believe investors can create a portfolio that may provide superior risk-adjusted returns over the long haul.

At the time of this article's writing, the author did not have positions in any of the companies mentioned.

[Subscribe Now](#)

[Find Publishing Companies](#)
 SearchForPublishers.com
Get Matched With A Publisher That Is Right For You. Get Started Now. 

Ω

**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2021-00185**

**SECOND PSC DATA REQUEST
DATED JULY 12, 2021**

37. Refer to the Moul Testimony, page 38, lines 8–21, Attachment PRM-13, and Attachment PRM-14.

a. Explain why it is appropriate to use the market return on large company stocks as opposed to the market as a whole.

b. Provide an updated Attachment PRM-13 the years selected to derive the 12.06 percent return and include the accompanying rates of interest. Also, include in the response, the range of interest rates for each year selected.

c. Provide an updated Attachment PRM-13 using the entire market and all years to calculate the market return.

d. Value Line covers about 1,700 companies. For Attachment PRM-14, page 2, explain whether for the forecasted market premiums, the companies present in the S&P 500 are also present in the Value Line based calculations.

e. For the Value Line based forecasted market premium, explain how the Dividend Yield and the Median Appreciation Potential were either derived or were found in a Value Line publication. If published by Value Line, provide a copy of the publication.

Response:

a. The Ibbotson Large Company Stocks Returns is based on the largest U.S. publicly traded companies, which account for a majority of the overall U.S. equity market. Additionally, the SBBI – 2021 market return values used are based on S&P 500 returns and Bloomberg Beta coefficients are calculated using the S&P 500 as the market index.

**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2021-00185**

**SECOND PSC DATA REQUEST
DATED JULY 12, 2021**

b. Please see PSC 2-37b Attachment 1. The years selected to derive the 12.06 percent return are shown on Page 2 of DELTA_R_PSCDR1_NUM054_061121_MOUL_ORM-13p1&2. Ibbotson does not publish daily interest rate yields, so the Company was not able to provide the range of interest rates during the course of a given year.

c. The data requested is not published by Ibbotson.

d. Please see PSC 2-37d Attachment 1.

e. Please see the response to part d. Please also see DELTA_R_PSCDR1_NUM054_061121_MOUL_PRM-14p2.

Sponsoring Witness: Dylan D'Ascendis



File at the front of the Ratings & Reports binder. Last week's Summary & Index should be removed.

April 2, 2021

TABLE OF SUMMARY & INDEX CONTENTS

Summary & Index Page Number

Industries, in alphabetical order 1
 Stocks, in alphabetical order 2-23
 Noteworthy Rank Changes 24

SCREENS

Industries, in order of Timeliness Rank 24
 Timely Stocks in Timely Industries 25-26
 Timely Stocks (1 & 2 for Performance) 27-29
 Conservative Stocks (1 & 2 for Safety) 30-31
 Highest Dividend Yielding Stocks 32
 Stocks with High 3- to 5-year Price Potential 32
 Biggest "Free Flow" Cash Generators 33
 Best Performing Stocks last 13 Weeks 33
 Worst Performing Stocks last 13 Weeks 33
 Widest Discounts from Book Value 34
 Stocks with Lowest P/Es 35
 Stocks with Highest P/Es 35
 Stocks with Highest Annual Total Returns 36
 Stocks with Highest 3- to 5-year Dividend Yield 36
 High Returns Earned on Total Capital 37
 Bargain Basement Stocks 37
 Untimely Stocks (5 for Performance) 38
 Highest Dividend Yielding Non-utility Stocks 38
 Highest Growth Stocks 39

The Median of Estimated PRICE-EARNINGS RATIOS
 of all stocks with earnings

22.0

26 Weeks Ago	Market Low	Market High
20.8	3-23-20	2-12-21
	11.0	21.3

The Median of Estimated DIVIDEND YIELDS
 (next 12 months) of all dividend paying stocks

1.8%

26 Weeks Ago	Market Low	Market High
2.4%	3-23-20	2-12-21
	3.7%	1.9%

The Median Estimated THREE-TO-FIVE YEAR PRICE APPRECIATION POTENTIAL
 of all 1700 stocks in the VL Universe

30%

26 Weeks Ago	Market Low	Market High
60%	3-23-20	2-12-21
	145%	30%

The Median Estimated 18-MONTH APPRECIATION POTENTIAL TO TARGET PRICE RANGE
 of all 1700 stocks in the VL Universe

5%

26 Weeks Ago	Market Low	Market High
20%	3-23-20	2-12-21
	72%	3%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

Numeral in parenthesis after the industry is rank for probable performance (next 12 months).

	PAGE		PAGE		PAGE		PAGE
Advertising (64)	2386	Electrical Equipment (50)	1301	Investment Banking (1)	1807	Railroad (9)	337
Aerospace/Defense (49)	701	Electric Util. (Central) (89)	901	Investment Co. (-)	1198	*R.E.I.T. (94)	1510
Air Transport (79)	301	Electric Utility (East) (62)	134	Investment Co.(Foreign) (-)	416	Recreation (82)	2301
Apparel (69)	2101	Electric Utility (West) (78)	2210	Machinery (45)	1701	Reinsurance (77)	2015
Asset Management (16)	2222	Electronics (51)	1319	Maritime (36)	330	Restaurant (87)	348
Automotive (2)	101	Engineering & Const (26)	1019	Medical Services (37)	788	Retail Automotive (59)	2117
Auto Parts (43)	962	Entertainment (4)	2329	Med Supp Invasive (6)	168	Retail Building Supply (33)	1137
Bank (19)	2501	Entertainment Tech (13)	2005	Med Supp Non-Invasive (17)	200	Retail (Hardlines) (63)	2165
Bank (Midwest) (3)	772	Environmental (54)	406	Metal Fabricating (71)	726	Retail (Softlines) (24)	2191
Beverage (27)	1965	Financial Svcs. (Div.) (48)	2534	*Metals & Mining (Div.) (7)	1581	Retail Store (25)	2134
Biotechnology (55)	827	Food Processing (40)	1901	Natural Gas Utility (68)	539	Retail/Wholesale Food (70)	1944
Brokers & Exchanges (35)	1797	Foreign Electronics (5)	1981	Natural Gas (Div.) (83)	522	Semiconductor (18)	1348
Building Materials (61)	1101	Furn/Home Furnishings (85)	1146	Office Equip/Supplies (91)	1411	Semiconductor Equip (30)	1383
Cable TV (28)	1001	Healthcare Information (90)	817	Oil/Gas Distribution (95)	600	Shoe (72)	2155
Cannabis (56)	1419	Heavy Truck & Equip (34)	146	Oilfield Svcs/Equip. (93)	2411	Steel (11)	736
*Chemical (Basic) (80)	1597	Homebuilding (53)	1125	Packaging & Container (38)	1170	Telecom. Equipment (15)	937
Chemical (Diversified) (22)	2429	Hotel/Gaming (84)	2352	Paper/Forest Products (52)	1161	Telecom. Services (74)	916
Chemical (Specialty) (41)	550	Household Products (23)	1186	Petroleum (Integrated) (97)	501	Telecom. Utility (86)	1012
Computers/Peripherals (32)	1397	*Human Resources (44)	1636	Petroleum (Producing) (92)	2395	*Thrift (31)	1501
Computer Software (21)	2573	Industrial Services (47)	373	Pipeline MLPs (96)	613	Tobacco (10)	1989
Cyber Security (14)	2025	Information Services (58)	429	Power (66)	1209	Toiletries/Cosmetics (12)	991
Diversified Co. (42)	1744	IT Services (39)	2603	*Precious Metals (65)	1565	Trucking (60)	317
*Drug (75)	1607	*Insurance (Life) (81)	1554	Precision Instrument (20)	111	Water Utility (8)	1788
E-Commerce (57)	1815	Insurance (Prop/Cas.) (46)	751	Public/Private Equity (67)	2440	Wireless Networking (73)	584
Educational Services (88)	1996	Internet (29)	2627	Publishing (76)	2377		

*Reviewed in this week's issue.

In three parts: This is Part 1, the Summary & Index. Part 2 is Selection & Opinion. Part 3 is Ratings & Reports. Volume LXXVI, No. 34.

Published weekly by VALUE LINE PUBLISHING LLC, 551 Fifth Avenue, New York, NY 10176

Index to Stocks

Prices quoted are as of March 22, 2021.
All shares are traded on the New York Stock Exchange except where noted.

PAGE NUMBERS

Bold type refers to full report.
The number on the left signifies a Supplement (if available).

NAME OF STOCK	Ticker Symbol	Recent Price	RANKS			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	Industry Rank			LATEST RESULTS			Do Options Trade?			
			Timeliness	Safety	Technical						Beta	Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd		Year Ago		
																			NAME CHANGED TO ANGI INC.	
1702	AAON, Inc. (NDQ)	AAON 70.98	3	3	2	.85	60- 90 (N- 25%)	59.2	0.5	1.20	.38	45	12/31	.27	.33	3/31	NIL	NIL	YES	
702	AAR Corp.	AIR 41.58	3	4	3	1.80	35- 60 (N- 45%)	22.7	NIL	1.83	NIL	49	2/28	◆.87	.07	3/31	NIL	.075	YES	
1966	AB InBev ADR	BUD 63.39	2	3	3	1.05	85- 125 (35- 95%)	19.9	1.6	3.18	1.00	27	12/31	1.13	.06	3/31	NIL	NIL	YES	
1745	ABB Ltd. ADR	ABB 31.56	3	2	3	1.10	20- 25 (N- N%)	39.5	2.6	.80	.83	42	12/31	.26	.14	3/31	NIL	NIL	YES	
374	ABM Industries Inc.	ABM 49.70	4	3	4	1.15	50- 75 (N- 50%)	19.5	1.5	2.55	.76	47	1/31	1.01	.39	6/30	.19	.185	YES	
1412	ACCO Brands	ACCO 8.35	3	3	2	1.50	20- 35 (140-320%)	9.1	3.1	.92	.26	91	12/31	.32	.46	3/31	.065	.065	YES	
2604	ACI Worldwide (NDQ)	ACIW 38.79	2	3	2	1.05	30- 45 (N- 15%)	36.9	NIL	1.05	NIL	39	12/31	.56	.47	3/31	NIL	NIL	YES	
1384	ACM Research (NDQ)	ACMR 93.49	3	4	2	.95	100- 170 (5- 80%)	57.0	NIL	1.64	NIL	30	12/31	.39	.19	3/31	NIL	NIL	YES	
1033	1320 ADT Inc.	ADT 7.99	5	4	3	1.25	11- 19 (40-140%)	NMF	1.8	d.69	.14	51	12/31	d.14	d.10	6/30	.035	.035	YES	
1210	AES Corp.	AES 25.96	3	3	2	1.05	30- 40 (15- 55%)	17.7	2.3	1.47	.60	66	12/31	.47	d.12	3/31	▲.151	.143	YES	
147	AGCO Corp.	AGCO 143.01	2	3	4	1.25	125- 190 (N- 35%)	25.4	0.4	5.62	.64	34	12/31	1.54	.94	3/31	.16	.16	YES	
1033	2330 AMC Networks (NDQ)	AMCX 69.19	3	3	4	1.00	85- 130 (25- 90%)	10.1	NIL	6.82	NIL	4	12/31	2.72	1.69	3/31	NIL	NIL	YES	
1637	AMN Healthcare	AMN 76.92	▼3	3	3	.45	75- 115 (N- 50%)	23.4	NIL	▲3.29	NIL	44	12/31	.19	.58	3/31	NIL	NIL	YES	
2396	ANGI Homeservices APA Corp. (NDQ)	APA 18.86	5	5	4	1.90	15- 30 (N- 60%)	NMF	0.5	d.52	.10	92	12/31	d.05	.08	6/30	.025	.025	YES	
1020	API Group Corp.	APG 19.50	-	3	-	NMF	20- 30 (5- 55%)	26.0	NIL	.75	NIL	26	9/30	.13	NA	3/31	NIL	NIL	YES	
1566	ASA Gold & Precious	ASA 20.84	-	3	-	.70	25- 35 (20- 70%)	NMF	0.1	NMF	0.02-NIL	65	2/28	◆22.42(q)	14.36(q)	3/31	NIL	NIL	YES	
1638	ASGN Inc.	ASGN 98.94	3	3	3	1.15	100- 145 (N- 45%)	25.1	NIL	3.94	NIL	44	12/31	1.04	.74	3/31	NIL	NIL	YES	
917	AT&T Inc.	T 29.99	4	1	5	.85	45- 55 (50- 85%)	9.6	6.9	3.12	2.08	74	12/31	.75	.89	3/31	.52	.52	YES	
938	A10 Networks	ATEN 10.46	3	3	3	1.10	12- 18 (15- 70%)	34.9	NIL	.30	NIL	15	12/31	.10	NIL	3/31	NIL	NIL	YES	
918	ATN International (NDQ)	ATNI 51.27	4	3	5	.75	55- 85 (5- 65%)	81.4	1.3	.63	.68	74	12/31	.16	d.11	6/30	◆.17	.17	YES	
1302	AZZ Inc.	AZZ 51.01	2	3	3	1.15	65- 95 (25- 85%)	19.9	1.3	2.56	.68	50	11/30	.80	.84	3/31	.17	.17	YES	
201	Abbott Labs.	ABT 121.47	3	1	2	.95	135- 165 (10- 35%)	23.3	1.5	5.21	1.80	17	12/31	1.45	.95	6/30	.45	.36	YES	
1608	AbbVie Inc.	ABBV 105.90	2	3	3	.95	120- 180 (15- 70%)	8.8	4.9	12.01	5.20	75	12/31	2.92	2.21	6/30	1.30	1.18	YES	
2192	Abercrombie & Fitch	ANF 34.13	3	4	4	1.35	25- 45 (N- 30%)	48.8	NIL	.70	NIL	24	1/31	1.27	1.29	3/31	NIL	.20	YES	
417	Aberdeen Australia Fd. (ASE)	IAF 5.80	-	3	-	1.15	7- 11 (20- 90%)	NMF	1.7	NMF	.10	-	1/31	6.05(q)	5.81(q)	3/31	.042	.053	YES	
1199	Aberdeen Asia-Pac. Fd.(ASE)	FAX 4.12	-	4	-	.80	4- 7 (N- 70%)	NMF	8.7	NMF	.36	-	10/31	4.65(q)	4.88(q)	3/31	.11	.11	YES	
418	Aberdeen Japan Equity	JEQ 9.26	-	3	-	.85	10- 15 (10- 60%)	NMF	0.5	NMF	.05	-	10/31	9.80(q)	8.97(q)	3/31	.061	.07	YES	
169	ABIOMED Inc. (NDQ)	ABMD 306.16	1	3	2	1.05	320- 480 (5- 55%)	63.0	NIL	4.86	NIL	6	12/31	1.35	1.51	3/31	NIL	NIL	YES	
2448	939 Acacia Communications	ACIA	SEE FINAL REPORT																	
2353	Accel Entertainment	ACEL 10.60	-	3	-	NMF	20- 30 (90-185%)	22.6	NIL	.47	NIL	84	12/31	d.13	d.18	3/31	NIL	NIL	YES	
2605	Accenture Plc	ACN 265.20	3	1	2	.95	270- 330 (N- 25%)	31.6	1.4	8.40	3.68	39	2/28	◆2.03	1.84	3/31	.88	.80	YES	
449	2006 Activision Blizzard (NDQ)	ATVI 91.87	3	3	1	.65	70- 100 (N- 10%)	29.4	0.5	3.12	.47	13	12/31	.65	.68	6/30	▲.47	.41	YES	
1303	Acuity Brands	AYI 135.22	4	3	3	1.25	175- 260 (30- 90%)	16.7	0.4	8.10	.52	50	11/30	2.03	2.13	3/31	.13	.13	YES	
2302	Acushnet Holdings	GOLF 42.12	3	3	2	.95	35- 55 (N- 30%)	27.0	1.6	1.56	.68	82	12/31	.29	.24	3/31	▲.165	.155	YES	
1200	Adams Divers. Equity Fd	ADX 18.10	-	2	-	1.00	20- 25 (10- 40%)	NMF	1.1	NMF	.20	-	12/31	20.06(q)	17.93(q)	3/31	.03	.02	YES	
202	Adaptive Biotech. (NDQ)	ADPT 42.90	-	3	-	NMF	65- 100 (50-135%)	NMF	NIL	d1.03	NIL	17	12/31	d.33	d.17	3/31	NIL	NIL	YES	
963	Adient plc	ADNT 40.89	4	4	3	1.55	40- 70 (N- 70%)	11.4	NIL	3.60	NIL	43	12/31	1.71	.96	3/31	NIL	NIL	YES	
2574	Adobe Inc. (NDQ)	ADBE 452.41	3	2	1	.75	585- 795 (30- 75%)	40.8	NIL	11.09	NIL	21	2/28	◆2.61	1.96	3/31	NIL	NIL	YES	
1997	Adtalem Global Educ.	ATGE 41.02	3	3	2	1.00	60- 85 (45-105%)	15.4	NIL	2.67	NIL	88	12/31	.77	.56	3/31	NIL	NIL	YES	
940	ADTRAN, Inc. (NDQ)	ADTN 17.74	2	3	3	1.15	12- 18 (N- N%)	45.5	2.0	.39	.36	15	12/31	.13	d.13	3/31	.09	.09	YES	
2118	Advance Auto Parts	AAP 182.99	3	3	4	1.15	165- 250 (N- 35%)	17.5	0.5	10.46	1.00	59	12/31	1.87	1.64	6/30	.25	.25	YES	
455	1102 Advanced Drainage	WMS 101.75	3	3	3	1.20	85- 130 (N- 30%)	30.9	0.4	3.29	.37	61	12/31	.62	.28	3/31	.09	.09	YES	
1349	Advanced Energy (NDQ)	AEIS 104.87	3	3	2	1.40	120- 180 (15- 70%)	18.4	0.4	5.69	.40	18	12/31	1.49	.87	3/31	▲.10	NIL	YES	
1350	Advanced Micro Dev. (NDQ)	AMD 80.30	2	3	2	1.15	65- 100 (N- 25%)	44.1	NIL	1.82	NIL	18	12/31	.52	.32	3/31	NIL	NIL	YES	
551	AdvanSix Inc.	ASIX 26.99	3	3	3	.75	30- 40 (10- 50%)	15.0	NIL	1.80	NIL	41	12/31	.94	d.06	3/31	NIL	NIL	YES	
1021	AECOM	ACM 61.71	3	3	3	1.35	55- 85 (N- 40%)	22.9	NIL	2.70	NIL	26	12/31	.62	.46	3/31	NIL	NIL	YES	
1427	1103 Aegion Corp. (NDQ)	AEGN 29.04	-	3	-	1.00	17- 25 (N- N%)	28.2	NIL	1.03	NIL	61	12/31	.31	.39	3/31	NIL	NIL	YES	
1229	2535 AerCap Hldgs. NV	AER 59.47	-	4	-	2.00	55- 90 (N- 50%)	8.4	NIL	7.10	NIL	48	12/31	1.03	2.34	3/31	NIL	NIL	YES	
1746	Aerojet Rocketdyne	AJRD 47.42	-	3	-	.90	50- 70 (5- 50%)	23.7	NIL	2.00	NIL	42	12/31	.47	.27	3/31	NIL	NIL	YES	
2449	703 AeroVironment (NDQ)	AVAV 119.19	3	3	2	.85	100- 155 (N- 50%)	71.8	NIL	1.66	NIL	49	1/31	.01	d.04	3/31	NIL	NIL	YES	
2223	Affiliated Managers	AMG 148.82	2	3	3	1.40	245- 260 (65- 75%)	31.7	NIL	4.70	.04	16	12/31	2.54	.46	3/31	.01	.32	YES	
1555	Aflac Inc.	AFL 50.55	2	2	3	1.25	▲ 60- 80 (20- 60%)	9.9	2.7	5.12	1.36	81	12/31	1.07	1.03	3/31	▲.33	.28	YES	
112	Agilent Technologies	A 123.61	2	2	3	.90	110- 150 (N- 20%)	33.0	0.6	3.75	.78	20	1/31	1.06	.81	6/30	◆.194	.18	YES	
1567	Agnico Eagle Mines	AEM 60.40	3	3	3	.50	145- 220 (140-265%)	17.4	2.3	3.47	1.40	65	12/31	.67	.37	3/31	.35	.20	YES	

★ Supplementary Report in this week's issue.

▲ Arrow indicates the direction of a change. When it appears with the Latest Dividend, the arrow signals that a change in the regular payment rate has occurred in the latest quarter.

For Timeliness, 3-5 year Target Price Range, or Estimated Earnings 12 months to 9-30-21, the arrow indicates a change since the preceding week. When a diamond ◆ (indicating a new figure) appears alongside the latest quarterly earnings

results, the rank change probably was primarily caused by the earnings report. In other cases, the change is due to the dynamics of the ranking system and could simply be the result of the improvement or weakening of other stocks.

Volume LXXVI, Number 34, Issue 8. The Value Line Investment Survey (ISSN 0042-2401) is published weekly by Value Line Publishing LLC, 551 Fifth Avenue New York, NY 10176 and is accorded expeditious treatment prescribed for newspapers. Subscription rate for one year in the United States and US possessions is \$598. Foreign rates upon request. Periodical Postage Paid at New York, NY and additional mailing offices.

The contents are protected by copyright 2021. Factual material is not guaranteed, but is obtained from sources believed to be reliable. Rights of reproduction and distribution are reserved to the publisher VALUE LINE PUBLISHING LLC.

**CHANGE OF ADDRESS: Postmaster: Send address change to:
The Value Line Investment Survey, 551 Fifth Avenue New York, NY 10176**

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	RANKS			3-5 year Target Price and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?				
			Timeliness	Safety	Technical Beta						Qtr. Ended	Earnings Per sh.	Year Ago		Qtr. Ended	Latest Div'd	Year Ago	
																		Qtr. Ended
1033 2629 Airbn, Inc. (NDQ)	ABNB	195.00	- 3	-	NMF	185- 295 (N- 50%)	NMF	NIL	d11.04	NIL	29	12/31	d11.24	NA	3/31	NIL	NIL	YES
449 2430 Air Products & Chem.	APD	278.82	2 1	4	.90	300- 365 (10- 30%)	29.8	2.2	9.35	6.00	22	12/31	2.12	2.14	6/30	▲1.50	1.34	YES
1816 Akamai Technologies (NDQ)	AKAM	100.19	▼3 3	3	.70	125- 185 (25- 85%)	27.3	NIL	3.67	NIL	57	12/31	.68	.73	3/31	NIL	NIL	YES
1703 Alamo Group	ALG	153.28	3 3	4	1.05	150- 225 (N- 45%)	25.3	0.4	6.07	.56	45	12/31	.68	.81	3/31	▲.14	.13	YES
302 Alaska Air Group	ALK	68.56	4 3	4	1.50	50- 75 (N- 10%)	NMF	NIL	d7.30	NIL	79	12/31	d2.55	1.46	3/31	NIL	.375	YES
1704 Albany Int'l 'A'	AIN	83.61	2 3	3	1.25	70- 105 (N- 25%)	24.1	1.0	3.47	.80	45	12/31	.89	.97	6/30	▲.20	.19	YES
2431 AlbeMarle Corp.	ALB	152.15	▲1 3	2	1.20	100- 150 (N- N%)	38.3	1.0	3.97	1.56	22	12/31	.79	.85	6/30	▲.39	.385	YES
1945 Albertsons Companies	ACI	19.19	- 3	-	NMF	20- 35 (5- 80%)	8.7	2.1	2.21	.40	70	11/30	.66	.09	3/31	.10	NIL	YES
2657 1582 Alcoa Corp.	AA	30.43	3 4	3	1.55	▲ 35- 55 (15- 80%)	18.9	NIL	▲1.61	NIL	7	12/31	.26	d1.31	3/31	NIL	NIL	YES
1511 Alexandria Real Estate	ARE	166.56	3 3	2	.90	▲ 215- 325 (30- 95%)	33.2	2.6	▲5.01	4.36	94	12/31	3.26	1.74	6/30	1.09	1.03	YES
1609 Alexion Pharm. (NDQ)	ALXN	155.25	- 3	-	.85	110- 170 (N- 10%)	13.6	NIL	11.44	NIL	75	12/31	2.44	4.00	3/31	NIL	NIL	YES
2630 Alibaba Group ADS	BABA	237.12	3 3	1	.85	245- 365 (5- 55%)	26.1	NIL	9.10	NIL	29	12/31	3.38	2.61	3/31	NIL	NIL	YES
449 203 Align Techn. (NDQ)	ALGN	530.60	2 3	1	1.30	340- 505 (N- N%)	57.8	NIL	9.18	NIL	17	12/31	2.00	1.53	3/31	NIL	NIL	YES
1946 Ali. Couche-Tard (TSE)	ATDB.TO	40.21b	4 3	5	.70	75- 115 (85-185%)	10.2	0.9	3.96	.37	70	1/31	▲7.22(b)	.83(b)	6/30	◆.088(b)	.07(b)	YES
828 Alkermes plc (NDQ)	ALKS	20.27	2 3	2	1.00	70- 100 (245-395%)	59.6	NIL	.34	NIL	55	12/31	.10	.83	3/31	NIL	NIL	YES
752 Allegheny Corp.	Y	632.09	▼3 2	4	1.10	790-1065 (25- 70%)	14.5	NIL	43.68	NIL	46	12/31	11.28	1.98	3/31	NIL	NIL	YES
1583 Allegheny Techn.	ATI	20.93	3 5	3	1.20	▼ 14- 25 (N- 20%)	NMF	NIL	▲d.83	NIL	7	12/31	d.33	.41	3/31	NIL	NIL	YES
303 Allegiant Travel (NDQ)	ALGT	247.96	2 3	4	1.30	175- 260 (N- 5%)	NMF	NIL	1.23	NIL	79	12/31	d1.12	3.72	3/31	NIL	.70	YES
1321 Allegion plc	ALLE	120.45	2 3	3	1.15	125- 190 (5- 60%)	21.4	1.2	5.64	1.44	51	12/31	1.49	1.28	3/31	▲.36	.32	YES
902 ALLETE	ALE	67.60	4 2	4	.90	65- 90 (N- 35%)	21.1	3.8	3.20	2.54	89	12/31	.90	.92	3/31	▲.63	.617	YES
430 Alliance Data Sys.	ADS	110.53	4 4	4	1.60	105- 180 (N- 65%)	9.3	0.8	11.91	.84	58	12/31	3.31	4.12	3/31	.21	.63	YES
2224 AllianceBernstein Hldg.	AB	41.87	3 3	3	1.30	35- 55 (N- 30%)	14.7	8.0	2.85	3.35	16	12/31	.97	.84	3/31	▲.97	.85	YES
903 Alliant Energy (NDQ)	LNT	51.51	4 2	5	.85	45- 60 (N- 15%)	21.4	3.1	2.41	1.61	89	12/31	.26	.46	3/31	▲.403	.38	YES
964 Allison Transmission	ALSN	41.40	2 3	3	1.10	40- 60 (N- 45%)	11.6	1.8	3.58	.76	43	12/31	.53	.90	3/31	▲.19	.17	YES
818 Alkermes Healthcare (NDQ)	MDRX	15.33	3 3	1	1.15	14- 20 (N- 30%)	22.9	NIL	.67	NIL	90	12/31	.29	.17	3/31	NIL	NIL	YES
753 Allstate Corp.	ALL	112.24	3 1	3	1.00	160- 200 (45- 80%)	7.4	2.9	15.07	3.24	46	12/31	5.87	3.13	6/30	▲.81	.54	YES
2502 Ally Financial	ALLY	44.90	3 3	4	1.50	60- 85 (35- 90%)	11.9	1.8	3.76	.80	19	12/31	1.60	.95	3/31	.19	.19	YES
829 Alynlym Pharm. (NDQ)	ALNY	144.15	3 4	2	.95	155- 260 (10- 80%)	NMF	NIL	d6.79	NIL	55	12/31	d2.09	d2.47	3/31	NIL	NIL	YES
1037 2631 Alphabet Inc. (NDQ)	GOOG	2038.59	1 1	2	.85	2315-2825 (15- 40%)	34.0	NIL	60.00	NIL	29	12/31	22.30	15.35	3/31	NIL	NIL	YES
2036 2575 Alteryx, Inc.	AYX	84.93	3 3	2	.80	150- 220 (75-160%)	NMF	NIL	.61	NIL	21	12/31	.62	.44	3/31	NIL	NIL	YES
1002 Alice USA	ATUS	34.86	3 3	2	1.05	45- 70 (30-100%)	21.1	NIL	1.65	NIL	28	12/31	.60	NIL	3/31	NIL	NIL	YES
1705 Altra Industrial Motion (NDQ)	AIRC	57.80	3 3	3	1.45	50- 75 (N- 30%)	19.7	0.4	2.93	.24	45	12/31	.76	.66	6/30	.06	.17	YES
1990 Altria Group	MO	51.64	▼3 3	5	.90	75- 115 (45-125%)	11.5	6.7	4.50	3.44	10	12/31	.99	1.02	6/30	.86	.84	YES
601 Altus Midstream (NDQ)	ALTM	53.55	▼4 5	2	1.50	90- 165 (70-210%)	25.4	11.2	2.11	6.00	95	12/31	.42	NIL	3/31	1.50	NIL	YES
2632 Amazon.com (NDQ)	AMZN	3110.87	2 1	2	.75	3350-4090 (10- 30%)	72.5	NIL	42.92	NIL	29	12/31	14.09	6.47	3/31	NIL	NIL	YES
1351 Ambarella, Inc. (NDQ)	AMBA	105.92	3 3	1	1.05	85- 125 (N- 20%)	NMF	NIL	.68	NIL	18	1/31	.14	.14	3/31	NIL	NIL	YES
1171 Amcor plc	AMCR	11.41	- 3	-	1.05	12- 18 (5- 60%)	16.8	4.1	.68	.47	38	12/31	.14	.12	3/31	.118	.115	YES
2606 Amdocs Ltd. (NDQ)	DOX	80.00	3 1	3	.95	85- 100 (5- 25%)	19.8	1.8	4.05	1.44	39	12/31	.86	.85	6/30	▲.36	.328	YES
789 Amesys, Inc. (NDQ)	AMED	270.37	3 3	2	.70	185- 280 (N- 5%)	43.1	NIL	6.27	NIL	37	12/31	1.49	.94	3/31	NIL	NIL	YES
318 AMERCO (NDQ)	UHAL	591.48	3 2	4	.95	355- 485 (N- N%)	19.0	NIL	31.20	NIL	60	12/31	9.33	1.58	3/31	NIL	NIL	YES
904 Ameren Corp.	AEE	77.97	3 2	5	.80	75- 100 (N- 30%)	21.0	2.9	3.71	2.24	89	12/31	.46	.38	3/31	▲.55	.495	YES
919 America Movil	AMX	13.77	2 3	4	.90	20- 30 (45-120%)	10.4	2.8	1.33	.38	74	12/31	.54	.33	3/31	NIL	NIL	YES
234 304 Amer. Airlines (NDQ)	AAL	23.83	4 5	5	1.65	17- 30 (N- 25%)	NMF	NIL	d11.11	NIL	79	12/31	d3.86	1.15	3/31	NIL	.10	YES
965 Amer. Axle	AXL	10.71	4 4	3	1.85	14- 25 (30-135%)	8.2	NIL	1.31	NIL	43	12/31	.51	.13	3/31	NIL	NIL	YES
2193 Amer. Eagle Outfitters	AEO	28.81	▲2 3	3	1.10	25- 35 (N- 20%)	24.8	1.4	1.16	.41	24	1/31	.39	.37	3/31	1.38	.138	YES
905 Amer. Elec. Power	AEP	83.63	4 1	4	.75	90- 110 (10- 30%)	17.7	3.6	4.72	3.04	89	12/31	.87	.51	3/31	.74	.70	YES
2536 Amer. Express	AXP	139.95	▲1 1	3	1.30	130- 160 (N- 15%)	20.9	1.3	6.71	1.80	48	12/31	1.76	2.03	6/30	.43	.43	YES
234 754 Amer. Financial Group	AFG	114.41	- 3	-	1.40	110- 165 (N- 45%)	15.3	1.7	7.50	2.00	46	12/31	2.25	2.22	3/31	.50	.45	YES
1512 Amer. Homes 4 Rent	AMH	32.80	3 3	3	1.00	30- 45 (N- 35%)	NMF	1.2	▲.27	.40	94	12/31	.09	.08	6/30	▲.10	.05	YES
2537 Amer. Int'l Group	AIG	46.23	4 3	3	1.50	70- 105 (50-125%)	10.7	2.8	4.34	1.28	48	12/31	d.07	.97	3/31	.32	.32	YES
1789 Amer. States Water	AWR	73.36	3 2	3	.65	60- 80 (N- 10%)	31.1	1.9	2.36	1.40	8	12/31	.54	.45	3/31	.335	.305	YES
585 Amer. Tower 'A'	AMT	225.83	4 2	4	.85	250- 340 (10- 50%)	42.8	2.4	5.28	5.40	73	12/31	.82	1.26	6/30	▲1.24	1.08	YES
552 Amer. Vanguard Corp.	AVD	20.41	3 3	3	1.20	20- 30 (N- 45%)	42.5	0.4	.48	.08	41	12/31	.26	.12	6/30	.02	.02	YES
1790 Amer. Water Works	AWK	140.05	2 3	2	.85	90- 140 (N- N%)	33.6	1.7	4.17	2.35	8	12/31	.80	.54	3/31	.55	.50	YES
1104 Amer. Woodmark (NDQ)	AMWD	97.15	3 3	3	1.55	115- 175 (20- 80%)	14.5	NIL	6.72	NIL	61	1/31	1.50	1.30	3/31	NIL	NIL	YES
2225 Ameriprise Fin'l	AMP	229.18	2 3	3	1.40	200- 300 (N- 30%)	12.7	1.8	18.04	4.16	16	12/31	1.43	3.53	3/31	1.04	.97	YES
204 AmerisourceBergen	ABC	116.35	2 2	4	.90	145- 195 (25- 70%)	13.9	1.5	8.40	1.76	17	12/31	2.18	1.76	3/31	.44	.42	YES
1747 AMETEK, Inc.	AME	122.89	3 2	3	1.15	100- 135 (N- 10%)	30.5	0.7	4.03	.80	42	12/31	.95	.96	3/31	▲.20	.18	YES
830 Amgen (NDQ)	AMGN	249.69	3 1	3	.80	300- 370 (20- 50%)	15.0	2.9	16.66	7.23	55	12/31	3.81	3.64	6/30	1.76	1.60	YES
1385 Amkor Technology (NDQ)	AMKR	23.92	3 4	4	1.25	25- 40 (5- 65%)	13.5	0.7	1.77	.16	30	12/31	.52	.41				

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	RANKS			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS					Do Options Trade?			
			Timeliness	Safety	Technical						Beta	Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended		Latest Div'd	Year Ago	
																			Qtr. Ended
1748 ARAMARK Holdings	ARMK	38.97	4	3	3	1.50	45- 65 (15- 65%)	NMF	1.1	d.25	.44	42	12/31	d.32	.57	3/31	.11	.11	YES
319 ArcBest Corp.	ARCB	68.90	3	3	3	1.00	70- 105 (N- 50%)	18.5	0.5	3.72	.32	60	12/31	.97	.56	3/31	.08	.08	YES
737 ArcelorMittal	MT	27.02	2	4	3	1.50	30- 50 (10- 85%)	7.6	1.1	3.56	.30	11	12/31	1.06	d1.86	3/31	NIL	NIL	YES
755 Arch Capital Group	ACGL	36.63	4	3	3	1.25	50- 70 (35- 90%)	13.9	NIL	2.64	NIL	46	12/31	.56	.74	3/31	NIL	NIL	YES
1902 Archer Daniels Mid'd	ADM	56.43	3	2	3	1.00	55- 70 (N- 25%)	16.5	2.7	3.42	1.52	40	12/31	1.22	.90	3/31	▲.37	.36	YES
2412 Archrock, Inc.	AROC	9.72	4	4	3	1.35	8- 14 (N- 45%)	16.5	6.0	.59	.58	93	12/31	.09	.30	3/31	.145	.145	YES
1584 Arconic Corp.	ARNC	26.87	-	3	-	NMF	35- 50 (30- 85%)	35.4	NIL	▼.76	NIL	7	12/31	d.59	N.A.	3/31	NIL	NIL	YES
2226 Ares Management	ARES	54.99	3	3	3	1.30	50- 70 (N- 25%)	39.0	3.4	1.41	1.88	16	12/31	.58	.25	3/31	▲.47	.40	YES
2016 Argo Group Int'l	ARGO	51.76	3	3	5	.95	55- 75 (5- 45%)	21.2	2.4	2.44	1.24	77	12/31	d.10	d3.01	3/31	.31	.31	YES
1817 Arista Networks	ANET	290.25	1	3	2	1.10	315- 475 (10- 65%)	30.8	NIL	9.42	NIL	57	12/31	2.31	3.25	3/31	NIL	NIL	YES
1106 Armstrong World Inds.	AWI	91.48	4	3	3	1.20	90- 135 (N- 50%)	20.5	0.9	4.47	.84	61	12/31	.72	1.04	3/31	.21	.20	YES
1323 Arrow Electronics	ARW	109.02	3	3	3	1.20	115- 175 (5- 60%)	10.3	NIL	10.62	NIL	51	12/31	3.17	2.20	3/31	NIL	NIL	YES
2119 Asbury Automotive	ABG	186.41	3	3	4	1.35	130- 195 (N- 5%)	14.1	NIL	13.25	NIL	59	12/31	4.44	2.53	3/31	NIL	NIL	YES
553 Ashland Global Hldgs.	ASH	87.84	3	3	3	1.30	90- 140 (N- 60%)	24.7	1.3	3.55	1.13	41	12/31	.66	.13	3/31	.275	.275	YES
773 Assoc. Banc-Corp	ASB	21.90	3	3	3	1.20	20- 35 (N- 60%)	14.9	3.3	1.47	.72	3	12/31	.40	.43	3/31	.18	.18	YES
2539 Assurant Inc.	AIZ	140.75	3	2	3	.90	105- 140 (N- N%)	13.9	1.9	10.14	2.64	48	12/31	2.23	1.91	3/31	.66	.63	YES
2017 Assured Guaranty	AGO	43.52	3	3	3	1.55	45- 65 (5- 50%)	10.9	2.0	4.00	.88	77	12/31	1.82	1.42	3/31	▲.22	.20	YES
148 Astec Inds.	ASTE	71.64	2	3	3	1.10	65- 100 (N- 40%)	29.4	0.6	2.44	.44	34	12/31	.56	.40	3/31	.11	.11	YES
1610 AstraZeneca PLC (ADS)	AZN	51.20	3	2	3	.75	65- 90 (25- 75%)	34.8	2.7	▲1.47	1.40	75	12/31	.39	.12	3/31	.95	.95	YES
704 Astronics Corp.	ATRO	18.42	4	5	1	1.80	35- 65 (90-25%)	NMF	NIL	▲d.23	NIL	49	12/31	d.65	.18	3/31	NIL	NIL	YES
2166 At Home Group	HOME	33.32	3	4	4	1.35	30- 50 (N- 50%)	21.5	NIL	1.55	NIL	63	1/31	◆1.08	d3.50	3/31	NIL	NIL	YES
1229 2018 Athens Holding Ltd.	ATH	52.05	-	3	-	1.85	75- 100 (45- 90%)	6.9	NIL	7.53	NIL	77	12/31	2.85	2.21	3/31	NIL	NIL	YES
305 Atlas Air Worldwide	AAWW	59.50	3	3	3	.75	85- 125 (45-110%)	5.9	NIL	10.05	NIL	79	12/31	4.83	3.72	3/31	NIL	NIL	YES
540 Atmos Energy	ATO	93.54	▼	3	4	1.80	130- 160 (40- 70%)	18.7	2.8	5.00	2.60	68	12/31	1.71	1.47	3/31	.625	.575	YES
941 AudioCodes Ltd.	AUDC	28.69	3	3	2	.95	40- 60 (40-110%)	19.3	1.1	1.49	.32	15	12/31	.44	.26	3/31	.16	.13	YES
1421 Aurora Cannabis	ACB	9.70	-	4	-	1.50	17- 30 (75-210%)	NMF	NIL	d1.99	NIL	56	12/31	d1.37	d9.74	3/31	NIL	NIL	YES
2578 Autodesk, Inc.	ADSK	265.96	3	3	2	.95	200- 300 (N- 15%)	NMF	NIL	2.37	NIL	21	1/31	4.10	.59	3/31	NIL	NIL	YES
967 Autoliv, Inc.	ALV	89.87	2	3	3	1.25	100- 155 (10- 70%)	15.0	NIL	6.00	NIL	43	12/31	2.15	1.78	3/31	NIL	.62	YES
2607 Automatic Data Proc.	ADP	184.39	2	1	3	1.05	195- 235 (5- 25%)	31.3	2.1	5.90	3.86	39	12/31	1.51	1.50	6/30	.93	.91	YES
2120 AutoNation, Inc.	AN	87.71	3	3	3	1.10	90- 135 (5- 55%)	12.1	NIL	7.25	NIL	59	12/31	2.43	1.74	3/31	NIL	NIL	YES
2121 AutoZone Inc.	AZO	1341.22	3	3	4	.95	1470-2210 (10- 65%)	17.8	NIL	75.30	NIL	59	2/28	14.93	12.39	3/31	NIL	NIL	YES
1818 Avalara, Inc.	AVLR	136.66	3	3	1	.75	85- 125 (N- N%)	NMF	NIL	▲d.32	NIL	57	12/31	d.13	d.16	3/31	NIL	NIL	YES
1514 AvalonBay Communities	AVB	185.13	4	3	4	1.10	180- 275 (N- 50%)	32.5	3.5	▲6.96	6.46	94	12/31	2.44	1.20	6/30	1.59	1.59	YES
135 AVANGRID, Inc.	AGR	47.83	3	2	5	.85	40- 55 (N- 15%)	22.1	3.7	2.16	1.76	62	12/31	.54	.72	6/30	.44	.44	YES
205 Avanos Medical	AVNS	45.08	▲	2	3	1.25	50- 75 (10- 65%)	50.1	NIL	.90	NIL	17	12/31	.28	.34	3/31	NIL	NIL	YES
554 Avantor, Inc.	AVTR	29.19	-	3	-	1.00	30- 50 (5- 70%)	44.2	NIL	.66	NIL	41	12/31	.06	.09	3/31	NIL	NIL	YES
942 Avaya Holdings	AVYA	30.69	3	4	2	.80	30- 45 (N- 45%)	NMF	NIL	.05	NIL	15	12/31	d.06	d.54	3/31	NIL	NIL	YES
555 Avery Dennison	AVY	180.43	1	2	3	1.20	135- 180 (N- N%)	24.4	1.4	7.38	2.48	41	12/31	2.28	1.92	3/31	.62	.58	YES
556 Avient Corp.	AVNT	48.91	-	3	-	1.35	50- 70 (N- 45%)	22.1	1.7	2.21	.85	41	12/31	.81	.34	6/30	.213	.203	YES
2167 Avis Budget Group	CAR	67.63	4	4	4	1.65	30- 50 (N- N%)	NMF	NIL	d.33	NIL	63	12/31	d.36	.73	3/31	NIL	NIL	YES
2211 Avista Corp.	AVA	46.27	3	2	5	.95	45- 60 (N- 30%)	22.0	3.7	2.10	1.69	78	12/31	.85	.75	3/31	▲.423	.405	YES
1324 Avnet, Inc.	AVT	40.39	3	2	3	1.10	50- 70 (25- 75%)	17.3	2.1	2.34	.84	51	12/31	.48	.40	3/31	.21	.21	YES
557 Axalta Coating	AXTA	29.42	3	3	3	1.30	35- 50 (20- 70%)	23.0	NIL	1.28	NIL	41	12/31	.30	.18	3/31	NIL	NIL	YES
1387 Axcelis Technologies	ACLS	39.06	3	3	3	1.25	30- 45 (N- 15%)	23.8	NIL	1.64	NIL	30	12/31	.43	.29	3/31	NIL	NIL	YES
2019 AXIS Capital Hldgs.	AXS	50.51	4	2	3	.95	70- 95 (40- 90%)	10.8	3.3	4.68	1.68	77	12/31	d.20	.05	6/30	.42	.41	YES
705 Axon Enterprise	AXON	144.77	3	3	2	.95	55- 80 (N- N%)	NMF	NIL	1.27	NIL	49	12/31	1.00	.41	3/31	NIL	NIL	YES
1611 Axsome Therapeutics	AXSM	63.53	5	4	1	1.10	85- 145 (35-130%)	NMF	NIL	d3.73	NIL	75	12/31	d.78	d.71	3/31	NIL	NIL	YES
1903 B&G Foods	BGS	33.37	3	2	4	.45	45- 65 (35- 95%)	14.1	5.7	2.36	1.90	40	12/31	.35	.28	6/30	.475	.475	YES
1013 BCE Inc.	BCE	46.03	3	2	4	.90	45- 60 (N- 30%)	18.6	5.7	2.48	2.64	86	12/31	.63	.68	6/30	▲.656	.591	YES
1798 BGC Partners	BGCP	4.42	4	4	4	1.00	6- 10 (35-125%)	7.4	0.9	.60	.04	35	12/31	.13	.12	3/31	.01	.14	YES
1585 BHP Group Ltd. ADR	BHP	69.17	3	2	2	1.05	80- 120 (15- 75%)	16.3	4.8	▲4.25	3.30(h)	7	12/31	1.53(p)	1.92(p)	3/31	▲2.02	1.30	YES
349 BJ's Restaurants	BJRI	57.82	4	4	3	1.80	40- 70 (N- 20%)	NMF	NIL	▲d.35	NIL	87	12/31	d.81	.75	3/31	NIL	NIL	YES
2135 BJ's Wholesale Club	BJ	44.05	3	3	2	.50	45- 70 (N- 60%)	17.2	NIL	2.56	NIL	25	1/31	.69	.30	3/31	NIL	NIL	YES
774 BOK Financial	BOKF	93.00	3	3	3	1.30	85- 125 (N- 35%)	12.1	2.2	7.66	2.08	3	12/31	2.21	1.56	3/31	.52	.51	YES
502 BP PLC ADR	BP	25.35	▲	3	4	1.30	50- 70 (95-175%)	37.8	5.0	.67	1.26	97	12/31	.42	.01	3/31	.315	.63	YES
1211 BWX Technologies	BWXT	64.56	3	3	3	.90	70- 100 (10- 55%)	21.6	1.3	2.99	.84	66	12/31	.69	.64	3/31	▲.21	.19	YES
113 Badger Meter	BMI	95.00	3	3	2	1.05	65- 95 (N- N%)	52.8	0.8	1.80	.72	20	12/31	.45	.42	3/31	.18	.17	YES
2633 Baidu, Inc.	BIDU	266.13	1	3	2	.95	230- 335 (N- 25%)	28.9	NIL	9.21	NIL	29	12/31	3.08	2.62	3/31	NIL	NIL	YES
2413 Baker Hughes	BKR	22.31	2	3	3	1.30	20- 30 (N- 35%)	49.6	3.2	.45	.72	93	12/31	d.07	.07	3/31	.18	.18	YES
558 Balchem Corp.	BCPC	126.57	1	3	3														

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	Safety			Technical Beta	3-5 year Target Price and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?					
			Timeliness	↓	↑							Qtr. Ended	Earnings Per sh.	Year Ago		Qtr. Ended	Latest Div'd	Year Ago		
																			↓	↓
2169 Best Buy Co.	BBY	120.96	3	3	3	1.15	110-165 (N-35%)	15.3	2.3	7.91	2.80	63	1/31	3.48	2.90	6/30	▲.70	.55	YES	
2657 1904 Beyond Meat (NDO)	BYND	139.60	-	4	-	NMF	140-225 (N-60%)	NMF	NIL	.15	NIL	40	12/31	d.40	d.01	3/31	NIL	NIL	YES	
2136 Big Lots Inc.	BIG	70.79	3	3	3	1.20	70-105 (N-50%)	12.4	1.9	5.73	1.36	25	1/31	2.59	2.39	6/30	.30	.60	YES	
206 Bio-Rad Labs. 'A'	BIO	580.00	2	2	1	.75	280-380 (N-N%)	49.7	NIL	11.68	NIL	17	12/31	4.01	2.32	3/31	NIL	NIL	YES	
241 831 Bio-Techne Corp. (NDO)	TECH	385.38	1	2	2	.80	240-320 (N-N%)	72.4	0.3	5.32	1.32	55	12/31	1.62	1.08	3/31	.32	.32	YES	
235 1613 Biogen (NDO)	BIIB	272.34	2	3	4	.85	240-360 (N-30%)	13.5	NIL	20.17	NIL	75	12/31	2.67	8.03	3/31	NIL	NIL	YES	
1614 Biohaven Pharma.	BHVN	72.21	4	4	1	1.25	85-140 (20-95%)	NMF	NIL	▼d13.74	NIL	75	12/31	d3.64	d2.85	3/31	NIL	NIL	YES	
2236 832 BioMarin Pharm. (NDO)	BMRN	78.52	4	3	4	.90	105-155 (35-95%)	70.1	NIL	1.12	NIL	55	12/31	.12	.08	3/31	NIL	NIL	YES	
2212 Black Hills	BKH	65.20	3	2	4	1.00	70-100 (5-55%)	17.2	3.5	3.80	2.31	78	12/31	1.23	1.13	3/31	.565	.535	YES	
1819 Black Knight, Inc.	BKI	74.78	2	2	1	.75	90-120 (20-60%)	32.7	NIL	2.29	NIL	57	12/31	.60	.54	3/31	NIL	NIL	YES	
2397 Black Stone Minerals	BSM	8.71	4	3	3	1.15	8-12 (N-40%)	19.8	8.0	.44	.70	92	12/31	.13	.22	3/31	▲.175	.30	YES	
586 BlackBerry	BB	10.71	▼	4	2	1.25	11-18 (5-70%)	71.4	NIL	.15	NIL	73	11/30	.02	.03	3/31	NIL	NIL	YES	
2227 BlackRock, Inc.	BLK	730.92	2	2	3	1.25	745-1005 (N-35%)	20.1	2.3	36.43	16.52	16	12/31	10.18	8.34	3/31	▲4.13	3.63	YES	
1431 2443 Blackstone Group	BX	73.55	3	3	3	1.15	50-75 (N-N%)	22.4	5.2	3.29	3.84	67	3/31	1.07	.71	3/31	▲.96	.61	YES	
2540 Block (H&R)	HRB	20.35	5	3	4	1.05	25-35 (25-70%)	46.3	5.3	.44	1.07	48	1/31	d1.27	d.66	6/30	.26	.26	YES	
350 Bloomin' Brands (NDO)	BLMN	28.00	4	4	4	1.70	25-40 (N-45%)	57.1	NIL	.49	NIL	87	12/31	d.13	.32	3/31	NIL	.20	YES	
149 Blue Bird Corp. (NDO)	BLBD	24.67	3	3	3	1.05	40-60 (60-145%)	23.5	NIL	1.05	NIL	34	12/31	NIL	.07	3/31	NIL	NIL	YES	
2662 706 Boeing (NDO)	BA	251.23	5	3	5	1.75	130-190 (N-N%)	NMF	NIL	d18.40	NIL	49	12/31	d14.65	d1.79	3/31	NIL	2.06	YES	
1034 507 Boingo Wireless (NDO)	WIFI	14.14	-	4	-	1.20	16-25 (15-75%)	NMF	NIL	d.31	NIL	73	12/31	d.08	d.12	3/31	NIL	NIL	YES	
1108 Boise Cascade	BCC	58.54	3	3	3	1.15	70-105 (20-80%)	6.3	0.7	9.26	.40	61	12/31	1.76	.37	3/31	.10	.10	YES	
2634 Booking Holdings (NDO)	BKNG	2231.89	2	3	3	1.15	2200-3300 (N-50%)	39.1	NIL	57.04	NIL	29	12/31	d.57	23.30	3/31	NIL	NIL	YES	
2156 Boot Barn Holdings	BOOT	62.88	3	4	3	1.40	35-60 (N-N%)	33.6	NIL	1.87	NIL	72	12/31	1.00	.85	3/31	NIL	NIL	YES	
375 Booz Allen Hamilton	BAH	79.83	3	3	3	.90	90-140 (15-75%)	20.8	1.9	3.84	1.50	47	12/31	1.04	.80	3/31	▲.37	.31	YES	
968 BorgWarner	BWA	48.13	3	3	3	1.25	65-95 (35-95%)	11.8	1.4	4.08	.68	43	12/31	1.18	1.17	3/31	.17	.17	YES	
1967 Boston Beer 'A'	SAM	107.67	2	3	3	1.60	505-760 (N-N%)	60.1	NIL	17.82	NIL	27	12/31	2.64	1.12	3/31	NIL	NIL	YES	
2387 Boston Omaha (NDO)	BOMN	38.90	3	3	3	.85	20-35 (N-N%)	NMF	NIL	d.27	NIL	64	9/30	.13	.03	3/31	NIL	NIL	YES	
1515 Boston Properties	BXP	102.44	5	3	4	1.20	155-230 (50-125%)	52.5	3.9	▼1.95	3.99	94	12/31	.05	.91	6/30	◆.98	.98	YES	
173 Boston Scientific	BSX	38.23	1	3	4	1.05	50-80 (30-110%)	54.6	NIL	.70	NIL	6	12/31	.11	.46	3/31	NIL	NIL	YES	
2354 Boyd Gaming	BYD	60.55	▲	3	3	1.60	60-90 (N-50%)	30.7	NIL	1.97	NIL	84	12/31	.46	.50	3/31	NIL	.07	YES	
1750 Brady Corp.	BRC	54.52	▲	3	3	1.00	55-80 (N-45%)	20.9	1.6	2.61	.88	42	1/31	.59	.62	6/30	.22	.218	YES	
524 Brigham Minerals	MNRL	14.30	-	4	-	1.35	20-35 (40-145%)	31.1	3.4	.46	.48	83	12/31	d.90	.23	3/31	▼.12	.38	YES	
1998 Bright Horizons Family	BFAM	163.45	4	3	2	1.10	150-220 (N-35%)	NMF	NIL	1.50	NIL	88	12/31	.36	1.01	3/31	NIL	NIL	YES	
351 Brinker Int'l	EAT	71.20	4	4	3	1.50	55-90 (N-25%)	31.4	NIL	2.27	NIL	87	12/31	.35	1.01	3/31	NIL	.38	YES	
376 Brink's (The) Co.	BCO	81.21	3	3	3	1.40	80-115 (N-40%)	19.8	0.7	4.11	.60	47	12/31	1.64	1.18	3/31	.15	.15	YES	
1615 Bristol-Myers Squibb	BMJ	63.38	3	3	4	.85	70-90 (10-40%)	NMF	3.1	▼d1.58	1.96	75	12/31	d4.43	d.73	6/30	.49	.45	YES	
1991 Brit. Am. Tobacco ADR	BTI	39.81	3	3	5	.95	100-145 (150-265%)	8.2	6.8	4.85	2.71	10	12/31	2.38(p)	2.33(p)	3/31	.677	.657	YES	
1353 Broadcom Inc. (NDO)	AVGO	475.28	3	3	2	1.10	480-720 (N-50%)	35.2	3.0	13.50	14.40	18	1/31	3.05	.73	3/31	3.60	3.25	YES	
431 Broadridge Fin'l	BR	147.59	2	2	3	.85	165-225 (10-50%)	27.1	1.6	5.45	2.30	58	12/31	.73	.53	6/30	.575	.54	YES	
377 Brookfield Asset Mgmt.	BAM	45.29	2	3	3	1.35	50-70 (10-55%)	36.8	1.1	1.23	.52	47	12/31	.40	.49	3/31	▲.13	.12	YES	
1751 Brookfield Infrastruc.	BIP	52.80	3	3	3	1.30	35-55 (N-5%)	65.2	3.9	.81	2.04	42	12/31	.58	d.07	3/31	▲.51	.538	YES	
1707 Brooks Automation (NDO)	BRKS	88.43	2	3	2	1.35	55-85 (N-N%)	59.0	0.5	1.50	.40	45	12/31	.47	.23	3/31	.10	.10	YES	
2541 Brown & Brown	BRO	45.34	2	1	3	.90	45-55 (N-20%)	24.5	0.8	1.85	.37	48	12/31	.34	.27	3/31	.093	.085	YES	
1968 Brown-Forman 'B'	BFB	69.18	▼	4	1	2	.90	80-100 (15-45%)	37.4	1.0	1.85	.72	27	1/31	.45	.48	6/30	.18	.174	YES
114 Bruker Corp. (NDO)	BRKR	61.43	3	3	3	1.10	70-105 (15-70%)	51.2	0.3	1.20	.16	20	12/31	.45	.44	3/31	.04	.04	YES	
2303 Brunswick Corp.	BC	99.07	3	3	3	1.45	110-160 (10-60%)	16.7	1.1	5.92	1.08	82	12/31	1.32	.82	3/31	.27	.24	YES	
2194 Buckle (The), Inc.	BKE	40.59	2	3	3	.95	40-55 (N-35%)	13.6	3.3	2.98	1.32	24	1/31	1.33	.96	6/30	▲.33	NIL	YES	
1109 Builders FirstSource (NDO)	BLDR	44.87	3	4	3	1.40	30-45 (N-N%)	13.6	NIL	3.31	NIL	61	12/31	1.26	.40	3/31	NIL	NIL	YES	
1905 Bunge Ltd.	BG	77.66	3	3	2	.95	65-95 (N-20%)	20.8	2.7	3.74	2.08	40	12/31	3.74	d.03	6/30	.50	.50	YES	
1229 2137 Burlington Stores	BURL	304.00	▲	3	3	1.15	205-305 (N-N%)	54.0	NIL	5.63	NIL	25	1/31	2.44	3.25	3/31	NIL	NIL	YES	
2608 CACI Int'l	CACI	250.11	3	3	3	.95	285-425 (15-70%)	16.6	NIL	15.03	NIL	39	12/31	4.18	3.11	3/31	NIL	NIL	YES	
1035 707 CAE Inc. (TSE)	CAE.TO	35.00b	▲	2	3	1.40	30-50 (N-45%)	44.9	NIL	.78	NIL	49	12/31	.22(b)	.37(b)	3/31	NIL(b)	.11(b)	YES	
1799 Cboe Global Markets (CBOE)	CBOE	100.99	3	2	5	.90	140-190 (40-90%)	22.5	1.7	4.49	1.68	35	12/31	.81	.77	3/31	.42	.36	YES	
857 378 CBRE Group	CBRE	75.93	▲	1	3	1.50	70-100 (N-30%)	24.7	NIL	3.07	NIL	47	12/31	1.45	1.32	3/31	NIL	NIL	YES	
457 2388 CDK Global Inc. (NDO)	CDK	52.79	▼	3	3	1.05	75-115 (40-120%)	21.6	1.1	2.44	.60	64	12/31	.47	.55	3/31	.15	.15	YES	
2609 CDW Corp. (NDO)	CDW	159.30	3	3	3	1.05	105-160 (N-N%)	28.4	1.0	5.60	1.60	39	12/31	1.65	1.27	3/31	.40	.38	YES	
631 1354 CEVA, Inc. (NDO)	CEVA	58.36	3	3	2	1.05	70-105 (20-80%)	NMF	NIL	.03	NIL	18	12/31	.03	.14	3/31	NIL	NIL	YES	
1598 CF Industries	CF	46.87	3	3	3	1.20	30-45 (N-N%)	24.0	2.6	▲1.95	1.22	80	12/31	.40	.25	3/31	.30	.30	YES	
379 C.H. Robinson (NDO)	CHRW	95.59	3	2	3	1.70	125-165 (30-75%)	23.1	2.2	4.13	2.08	47	12/31	1.08	.73	6/30	.51	.51	YES	
2542 CIT Group	CIT	49.67	-	3	-	1.75	35-50 (N-N%)	41.7	2.8	1.19	1.40	48	12/31	d.04	1.27	3/31	.35			

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	RANKS			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Qtr. Ended	Latest Div'd	Year Ago	Qtr. Ended	Latest Div'd	Year Ago	Do Options Trade?				
			Timeliness	Safety	Technical						Beta	Qtr. Ended	Earnings Per sh.								Year Ago	Qtr. Ended	Latest Div'd	Year Ago
2304 Callaway Golf	ELY	28.53	-	3	-	1.60	30-	45	(5-60%)	29.4	NIL	.97	82	12/31	d.33	d.26	3/31	NIL	.01	YES				
1516 Camden Property Trust	CPT	108.19	▲	3	2	3	1.00	115-	155	(5-45%)	94.9	3.2	94	12/31	.29	.95	6/30	.83	.83	YES				
1586 Cameco Corp.	(TSE) COO.TO	22.07	3	3	3	.85	17-	25	(N-15%)	NMF	0.4	▲	40	12/31	.12(b)	.24(b)	3/31	NIL(b)	NIL(b)	YES				
1908 Campbell Soup	CPB	51.02	3	2	5	60	50-	65	(N-25%)	16.6	2.9	3.08	40	1/31	.84	.72	6/30	.37	.35	YES				
1427 2122 Camping World Holdings	CWH	39.98	3	5	2	1.60	45-	85	(15-115%)	13.6	0.9	2.93	59	12/31	.48	d.35	3/31	.09	.08	YES				
451 2102 Canada Goose Hldgs.	(TSE)GOOS.TO	54.59	4	3	3	1.25	65-	100	(20-85%)	47.5	NIL	1.15	69	12/31	1.01	1.08	3/31	NIL	NIL	YES				
2509 Can. Imperial Bank	(TSE) CM.TO	125.89b	3	2	4	.95	100-	135	(N-5%)	14.2	4.6	8.85	19	1/31	3.55(b)	2.63(b)	6/30	1.46(b)	1.46(b)	YES				
339 Can. National Railway	CNI	113.16	3	1	3	.85	140-	170	(25-50%)	24.1	1.7	4.70	187	9	12/31	1.10	.94	3/31	▲.467	.437	YES			
2399 Can. Natural Res.	(TSE) CNQ.TO	37.09b	4	3	3	1.55	35-	50	(N-35%)	62.9	5.1	.59	1.88	92	12/31	.15(b)	.58(b)	6/30	▲.47(b)	.425(b)	YES			
★ 340 Can. Pacific Railway	CP	356.53	3	2	3	.95	400-	540	(10-50%)	22.9	0.8	15.60	2.88	9	12/31	3.85	3.70	6/30	.72	.63	YES			
2139 Canadian Tire 'A'	(TSE)CTCA.TO	179.11b	2	3	3	1.10	175-	260	(N-45%)	13.1	2.6	13.71	4.70	25	12/31	7.97(b)	5.42(b)	6/30	1.175(b)	1.138(b)	YES			
1982 Canon Inc. (ADR)(g)	CAJ	22.10	2	3	4	.80	35-	45	(60-105%)	22.6	3.4	.98	.75	5	12/31	.49	.28	6/30	.384	.742	YES			
1422 Canopy Growth Corp.	CGC	33.46	3	4	2	1.10	40-	70	(20-110%)	NMF	NIL	d2.33	NIL	56	12/31	d1.86	d.18	3/31	NIL	NIL	YES			
2236 207 Cantel Medical Corp.	CMD	78.05	-	3	-	1.80	100-	150	(30-90%)	35.5	NIL	2.20	NIL	17	1/31	.27	d0.05	3/31	NIL	.105	YES			
2543 Capital One Fin'l	COF	125.22	2	3	3	1.50	90-	130	(N-5%)	11.2	1.3	11.15	1.60	48	12/31	5.35	2.25	3/31	▲.40	.40	YES			
1502 Capitol Fed. Fin'l	(NDQ) CFFN	13.34	2	3	3	.85	11-	16	(N-20%)	26.7	2.5	.50	.34	31	12/31	.14	.16	3/31	.085	.085	YES			
2103 Capri Holdings Ltd.	CPRI	53.29	3	4	4	1.80	55-	95	(5-80%)	18.4	NIL	2.90	NIL	69	12/31	1.18	1.38	3/31	NIL	NIL	YES			
208 Cardinal Health	CAH	59.14	3	3	4	1.05	90-	135	(50-130%)	10.0	3.3	5.92	1.96	17	12/31	1.74	1.52	6/30	.486	.48	YES			
1752 Carlisle Cos.	CSL	156.30	3	2	3	1.10	175-	235	(10-50%)	23.1	1.4	6.78	2.21	42	12/31	1.57	1.81	3/31	.525	.50	YES			
2444 Carlyle Group	(NDQ) CG	37.02	3	3	3	1.15	40-	60	(10-60%)	14.6	2.7	2.53	1.00	67	12/31	1.44	d.08	3/31	.25	.25	YES			
2123 CarMax, Inc.	KMX	132.30	3	3	3	1.25	125-	190	(N-45%)	23.3	NIL	5.68	NIL	59	11/30	1.42	1.04	3/31	NIL	NIL	YES			
2305 Capitol Corp.	CCL	27.48	5	5	5	1.65	30-	50	(10-80%)	NMF	NIL	d5.07	NIL	82	11/30	d2.41	6.1	3/31	NIL	.50	YES			
738 Carpenter Technology	CRS	40.52	4	3	3	1.55	35-	55	(N-35%)	NMF	2.0	d1.92	.80	11	12/31	d.61	.79	3/31	.20	.20	YES			
1708 Carrier Global	CARR	41.41	-	3	-	NMF	40-	60	(N-45%)	23.0	1.2	1.80	.48	45	12/31	.31	NA	3/31	▲.12	NIL	YES			
1035 2104 Carter's Inc.	CRI	88.67	4	3	2	.95	135-	200	(50-125%)	13.9	NIL	6.36	NIL	69	12/31	2.46	2.81	3/31	NIL	.60	YES			
2124 Carvana Co.	CVNA	273.92	4	5	3	1.70	245-	455	(N-65%)	NMF	NIL	d1.54	NIL	59	12/31	d.87	d.82	3/31	NIL	NIL	YES			
407 Casella Waste Sys.	(NDQ) CWST	63.82	3	3	3	.95	65-	95	(N-50%)	73.4	NIL	.87	NIL	54	12/31	1.24	.19	3/31	NIL	NIL	YES			
1947 Casey's Gen'l Stores	(NDQ) CASY	207.35	3	3	3	.90	145-	220	(N-5%)	29.8	0.7	6.96	1.36	70	1/31	1.04	.91	6/30	.34	.32	YES			
174 Catalent, Inc.	CTLT	109.82	2	3	2	1.05	125-	190	(15-75%)	38.7	NIL	2.84	NIL	6	12/31	.45	.23	3/31	NIL	NIL	YES			
151 Caterpillar Inc.	CAT	262.02	2	2	4	1.10	235-	320	(5-40%)	28.9	1.8	7.82	4.12	34	12/31	2.12	2.63	3/31	1.03	1.03	YES			
2195 Cato Corp.	CATO	11.55	4	3	4	.80	19-	30	(65-160%)	7.6	NIL	1.51	NIL	24	1/31	◆d.31	d.13	3/31	NIL	.66	YES			
2306 Cedar Fair L.P.	FUN	48.52	4	4	4	1.30	60-	100	(25-105%)	NMF	NIL	d3.56	NIL	82	12/31	d1.91	.05	3/31	NIL	.935	YES			
2433 Celanese Corp.	CE	146.94	▼	3	4	1.15	120-	180	(N-20%)	16.9	1.9	8.71	2.72	22	12/31	2.09	1.99	3/31	▲.68	.62	YES			
1327 Celestica Inc.	CLS	8.62	5	3	3	1.40	14-	20	(60-130%)	9.0	NIL	.96	NIL	51	12/31	.26	.18	3/31	NIL	NIL	YES			
1110 CEMEX ADS	CX	6.67	3	4	2	1.40	7-	12	(5-80%)	29.0	NIL	.23	NIL	61	12/31	.06	d.10	3/31	NIL	NIL	YES			
504 Cenovus Energy	(TSE) CVE.TO	9.79b	▲	4	5	1.65	9-	18	(N-85%)	NMF	0.7	d.65	.07	97	12/31	d.45(b)	d.13(b)	3/31	▲.018(b)	.063(b)	YES			
791 Centene Corp.	CNC	64.46	1	3	4	1.05	80-	120	(25-85%)	13.0	NIL	4.96	NIL	37	12/31	.46	.73	3/31	NIL	.935	YES			
907 CenterPoint Energy	CNP	21.96	2	3	4	1.15	20-	30	(N-35%)	15.5	3.0	1.42	.65	89	12/31	.27	.41	3/31	▲.16	.29	YES			
419 Central & East. Europe	CEE	24.80	-	4	-	1.10	25-	45	(N-80%)	NMF	3.7	NMF	.92	-	10/31	22.01(q)	31.60(q)	3/31	.919	1.463	YES			
1187 Central Garden & Pet	(NDQ) CENT	52.65	3	3	3	.80	60-	90	(15-70%)	21.9	NIL	2.40	NIL	23	12/31	.10	d.08	3/31	NIL	NIL	YES			
1587 Century Aluminum	(NDQ) CENX	17.04	4	5	2	1.65	10-	18	(N-5%)	NMF	NIL	▲d.29	NIL	7	12/31	d.34	d.05	3/31	NIL	NIL	YES			
819 Cerber Corp.	(NDQ) CERN	71.97	3	2	3	.90	85-	115	(20-60%)	23.4	1.2	3.08	.88	90	12/31	.78	.75	3/31	▲.22	.18	YES			
209 Charles River	CRL	288.13	2	3	3	1.20	135-	205	(N-N%)	45.3	NIL	6.36	NIL	17	12/31	2.81	1.61	3/31	NIL	NIL	YES			
727 Chart Industries	(NDQ) GTLS	144.68	3	3	3	1.85	85-	125	(N-N%)	38.8	NIL	3.73	NIL	71	12/31	1.28	.72	3/31	NIL	NIL	YES			
1004 Charter Commun.	(NDQ) CHTR	637.62	2	3	2	.90	575-	865	(N-35%)	29.9	NIL	21.30	NIL	28	12/31	6.05	3.28	3/31	NIL	NIL	YES			
2026 Charter Point Software	(NDQ) CHKP	117.20	3	1	2	.75	150-	185	(30-60%)	18.8	NIL	6.22	NIL	14	12/31	1.95	1.84	3/31	NIL	NIL	YES			
352 Cheesecake Factory	(NDQ) CAKE	58.51	4	3	3	1.35	55-	80	(N-35%)	57.9	NIL	1.01	NIL	87	12/31	d.32	.58	3/31	NIL	.36	YES			
1948 Chefs' Warehouse	(NDQ) CHEF	30.13	4	4	3	2.10	20-	35	(N-15%)	NMF	NIL	d.69	NIL	70	12/31	d1.02	.36	3/31	NIL	NIL	YES			
1999 Chegg, Inc.	CHGG	92.60	3	3	2	.80	90-	130	(N-40%)	62.1	NIL	1.49	NIL	88	12/31	.55	.08	3/31	NIL	NIL	YES			
1753 Chemed Corp.	CHE	460.16	3	2	2	.85	485-	655	(5-40%)	25.2	0.3	18.25	1.40	42	12/31	5.13	4.22	3/31	.34	.32	YES			
560 Chemours Co. (The)	CC	26.92	4	4	2	1.55	25-	45	(N-65%)	15.7	3.7	1.71	1.00	41	12/31	.11	d1.94	3/31	.25	.25	YES			
603 Cheniere Energy Inc.	(ASE) LNG	72.65	3	3	3	1.10	110-	165	(50-125%)	27.1	NIL	2.68	NIL	95	12/31	d.77	3.34	3/31	NIL	NIL	YES			
614 Cheniere Energy Part.	CQP	43.29	5	3	3	.90	50-	75	(15-75%)	16.5	6.2	2.63	2.67	96	12/31	.77	.87	3/31	▲.655	.63	YES			
541 Chesapeake Utilities	CPK	114.96	1	2	3	.80	115-	155	(N-35%)	27.5	1.6	4.18	1.87	68	12/31	1.24	1.04	6/30	.44	.405	YES			
235 505 Chevron Corp.	CVX	102.54	5	3	5	1.30	90-	135	(N-30%)	53.4	5.0	1.92	5.16	97	12/31	d.33	d3.51	3/31	1.29	1.29	YES			
2635 Chewy, Inc.	CHWY	85.88	-	4	-	NMF	50-	75	(N-N%)	NMF	NIL	d.29	NIL	29	10/31	d.08	d.20	3/31	NIL	NIL	YES			
2196 Children's Place	(NDQ) PLCE	76																						

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	Timeliness	Safety			Technical Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?					
				Qtr. Ended	Earns. Per sh.	Year Ago							Qtr. Ended	Latest Div'd	Year Ago						
1189	Clorox Co.	CLX	189.44	3	1	3	.45	180- 200	(N- 15%)	22.9	2.3	8.28	4.44	23	12/31	2.03	1.46	6/30	1.11	1.06	YES
2581	Cloudfare, Inc.	NET	72.76	-	3	-	NMF	60- 85	(N- 15%)	NMF	NIL	d.23	NIL	21	12/31	d.02	d.09	3/31	NIL	NIL	YES
1969	Coca-Cola	KO	51.00	3	1	3	.90	60- 70	(20- 35%)	24.8	3.3	2.06	1.68	27	12/31	.47	.44	6/30	▲.42	.41	YES
1970	Coca-Cola Consol.	(NDQ) COKE	296.73	3	3	2	.75	420- 620	(40-110%)	16.7	0.3	17.75	1.00	27	12/31	6.11	1.51	3/31	▲.25	.25	YES
1971	Coca-Cola Euro. Part.	(NDQ) CCEP	51.63	3	3	3	1.15	50- 75	(N- 45%)	23.9	3.9	2.16	2.01	27	12/31	1.56(p)	1.32(p)	3/31	◆NIL	NIL	YES
1570	Coeur Mining	CDE	9.65	3	4	3	.80	▲ 12- 20	(25-105%)	20.5	NIL	▲.47	NIL	65	12/31	.05	d1.13	3/31	NIL	NIL	YES
1005	Cogeco Commun.	(TSE) COCA.TO	120.59b	3	2	3	.55	105- 140	(N- 15%)	14.2	2.1	8.50	2.56	28	11/30	2.22(b)	1.70(b)	3/31	▲.64(b)	.58(b)	YES
631	115 Cognex Corp.	(NDQ) CGNX	79.00	2	3	2	1.05	50- 70	(N- N%)	63.2	0.3	1.25	.24	20	12/31	.39	.46	3/31	.06	.055	YES
2611	Cognizant Technology	(NDQ) CTSH	76.73	3	2	2	1.05	85- 115	(10- 50%)	20.2	1.3	3.79	.96	39	12/31	.67	1.07	3/31	▲.24	.22	YES
★	116 Coherent, Inc.	(NDQ) COHR	258.53	-	3	-	1.20	195- 295	(N- 15%)	56.2	NIL	4.60	NIL	20	12/31	.01	.24	3/31	NIL	NIL	YES
1754	Colfax Corp.	CFX	45.72	4	3	3	1.65	35- 55	(N- 20%)	22.6	NIL	2.02	NIL	42	12/31	.51	.61	3/31	NIL	NIL	YES
1190	Colgate-Palmolive	CL	75.77	▼	1	2	1.70	70- 85	(N- 10%)	23.3	2.4	3.25	1.80	23	12/31	.75	.75	6/30	▲.45	.44	YES
450	2105 Columbia Sportswear	(NDQ) COLM	108.73	4	3	3	1.15	110- 170	(N- 55%)	31.7	1.0	3.43	1.04	69	12/31	1.44	1.67	3/31	▲.26	.26	YES
1709	Colombus McKinnon	(NDQ) CMCO	52.80	4	3	4	1.25	35- 55	(N- 5%)	32.2	0.5	1.64	.24	45	12/31	.26	.64	6/30	◆.06	.06	YES
1006	Comcast Corp.	(NDQ) CMCSA	56.37	2	1	3	.80	85- 105	(50- 85%)	22.0	1.8	2.56	1.00	28	12/31	.56	.79	6/30	▲.25	.23	YES
775	Comerica Inc.	CMA	67.88	2	3	3	1.35	70- 100	(5- 45%)	12.4	4.0	5.46	2.72	3	12/31	1.49	1.85	6/30	.68	.68	YES
776	Commerce Bancshs.	(NDQ) CBSH	76.87	3	1	3	.90	70- 90	(N- 15%)	20.0	1.4	3.84	1.05	3	12/31	1.11	.89	3/31	▲.263	.257	YES
740	Commercial Metals	CMC	28.37	▲	4	3	1.10	35- 55	(25- 95%)	15.8	1.7	1.80	.48	11	2/28	◆.55	.53	6/30	◆.12	.12	YES
946	CommScope Holding	(NDQ) COMM	15.65	▲	2	3	1.35	20- 35	(30-125%)	8.1	NIL	1.94	NIL	15	12/31	.59	.46	3/31	NIL	NIL	YES
2445	Compass Diversified	CODI	24.19	3	3	2	1.05	25- 40	(5- 65%)	73.3	6.0	.33	1.44	67	12/31	d.06	d.24	3/31	.36	.36	YES
1599	Compass Minerals Int'l	CMP	64.92	4	3	3	.95	70- 110	(10- 70%)	35.3	4.4	▼1.84	2.88-1.44	80	12/31	.94	1.63	3/31	.72	.72	YES
820	Computer Prog. & Sys.	(NDQ) CPSI	31.12	5	3	3	.95	45- 65	(45-110%)	13.1	NIL	2.38	NIL	90	12/31	.55	.78	3/31	NIL	.10	YES
947	Comtech Telecom.	(NDQ) CMTL	27.26	4	4	3	1.35	30- 45	(10- 65%)	39.5	1.5	.69	.40	15	1/31	.17	.14	6/30	.10	.10	YES
1909	Conagra Brands	CAG	38.27	2	3	4	.70	40- 55	(5- 45%)	15.4	3.0	2.48	1.13	40	11/30	.81	.63	3/31	.275	.213	YES
2448	Concho Resources	CXO		SEE FINAL SUPPLEMENT																	
175	CONMED Corp.	(NDQ) CNMD	125.40	2	3	3	1.50	105- 160	(N- 30%)	67.4	0.6	1.86	.80	6	12/31	.81	.60	6/30	.20	.20	YES
2170	Conn's, Inc.	(NDQ) CONN	15.33	-	4	-	1.60	10- 17	(N- 10%)	14.6	NIL	1.05	NIL	63	10/31	.25	.39	3/31	NIL	NIL	YES
2400	ConocoPhillips	COP	52.24	4	3	4	1.35	50- 70	(N- 35%)	NMF	3.3	d1.07	1.72	92	12/31	d.72	.66	3/31	.43	.42	YES
1015	Consol. Commun.	CNSL		SEE FINAL REPORT																	
136	Consol. Edison	ED	72.05	4	1	4	.75	85- 105	(20- 45%)	17.2	4.3	4.18	3.10	62	12/31	.79	.88	3/31	▲.775	.765	YES
1792	Consolidated Water	(NDQ) CWCO	13.61	5	3	4	.85	25- 35	(85-155%)	29.6	2.5	.46	.34	8	9/30	.09	.11	6/30	.085	.085	YES
1972	Constellation Brands	STZ	230.72	3	2	2	1.20	270- 350	(15- 50%)	21.4	1.4	10.79	3.20	27	11/30	3.09	2.14	3/31	.75	.75	YES
2401	Continental Resources	CLR	25.76	4	4	4	1.30	30- 55	(15-115%)	NMF	NIL	.10	NIL	92	12/31	d.23	.53	3/31	NIL	.05	YES
210	Cooper Cos.	COO	386.37	2	2	3	.95	305- 415	(N- 5%)	43.9	NIL	8.80	.06	17	1/31	42.31	1.82	3/31	.03	.03	YES
848	969 Cooper Tire & Rubber	CTB	56.15	-	3	-	1.10	55- 80	(N- 40%)	17.3	0.7	3.25	.42	43	12/31	.75	1.02	3/31	.105	.105	YES
970	Cooper-Standard	CPS	38.08	4	4	3	1.60	70- 120	(85-215%)	NMF	NIL	d2.61	NIL	43	12/31	d1.61	d4.00	3/31	NIL	NIL	YES
306	Copa Holdings, S.A.	CPA	85.18	4	4	3	1.55	105- 175	(25-105%)	NMF	NIL	d1.79	NIL	79	12/31	d3.97	.06	3/31	NIL	.80	YES
2125	Copart, Inc.	(NDQ) CPRT	109.79	2	2	2	1.00	115- 155	(5- 40%)	35.4	NIL	3.10	NIL	59	1/31	.80	.65	3/31	NIL	NIL	YES
1035	1949 Core-Mark Holding	(NDQ) CORE	38.71	3	3	4	.75	30- 50	(N- 30%)	29.1	1.4	1.33	.53	70	12/31	.42	.35	3/31	.13	.12	YES
2662	1517 CoreCivic, Inc.	(NDQ) CXW	9.01	-	4	-	1.20	▼ 12- 20	(35-100%)	20.0	NIL	▼.45	NIL	94	12/31	d.22	.35	3/31	.13	.44	YES
1229	433 CoreLogic	CLGX	78.77	-	3	-	1.10	85- 125	(10- 60%)	16.9	1.7	4.66	1.32	58	12/31	1.51	.77	3/31	.33	.22	YES
2415	Core Laboratories	CLB	32.21	▲	3	4	1.55	30- 45	(N- 40%)	40.3	0.1	.80	.04	93	12/31	.30	.23	3/31	.01	.25	YES
1111	Cormerstone Building	CNR	13.32	4	5	3	1.65	18- 35	(35-165%)	23.8	NIL	.56	NIL	61	12/31	.01	.02	3/31	NIL	NIL	YES
1820	Cormerstone OnDemand	(NDQ) CSOD	44.85	3	3	1	1.30	60- 90	(35-100%)	30.7	NIL	1.46	NIL	57	12/31	.64	.43	3/31	NIL	NIL	YES
1305	Coming Inc.	GLW	40.97	3	2	4	1.15	40- 55	(N- 35%)	25.9	2.3	1.58	.96	50	12/31	.28	.01	3/31	▲.24	.22	YES
1600	Corteva, Inc.	CTVA	47.30	-	3	-	.90	▲ 40- 60	(N- 25%)	27.2	1.2	▲1.74	.57	80	12/31	.04	.07	3/31	.13	.13	YES
1229	434 CoStar Group	(NDQ) CSGP	827.81	3	2	2	.90	920-1240	(10- 50%)	73.5	NIL	11.26	NIL	58	12/31	2.85	2.82	3/31	NIL	NIL	YES
2140	Costco Wholesale	(NDQ) COST	334.49	2	1	2	.60	440- 540	(30- 60%)	32.6	0.9	10.25	2.95	25	2/28	2.14	2.10	3/31	.70	.65	YES
992	Coty Inc.	COTY	8.70	-	5	-	1.40	11- 20	(25-130%)	30.0	NIL	.29	NIL	12	12/31	.17	.27	3/31	NIL	.125	YES
1821	Coupa Software	(NDQ) COUP	258.04	4	3	1	1.70	145- 215	(N- N%)	NMF	NIL	d1.80	NIL	57	1/31	d.85	d.38	3/31	NIL	NIL	YES
856	1212 Covanta Holding Corp.	(NDQ) CVA	13.86	2	3	2	1.15	12- 18	(N- 30%)	NMF	2.3	d.11	.32	66	12/31	.09	.09	6/30	.08	.25	YES
354	Cracker Barrel	(NDQ) CBRL	166.92	5	3	4	1.05	165- 245	(N- 45%)	26.7	NIL	6.26	NIL	87	1/31	.70	2.55	3/31	NIL	1.30	YES
1755	Crane Co.	CR	92.61	2	3	4	1.40	90- 130	(N- 40%)	20.2	1.9	4.58	1.72	42	12/31	.80	1.40	3/31	.43	.43	YES
2544	Credit Acceptance	(NDQ) CACC	371.40	3	3	5	1.30	655- 980	(75-165%)	12.0	NIL	30.95	NIL	48	12/31	9.43	8.60	3/31	NIL	NIL	YES
1356	Crete, Inc.	(NDQ) CREE	108.69	-	3	-	1.00	35- 55	(N- N%)	NMF	NIL	d1.48	.01	92	12/31	d.75	d.49	3/31	NIL	NIL	YES
2402	Crescent Point Energy	(TSE) CPG.TO	5.25b	▲	3	4	1.70	4- 8	(N- 50%)	32.8	0.2	.16	.01	92	12/31	.16(b)	d1.73(b)	6/30	.003(b)	.01(b)	YES
615	Crestwood Equity Part.	CEQP	24.45	4	4	3	1.55	40- 60	(65-145%)	NMF	10.2	d.83	2.50	96	12/31	.03	.28	3/31	.625	.625	YES
2158																					

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Timeliness	Safety	Technical	Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?				
		Qtr. Ended	Earns. Per sh.	Year Ago										Qtr. Ended	Latest Div'd	Year Ago					
2582 Datadog, Inc. (NDQ)	DDOG	85.18	-	3	-	NMF		110- 165 (30- 95%)	NMF	NIL	.16	NIL	21	12/31	.06	NIL	3/31	NIL	NIL	YES	
356 Dave & Buster's Ent. (NDQ)	PLAY	45.54	4	5	4	1.90		40- 75 (N- 65%)	NMF	NIL	d2.58	NIL	87	10/31	d1.01	.02	3/31	NIL	NIL	.16	YES
793 DaVita Inc. (NDQ)	DVA	110.04	2	3	3	1.00		140- 210 (25- 90%)	14.4	NIL	7.62	NIL	37	12/31	1.67	1.86	3/31	NIL	NIL	YES	
2159 Deckers Outdoor (NDQ)	DECK	332.80	2	3	4	1.10		210- 310 (N- N%)	28.3	NIL	11.75	NIL	72	12/31	8.99	7.14	3/31	NIL	NIL	YES	
848 153 Deere & Co. (NDQ)	DE	371.59	1	1	4	1.15		305- 370 (N- N%)	28.8	1.0	12.90	3.60	34	1/31	3.87	1.63	6/30	▲.90	.76	YES	
506 Delek US Holdings (NDQ)	DK	22.15	▲	3	4	1.35		40- 55 (80-150%)	NMF	NIL	d1.25	NIL	97	12/31	d2.77	d.11	3/31	NIL	.31	YES	
1399 Dell Technologies (NDQ)	DELL	87.35	-	3	-	1.05		85- 125 (N- 45%)	10.0	NIL	8.70	NIL	32	1/31	2.70	2.00	3/31	NIL	NIL	.16	YES
307 Delta Air Lines (NDQ)	DAL	47.97	4	3	3	1.55		50- 75 (5- 55%)	NMF	NIL	d6.23	NIL	79	12/31	d2.53	1.70	3/31	NIL	.403	YES	
2379 Deluxe Corp. (NDQ)	DLX	40.72	4	3	4	1.20		70- 100 (70-145%)	20.4	2.9	2.00	1.20	76	12/31	.58	1.06	3/31	.30	.30	YES	
357 Denny's Corp. (NDQ)	DENN	18.81	4	4	4	1.65		20- 35 (5- 85%)	69.7	NIL	.27	NIL	87	12/31	d.05	.23	3/31	NIL	NIL	YES	
1034 177 Dentsply Sirona (NDQ)	XRAY	62.44	2	3	3	1.05		60- 90 (N- 45%)	27.8	0.6	2.25	.40	6	12/31	.87	.73	6/30	.10	.10	YES	
2198 Designer Brands (NDQ)	DBI	15.67	-	5	-	1.70		10- 19 (N- 20%)	NMF	NIL	d.45	NIL	24	1/31	d.53	d.05	3/31	NIL	.25	YES	
1016 Deutsche Telekom ADR (PNK)	DTGTY	19.65	3	3	4	1.80		25- 40 (25-105%)	15.8	3.4	1.24	.66	86	12/31	.44	.16	3/31	NIL	NIL	YES	
528 Devon Energy (NDQ)	DVN	22.33	-	3	-	1.60		25- 35 (10- 55%)	28.3	2.0	.79	.44	83	12/31	NIL	.33	3/31	.11	.09	YES	
212 DexCom Inc. (NDQ)	DXCM	359.82	▼	3	4	.95		300- 505 (N- 40%)	NMF	NIL	3.21	NIL	17	12/31	.94	1.00	3/31	NIL	NIL	YES	
1973 Diageo plc (NDQ)	DEO	166.62	3	1	2	.95		135- 165 (N- N%)	46.3	2.2	3.60	3.60	27	12/31	3.68(p)	3.91(p)	6/30	1.535	1.36	YES	
2403 Diamondback Energy (NDQ)	FANG	75.31	4	3	3	1.55		50- 80 (N- 5%)	28.1	2.1	2.68	1.60	92	12/31	d4.68	d2.96	3/31	▲.40	.375	YES	
2171 Dick's Sporting Goods (NDQ)	DKS	79.09	3	3	3	1.40		85- 125 (5- 60%)	14.7	1.8	5.38	1.45	63	1/31	2.43	1.32	3/31	▲.363	.313	YES	
1413 Diebold Nixdorf (NDQ)	DBD	13.75	4	5	3	1.65		25- 45 (80-225%)	8.4	NIL	1.64	NIL	91	12/31	.44	.47	3/31	NIL	NIL	YES	
1519 Digital Realty Trust (NDQ)	DLR	136.55	4	3	2	.80		130- 195 (N- 45%)	NMF	3.4	▼1.16	4.70	94	12/31	.16	1.50	3/31	2.28	2.20	YES	
2141 Dillard's, Inc. (NDQ)	DDS	90.56	▼	4	3	1.25		60- 95 (N- 5%)	23.2	0.7	3.90	.60	25	1/31	3.05	2.40	6/30	.15	.15	YES	
358 Dine Brands Global (NDQ)	DIN	89.31	5	4	3	2.00		60- 100 (N- 10%)	20.7	NIL	4.31	NIL	87	12/31	d.10	1.59	3/31	NIL	.69	YES	
1357 Diodes Inc. (NDQ)	DIOD	90.86	3	3	4	1.10		80- 120 (N- 30%)	28.0	NIL	3.25	NIL	18	12/31	.74	.65	3/31	NIL	NIL	YES	
2545 Discover Fin'l Svcs. (NDQ)	DFS	94.68	▲	1	3	1.65		120- 175 (25- 85%)	10.1	1.9	9.34	1.76	48	12/31	2.59	2.25	3/31	.44	.44	YES	
2331 Discovery, Inc. (NDQ)	DISCA	74.65	▲	1	3	1.10		55- 85 (N- 45%)	36.2	NIL	2.06	NIL	4	12/31	.42	.67	3/31	NIL	NIL	YES	
1007 Dish Network 'A' (NDQ)	DISH	37.54	3	3	4	1.35		45- 65 (20- 75%)	11.0	NIL	3.42	NIL	28	12/31	1.24	.69	3/31	NIL	NIL	YES	
632 2332 Disney (Walt) (NDQ)	DIS	192.86	1	2	3	.95		150- 200 (N- 5%)	96.4	NIL	2.00	NIL	4	12/31	.02	1.17	3/31	NIL	.88	YES	
1427 2583 DocuSign, Inc. (NDQ)	DOCU	207.43	4	3	1	.70		300- 450 (45-115%)	NMF	NIL	d1.08	NIL	21	1/31	d.38	d.26	3/31	NIL	NIL	YES	
2007 Dolby Labs. (NDQ)	DLB	99.65	3	2	3	.95		75- 100 (N- N%)	39.9	0.9	2.50	.88	13	12/31	1.30	.47	3/31	.22	.22	YES	
2142 Dollar General (NDQ)	DG	193.96	2	2	3	.65		215- 290 (10- 50%)	19.8	0.9	9.81	1.68	25	1/31	▲2.62	2.10	6/30	▲.42	.36	YES	
2143 Dollar Tree, Inc. (NDQ)	DLTR	110.25	3	3	2	.80		125- 185 (15- 70%)	18.0	NIL	6.13	NIL	25	1/31	2.13	1.79	3/31	NIL	NIL	YES	
137 Dominion Energy (NDQ)	D	73.50	4	2	5	.80		75- 100 (N- 35%)	19.8	3.4	3.71	2.52	62	12/31	.98	1.22	3/31	.63	.94	YES	
359 Domino's Pizza (NDQ)	DPZ	369.32	3	2	3	.55		540- 730 (45-100%)	29.4	1.0	12.55	3.76	87	12/31	3.85	3.13	3/31	▲.94	.78	YES	
1162 Domtar Corp. (NDQ)	UFS	36.42	4	3	2	1.25		45- 65 (25- 80%)	16.6	NIL	2.19	NIL	52	12/31	.29	.03	3/31	NIL	.455	YES	
1711 Donaldson Co. (NDQ)	DCI	59.29	3	2	3	1.15		70- 100 (20- 70%)	28.2	1.4	2.10	.84	45	1/31	.52	.50	3/31	.21	.21	YES	
972 Dorman Products (NDQ)	DORM	106.94	2	3	3	.85		100- 150 (N- 40%)	24.6	NIL	4.34	NIL	43	12/31	1.19	.52	3/31	NIL	NIL	YES	
154 Douglas Dynamics (NDQ)	PLOW	45.97	4	3	3	1.15		50- 75 (10- 65%)	27.2	2.5	1.69	1.14	34	12/31	.78	.72	3/31	▲.285	.28	YES	
1712 Dover Corp. (NDQ)	DOV	136.44	▼	2	4	1.30		110- 145 (N- 5%)	24.5	1.5	5.58	1.98	45	12/31	1.55	1.54	3/31	.495	.49	YES	
236 1601 Dow Inc. (NDQ)	DOW	63.51	-	3	-	1.10		55- 85 (N- 35%)	25.3	4.5	2.51	2.85	80	12/31	.81	.78	3/31	.70	.70	YES	
236 2357 DraftKings Inc. (NDQ)	DKNG	71.72	-	4	-	NMF		70- 120 (N- 65%)	NMF	NIL	d1.41	NIL	84	12/31	d.69	NA	3/31	NIL	NIL	YES	
2416 Dril-Quip, Inc. (NDQ)	DRQ	35.05	5	3	4	1.05		45- 70 (30-100%)	NMF	NIL	d.17	NIL	93	12/31	d.21	.21	3/31	NIL	NIL	YES	
2636 Dropbox, Inc. (NDQ)	DBX	27.32	3	3	3	.70		30- 40 (10- 45%)	28.5	NIL	.96	NIL	29	12/31	.28	.16	3/31	NIL	NIL	YES	
138 Duke Energy (NDQ)	DUK	93.12	4	2	3	.85		90- 120 (N- 30%)	22.5	4.2	4.14	3.90	62	12/31	d.10	.89	3/31	.965	.945	YES	
1520 Duke Realty Corp. (NDQ)	DRE	41.74	3	2	3	.90	▲	40- 55 (N- 30%)	44.4	2.5	▲.94	1.06	94	12/31	.45	.23	3/31	.255	.235	YES	
435 Dun & Bradstreet (NDQ)	DNB	24.55	-	3	-	NMF		25- 40 (N- 65%)	23.6	NIL	1.04	NIL	58	12/31	.28	NA	3/31	NIL	NIL	YES	
1602 DuPont de Nemours (NDQ)	DD	77.56	-	3	-	1.15		65- 100 (N- 30%)	22.5	1.6	3.45	1.22	80	12/31	.95	.95	3/31	.30	.30	YES	
921 Dycom Inds. (NDQ)	DY	91.84	4	3	2	1.50		75- 115 (N- 25%)	35.6	NIL	2.58	NIL	74	1/31	d.07	d.23	3/31	NIL	NIL	YES	
993 e.l.f. Beauty (NDQ)	ELF	28.35	1	4	4	1.25		20- 35 (N- 25%)	45.7	NIL	.62	NIL	12	12/31	.22	.24	3/31	NIL	NIL	YES	
529 EOG Resources (NDQ)	EOG	68.23	4	3	4	1.20		100- 150 (45-120%)	30.3	2.4	2.25	1.65	83	12/31	.71	1.35	6/30	▲.413	.375	YES	
2613 EPAM Systems (NDQ)	EPAM	380.45	3	3	3	1.00		370- 555 (N- 45%)	59.4	NIL	6.41	NIL	39	12/31	1.46	1.29	3/31	NIL	NIL	YES	
530 EQT Corp. (NDQ)	EQT	18.47	4	5	3	.85		20- 40 (10-115%)	45.0	NIL	.41	NIL	83	12/31	d.02	d.03	3/31	NIL	.03	YES	
1112 Eagle Materials (NDQ)	EXP	127.74	3	3	3	1.30		110- 170 (N- 35%)	18.6	NIL	6.86	NIL	61	12/31	1.94	1.51	3/31	NIL	.10	YES	
2513 East West Bancorp (NDQ)	EWBC	75.97	2	3	3	1.20		65- 95 (N- 25%)	20.4	1.7	3.73	1.32	19	12/31	1.15	1.29	3/31	▲.33	.275	YES	
2434 Eastman Chemical (NDQ)	EMN	112.23	2	3	3	1.25		90- 130 (N- 15%)	18.6	2.5	6.03	2.76	22	12/31	.23	.21	6/30	.69	.66	YES	
973 Eaton Corp. plc (NDQ)	ETN	134.86	▼	3	4	1.30		110- 165 (N- 20%)	25.5	2.3	5.28	3.04	43	12/31	1.28	1.46	3/31	▲.76	.73	YES	
1033 2228 Eaton Vance Corp. (NDQ)	EV							SEE FINAL SUPPLEMENT													
2637 eBay Inc. (NDQ)	EBAY	60.29	2	3	2	1.00		75- 115 (25- 90%)	16.3	1.2	3.69	.72	29	12/31	1.14	.70	3/31	▲.18	.16	YES	
1008 EchoStar Corp. (NDQ)	SATS	25.97	4	3	4	.90		25- 35 (N- 35%)	NMF	NIL	.04	NIL									

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	Timeliness	Safety	Technical	Beta	3-5 year Target Price and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?				
												Qtr. Ended	Earns. Per sh.	Year Ago		Qtr. Ended	Latest Div'd	Year Ago	
531 Enerplus Corp. (TSE)	ERF.TO	6.55b	4 4 4	4 4 4	1.45	8- 13	(20-100%)	NMF	1.8	d11.1	.12	83	12/31	d.92(b)	d1.93(b)	3/31	.03(b)	.03(b)	
1214 EnerSys	ENS	97.86	4 3 3	3 3 3	1.25	95- 145	(N- 50%)	20.8	0.7	4.70	.70	66	12/31	.89	.64	3/31	.175	.175	YES
606 EnLink Midstream LLC	ENLC	4.51	4 5 3	3 3 3	1.65	4- 7	(N- 55%)	NMF	8.4	d.15	.38-.23	95	12/31	d.31	d1.92	3/31	.094	.188	YES
1414 Ennis, Inc.	EBF	20.88	4 3 4	4 4 8	1.60	18- 25	(N- 20%)	17.8	4.3	1.17	.90	91	11/30	.32	.41	6/30	♦.225	.225	YES
1215 Enphase Energy (NDQ)	ENPH	161.11	3 3 2	3 3 2	.90	120- 180	(N- 10%)	NMF	NIL	1.60	NIL	66	12/31	.50	.88	3/31	NIL	NIL	YES
1758 EnPro Industries	NPO	86.87	2 3 3	3 3 3	1.35	80- 120	(N- 40%)	41.4	1.2	2.10	1.08	42	12/31	1.24	d.40	3/31	▲.27	.26	YES
1388 Entegris, Inc. (NDQ)	ENTG	105.00	2 3 3	3 3 3	1.10	90- 135	(N- 30%)	36.1	0.3	2.91	.35	30	12/31	.71	.55	3/31	.08	.08	YES
909 Entergy Corp.	ETR	97.68	4 2 5	9 5	1.15	110- 150	(15- 55%)	13.6	4.0	7.18	3.92	89	12/31	1.93	1.94	3/31	.95	.93	YES
219 Enterprise Products	EPD	22.89	3 3 4	1 1	.95	35- 55	(55-140%)	14.1	7.9	1.62	1.81	96	12/31	.15	.50	3/31	▲.45	.445	YES
179 Envista Holdings	NVST	40.68	- 3	-	NMF	45- 65	(10- 60%)	37.7	NIL	1.08	NIL	6	12/31	.64	.35	3/31	NIL	NIL	YES
436 Equifax, Inc.	EFX	175.13	2 3 3	3 3 3	1.05	170- 250	(N- 45%)	26.4	0.9	6.63	1.56	58	12/31	2.00	1.53	3/31	.39	.39	YES
1521 Equinix, Inc. (NDQ)	EQIX	666.69	4 3 2	2 85	1.05	675-1015	(N- 50%)	NMF	1.8	▼7.67	11.74	94	12/31	.57	1.46	3/31	▲2.87	2.66	YES
2546 Equitable Holdings	EQH	32.39	3 3 4	1 60	1.60	35- 50	(10- 55%)	6.4	2.1	5.08	.68	48	12/31	1.65	1.37	3/31	.17	.15	YES
1522 Equity Residential	EQR	72.03	4 3 4	1 05	1.75	75- 115	(5- 60%)	53.0	3.3	1.36	2.41	94	12/31	.68	.77	6/30	♦.603	.603	YES
948 Ericsson ADR(g) (NDQ)	ERIC	13.38	2 3 1	85	1.85	13- 20	(N- 50%)	17.6	1.8	.76	.24	15	12/31	.28	.15	3/31	♦NIL	NIL	YES
761 Erie Indemnity (NDQ)	ERIE	230.28	2 2 1	65	255- 345	(10- 50%)	39.8	1.8	5.79	4.14	46	12/31	1.20	1.14	6/30	1.035	.965	YES	
1757 ESCO Technologies	ESE	108.57	3 3 4	1 00	90- 130	(N- 20%)	33.9	0.3	3.20	.32	42	12/31	.55	.43	6/30	.08	.08	YES	
1793 Essential Utilities	WTRG	42.50	2 3 1	95	40- 55	(N- 30%)	34.8	2.4	1.22	1.04	8	12/31	.40	.28	3/31	.251	.234	YES	
1523 Essex Property Trust	ESS	275.98	4 3 4	1 10	290- 430	(5- 55%)	65.4	3.0	▼4.22	8.36	94	12/31	1.47	1.95	6/30	▲2.09	2.078	YES	
1148 Ethan Allen Interiors	ETH	28.31	3 3 4	85	30- 50	(5- 75%)	16.0	3.5	1.77	1.00	85	12/31	.69	.27	6/30	.25	.21	YES	
1036 2638 Etsy, Inc. (NDQ)	ETSY	219.77	2 3 2	1 10	150- 225	(N- N%)	98.6	NIL	2.23	NIL	29	12/31	1.08	.25	3/31	NIL	NIL	YES	
331 EuroNav NV	EURN	9.56	1 4 4	1 05	9- 16	(N- 65%)	NMF	1.3	d.57	.12	36	12/31	d.29	.72	3/31	.03	NIL	YES	
421 European Equity Fund	EEA	10.61	- 3	-	1.00	11- 16	(5- 50%)	NMF	0.9	NMF	.10	-	12/31	12.09(q)	10.73(q)	3/31	.069	.093	YES
2020 Everest Re Group Ltd.	RE	243.88	3 1 3	95	205- 250	(N- 5%)	15.4	2.5	15.82	6.20	77	12/31	1.59	5.32	3/31	1.55	1.55	YES	
910 Evergy, Inc.	EVRG	58.63	4 2 5	95	60- 80	(N- 35%)	17.9	3.8	3.27	2.20	89	12/31	.22	.28	3/31	.535	.505	YES	
139 Eversource Energy	ES	82.25	2 1 3	90	80- 100	(N- 20%)	21.8	2.9	3.78	2.41	62	12/31	.79	.76	3/31	▲.603	.567	YES	
2237 795 Exact Sciences (NDQ)	EXAS	135.26	3 4 2	1 15	115- 190	(N- 40%)	NMF	NIL	d3.15	NIL	37	12/31	d.15	d.79	3/31	NIL	NIL	YES	
833 Exelixis, Inc. (NDQ)	EXEL	23.62	4 3 3	95	30- 50	(25-110%)	43.7	NIL	.54	NIL	55	12/31	.09	.22	3/31	NIL	NIL	YES	
140 Exelon Corp. (NDQ)	EXC	42.79	4 3 3	95	45- 65	(5- 50%)	13.7	3.6	3.13	1.53	62	12/31	.37	.79	3/31	.383	.382	YES	
2639 Expedia Group (NDQ)	EXPE	173.09	2 3 4	1 30	100- 165	(N- N%)	NMF	NIL	.50	NIL	29	12/31	d2.89	.52	3/31	NIL	.34	YES	
382 Expeditors Int'l (NDQ)	EXPD	103.07	2 1 3	95	100- 120	(N- 15%)	25.3	1.0	4.08	1.04	47	12/31	1.16	.79	3/31	NIL	NIL	YES	
437 Exponent, Inc. (NDQ)	EXPO	95.20	3 3 3	90	75- 115	(N- 20%)	55.7	0.8	1.71	.80	58	12/31	.41	.36	3/31	▲.20	.19	YES	
1431 2358 Extended Stay America	STAY	19.73	- 3	-	1.10	25- 40	(25-105%)	37.2	1.9	.53	.38	84	12/31	.16	d.26	3/31	▲.09	.23	YES
1524 Extra Space Storage	EXR	128.16	2 3 3	95	▲ 105- 160	(N- 25%)	31.0	3.1	▲4.13	4.00	94	12/31	1.19	.86	3/31	▲1.00	.90	YES	
507 Exxon Mobil Corp.	XOM	55.91	3 3 4	1 15	55- 80	(N- 45%)	NMF	6.2	d3.30	3.48	97	12/31	d4.70	1.33	3/31	.87	.87	YES	
2237 949 F5 Networks (NDQ)	FFIV	202.94	1 3 2	95	205- 310	(N- 55%)	33.0	NIL	6.15	NIL	15	12/31	1.41	1.62	3/31	NIL	NIL	YES	
117 FARO Technologies (NDQ)	FARO	89.08	▲ 2	3 3	1.10	85- 125	(N- 40%)	NMF	NIL	.72	NIL	20	12/31	.22	d2.85	3/31	NIL	NIL	YES
2042 1307 FLIR Systems (NDQ)	FLIR	55.08	- 3	-	95	55- 80	(N- 45%)	21.3	1.2	2.58	.68	50	12/31	.78	.55	3/31	.17	.17	YES
1603 FMC Corp.	FMC	110.30	4 3 3	1 20	120- 180	(10- 65%)	17.2	1.8	6.42	1.94	80	12/31	1.42	1.76	6/30	.48	.44	YES	
383 FTI Consulting	FCN	137.15	3 3 5	75	120- 180	(N- 30%)	23.2	NIL	5.91	NIL	47	12/31	1.61	.80	3/31	NIL	NIL	YES	
2640 Facebook Inc. (NDQ)	FB	293.54	3 2 2	90	415- 565	(40- 90%)	24.7	NIL	11.88	NIL	29	12/31	3.88	2.56	3/31	NIL	NIL	YES	
438 FactSet Research	FDS	314.38	3 2 3	1 00	275- 375	(N- 20%)	30.1	1.0	10.45	3.23	58	11/30	2.62	2.43	3/31	.77	.72	YES	
2615 Fair Isaac	FICO	471.80	3 3 3	1 15	445- 665	(N- 40%)	55.5	NIL	8.50	NIL	39	12/31	2.90	1.82	3/31	NIL	NIL	YES	
1138 Fastenal Co. (NDQ)	FAST	47.98	2 2 3	90	55- 75	(15- 55%)	32.2	2.3	1.49	1.12	33	12/31	.34	.31	3/31	▲.28	.25	YES	
849 2616 Fastly, Inc. (NDQ)	FSLY	71.52	- 4	-	NMF	120- 205	(70-185%)	NMF	NIL	d.60	NIL	39	12/31	d.40	d.15	3/31	NIL	NIL	YES
1525 Federal Rlty. Inv. Trust	FRT	100.66	5 3 4	1 15	115- 175	(15- 75%)	51.1	4.3	▲1.97	4.28	94	12/31	1.22	1.92	6/30	1.06	1.05	YES	
156 Federal Signal	FSS	37.58	▼ 4	3 3	1.00	45- 65	(20- 75%)	21.2	1.0	1.77	.36	34	12/31	.44	.48	3/31	▲.09	.08	YES
2229 Federated Hermes	FHI	30.45	3 3 3	1 45	80- 95	(165-210%)	10.7	3.5	2.85	1.08	16	12/31	.93	.81	3/31	.27	.27	YES	
★ 308 FedEx Corp.	FDX	274.02	2 2 3	1 10	335- 450	(20- 65%)	15.5	0.9	17.63	2.60	79	2/28	♦3.47	1.41	6/30	.65	.65	YES	
103 Ferrari N.V.	RACE	208.06	2 3 2	90	190- 285	(N- 35%)	42.6	0.5	4.88	1.06	2	12/31	1.23	1.01	6/30	1.038	1.219	YES	
563 Ferro Corp.	FOE	17.35	- 3	-	1.30	20- 30	(15- 75%)	17.4	NIL	1.00	NIL	41	12/31	.25	.17	3/31	NIL	NIL	YES
2448 Fiat Chrysler	FCAU		SEE FINAL SUPPLEMENT																
2547 Fidelity Nat'l Fin'l	FNF	39.03	3 3 3	1 25	60- 90	(55-130%)	9.1	3.7	4.27	1.44	48	12/31	2.74	1.22	3/31	.36	.33	YES	
2548 Fidelity Nat'l Info.	FIS	141.18	2 2 3	1 00	145- 195	(5- 40%)	75.5	1.1	1.87	1.56	48	12/31	.16	d.26	3/31	▲.39	.35	YES	
360 Fiesta Restaurant (NDQ)	FRGI	14.26	- 5	-	1.00	16- 30	(10-110%)	NMF	NIL	.14	NIL	87	12/31	.03	d.04	3/31	NIL	NIL	YES
777 Fifth Third Bancorp (NDQ)	FITB	37.22	▲ 1	3 4	1.45	30- 50	(N- 35%)	13.6	2.9	2.73	1.08	3	12/31	.88	.68	6/30	♦.27	.27	YES
157 Finning Int'l (TSE)	FTT.TO	32.00b	3 3 2	1 00	35- 50	(10- 55%)	20.8	2.6	1.54	.82	34	12/31	.38(b)	.31(b)	3/31	.205(b)	.205(b)	YES	
2028 FireEye Inc. (NDQ)	FEYE	20.36	3 4 2	1 15	30- 45	(45-120%)	NMF	NIL	d.89	NIL	14	12/31	d.19	d.23	3/31	NIL	NIL	YES	
762 First American Fin'l	FAF	53.51	3 3 1	1 15	85- 130	(60-145%)	7.9	3.4	6.79	1.84	46	12/31	2.49	1.97	3/31	.46	.44	YES	
2514 First Commonwealth	FCF	14.49	2 3 3	1 05	20- 30	(40-105%)	15.9	3.0	.91	.44	19								

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	Timeliness	Safety	Technical	Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?					
												Qtr. Ended	Earns. Per sh.	Year Ago		Qtr. Ended	Latest Div'd	Year Ago		
911 Fortis Inc. (TSE)	FTS.TO	53.77b	4	2	5	.75	60- 80 (10- 50%)	20.0	3.9	2.69	2.08	89	12/31	.71(b)	.77(b)	6/30	.505(b)	.478(b)	YES	
118 Fortive Corp.	FTV	68.21	-	3	-	1.20	65- 100 (N- 45%)	37.5	0.4	1.82	.28	20	12/31	.70	.28	3/31	.07	.07	YES	
1149 Fortune Brands Home	FBHS	90.71	3	3	3	1.25	105- 155 (15- 70%)	18.5	1.1	4.90	1.04	85	12/31	1.25	1.00	3/31	▲.26	.24	YES	
320 Forward Air (NDQ)	FWRD	87.21	3	3	3	1.00	75- 115 (N- 30%)	32.3	1.0	2.70	.84	60	12/31	.55	.85	3/31	.21	.18	YES	
2333 Fox Corp. 'A' (NDQ)	FOXA	43.65	-	3	-	NMF	45- 70 (5- 60%)	17.0	1.1	2.57	.46	4	12/31	.16	.10	6/30	.23	.23	YES	
2308 Fox Factory Holding (NDQ)	FOXF	133.16	3	3	3	.95	95- 145 (N- 10%)	49.0	NIL	2.72	NIL	82	12/31	.75	.58	3/31	NIL	NIL	YES	
1571 Franco-Nevada Corp.	FNV	123.44	3	3	4	.40	110- 170 (N- 40%)	38.7	1.0	3.19	1.20	65	12/31	.87	.60	3/31	.26	.25	YES	
1308 Franklin Electric (NDQ)	FELE	77.63	3	3	3	.95	65- 95 (N- 20%)	29.6	0.9	2.62	.70	50	12/31	.57	.43	3/31	▲.175	.155	YES	
2230 Franklin Resources	BEN	29.98	3	2	3	1.15	50- 60 (65-100%)	22.2	3.7	1.35	1.12	16	12/31	.67	.70	6/30	.28	.27	YES	
848 1588 Freep't-McMoRan Inc.	FCX	35.01	▼	4	3	1.50	▲ 35- 55 (N- 55%)	15.1	0.9	▲2.32	.32	7	12/31	.38	.02	6/30	▲.075	NIL	YES	
236 796 Fresenius Medical ADR	FMS	36.65	4	2	4	.90	50- 65 (35- 75%)	18.6	2.2	1.97	.80	37	12/31	.37	.68	3/31	NIL	NIL	YES	
1911 Fresh Del Monte Prod.	FDP	28.60	5	3	5	.55	40- 60 (40-110%)	19.3	1.4	1.48	.40	40	12/31	.02	d.54	6/30	.10	.05	YES	
1912 Freshpet, Inc. (NDQ)	FRPT	149.57	1	4	2	1.00	60- 95 (N- N%)	NMF	NIL	.38	NIL	40	12/31	d.08	.12	3/31	NIL	NIL	YES	
384 frontdoor, inc. (NDQ)	FTRD	56.28	3	3	3	.80	50- 80 (N- 40%)	35.0	NIL	1.61	NIL	47	12/31	.02	.22	3/31	NIL	NIL	YES	
332 Frontline Ltd.	FRO	7.78	4	5	5	1.25	5- 10 (N- 30%)	NMF	2.6	d.13	.20	NIL	36	12/31	d.05	.55	3/31	NIL	.40	YES
2334 fuhoTV Inc.	FUBO	31.53	-	4	-	NMF	40- 70 (25-120%)	NMF	NIL	d2.73	NIL	4	12/31	d2.47	NA	3/31	NIL	NIL	YES	
1983 FUJIFILM Hldgs. ADR(g)(PNK)	FUJIIY	61.41	3	2	2	.75	55- 75 (N- 20%)	21.2	1.5	2.90	.95	5	12/31	1.44	1.30	3/31	NIL	NIL	YES	
564 Fuller (H.B.)	FUL	59.46	3	3	3	1.15	60- 90 (N- 50%)	22.3	1.1	2.67	.65	41	11/30	.77	.61	3/31	.163	.16	YES	
2106 G-II Apparel Group (NDQ)	GIII	33.07	4	5	3	2.15	30- 60 (N- 80%)	18.5	NIL	1.79	NIL	69	1/31	◆.30	.52	3/31	NIL	NIL	YES	
341 GATX Corp.	GATX	88.42	▼	3	2	.95	70- 105 (N- 20%)	26.0	2.3	3.40	2.00	9	12/31	.50	1.36	3/31	▲.50	.48	YES	
565 GCP Applied Tech.	GCP	24.84	5	3	2	1.10	35- 50 (40-100%)	30.7	NIL	.81	NIL	41	12/31	.22	.27	3/31	NIL	NIL	YES	
2662 1526 GEO Group (The)	GEO	8.06	5	4	5	1.05	▼ 14- 25 (75-210%)	10.3	12.4	▼.78	1.00	94	12/31	.09	.32	3/31	▼.25	.48	YES	
242 1424 GW Pharm. ADS (NDQ)	GWPH	215.33	-	4	-	1.00	240- 400 (10- 85%)	NMF	NIL	d.36	NIL	56	12/31	d.96	d.80	3/31	NIL	NIL	YES	
1202 Gabelli Equity	GAB	6.70	-	3	-	1.35	6- 9 (N- 35%)	NMF	0.7	NMF	.05	-	6/30	4.60(q)	5.91(q)	12/31	NIL	NIL	YES	
2551 Gallagher (Arthur J.)	AJG	122.05	3	1	4	1.00	125- 150 (N- 25%)	27.8	1.6	4.39	1.92	48	12/31	.72	.51	3/31	▲.48	.45	YES	
1527 Gaming and Leisure (NDQ)	GLPI	42.37	3	3	2	1.40	45- 65 (5- 55%)	17.5	6.2	2.42	2.62	94	12/31	.74	.53	3/31	▲.65	.70	YES	
1230 2200 Gap (The), Inc.	GPS	30.20	2	4	4	1.55	30- 45 (N- 50%)	30.8	NIL	.98	NIL	24	1/31	.61	.58	3/31	NIL	.243	YES	
1309 Garmin Ltd. (NDQ)	GRMN	127.58	3	2	3	.95	130- 180 (N- 40%)	23.5	2.1	5.43	2.68	50	12/31	1.73	1.89	6/30	▲.67	.61	YES	
440 Gartner Inc.	IT	183.04	2	3	3	1.20	215- 320 (15- 75%)	41.7	NIL	4.39	NIL	58	12/31	1.59	1.18	3/31	NIL	NIL	YES	
1714 Gates Industrial plc	GTES	16.49	3	3	3	1.30	15- 25 (N- 50%)	17.0	NIL	.97	NIL	45	12/31	.20	.19	3/31	NIL	NIL	YES	
632 1217 Generac Holdings	GNRC	313.73	▼	2	3	1.05	300- 450 (N- 45%)	38.9	NIL	8.07	NIL	66	12/31	1.97	1.12	3/31	NIL	NIL	YES	
1203 Gen'l Amer. Invest	GAM	39.38	-	3	-	1.10	45- 65 (15- 65%)	NMF	0.6	NMF	.25	-	12/31	44.00(q)	43.70(q)	3/31	◆	NIL	NIL	YES
710 Gen'l Dynamics	GD	176.56	2	1	4	1.15	210- 255 (20- 45%)	15.9	2.7	11.09	4.76	49	12/31	3.49	3.51	6/30	▲.19	1.10	YES	
1428 1759 Gen'l Electric	GE	13.13	-	4	-	1.30	14- 20 (5- 50%)	57.1	0.3	.23	.04	42	12/31	.08	.21	6/30	.01	.01	YES	
★ ★ 1913 Gen'l Mills	GIS	61.45	3	1	4	.65	65- 80 (5- 30%)	16.9	3.4	3.64	2.08	40	11/30	1.06	.95	6/30	.51	.49	YES	
2449 105 Gen'l Motors	GM	58.10	2	3	3	1.30	60- 95 (5- 65%)	9.8	NIL	5.90	NIL	2	12/31	1.93	.05	3/31	NIL	.38	YES	
2160 Genesco Inc.	GCO	45.96	4	3	3	1.80	60- 100 (30-120%)	15.7	NIL	2.93	NIL	72	1/31	2.76	2.81	3/31	NIL	NIL	YES	
385 Genpact Limited	G	43.21	4	2	3	1.10	55- 75 (25- 75%)	20.2	1.0	2.14	.43	47	12/31	.51	.57	3/31	▲.108	.098	YES	
974 Gentex Corp. (NDQ)	GNTX	34.88	3	3	3	.95	45- 65 (30- 85%)	16.8	1.4	2.08	.48	43	12/31	.58	.39	6/30	.12	.12	YES	
975 Gentherm Inc. (NDQ)	THRM	74.43	2	3	3	1.15	75- 115 (N- 55%)	27.4	NIL	2.72	NIL	43	12/31	1.02	.32	3/31	NIL	NIL	YES	
976 Genuine Parts	GPC	115.33	▼	3	4	1.20	120- 185 (5- 60%)	20.2	2.8	5.72	3.26	43	12/31	1.52	1.35	6/30	▲.815	.79	YES	
2036 1556 Genworth Fin'l	GNW	3.39	-	5	-	1.30	▲ 4- 7 (20-105%)	3.5	NIL	▲.96	NIL	81	12/31	.34	.05	3/31	NIL	NIL	YES	
741 Gibraltar Inds. (NDQ)	ROCK	86.31	1	3	2	1.10	85- 130 (N- 50%)	23.1	NIL	3.73	NIL	11	12/31	.59	.62	3/31	NIL	NIL	YES	
1038 2107 Gildan Activewear	GIL	30.87	3	3	3	1.45	35- 50 (15- 60%)	24.1	NIL	1.28	NIL	69	12/31	.45	.41	3/31	NIL	.154	YES	
1619 Gilead Sciences (NDQ)	GILD	65.53	4	2	4	.60	75- 105 (15- 60%)	13.0	4.3	5.05	2.84	75	12/31	1.25	2.13	3/31	▲.71	.68	YES	
2446 Gladstone Capital (NDQ)	GLAD	9.94	-	3	-	1.35	13- 20 (30-100%)	9.9	7.8	1.00	.78	67	12/31	.38	.02	3/31	.195	.21	YES	
1176 Glatfelter Corp.	GLT	17.34	3	3	3	1.15	25- 40 (45-130%)	23.1	3.1	.75	.54	38	12/31	.21	d1.01	3/31	.135	.13	YES	
180 Glaukos Corp.	GKOS	87.55	3	4	2	1.25	90- 150 (5- 70%)	NMF	NIL	d1.31	NIL	6	12/31	d.24	d1.06	3/31	NIL	NIL	YES	
1620 GlaxoSmithKline ADR(g)	GSK	36.67	3	1	5	.85	45- 55 (25- 50%)	21.8	5.7	▼1.68	2.08	75	12/31	.18	.65	3/31	.517	.50	YES	
2552 Global Payments	GNP	203.87	-	3	-	1.20	170- 255 (N- 25%)	74.1	0.4	2.75	.78	48	12/31	.61	.34	3/31	.195	.195	YES	
1557 Globe Life Inc.	GL	98.17	2	1	3	1.20	115- 145 (15- 50%)	13.6	0.8	7.24	.75	81	12/31	1.74	1.70	3/31	.188	.173	YES	
181 Globus Medical	GMED	61.34	▼	2	3	1.80	70- 110 (15- 80%)	31.3	NIL	1.96	NIL	6	12/31	.52	.44	3/31	NIL	NIL	YES	
451 2009 Glu Mobile (NDQ)	GLUU	12.44	-	5	-	.75	7- 13 (N- 5%)	NMF	NIL	.09	NIL	13	12/31	.13	.07	3/31	NIL	NIL	YES	
1823 GoDaddy Inc.	GDY	75.46	3	3	1	1.05	100- 150 (35-100%)	47.2	NIL	1.60	NIL	57	12/31	.41	.34	3/31	NIL	NIL	YES	
2240 333 Golar LNG Ltd. (NDQ)	GLNG	11.64	-	5	-	1.25	7- 13 (N- 10%)	NMF	NIL	d.28	NIL	36	12/31	.09	.25	3/31	NIL	NIL	YES	
2449 1808 Goldman Sachs	GS	339.33	1	2	3	1.20	325- 445 (N- 30%)	10.8	1.5	31.38	5.00	1	12/31	12.08	4.69	3/31	1.25	1.25	YES	
848 977 Goodyear Tire (NDQ)	GT	17.09	4	4	3	1.45	19- 30 (10- 75%)	16.4	NIL	1.04	NIL	43	12/31	.44	.19	3/31	NIL	.16	YES	
451 1331 GoPro, Inc. (NDQ)	GPRO	13.37	4	5	4	1.35	7- 13 (N- N%)	NMF	NIL	d.07	NIL	51	12/31	.28	.65	3/31	NIL	NIL	YES	
158 Gorman-Rupp Co.	GRC	32.80	5	3	3	1.00	45- 70 (35-115%)	25.0	1.9	1.31	.62	34	12/31	.25	.25	3/31	.			

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	Timeliness			Safety	Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?			
			Qtr. Ended	Earnings Per sh.	Year Ago								Qtr. Ended	Latest Div'd	Year Ago				
																	Qtr. Ended	Earnings Per sh.	Year Ago
798 HCA Healthcare	HCA	188.18	2	3	4	1.20	175- 260 (N- 40%)	14.2	1.0	13.23	1.92	37	12/31	4.13	3.09	3/31	▲.48	.43	YES
1840 HD Supply Holdings	HDS						SEE FINAL SUPPLEMENT												
1150 HNI Corp.	HNI	40.14	5	3	3	1.10	50- 80 (25-100%)	23.5	3.0	1.71	1.22	85	12/31	.66	1.12	3/31	.305	.305	YES
1400 HP Inc.	HPQ	30.47	▼2	3	4	1.25	40- 60 (30- 95%)	9.7	2.6	3.15	.78	32	1/31	.92	.66	6/30	.194	.176	YES
2516 HSBC Holdings PLC	HSBC	29.34	2	4	4	.85	50- 70 (70-140%)	NMF	2.6	d.15	.75	19	12/31	.15	d1.35	6/30	▲.75	NIL	YES
213 Haemonetics Corp.	HAE	115.77	▲2	3	1	.80	125- 195 (10- 70%)	39.2	NIL	2.95	NIL	17	12/31	.81	.94	3/31	NIL	NIL	YES
1914 Hain Celestial Group (NDQ)	HAIN	44.83	1	3	2	.75	45- 65 (N- 45%)	36.4	NIL	1.23	NIL	40	12/31	.34	.17	3/31	NIL	NIL	YES
2417 Halliburton Co.	HAL	21.54	4	4	3	1.70	20- 35 (N- 60%)	40.6	0.8	.53	.18	93	12/31	.18	.32	3/31	.045	.18	YES
780 Hancock Whitney Corp.(NDQ)	HWC	42.80	3	3	3	1.50	40- 60 (N- 40%)	10.8	2.5	3.96	1.08	3	12/31	1.17	1.03	3/31	.27	.27	YES
2109 Hanesbrands, Inc.	HBI	20.46	5	3	4	.90	18- 25 (N- 20%)	14.8	2.9	1.38	.60	69	12/31	.38	.51	3/31	.15	.15	YES
763 Hanover Insurance	THG	129.77	3	2	3	.95	135- 180 (5- 40%)	12.7	2.2	10.22	2.80	46	12/31	3.02	2.01	3/31	.70	.65	YES
2309 Harley-Davidson	HOG	35.27	4	3	3	1.25	80- 115 (125-225%)	17.5	1.7	2.01	.60	82	12/31	d.44	2.01	3/31	▲.15	.38	YES
1039 386 Harco Corp.	HSC	18.21	5	3	3	1.40	30- 50 (65-175%)	31.4	NIL	.58	NIL	47	12/31	.12	.12	3/31	NIL	NIL	YES
★ 2553 Hartford Fin'l Svcs.	HIG	67.29	-	2	-	1.20	60- 80 (N- 20%)	12.4	2.1	5.41	1.40	48	12/31	1.76	1.43	6/30	▲.35	.325	YES
2510 Hasbro, Inc. (NDQ)	HAS	96.85	3	3	3	1.20	125- 190 (30- 95%)	22.9	2.8	4.23	2.72	82	12/31	1.27	1.24	6/30	.68	.68	YES
2172 Haverly Furniture	HVT	38.70	3	3	3	.95	35- 55 (N- 40%)	13.3	2.3	2.90	.88	63	12/31	1.37	.31	3/31	.22	.20	YES
2214 Hawaiian Elec.	HE	42.04	▼5	2	5	.80	30- 40 (N- N%)	22.7	3.2	1.85	1.36	78	12/31	.46	.61	3/31	▲.34	.33	YES
309 Hawaiian Hldgs. (NDQ)	HA	26.89	4	4	4	1.65	25- 45 (N- 65%)	NMF	NIL	d7.86	NIL	79	12/31	d3.71	1.07	3/31	NIL	.12	YES
729 Haynes International (NDQ)	HAYN	28.87	4	3	4	1.20	30- 45 (5- 55%)	NMF	3.0	d1.10	.88	71	12/31	d.65	.26	3/31	.22	.22	YES
1528 Healthcare R'tly Trust	HR	30.48	4	3	4	.90	40- 55 (30- 80%)	NMF	4.0	▼.04	1.21	94	12/31	d.12	.20	3/31	▲.303	.30	YES
387 Healthcare Svcs. (NDQ)	HCSG	28.62	4	3	2	.90	35- 50 (20- 75%)	23.3	2.9	1.23	.82	47	12/31	.37	.25	3/31	▲.206	.201	YES
821 HealthEquity, Inc. (NDQ)	HQY	70.91	4	3	2	1.30	85- 130 (20- 85%)	39.6	NIL	1.79	NIL	90	1/31	.42	.39	3/31	NIL	NIL	YES
1529 Healthpeak Properties	PEAK	31.64	2	3	3	1.05	▲ 30- 45 (N- 40%)	60.8	3.8	▲.52	1.20	94	12/31	.21	.09	3/31	▼.30	.37	YES
321 Heartland Express (NDQ)	HTLD	19.06	4	2	5	.70	25- 35 (30- 85%)	19.6	0.4	.97	.08	60	12/31	.22	.16	6/30	.02	.02	YES
1572 Hecla Mining	HL	6.33	4	4	3	.90	11- 18 (75-185%)	27.5	0.3	▼.23	.02	65	12/31	NIL	d.02	3/31	▼.004	.003	YES
711 HEICO Corp.	HEI	125.23	2	3	3	1.10	130- 195 (5- 55%)	55.7	0.1	2.25	.16	49	1/31	.51	.89	3/31	.08	.08	YES
1641 Heidrick & Struggles (NDQ)	HSII	36.12	2	3	3	.90	▲ 40- 60 (10- 65%)	21.5	1.7	▲1.68	.60	44	12/31	.28	.54	3/31	.15	.15	YES
994 Helen of Troy Ltd. (NDQ)	HELE	213.37	3	3	3	.95	165- 250 (N- 15%)	18.2	NIL	11.70	NIL	12	11/30	3.76	3.12	3/31	NIL	NIL	YES
1762 Helios Technologies (NDQ)	HLIO	71.45	3	3	4	.85	80- 120 (10- 70%)	28.5	0.5	2.51	.36	42	12/31	.60	.54	6/30	.09	.09	YES
2418 Helix Energy Solutions	HLX	5.32	-	5	-	2.10	8- 14 (50-165%)	29.6	NIL	.18	NIL	93	12/31	.03	.05	3/31	NIL	NIL	YES
2419 Helmerich & Payne	HP	29.66	4	4	5	1.55	25- 40 (N- 35%)	NMF	3.5	d2.30	1.04	93	12/31	d.73	.13	6/30	▲.26	.71	YES
2618 Henry (Jack) & Assoc. (NDQ)	JKHY	149.23	▼3	1	5	.85	145- 180 (N- 20%)	33.1	1.2	4.51	1.84	39	12/31	.94	.94	3/31	▲.46	.40	YES
850 1915 Herbalife Nutrition	HLF	46.30	4	3	1	.95	60- 90 (30- 95%)	11.7	NIL	3.97	NIL	40	12/31	.71	.74	3/31	NIL	NIL	YES
1916 Hershey Co.	HSY	156.38	3	1	2	.85	140- 175 (N- 10%)	24.1	2.1	6.49	3.22	40	12/31	1.39	1.28	3/31	.804	.773	YES
508 Hess Corp.	HES	68.50	4	3	3	1.45	75- 115 (10- 70%)	NMF	1.5	d2.09	1.00	97	12/31	d.58	d.60	3/31	.25	.25	YES
1401 Hewlett Packard Ent.	HPE	15.34	3	3	3	1.35	25- 35 (65-130%)	8.5	3.1	1.80	.48	32	1/31	.52	.44	6/30	.12	.12	YES
2435 Hexcel Corp.	HXL	59.25	5	3	5	1.40	50- 80 (N- 35%)	NMF	NIL	d.25	NIL	22	12/31	.04	.89	3/31	NIL	.17	YES
2173 Hibbett Sports (NDQ)	HIBB	74.92	3	4	3	1.55	65- 110 (N- 45%)	20.6	NIL	3.64	NIL	63	1/31	1.40	.51	3/31	NIL	NIL	YES
214 Hill-Rom Hldgs.	HRC	108.74	3	3	3	1.05	110- 165 (N- 50%)	20.1	0.9	5.40	.96	17	12/31	1.53	1.13	3/31	▲.24	.22	YES
388 Hillenbrand, Inc.	HI	49.63	3	3	3	1.20	35- 50 (N- N%)	16.5	1.7	3.00	.86	47	12/31	.96	.63	3/31	.215	.213	YES
2359 Hilton Grand Vacations	HGV	38.22	▲3	3	3	1.55	45- 65 (20- 70%)	39.4	NIL	.97	NIL	84	12/31	.65	.83	3/31	NIL	NIL	YES
2360 Hilton Worldwide Hldgs.	HLT	122.92	1	3	4	1.10	95- 140 (N- 15%)	70.2	NIL	1.75	NIL	84	12/31	d.80	1.00	3/31	NIL	.15	YES
1984 Hitachi, Ltd. ADR(g) (PNK)	HTHY	99.97	3	3	3	1.05	65- 100 (N- N%)	31.7	2.0	3.15	2.00	5	12/31	1.14	d2.58	3/31	NIL	NIL	YES
620 Holly Energy Part.	HEP	18.66	5	4	5	.95	25- 40 (35-115%)	10.8	7.5	1.72	1.40	96	12/31	.49	.43	3/31	.35	.673	YES
509 HollyFrontier Corp.	HFC	35.85	5	3	5	1.35	30- 50 (N- 40%)	NMF	4.1	d3.7	1.48	97	12/31	d.74	.48	3/31	.35	.35	YES
215 Hologic, Inc. (NDQ)	HOLX	73.93	2	3	2	1.05	150- 225 (105-205%)	8.2	NIL	9.00	NIL	17	12/31	2.86	.26	3/31	NIL	NIL	YES
849 1140 Home Depot	HD	288.94	3	1	4	1.00	280- 345 (N- 20%)	23.2	2.3	12.45	6.60	33	1/31	2.65	2.28	3/31	▲1.65	1.50	YES
106 Honda Motor ADR(g)	HMC	30.93	3	3	3	1.00	40- 55 (30- 80%)	8.5	3.1	3.65	.96	2	12/31	1.60	.62	3/31	▲.239	.26	YES
237 1763 Honeywell Int'l	HON	212.13	2	1	3	1.20	190- 235 (N- 10%)	26.8	1.8	7.92	3.72	42	12/31	2.07	2.06	3/31	.93	.90	YES
238 1621 Horizon Therapeutics (NDQ)	HZNP	90.38	▲2	3	2	.85	80- 120 (N- 35%)	38.6	NIL	▼2.34	NIL	75	12/31	.99	2.84	3/31	NIL	NIL	YES
1917 Hormel Foods	HRL	48.55	4	1	3	.55	55- 70 (15- 45%)	27.7	2.0	1.75	.98	40	1/31	.41	.45	6/30	◆.245	.233	YES
1127 Horton D.R.	DHI	84.49	▼3	3	2	1.15	70- 110 (N- 30%)	9.8	1.0	8.60	.81	53	12/31	2.14	1.16	3/31	.20	.175	YES
1530 Host Hotels & Resorts	HST	17.56	4	3	4	1.10	15- 20 (N- 15%)	NMF	NIL	d1.04	NIL	94	12/31	d.09	.11	3/31	NIL	.20	YES
1918 Hostess Brands (NDQ)	TWPK	14.95	1	3	2	.75	20- 30 (35-100%)	18.2	NIL	.82	NIL	40	12/31	.21	.16	3/31	NIL	NIL	YES
1810 Houlihan Lokey	HLI	65.96	2	2	3	1.70	75- 105 (15- 60%)	20.7	2.0	3.19	1.32	1	12/31	1.71	.75	3/31	.33	.31	YES
389 Howard Hughes Corp.	HHC	97.54	3	3	3	1.70	110- 165 (15- 70%)	NMF	NIL	.43	NIL	47	12/31	d.12	d.03	3/31	NIL	NIL	YES
712 Howmet Aerospace	HWM	31.55	-	3	-	1.70	30- 45 (N- 45%)	36.7	NIL	.86	NIL	49	12/31	.21	.53	3/31	NIL	.02	YES
322 Hub Group	HUBG	65.38	3	3	4	.75	65- 95 (N- 45%)	22.1	NIL	2.96	NIL	60	12/31	.81	.84	3/31	NIL	NIL	YES
1311 Hubbell Inc.	HUBB	184.37	3	2	4	1.20	180- 240 (N- 30%)	22.9	2.2	8.06	4.00	50	12/31	1.76	1.91	3/31	.98	.91	YES
633 1824 HubSpot, Inc.																			

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	RANKS			3-5 year Target Price and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?						
			Timeliness	Safety	Technical Beta						Qtr. Ended	Earnings Per sh.	Year Ago		Qtr. Ended	Latest Div'd	Year Ago			
																		Qtr. Ended	Earnings Per sh.	Year Ago
730 Illinois Tool Works	ITW	219.11	3	1	4	1.05	250-305	(15-40%)	28.2	2.1	7.77	4.56	71	12/31	2.02	1.99	6/30	1.14	1.07	YES
633 217 Illumina Inc.	(NDO) ILMN	429.92	3	3	2	.90	365-550	(N-30%)	79.6	NIL	5.40	NIL	17	12/31	1.75	1.61	3/31	NIL	NIL	YES
1232 2311 IMAX Corp.	(NDO) IMAX	21.04	4	4	3	.85	30-45	(45-115%)	NMF	NIL	0.18	NIL	82	12/31	d.21	.35	3/31	NIL	NIL	YES
2010 Immersion Corp.	(NDO) IMMR	10.68	-	4	-	.95	9-15	(N-40%)	NMF	NIL	d.08	NIL	13	12/31	.30	.03	3/31	NIL	NIL	YES
510 Imperial Oil Ltd.	(ASE) IMO	23.48	4	3	4	1.45	25-35	(5-50%)	41.2	2.9	.57	.68	97	12/31	.02	.29	6/30	▲.168	.164	YES
834 Incyte Corp.	(NDO) INCY	81.67	3	3	4	.75	170-255	(110-210%)	27.0	NIL	3.03	NIL	55	12/31	.68	.51	3/31	NIL	NIL	YES
422 India Fund (The)	IFN	22.15	-	3	-	.95	20-30	(N-35%)	NMF	0.2	NMF	.04	-	12/31	22.99(q)	22.60(q)	3/31	NIL	NIL	YES
950 Infinaera Corp.	(NDO) INFN	10.22	▼	4	2	1.20	8-15	(N-45%)	NMF	NIL	d.55	NIL	15	12/31	d.05	d.37	3/31	NIL	NIL	YES
2619 Infosys Ltd. ADR	INFY	19.07	1	1	3	.95	20-25	(5-30%)	28.5	1.3	.67	.25	39	12/31	.17	.15	3/31	NIL	NIL	YES
1717 Ingersoll Rand Inc.	IR	48.81	-	3	-	NMF	45-70	(N-45%)	29.6	NIL	1.65	NIL	45	12/31	.53	NA	3/31	NIL	NIL	YES
567 Ingevity Corp.	(NDO) NGVT	75.08	3	3	3	1.35	100-150	(35-100%)	14.8	NIL	5.08	NIL	41	12/31	1.33	1.10	3/31	NIL	NIL	YES
1952 Ingles Markets	(NDO) IMKTA	63.22	3	3	4	.50	40-65	(N-35%)	9.2	1.0	6.90	.66	70	12/31	2.66	.87	3/31	▲.165	.165	YES
1919 Ingredion Inc.	(NDO) INGR	90.21	3	2	4	.90	115-155	(25-70%)	14.6	2.9	6.20	2.58	40	12/31	1.69	1.60	6/30	◆.64	.63	YES
568 Innospec Inc.	(NDO) IOSP	101.01	3	3	3	1.00	90-130	(N-30%)	30.4	1.1	3.32	1.10	41	12/31	.91	1.26	3/31	NIL	NIL	YES
218 Inogen, Inc.	(NDO) INGN	49.34	3	3	3	.85	65-100	(30-105%)	NMF	NIL	d.37	NIL	17	12/31	d.23	d.06	3/31	NIL	NIL	YES
1358 Inphi Corp.	(NDO) IPHI	165.29	-	3	-	1.00	150-225	(N-35%)	45.8	NIL	3.61	NIL	18	12/31	.91	.47	3/31	NIL	NIL	YES
592 Inseego Corp.	(NDO) INSG	10.60	4	5	2	1.00	25-45	(135-325%)	NMF	NIL	d.23	NIL	73	12/31	d.14	d.17	3/31	NIL	NIL	YES
2174 Insight Enterprises	(NDO) NSIT	95.70	1	3	3	1.20	90-135	(N-40%)	19.4	NIL	4.93	NIL	63	12/31	1.50	1.20	3/31	NIL	NIL	YES
1642 Insperity Inc.	(NDO) NSP	83.66	5	3	2	1.40	85-125	(N-50%)	27.3	1.9	▼3.06	1.60	44	12/31	.11	.51	3/31	.40	.40	YES
183 Inspire Medical Sys.	(NDO) INSP	207.37	3	4	2	1.60	185-310	(N-50%)	NMF	NIL	d2.26	NIL	6	12/31	d.28	d.38	3/31	NIL	NIL	YES
742 Insteel Industries	(NDO) IJIN	33.56	3	3	4	1.15	45-65	(35-95%)	19.2	0.4	1.75	.12	11	12/31	.42	.03	3/31	.03	.06	YES
184 Insulet Corp.	(NDO) PODD	269.32	1	3	2	.95	100-150	(N-N)	NMF	NIL	.83	NIL	6	12/31	d.26	.09	3/31	NIL	NIL	YES
850 1332 Integer Holdings	(NDO) ITGR	89.48	4	3	3	1.45	100-150	(10-70%)	26.6	NIL	3.36	NIL	51	12/31	.71	1.25	3/31	NIL	NIL	YES
185 Integra LifeSciences	(NDO) IART	67.14	2	3	2	1.05	70-105	(5-55%)	23.6	NIL	2.84	NIL	6	12/31	.84	.68	3/31	NIL	NIL	YES
2659 1359 Intel Corp.	(NDO) INTC	65.63	1	1	3	1.80	100-120	(50-85%)	13.2	2.1	4.98	1.39	18	12/31	1.52	1.52	6/30	.348	.33	YES
995 Inter Parfums	(NDO) IPAR	71.96	3	3	3	1.15	70-105	(N-45%)	44.4	1.4	1.62	1.00	12	12/31	.47	.26	3/31	▲.25	.33	YES
1801 Interactive Brokers	(NDO) IBKR	78.01	1	3	3	1.05	65-100	(N-30%)	34.5	0.5	2.26	.40	35	12/31	.69	.57	3/31	.10	.10	YES
835 Intercept Pharm.	(NDO) ICPT	23.55	3	4	4	1.40	75-125	(220-430%)	NMF	NIL	d6.61	NIL	55	12/31	d1.58	d2.99	3/31	NIL	NIL	YES
1802 Intercontinental Exch.	(NDO) ICE	111.55	3	2	3	.95	105-145	(N-30%)	24.4	1.2	4.57	1.32	35	12/31	1.13	.95	3/31	▲.33	.30	YES
593 InterDigital Inc.	(NDO) IDCC	64.99	4	3	2	1.20	95-145	(45-125%)	65.0	2.2	1.00	1.40	73	12/31	d.04	.44	3/31	.35	.35	YES
2658 1151 Interface Inc. 'A'	(NDO) TILE	12.85	4	4	4	1.60	25-40	(95-210%)	12.6	0.3	1.02	.04	85	12/31	.27	.46	6/30	◆.01	.075	YES
1402 Int'l Business Mach.	(NDO) IBM	130.55	3	1	5	1.05	150-185	(15-40%)	15.1	5.0	8.67	6.52	32	12/31	2.07	4.71	3/31	1.63	1.62	YES
569 Int'l Flavors & Frag.	(NDO) IFF	137.30	-	1	-	.95	180-225	(30-65%)	23.2	2.3	5.92	3.12	41	12/31	1.32	1.46	6/30	.77	.75	YES
2362 Int'l Game Tech. PLC	(NDO) IGT	18.34	4	4	3	1.70	20-35	(10-90%)	26.2	NIL	.70	NIL	84	12/31	d1.25	.31	3/31	NIL	.20	YES
1163 Int'l Paper	(NDO) IP	52.63	2	3	3	1.15	75-110	(45-110%)	17.9	3.9	2.94	2.05	52	12/31	.39	.42	3/31	.513	.513	YES
2389 Interpublic Group	(NDO) IPG	29.27	2	3	4	1.20	35-55	(20-90%)	17.4	3.7	1.68	1.08	64	12/31	.28	.84	3/31	▲.27	.255	YES
2585 Intuit Inc.	(NDO) INTU	383.02	3	2	2	1.00	400-540	(5-40%)	45.3	0.6	8.46	2.48	21	1/31	.68	1.16	6/30	.59	.53	YES
186 Intuitive Surgical	(NDO) ISRG	714.73	2	2	1	1.20	880-1190	(25-65%)	62.0	NIL	11.52	NIL	6	12/31	3.02	2.99	3/31	NIL	NIL	YES
1434 219 Invacare Corp.	(NDO) IVC	8.47	-	5	-	1.50	10-18	(20-115%)	NMF	NIL	d.03	NIL	17	12/31	d.10	d.28	3/31	NIL	.013	YES
2231 Invesco Ltd.	(NDO) IVZ	25.11	▲	1	3	1.50	35-50	(40-100%)	17.1	2.5	1.47	.62	16	12/31	.46	.39	3/31	▲.155	.31	YES
2238 1504 Investors Bancorp	(NDO) ISBC	14.31	2	3	3	1.10	▲ 19-30	(35-110%)	12.3	3.9	▲ 1.16	.56	31	12/31	.32	.19	3/31	▲.14	.12	YES
806 Invitae Corp.	(NDO) NVTX	42.79	4	4	2	1.70	40-75	(N-75%)	NMF	NIL	d2.98	NIL	37	12/31	d1.34	d.79	3/31	NIL	NIL	YES
★★ 836 Ionis Pharm.	(NDO) IONS	55.64	4	4	3	.95	70-115	(25-105%)	NMF	NIL	d.45	NIL	55	12/31	d2.44	1.28	3/31	NIL	NIL	YES
220 iRhythm Technologies	(NDO) IRTC	142.54	3	4	1	.95	220-445	(55-210%)	NMF	NIL	d.94	NIL	17	12/31	d.33	d.65	3/31	NIL	NIL	YES
923 Iridium Commun.	(NDO) IRDM	39.24	2	3	2	1.10	40-60	(N-55%)	NMF	NIL	.07	NIL	74	12/31	d.06	d.15	3/31	NIL	NIL	YES
1333 iRobot Corp.	(NDO) IRBT	123.82	3	3	2	.80	130-200	(5-60%)	41.4	NIL	2.99	NIL	51	12/31	.84	.70	3/31	NIL	NIL	YES
391 Iron Mountain	(NDO) IRM	36.58	2	3	3	.90	40-60	(10-65%)	30.5	6.8	1.20	2.48	47	12/31	.29	.31	6/30	.619	.619	YES
1622 Ironwood Pharm.	(NDO) IRWD	11.52	4	4	5	.95	20-35	(75-205%)	12.3	NIL	.94	NIL	75	12/31	.27	.30	3/31	NIL	NIL	YES
594 Itron Inc.	(NDO) ITRI	89.30	3	3	1	1.10	95-145	(5-60%)	63.3	NIL	1.41	NIL	73	12/31	.53	.36	3/31	NIL	NIL	YES
1920 J&J Snack Foods	(NDO) JJSF	154.39	4	1	2	.90	155-185	(N-20%)	56.1	1.5	2.75	2.30	40	12/31	.09	.89	6/30	.575	.575	YES
2450 2517 JPMorgan Chase	(NDO) JPM	150.97	2	1	3	1.15	125-150	(N-N)	13.7	2.4	11.04	3.60	19	12/31	3.79	2.57	6/30	◆.90	.90	YES
924 j2 Global	(NDO) JCOM	118.47	1	3	3	1.05	115-170	(N-45%)	32.9	NIL	3.60	NIL	74	12/31	1.27	1.35	3/31	NIL	NIL	YES
1334 Jabil Inc.	(NDO) JBL	50.55	3	3	3	1.25	75-110	(50-120%)	10.1	0.6	5.00	.32	51	2/28	1.27	.50	3/31	.08	.08	YES
361 Jack in the Box	(NDO) JACK	114.69	3	4	3	1.35	105-170	(N-50%)	20.3	1.4	5.65	1.60	87	12/31	2.16	1.17	3/31	.40	.40	YES
1024 Jacobs Engineering	(NDO) J	123.19	3	3	3	1.10	140-210	(15-70%)	21.1	0.7	5.85	.84	26	12/31	1.41	1.20	3/31	▲.21	.19	YES
1113 James Hardie ADS	(NDO) JHX	29.10	3	3	1	1.35	25-35	(N-20%)	44.1	NIL	.66	NIL	61	12/31	.15	.10	3/31	NIL	NIL	YES
2232 Janus Henderson plc	(NDO) JHG	31.84	3	3	3	1.40	35-55	(10-75%)	12.8	4.5	2.48	1.44	16	12/31	1.02	.59	3/31	.36	.36	YES
423 Japan Smaller Cap Fd	(NDO) JOF	9.56	-	3	-	.90	10-16													

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	RANKS			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?						
			Timeliness	Safety	Technical Beta						Qtr. Ended	Earnings Per sh.	Year Ago		Qtr. Ended	Latest Div'd	Year Ago			
																		Qtr. Ended	Earnings Per sh.	Year Ago
121 Keysight Technologies	(NDQ) KEYS	137.43	3	2	2	85	145- 200	(5- 45%)	24.5	NIL	5.60	NIL	20	1/31	1.43	1.26	3/31	NIL	NIL	YES
1644 Kforce Inc.	(NDQ) KFRC	51.61	3	3	3	1.00	▲ 55- 80	(5- 55%)	17.4	1.8	▲ 2.96	.92	44	1/31	.86	.66	3/31	▲ .23	.20	YES
1152 Kimball Int'l	(NDQ) KBAL	133.61	5	3	5	1.15	25- 35	(85-155%)	20.6	2.6	.66	.36	85	12/31	d.02	.30	6/30	.09	.09	YES
1193 Kimberly-Clark	KMB	133.03	4	1	4	7.0	165- 205	(25- 55%)	16.8	3.4	7.94	4.56	23	12/31	1.69	1.71	6/30	▲ 1.14	1.07	YES
1531 Kimco Realty	KIM	18.49	4	3	3	1.20	25- 40	(35-115%)	21.5	4.3	.86	.80	94	12/31	.45	.22	3/31	▲ .17	.28	YES
607 Kinder Morgan Inc.	KMI	15.78	5	3	4	1.20	35- 55	(120-250%)	15.9	6.7	.99	1.05	95	12/31	.27	.27	3/31	.263	.25	YES
1573 Kinross Gold	KGC	6.94	3	3	3	.50	14- 25	(100-260%)	8.3	1.7	▼ .84	.12	65	12/31	.27	.13	3/31	.03	NIL	YES
334 Kirby Corp.	KEX	64.04	4	3	5	1.15	50- 70	(N- 10%)	47.8	NIL	1.34	NIL	36	12/31	.37	.58	3/31	NIL	NIL	YES
1574 Kirkland Lake Gold	KL	34.40	-	2	-	NMF	50- 65	(45- 90%)	11.2	2.2	3.06	.75	65	12/31	.86	.80	6/30	.188	.125	YES
324 Knight-Swift Trans.	KNX	45.24	3	3	4	.85	60- 90	(35-100%)	14.2	0.7	3.19	.32	60	12/31	.94	.55	3/31	.08	.08	YES
1415 Knoll Inc.	KNL	16.87	5	3	4	1.40	25- 35	(50-105%)	67.5	1.4	.25	.24	91	12/31	d.05	.21	3/31	.06	.17	YES
952 Knowles Corp.	KN	21.30	3	3	3	1.10	25- 35	(15- 65%)	17.0	NIL	1.25	NIL	15	12/31	.41	.35	3/31	NIL	NIL	YES
851 2145 Kohl's Corp.	KSS	58.74	3	4	4	1.80	40- 65	(N- 10%)	38.1	1.7	1.54	1.00	25	1/31	2.22	1.99	3/31	▲ .25	NIL	YES
424 Korea Fund	KF	43.15	-	3	-	1.15	55- 80	(25- 85%)	NMF	0.2	NMF	.07	-	1/31	47.09(q)	34.40(q)	3/31	.526	.071	YES
850 1645 Komf Ferry	KFY	63.02	2	3	3	1.20	▲ 65- 95	(5- 50%)	20.0	0.6	▲ 3.15	.40	44	1/31	.95	.75	6/30	.10	.10	YES
1718 Kornit Digital Ltd.	(NDQ) KRNT	100.01	2	3	3	1.05	85- 125	(N- 25%)	NMF	NIL	.74	NIL	45	12/31	.12	.11	3/31	NIL	NIL	YES
1922 Kraft Heinz Co.	(NDQ) KHC	39.55	3	3	3	1.90	45- 65	(15- 65%)	13.7	4.0	2.89	1.60	40	12/31	.80	.72	3/31	.40	.40	YES
570 Kraton Corp.	KRA	37.14	4	5	3	1.85	30- 50	(N- 35%)	35.4	NIL	1.05	NIL	41	12/31	d.69	.13	3/31	NIL	NIL	YES
714 Kratos Defense & Sec.	(NDQ) KTOS	25.48	3	4	1	1.35	25- 45	(N- 75%)	45.5	NIL	.56	NIL	49	12/31	1.04	.03	3/31	NIL	NIL	YES
1953 Kroger Co.	KR	36.19	2	3	4	.45	40- 55	(10- 50%)	13.2	2.0	2.74	.72	70	1/31	.81	.57	6/30	.18	.16	YES
571 Kronos Worldwide	KRO	15.33	2	4	3	1.10	15- 25	(N- 65%)	26.0	4.7	.59	.72	41	12/31	.09	.08	3/31	.18	.18	YES
456 1391 Kulicke & Sofia	(NDQ) KLIC	49.68	2	3	3	1.05	50- 75	(N- 50%)	15.5	1.1	3.20	.56	30	12/31	.86	.24	6/30	.14	.12	YES
1428 2201 L Brands	LB	60.01	3	4	4	1.55	55- 90	(N- 50%)	13.7	1.0	4.38	.60	24	1/31	3.03	d.70	3/31	NIL	.30	YES
715 L3Harris Technologies	LHX	198.04	-	2	-	NMF	305- 415	(55-110%)	19.1	2.1	10.36	4.08	49	12/31	.92	1.77	3/31	▲ 1.02	.85	YES
978 LCI Industries	LCII	136.66	3	3	3	1.20	165- 245	(20- 80%)	15.4	2.2	8.87	3.00	43	12/31	1.92	1.14	3/31	.75	.65	YES
803 LHC Group	(NDQ) LHCG	194.67	3	3	3	.75	260- 385	(35-100%)	33.2	NIL	5.86	NIL	37	12/31	.97	.72	3/31	NIL	NIL	YES
979 LKQ Corp.	(NDQ) LKQ	42.98	2	3	4	1.50	65- 95	(50-120%)	15.4	NIL	2.79	NIL	43	12/31	.69	.54	3/31	NIL	NIL	YES
1803 LPL Financial Hldgs.	(NDQ) LPLA	144.78	3	3	4	1.30	145- 215	(N- 50%)	23.7	0.7	6.12	1.00	35	12/31	1.38	1.53	3/31	.25	.25	YES
1153 La-Z-Boy Inc.	LZB	43.53	1	3	3	1.15	55- 80	(25- 85%)	15.3	1.4	2.85	.60	85	1/31	.74	.72	3/31	▲ .15	.14	YES
804 Laboratory Corp.	LH	243.10	3	2	3	1.15	255- 345	(5- 40%)	9.0	NIL	26.96	NIL	37	12/31	10.56	2.86	3/31	NIL	NIL	YES
1392 Lam Research	(NDQ) LRCX	560.03	2	3	3	1.35	435- 650	(N- 15%)	22.0	1.0	25.48	5.50	30	12/31	6.03	4.01	6/30	1.30	1.15	YES
2390 Lamar Advertising	(NDQ) LAMR	92.54	5	3	3	1.60	95- 145	(5- 55%)	32.8	3.2	2.82	3.00	64	12/31	1.08	1.02	3/31	▲ .75	1.00	YES
1923 Lamb Weston Holdings	LW	79.25	4	3	3	1.15	65- 100	(N- 25%)	37.7	1.2	2.10	.95	40	11/30	.66	.95	3/31	▲ 235	2.33	YES
1924 Lancaster Colony	(NDQ) LANC	183.91	3	2	2	1.70	145- 195	(N- 5%)	36.4	1.6	5.05	3.00	40	12/31	1.62	1.58	3/31	.75	.70	YES
2237 2363 Las Vegas Sands	LVS	62.87	4	4	4	1.05	75- 130	(20-105%)	NMF	NIL	.50	NIL	84	12/31	d.37	.88	3/31	NIL	.79	YES
1360 Lattice Semiconductor	(NDQ) LSCC	44.73	3	3	3	1.10	50- 75	(10- 70%)	56.6	NIL	.79	NIL	18	12/31	.19	.17	3/31	NIL	NIL	YES
451 996 Lauder (Estee)	EL	286.18	1	2	2	.95	185- 250	(N- N%)	46.8	0.8	6.11	2.22	12	12/31	2.61	2.11	3/31	.53	.48	YES
2555 Laureate Education	(NDQ) LAUR	14.09	-	3	-	1.35	17- 25	(20- 75%)	64.0	NIL	.22	NIL	88	12/31	d1.17	.24	3/31	NIL	NIL	YES
980 Lazard Ltd.	LAZ	43.06	2	3	2	1.30	60- 90	(40-110%)	13.5	4.4	3.18	1.88	48	12/31	1.66	.91	3/31	.47	.47	YES
1154 Leggett & Platt	LEG	46.30	3	3	3	1.25	60- 95	(30-105%)	19.2	3.5	2.41	1.60	85	12/31	.76	.68	6/30	.40	.40	YES
393 Leidos Hldgs.	LDOS	95.47	3	3	2	1.10	115- 170	(20- 80%)	15.1	1.4	6.34	1.36	47	12/31	1.63	1.51	3/31	.34	.34	YES
1129 Lennar Corp.	LEN	97.01	▼	2	2	1.30	75- 110	(N- 15%)	10.6	1.1	9.12	1.02	53	2/28	3.20	1.27	3/31	.25	.125	YES
2119 Lennox Int'l	LII	303.36	3	3	3	1.00	305- 460	(N- 50%)	27.2	1.0	11.14	3.08	45	12/31	2.89	2.45	6/30	.77	.77	YES
1710 Levi Strauss & Co.	LEVI	24.82	-	3	-	NMF	25- 35	(N- 40%)	32.2	0.6	.77	.16	69	11/30	.14	.23	3/31	▲ .04	.08	YES
1204 Liberty All-Star	USA	7.58	-	3	-	1.20	6- 9	(N- 20%)	NMF	9.2	NMF	.70	-	12/31	7.37(q)	6.90(q)	3/31	.35	.34	YES
1009 Liberty Global plc	(NDQ) LBTYA	26.93	3	3	3	.85	45- 65	(65-140%)	NMF	NIL	d1.22	NIL	28	12/31	d1.72	d2.20	3/31	NIL	NIL	YES
925 Liberty Latin Amer.	(NDQ) LILA	14.42	5	4	5	1.10	17- 30	(20-110%)	NMF	NIL	d.57	NIL	74	12/31	d.12	.23	3/31	NIL	NIL	YES
1429 1623 Lilly (Eli)	LLY	185.84	1	1	3	.75	▲ 200- 240	(10- 30%)	20.9	1.8	8.88	3.40	75	12/31	2.75	1.73	3/31	▲ .85	.74	YES
1429 981 Linamar Corp.	(TSE) LNR.TO	78.76b	3	3	3	1.10	80- 120	(N- 50%)	13.9	0.8	5.66	.64	43	12/31	1.73(b)	.76(b)	6/30	▲ .16	.18	YES
1720 Lincoln Elec Hldgs.	(NDQ) LECO	123.69	3	2	3	1.05	90- 125	(N- N%)	28.1	1.6	4.40	2.04	45	12/31	1.24	1.15	6/30	.51	.49	YES
1558 Lincoln Nat'l Corp.	LNC	62.39	4	3	4	1.90	▲ 65- 100	(5- 60%)	10.6	2.8	5.88	1.74	81	12/31	1.78	2.41	6/30	.42	.40	YES
572 Linde plc	LIN	270.36	-	3	-	.95	300- 455	(10- 70%)	29.7	1.6	9.10	4.34	41	12/31	2.30	1.89	3/31	▲ 1.06	.963	YES
1721 Lindsay Corp.	LNN	164.83	3	3	4	.85	80- 120	(N- N%)	52.3	0.8	3.15	1.28	45	11/30	.65	.77	3/31	.32	.31	YES
2337 Lions Gate 'A'	LGFA	18.04	3	3	4	1.20	16- 25	(N- 40%)	NMF	NIL	NIL	NIL	4	12/31	d.06	d.42	3/31	NIL	NIL	YES
2128 Lithia Motors	LAD	383.00	3	3	3	1.20	295- 445	(N- 15%)	20.9	0.3	18.31	1.24	59	12/31	7.02	2.89	3/31	.31	.30	YES
1312 Littelfuse Inc.	(NDQ) LFUS	260.76	3	3	3	1.10	220- 330	(N- 25%)	32.1	0.7	8.13	1.92	50	12/31	2.23	1.17	3/31	.48	.48	YES
187 LivaNova PLC	(NDQ) LIVN	76.24	▲	3	3	1.40	80- 120	(5- 55%)	37.4	NIL	2.04	NIL	6	12/31	d5.75	d.75				

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	Timeliness	Safety	Technical	Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Qtr. Ended	Latest Div'd	Year Ago	Qtr. Ended	Latest Div'd	Year Ago	
												Qtr. Ended	Earns. Per sh.	Year Ago							
450 1393 MKS Instruments (NDO)	MKSI	176.33	3 3 3	3	1.15	135- 205	(N- 15%)	22.8	0.5	7.74	.80	30	12/31	2.34	1.20	3/31	.20	.20	YES		
621 MPLX LP	MPLX	25.97	3 3 3	3	1.10	35- 55	(35-110%)	10.4	10.6	2.50	2.75-1.75	96	12/31	.63	.55	3/31	.688	.688	YES		
2420 MRC Global	MRC	9.24	- 5 -	1.30		11- 20	(20-115%)	NMF	NIL	d.25	NIL	93	12/31	d.13	d.37	3/31	NIL	NIL	YES		
1722 MSA Safety	MSA	159.12	3 3 3	3	1.00	115- 170	(N- 5%)	35.2	1.1	4.52	1.75	45	12/31	1.27	1.29	3/31	.43	.42	YES		
1723 MSC Industrial Direct	MSM	87.76	3 2 3	.95		120- 165	(35- 90%)	19.3	3.4	4.54	3.00	45	11/30	1.10	1.21	3/31	.75	.75	YES		
442 MSCI Inc.	MSCI	419.36	3 3 3	.95		320- 480	(N- 15%)	49.0	0.8	8.56	3.42	58	12/31	1.96	1.67	3/31	.78	.68	YES		
2339 MSG Networks	MSGN	19.77	▲ 3 4	.80		25- 40	(N- 50%)	7.9	NIL	2.49	NIL	4	12/31	.72	.63	3/31	NIL	NIL	YES		
123 MTS Systems (NDO)	MTSC	58.29	- 4 -	1.70		55- 85	(N- 45%)	41.6	NIL	1.40	NIL	20	12/31	.09	.37	3/31	NIL	.30	YES		
1533 Macerich Comp. (The)	MAC	12.98	4 4 4	1.55		20- 35	(55-170%)	NMF	5.0	▼d2.03	.65	94	12/31	d1.27	.19	3/31	.15	.75	YES		
1534 Mack-Cali R'lty	CLI	15.39	2 3 2	.95	▲	25- 40	(60-160%)	90.5	NIL	▲.17	NIL	94	12/31	.67	.53	3/31	NIL	.20	YES		
★★ 1361 MACOM Tech. Solutions(NDO)	MTSI	58.66	2 3 2	1.20		60- 90	(N- 55%)	30.9	NIL	1.90	NIL	18	12/31	.46	.07	3/31	NIL	NIL	YES		
394 Macquarie Infra.	MIC	31.30	- 3 -	NMF		25- 35	(N- 50%)	NMF	NIL	1.14	NIL	47	12/31	d.17	.18	3/31	NMF	1.00	YES		
2146 Macy's Inc.	M	17.78	▼ 4 4	3 1.70		18- 30	(N- 70%)	NMF	NIL	d.12	NIL	25	1/31	.80	2.12	3/31	NIL	.378	YES		
2161 Madden (Steven) Ltd. (NDO)	SHOO	37.11	2 3 3	1.15		35- 55	(N- 50%)	29.2	1.6	1.27	.60	72	12/31	.28	.21	3/31	▲.15	.15	YES		
2340 Madison Sq. Garden Sport	MSGS	189.16	- 4 -	NMF		210- 350	(10- 85%)	NMF	NIL	d5.47	NIL	4	12/31	d1.68	3.93	3/31	NIL	NIL	YES		
622 Magellan Midstream	MMP	43.86	5 3 5	1.20		70- 105	(60-140%)	12.3	9.4	3.57	4.11-3.00	96	12/31	.82	1.25	3/31	1.028	1.028	YES		
851 982 Magna Int'l 'A'	MGA	90.65	3 3 4	1.45		90- 135	(N- 50%)	11.8	1.9	7.68	1.75(h)	43	12/31	2.83	1.41	3/31	▲.43	.40	YES		
2404 Magnolia Oil & Gas	MGY	11.47	3 5 3	1.35		10- 20	(N- 75%)	45.9	NIL	.25	NIL	92	12/31	.16	.05	3/31	NIL	NIL	YES		
2312 Malibu Boats (NDO)	MBUU	85.73	3 3 3	1.30		80- 120	(N- 40%)	17.2	NIL	4.97	NIL	82	12/31	1.22	.93	3/31	NIL	NIL	YES		
2621 Manhattan Assoc.	MANH	120.86	4 3 1	1.25		110- 160	(N- 40%)	NMF	NIL	.96	NIL	39	12/31	.32	.26	3/31	NIL	NIL	YES		
160 Manitowoc Co.	MTW	21.16	3 4 4	1.25		16- 25	(N- 20%)	60.5	NIL	.35	NIL	34	12/31	.19	.35	3/31	NIL	NIL	YES		
1646 ManpowerGroup Inc.	MAN	98.97	2 3 3	1.15		105- 160	(5- 60%)	22.1	2.4	4.48	2.34	44	12/31	1.33	2.33	3/31	NIL	NIL	YES		
2622 ManTech Int'l 'A' (NDO)	MANT	84.32	▼ 4 3	.85		90- 130	(5- 55%)	26.9	1.8	3.13	1.52	39	12/31	.79	1.00	3/31	▲.38	.32	YES		
1559 Manulife Fin'l	MFC	21.52	3 3 3	1.45	▲	30- 45	(40-110%)	8.6	4.2	▲2.50	.90	81	12/31	.70	.56	3/31	.21	.193	YES		
1925 Maple Leaf Foods (TSE)	MFLTO	28.76	3 2 5	.55		40- 55	(40- 90%)	17.0	2.5	1.69	.72	40	12/31	.20	.14	3/31	▲.18	.16	YES		
2405 Marathon Oil Corp.	MRO	10.83	4 4 3	1.50		14- 25	(30-130%)	NMF	1.1	d.68	.12	92	12/31	d.12	.07	3/31	.03	.05	YES		
511 Marathon Petroleum	MPC	53.35	- 3 -	1.70		65- 95	(20- 80%)	72.1	4.3	.74	2.32	97	12/31	.29	1.56	3/31	.58	.58	YES		
2365 Marcus Corp.	MCS	21.39	5 4 5	1.55		25- 40	(15- 85%)	NMF	NIL	d2.57	NIL	84	12/31	d1.29	.25	3/31	NIL	.17	YES		
2175 MarineMax	HZO	58.13	3 4 4	1.40		50- 85	(N- 45%)	14.9	NIL	3.90	NIL	63	12/31	1.04	.41	3/31	NIL	NIL	YES		
764 Markel Corp.	MKL	1111.40	3 2 3	1.15		1445-1955	(30- 75%)	10.1	NIL	110.33	NIL	46	12/31	59.33	36.26	3/31	NIL	NIL	YES		
1804 MarketAxess Holdings (NDO)	MKTX	521.28	3 3 3	.75		390- 580	(N- 10%)	63.1	0.5	8.26	2.64	35	12/31	1.91	1.32	3/31	▲.66	.60	YES		
2366 Marriott Int'l (NDO)	MAR	151.50	2 3 4	1.30		115- 170	(N- 10%)	95.9	NIL	1.58	NIL	84	12/31	d.50	.85	3/31	NIL	.48	YES		
2367 Marriott Vacations	VAC	173.51	4 3 4	1.75		160- 240	(N- 40%)	47.3	0.6	3.67	1.00	84	12/31	d.05	2.41	3/31	NIL	1.08	YES		
2558 Marsh & McLennan	MMC	117.28	3 1 4	.95		110- 135	(N- 15%)	24.0	1.6	4.88	1.90	48	12/31	.73	.76	6/30	◆.465	.455	YES		
1115 Martin Marietta	MLM	321.82	3 3 3	1.15		260- 385	(N- 20%)	26.0	0.7	12.38	2.32	61	12/31	2.93	2.09	3/31	.57	.55	YES		
1232 953 Marvell Technology (NDO)	MRVL	47.67	2 3 3	1.05		60- 90	(25- 90%)	37.8	0.5	1.26	.24	15	1/31	.29	.17	6/30	.06	.06	YES		
1116 Masco Corp.	MAS	57.79	3 3 4	1.10		55- 85	(N- 45%)	16.8	1.6	3.44	.94	61	12/31	.73	.54	3/31	.14	.135	YES		
222 Masimo Corp. (NDO)	MASI	230.00	▼ 2 2	.85		115- 170	(N- N%)	58.7	NIL	3.92	NIL	17	12/31	1.21	.92	3/31	NIL	NIL	YES		
1155 Masonite Int'l	DOOR	117.50	5 3 3	1.15		100- 155	(N- 30%)	26.8	NIL	4.38	NIL	85	12/31	1.08	.06	3/31	NIL	NIL	YES		
1026 MasTec	MTZ	91.15	2 3 3	1.35		90- 135	(N- 50%)	17.0	NIL	5.35	NIL	26	12/31	1.75	1.33	3/31	NIL	NIL	YES		
2559 MasterCard Inc.	MA	358.40	1 1 3	1.10		285- 345	(N- N%)	42.9	0.5	8.36	1.76	48	12/31	1.64	1.96	6/30	.44	.40	YES		
2406 Matador Resources	MTDR	23.50	4 5 3	1.80		20- 35	(N- 50%)	29.7	0.4	.79	.10	92	12/31	.27	.39	3/31	▲.025	NIL	YES		
2644 Match Group (NDO)	MATCH	154.89	2 4 2	1.05		60- 95	(N- 45%)	70.7	NIL	2.19	NIL	29	12/31	.48	.45	3/31	NIL	NIL	YES		
1591 Materion Corp.	MTRN	68.75	3 3 2	1.15		75- 110	(10- 60%)	24.1	0.7	2.85	.46	7	12/31	.70	.68	3/31	.115	.11	YES		
2238 335 Matson, Inc.	MATX	72.62	3 3 3	.90		75- 110	(5- 50%)	14.5	1.3	5.02	.92	36	12/31	1.96	.36	3/31	.23	.22	YES		
2313 Mattel, Inc. (NDO)	MAT	20.88	2 4 4	1.20		17- 30	(N- 45%)	41.8	NIL	.50	NIL	82	12/31	.37	NIL	3/31	NIL	NIL	YES		
2458 717 Maxar Technologies (NDO)	MAXR	38.92	▼ 4 5	1.20		30- 55	(N- 40%)	NMF	0.1	d.15	.04	49	12/31	d.85	.87	3/31	.01	.01	YES		
1362 Maxim Integrated (NDO)	MXIM	90.66	- 3 -	.95		80- 125	(N- 40%)	30.4	NIL	2.98	NIL	18	12/31	.73	.55	3/31	NIL	.48	YES		
395 MAXIMUS Inc.	MMS	87.24	3 1 3	.80		115- 140	(30- 60%)	23.6	1.3	3.70	1.16	47	12/31	1.03	.91	3/31	.28	.28	YES		
452 1363 MaxLinear, Inc.	MXL	36.11	3 3 3	1.25		35- 55	(N- 20%)	20.0	NIL	1.81	NIL	18	12/31	.39	.16	3/31	NIL	NIL	YES		
1926 McCormick & Co.	MKC	87.85	4 1 3	.80		90- 110	(N- 25%)	30.1	1.5	2.92	1.36	40	11/30	.79	.81	3/31	▲.34	.31	YES		
238 362 McDonald's Corp.	MCD	225.07	4 1 3	.95		240- 295	(5- 30%)	28.7	2.3	7.85	5.22	87	12/31	1.70	1.97	3/31	1.29	1.25	YES		
223 McKesson Corp.	MCK	192.38	3 2 3	1.00		340- 460	(75-140%)	10.4	0.9	18.43	1.68	17	12/31	4.60	3.78	6/30	.42	.41	YES		
1232 1825 Medallia Inc (NDO)	MDLA	29.15	- 4 -	NMF		25- 40	(N- 35%)	NMF	NIL	d.54	NIL	57	1/31	d.32	d.25	3/31	NIL	NIL	YES		
1927 Medifast, Inc.	MED	232.30	2 3 1	1.10		185- 280	(N- 20%)	22.5	2.4	10.32	5.68	40	12/31	2.36	1.66	6/30	▲1.42	1.13	YES		
805 MEDNAX, Inc.	MD	27.02	4 3 3	1.50		35- 55	(30-105%)	20.0	NIL	1.35	NIL	37	12/31	.25	.91	3/31	NIL	NIL	YES		
806 Medpace Holdings (NDO)	MEDP	164.45	2 3 2	1.15		110- 170	(N- 5%)	37.4	NIL	4.40	NIL	37	12/31	1.35	.78	3/31	NIL	NIL	YES		
188 Medtronic plc	MDT	116.84	3 1 2	.95		125- 155	(5- 35%)	26.2	2.1	4.46	2.40	6	1/31	1.29	1.44	6/30	.58	.54	YES		
2368 Melco Resorts & Entert.(NDO)	MLCO	20.86	5 4 4	1.05		20- 35	(N- 70%)	NMF	NIL	d.62											

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

R A N K S

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	Safety			Technical Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago						
			Timeliness	↓	↑							↓	↑	Qtr. Ended								Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago
575	Minerals Techn.	MTX	76.74	▼	4	3	4	1.20	80- 120	(5- 55%)	17.1	0.3	4.48	.20	41	12/31	1.08	.83	3/31	.05	.05	YES				
1625	Mirati Therapeutics (NDO)	MRTX	184.24		2	4	2	.95	▲ 200- 335	(10- 80%)	NMF	NIL	d8.73	NIL	75	12/31	d2.23	d1.83	3/31	NIL	NIL	YES				
838	Moderna, Inc. (NDO)	MRNA	145.60		3	4	1	.50	450- 750	(210-415%)	20.1	NIL	7.25	NIL	55	12/31	d.69	d.37	3/31	NIL	NIL	YES				
634	1157 Mohawk Inds.	MHK	183.15		3	3	3	1.40	215- 325	(15- 75%)	15.2	NIL	12.04	NIL	85	12/31	3.54	2.25	3/31	NIL	NIL	YES				
807	Molina Healthcare	MOH	234.48		1	3	3	1.05	240- 360	(N- 55%)	18.9	NIL	12.40	NIL	37	12/31	1.80	2.73	3/31	NIL	NIL	YES				
1976	Molson Coors Beverage	TAP	49.85		1	3	3	1.05	65- 100	(30-100%)	12.3	NIL	4.06	NIL	27	12/31	d6.32	.75	3/31	NIL	.57	YES				
2369	Monarch Casino (NDO)	MCRI	64.50		4	3	3	1.45	60- 90	(N- 40%)	24.7	NIL	2.61	NIL	84	12/31	.80	.33	3/31	NIL	NIL	YES				
1928	Mondelez Int'l (NDO)	MDLZ	58.84		3	1	3	.90	70- 90	(20- 55%)	21.1	2.2	2.79	1.32	40	12/31	.67	.61	6/30	.315	.285	YES				
2588	MongoDB, Inc. (NDO)	MDB	309.77		3	4	1	.75	200- 310	(N- N%)	NMF	NIL	d2.69	NIL	21	1/31	d1.25	d1.10	3/31	NIL	NIL	YES				
1366	Monolithic Power Sys. (NDO)	MPWR	348.24		3	3	3	.95	340- 510	(N- 45%)	62.5	0.7	5.57	2.40	18	12/31	1.31	.70	6/30	▲.60	.50	YES				
2129	Monro, Inc. (NDO)	MNRO	64.78		4	3	4	.85	80- 115	(25- 80%)	36.0	1.4	1.80	.88	59	12/31	.20	.56	3/31	.22	.22	YES				
1977	Monster Beverage (NDO)	MNST	89.05		3	2	3	.85	100- 125	(10- 40%)	36.3	NIL	2.45	NIL	27	12/31	.62	.47	3/31	NIL	NIL	YES				
443	Moody's Corp.	MCO	290.29		4	3	4	1.15	260- 385	(N- 35%)	30.0	0.9	9.67	2.48	58	12/31	1.91	2.00	3/31	▲.62	.56	YES				
718	Moog Inc. 'A'	MOGA	81.05		2	3	2	1.45	80- 120	(N- 50%)	14.9	1.2	5.45	1.00	49	12/31	1.17	1.44	3/31	.25	.25	YES				
1811	Morgan Stanley	MS	81.92		2	2	3	1.30	100- 130	(20- 60%)	13.5	1.7	6.06	1.40	1	12/31	1.81	1.30	3/31	.35	.35	YES				
1604	Mosaic Company	MOS	32.35		3	3	3	1.25	25- 40	(N- 25%)	19.0	0.9	▲ 1.70	.30	80	12/31	.65	d.41	3/31	.05	.05	YES				
984	Motorcar Parts Of Amer.(NDO)	MPAA	22.76		4	3	3	1.10	30- 40	(30- 75%)	13.1	NIL	1.74	NIL	43	12/31	.33	.28	3/31	NIL	NIL	YES				
954	Motorola Solutions	MSI	185.71		2	2	3	.90	215- 290	(15- 55%)	22.0	1.5	8.46	2.84	15	12/31	2.86	2.94	6/30	.71	.64	YES				
2177	Movado Group	MOV	23.42		3	3	3	1.35	35- 55	(50-135%)	12.8	1.7	1.83	.40	63	10/31	.70	.82	3/31	▲.10	NIL	YES				
732	Mueller Inds.	MLI	41.87		3	3	3	1.25	50- 75	(20- 80%)	14.8	1.2	2.82	.52	71	12/31	.64	.50	6/30	▲.13	.10	YES				
1725	Mueller Water Prod.	MWA	13.57		3	3	3	1.15	17- 25	(25- 85%)	22.6	1.6	.60	.22	45	12/31	.11	.08	3/31	.055	.053	YES				
512	Murphy Oil Corp.	MUR	17.37		5	4	5	1.75	25- 45	(45-160%)	NMF	2.9	d2.26	.50	97	12/31	d1.11	d.70	3/31	.125	.25	YES				
2178	Murphy USA Inc.	MUSA	138.02		3	3	4	.75	150- 225	(10- 65%)	18.7	0.7	7.38	1.00	63	12/31	2.16	1.54	3/31	.25	NIL	YES				
1770	Myers Inds.	MYE	20.30		1	3	2	1.20	20- 30	(N- 50%)	22.3	2.7	.91	.54	42	12/31	.08	.16	6/30	.135	.135	YES				
839	Myriad Genetics (NDO)	MYGN	31.26		3	3	2	1.10	16- 25	(N- 80%)	NMF	NIL	d.13	NIL	55	12/31	d.12	.23	3/31	NIL	NIL	YES				
1336	NCR Corp.	NCR	36.34		3	3	3	1.55	45- 65	(25- 80%)	15.5	NIL	2.34	NIL	51	12/31	.59	.85	3/31	NIL	NIL	YES				
766	NMI Holdings (NDO)	NMIH	23.63		5	3	3	1.65	40- 60	(70-155%)	10.2	NIL	2.31	NIL	46	12/31	.56	.71	3/31	NIL	NIL	YES				
2421	NOV Inc.	NOV	14.35		5	4	5	1.30	19- 30	(30-110%)	NMF	NIL	d.35	NIL	93	12/31	d.90	d1.01	3/31	NIL	.05	YES				
1039	1219 NRG Energy	NRG	35.78		3	3	2	1.20	45- 60	(25- 70%)	14.4	3.6	2.49	1.30	66	12/31	d.71	12.89	3/31	▲.325	.30	YES				
1132	NVR, Inc.	NVR	4503.64		3	3	2	1.15	3310-4970	(N- 10%)	16.6	NIL	271.93	NIL	53	12/31	76.93	64.41	3/31	NIL	NIL	YES				
1368	NXP Semiconductors NV(NDO)	NXPI	200.40		2	3	2	1.10	185- 280	(N- 40%)	22.1	1.1	9.07	2.25	18	12/31	2.22	1.99	6/30	▲.563	.375	YES				
2422	Nabors Inds.	NBR	102.63		5	5	1	1.80	40- 75	(N- N%)	NMF	NIL	d96.93	NIL	93	12/31	d16.45	d12.00	3/31	NIL	.50	YES				
1805	Nasdaq, Inc. (NDO)	NDAQ	147.12		3	3	3	1.05	105- 155	(N- 5%)	23.6	1.3	6.23	1.96	35	12/31	1.60	1.29	3/31	.49	.47	YES				
2520	Nat'l Bank of Canada (TSE)	NA.TO	87.80b		3	2	5	1.10	80- 110	(N- 25%)	13.8	3.3	6.37	2.93	19	1/31	2.15(b)	1.67(b)	6/30	.71(b)	.71(b)	YES				
1978	National Beverage (NDO)	FIZZ	49.99		2	3	1	.80	45- 65	(N- 30%)	27.9	NIL	1.79	NIL	27	1/31	.39	.29	3/31	NIL	NIL	YES				
533	National Fuel Gas	NFG	48.65		4	3	4	.85	90- 135	(85-175%)	13.3	3.7	3.65	1.78	83	12/31	.85	1.00	6/30	.445	.435	YES				
125	National Instruments (NDO)	NATI	42.73		4	3	2	1.20	45- 65	(5- 50%)	72.4	2.5	.59	1.08	20	12/31	.04	.45	3/31	▲.27	.26	YES				
1771	National Presto Ind.	NPK	101.23		3	3	2	.60	85- 125	(N- 25%)	16.7	6.2	6.06	6.25	42	12/31	1.98	1.67	3/31	▲6.25	6.00	YES				
2179	National Vision Holdings(NDO)	EYE	43.60		3	3	2	1.70	150- 225	(245-415%)	5.9	9.7	7.38	NIL	63	12/31	.42	.05	3/31	NIL	NIL	YES				
1592	Natural Resource	NRP	18.57		▲2	4	4	.85	20- 35	(10- 90%)	7.9	9.7	▲2.36	1.80-.90	7	12/31	.56	d10.15	3/31	.45	.45	YES				
225	Natus Medical (NDO)	NTUS	25.65		▲3	3	3	.90	35- 55	(35-115%)	34.2	NIL	.75	NIL	17	12/31	.15	.09	3/31	NIL	NIL	YES				
2560	Navigent Corp. (NDO)	NAVI	13.82		3	3	3	1.60	14- 20	(N- 45%)	6.7	4.6	2.07	.64	48	12/31	.99	.78	3/31	.16	.16	YES				
161	Navistar Int'l	NAV	44.07		5	5	1	1.55	35- 60	(N- 35%)	22.0	NIL	2.00	NIL	34	1/31	.05	d.33	3/31	NIL	NIL	YES				
1165	Neenah, Inc.	NP	54.29		4	3	3	1.20	65- 95	(20- 75%)	19.5	3.5	2.79	1.88	52	12/31	.59	.92	3/31	.47	.47	YES				
1626	Nektar Therapeutics (NDO)	NKTR	22.38		5	5	3	.95	20- 40	(N- 80%)	NMF	NIL	▼d3.35	NIL	75	12/31	d.65	d.64	3/31	NIL	NIL	YES				
226	Neogen Corp. (NDO)	NEOG	82.66		▲3	3	2	.80	80- 120	(N- 45%)	67.8	NIL	1.22	NIL	17	2/28	◆.25	.23	3/31	NIL	NIL	YES				
1929	Nestle SA ADS (PNK)	NSRGY	111.35		1	2	6	.65	125- 150	(10- 35%)	24.1	2.5	4.62	2.80	40	12/31	2.53(p)	2.62(p)	3/31	NIL	NIL	YES				
1040	1405 NetApp, Inc. (NDO)	NTAP	70.54		1	3	3	1.15	70- 110	(N- 55%)	17.1	2.9	4.12	2.08	32	1/31	1.10	1.16	6/30	.48	.48	YES				
2341	Nefflix, Inc. (NDO)	NFLX	523.11		1	3	1	.70	470- 710	(N- 35%)	62.7	NIL	8.34	NIL	4	12/31	1.19	1.30	3/31	NIL	NIL	YES				
955	NETGEAR (NDO)	NTGR	43.66		3	3	3	NMF	50- 75	(15- 70%)	13.5	NIL	3.24	NIL	15	12/31	.99	.34	3/31	NIL	NIL	YES				
840	Neurocrine Biosci. (NDO)	NBIX	92.11		3	3	2	.90	130- 190	(40-105%)	31.7	NIL	2.91	NIL	55	12/31	.91	.35	3/31	NIL	NIL	YES				
189	Nevro Corp.	NVRO	144.85		1	4	1	1.30	120- 200	(N- 40%)	NMF	0.8	d1.57	NIL	6	12/31	d.21	d.44	3/31	NIL	NIL	YES				
1430	534 New Fortress Energy LLC(NDO)	NFE	52.61		4	4	1	1.20	30- 50	(N- N%)	NMF	0.8	.43	.40	83	12/31	NIL	d.30	3/31	.10	NIL	YES				
426	New Germany Fund	GF	19.77		3	3	1	1.05	20- 30	(N- 50%)	NMF	1.0	NMF	.20	12/31	21.8										

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	Timeliness	Safety	Technical	Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?				
												Qtr. Ended	Earns. Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago		
1232 2314 Norwegian Cruise Line	NCLH	28.65	4 5 4	1.80		35- 60	(20-110%)	NMF	NIL	d4.23	NIL	82	12/31	d2.33	.56	3/31	NIL	NIL	YES
126 Novanta Inc.	(NDQ) NOV	132.18	3 3 3	.95		80- 120	(N- N%)	97.9	NIL	1.35	NIL	20	12/31	.35	.26	3/31	NIL	NIL	YES
1627 Novartis AG ADR	NVS	86.51	3 1 2	.80		110- 135	(25- 55%)	22.1	3.7	3.92	3.20	75	12/31	.92	.50	3/31	3.199	3.087	YES
1628 Novo Nordisk ADR(g)	NVO	71.05	3 1 1	.80		85- 105	(20- 50%)	23.9	1.8	2.97	1.30	75	12/31	.66	.56	3/31	NIL	NIL	YES
227 NovoCure Limited	(NDQ) NVCR	140.30	2 4 1	1.15		95- 160	(N- 15%)	NMF	NIL	.55	NIL	17	12/31	.04	.04	3/31	NIL	NIL	YES
997 Nu Skin Enterprises	NUS	53.91	3 3 3	1.00		85- 125	(60-130%)	13.1	2.9	4.10	1.56	12	12/31	1.40	.72	3/31	▲.38	.375	YES
2589 Nuance Commun. (NDQ)	NUAN	45.20	2 3 2	1.05		45- 70	(N- 55%)	NMF	NIL	.20	NIL	21	12/31	.05	.19	3/31	NIL	NIL	YES
743 Nucor Corp.	NUE	69.55	1 3 4	1.20		75- 115	(10- 65%)	17.0	2.3	4.10	1.62	11	12/31	1.30	.35	6/30	4.05	4.03	YES
623 NuStar Energy L.P.	NS	17.04	5 4 4	1.30		30- 50	(75-195%)	33.4	9.4	.51	1.60-1.20	96	12/31	d.19	.40	3/31	4.0	.60	YES
1828 Nutanix, Inc.	(NDQ) NNTX	26.43	4 4 1	1.15		60- 100	(125-280%)	NMF	NIL	d2.44	NIL	57	1/31	d1.42	d1.13	3/31	NIL	NIL	YES
1605 Nutrien Ltd.	NTR	56.00	3 3 3	1.10		50- 70	(N- 25%)	29.9	3.3	▲1.87	1.86	80	12/31	.14	.05	6/30	▲.46	.45	YES
190 NuVasive, Inc. (NDQ)	NUVA	68.08	5 3 5	1.10		90- 140	(30-105%)	39.6	NIL	1.72	NIL	6	12/31	.03	.55	3/31	NIL	NIL	YES
1206 Nuveen Multi Value Fund	NUV	10.96	- 1 -	.60		9- 12	(N- 10%)	NMF	3.5	NMF	.38	-	10/31	10.48(q)	10.57(q)	3/31	.062	.062	YES
1313 nVent Electric plc	NVT	28.73	4 3 4	1.30		30- 45	(5- 55%)	17.6	2.4	1.63	.70	50	12/31	.43	.27	6/30	1.175	1.175	YES
1367 NVIDIA Corp. (NDQ)	NVDA	527.45	3 3 1	1.10		250- 375	(N- N%)	68.0	0.1	7.76	.64	18	1/31	2.31	1.53	3/31	.16	.16	YES
1179 O-I Glass	OI	12.37	5 4 2	1.45		16- 25	(30-100%)	17.2	NIL	.72	NIL	38	12/31	d.18	.20	3/31	NIL	.05	YES
1416 ODP Corp. (NDQ)	ODP	37.07	- 5 -	1.40		40- 75	(10-100%)	10.6	NIL	3.50	NIL	91	12/31	.55	1.20	3/31	NIL	.25	YES
913 OGE Energy	OGE	32.08	▼ 3 2 4	1.05		40- 55	(25- 70%)	14.9	5.1	2.15	1.64	89	12/31	.30	.26	6/30	4.03	.387	YES
127 OSI Systems (NDQ)	OSIS	97.57	3 3 3	.95		115- 175	(20- 80%)	22.2	NIL	4.39	NIL	20	12/31	1.10	1.12	3/31	NIL	NIL	YES
513 Occidental Petroleum	OXY	27.46	4 4 4	1.60		40- 65	(45-135%)	NMF	0.3	d1.08	.08	97	12/31	d.78	d.30	6/30	.01	.79	YES
2423 Oceaneering Int'l	OII	12.24	4 5 4	1.95		8- 16	(N- 30%)	NMF	NIL	d.70	NIL	93	12/31	.02	.03	3/31	NIL	NIL	YES
2032 Okta, Inc. (NDQ)	OKTA	222.50	2 3 1	.65		320- 480	(45-115%)	NMF	NIL	d1.94	NIL	14	1/31	d.58	d.42	3/31	NIL	NIL	YES
325 Old Dominion Freight	ODFL	231.25	3 1 3	.90		170- 210	(N- N%)	34.5	0.4	6.71	.82	60	12/31	1.61	1.20	3/31	▲.20	.153	YES
783 Old Nat'l Bancorp (NDQ)	ONB	19.78	2 3 3	1.00		20- 35	(N- 75%)	12.6	2.8	1.57	.56	3	12/31	.44	.29	3/31	.14	.14	YES
767 Old Republic	ORI	21.61	4 3 3	1.15		50- 70	(130-225%)	9.9	4.1	2.19	.88	46	12/31	.75	.47	3/31	▲.22	.21	YES
1606 Olin Corp.	OLN	37.77	3 3 4	1.30	▲	18- 25	(N- N%)	NMF	2.1	▲.02	.80	80	12/31	d.18	d.08	3/31	.20	.20	YES
2148 Ollie's Bargain Outlet	OLLI	86.03	3 3 3	1.05		110- 160	(30- 85%)	31.1	NIL	2.77	NIL	25	1/31	◆.97	.74	3/31	NIL	NIL	YES
228 Omnicell, Inc. (NDQ)	OMCL	138.88	1 3 3	.95		130- 195	(N- 40%)	45.2	NIL	3.07	NIL	17	12/31	.91	.51	3/31	NIL	NIL	YES
2391 Omnicom Group	OMC	77.15	2 3 4	1.00		100- 150	(30- 95%)	14.4	3.6	5.37	2.80	64	12/31	1.84	1.89	6/30	▲.70	.65	YES
1369 ON Semiconductor (NDQ)	ON	40.82	3 3 3	1.40		45- 65	(10- 60%)	26.3	NIL	1.55	NIL	18	12/31	.35	.30	3/31	NIL	NIL	YES
545 ONE Gas, Inc.	OGS	73.11	3 2 4	.80		105- 145	(45-100%)	19.2	3.2	3.81	2.36	68	12/31	1.09	.96	3/31	▲.58	.54	YES
2645 1-800-FLOWERS.COM (NDQ)	FLWS	29.13	3 3 3	.95		25- 40	(N- 35%)	17.7	NIL	1.65	NIL	29	12/31	1.71	1.12	3/31	NIL	NIL	YES
823 1Life Healthcare (NDQ)	ONEM	40.62	- 3 -	NMF		60- 90	(50-120%)	NMF	NIL	d.71	NIL	90	12/31	d.06	NA	3/31	NIL	NIL	YES
608 ONEOK Inc.	OKE	48.49	4 3 5	1.50		75- 115	(55-135%)	17.0	7.9	2.85	3.85-1.95	95	12/31	.69	.77	3/31	1.935	.935	YES
1394 Ono Innovation	ONTO	61.69	3 3 2	1.10		75- 115	(20- 85%)	22.7	NIL	2.72	NIL	30	12/31	.72	d.22	3/31	NIL	NIL	YES
927 Ooma, Inc.	OOMA	17.07	3 4 4	1.10		13- 20	(N- 15%)	NMF	NIL	d.26	NIL	74	1/31	d.03	d.11	3/31	NIL	NIL	YES
1829 Open Text Corp. (NDQ)	OTEX	49.29	3 2 3	.95		50- 65	(N- 30%)	31.4	1.6	1.57	.80	57	12/31	d.24	.40	3/31	▲.201	.175	YES
1629 Opko Health (NDQ)	OPK	4.94	3 3 3	1.00		5- 10	(N- 100%)	49.4	NIL	1.10	NIL	75	12/31	.05	d.18	3/31	NIL	NIL	YES
1430 2590 Oracle Corp.	ORCL	66.32	2 1 3	.75		85- 100	(30- 50%)	14.9	1.9	4.44	1.28	21	2/28	1.16	.97	6/30	▲.32	.24	YES
2130 O'Reilly Automotive (NDQ)	ORLY	490.84	3 3 4	.95		580- 870	(20- 75%)	21.3	NIL	23.06	NIL	59	12/31	5.40	4.25	3/31	NIL	NIL	YES
1221 Ormat Technologies	ORA	79.98	3 3 1	.70		95- 145	(20- 80%)	53.7	0.6	1.49	.50	66	12/31	.39	.24	3/31	▲.12	.11	YES
162 Oshkosh Corp.	OSK	118.48	3 3 4	1.30		110- 165	(N- 40%)	21.3	1.1	5.55	1.32	34	12/31	1.13	1.10	3/31	.33	.30	YES
1727 Otis Worldwide	OTIS	66.82	- 3 -	NMF		70- 105	(5- 55%)	25.7	1.2	2.60	.80	45	12/31	.66	NA	3/31	.20	NIL	YES
914 Otter Tail Corp. (NDQ)	OTTR	45.32	4 2 4	.85		45- 65	(N- 45%)	18.9	3.5	2.40	1.58	89	12/31	.45	.51	3/31	▲.39	.37	YES
2392 OUTFRONT Media	OUT	22.55	5 4 4	1.85		30- 45	(35-100%)	NMF	NIL	d.01	NIL	64	12/31	d.02	.31	3/31	NIL	.38	YES
535 Oviniv Inc.	OVV	24.70	3 4 3	1.65		25- 40	(N- 60%)	14.4	1.5	1.71	.38	83	12/31	.71	.81	3/31	.094	.094	YES
1117 Owens Corning	OC	89.82	3 3 3	1.30		90- 130	(N- 45%)	13.9	1.2	6.44	1.04	61	12/31	2.14	.66	6/30	.26	.24	YES
2111 Oxford Inds.	OXM	86.38	3 3 3	1.40		80- 120	(N- 40%)	36.1	1.2	2.39	1.00	69	10/31	d.44	1.00	3/31	.25	.37	YES
514 PBF Energy	PBF	14.35	5 4 5	1.90		25- 40	(75-180%)	NMF	NIL	d4.49	NIL	97	12/31	d2.49	.44	3/31	NIL	.30	YES
2180 PC Connection (NDQ)	CXNX	46.21	▼ 5 3 2	.85		45- 70	(N- 50%)	17.4	NIL	2.66	NIL	63	12/31	.62	.83	3/31	NIL	NIL	YES
1040 536 PDC Energy (NDQ)	PDC	33.83	3 4 3	1.45		35- 55	(5- 65%)	70.5	NIL	.48	NIL	83	12/31	d.07	d.34	3/31	NIL	NIL	YES
2521 PNC Financial Serv.	PNC	171.22	3 2 3	1.20		145- 190	(N- 10%)	18.1	2.7	9.46	4.60	19	12/31	3.26	2.97	3/31	1.15	1.15	YES
2217 PNM Resources	PNM	48.96	- 3 -	.95		40- 65	(N- 35%)	24.1	2.7	2.03	1.33	78	12/31	.11	.40	6/30	3.28	.307	YES
808 PPD, Inc. (NDQ)	PPD	37.46	- 3 -	NMF		40- 55	(5- 45%)	26.9	NIL	1.39	NIL	37	12/31	.39	NA	3/31	NIL	NIL	YES
2437 PPG Inds.	PPG	147.94	2 1 3	1.10		160- 200	(10- 35%)	25.3	1.5	5.84	2.16	22	12/31	1.14	1.22	3/31	.54	.51	YES
★ PPL Corp.	PPL	29.07	2 2 4	1.10		35- 50	(20- 70%)	11.5	5.7	2.53	1.67	62	12/31	.38	.48	6/30	4.15	4.15	YES
1037 577 PQ Group Holdings	PQG	16.67	- 3 -	.95		15- 25	(N- 50%)	24.9	NIL	.67	NIL	41	12/31	d1.35	.14	3/31	NIL	NIL	YES
809 PRA Health Sciences (NDQ)	PRAH	149.51	- 3 -	1.25		140- 205	(N- 35%)	26.5	NIL	5.65	NIL	37	12/31	1.55	1.54	3/31	NIL	NIL	YES
239 2591 PTC Inc. (NDQ)	PTC	130.14	2 3 2	1.10		70- 110	(N- N%)	93.0	NIL	1.40	NIL	21	12/31	.20	.31	3/31	NIL	NIL	YES

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	Timeliness	Safety	Technical	Beta	3-5 year Target Price and % appreciation	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS							
												Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago		
2370 Penn Nat'l Gaming (NDO)	PENN	113.16	4 4 3	4	3	1.75	80- 125 (N- 10%)	73.0	NIL	1.55	NIL	84	12/31	.07	.70	3/31	NIL	NIL	YES
2131 Penske Auto	PAG	80.13	2 3 3	3	3	1.50	65- 100 (N- 25%)	11.7	2.1	6.83	1.72	59	12/31	2.49	1.25	3/31	▲.43	.42	YES
1774 Pentair plc	PNR	60.61	3 3 3	3	3	1.25	60- 85 (N- 40%)	24.1	1.3	2.52	.80	42	12/31	.60	.68	6/30	.20	.19	YES
191 Penumbra Inc.	PEN	267.40	3 3 3	1	1.5	210- 310 (N- 15%)	NMF	NIL	NIL	2.4	NIL	6	12/31	.42	.22	3/31	NIL	NIL	YES
851 1507 People's United Fin'l (NDO)	PBCT	17.46	- 3 -	-	1.05	18- 25 (5- 45%)	12.3	4.2	▲1.42	.73	31	12/31	.49	.31	3/31	.18	.178	YES	
1979 PepsiCo, Inc. (NDO)	PEP	137.80	3 1 3	3	1.80	150- 180 (10- 30%)	23.2	3.0	5.93	4.09	27	12/31	1.47	1.45	3/31	1.023	1.91	YES	
2003 Perdoceo Education (NDO)	PRDO	12.55	3 4 4	1	1.10	30- 50 (140-300%)	7.9	NIL	1.59	NIL	88	12/31	.39	.33	3/31	NIL	NIL	YES	
1956 Performance Food	PFGC	54.70	3 4 3	1.60	35- 60 (N- 10%)	43.8	NIL	1.25	NIL	70	12/31	.35	.39	3/31	NIL	NIL	YES		
128 PerkinElmer Inc.	PKI	128.13	▼2 2 1	.95	205- 280 (60-120%)	11.7	0.2	10.96	.28	20	12/31	3.96	1.35	6/30	.07	.07	YES		
1630 Perrigo Co. plc	PRGO	42.54	- 3 -	1.00	▼ 50- 75 (20- 75%)	15.0	2.3	2.83	.97	75	12/31	.93	1.06	3/31	▲.24	.225	YES		
2451 2646 PetMed Express (NDO)	PETS	33.48	▼3 3 2	6.0	40- 55 (20- 65%)	20.3	3.3	1.65	1.12	29	12/31	.38	.34	3/31	.28	.27	YES		
852 516 Petroleo Brasileiro ADR	PBR	8.37	5 5 3	1.55	14- 25 (65-200%)	26.2	1.3	.32	.11	97	12/31	1.76	.30	3/31	◆NIL	NIL	YES		
1631 Pfizer, Inc.	PFE	36.00	4 1 5	.85	45- 55 (25- 55%)	15.5	4.3	2.33	1.56	75	12/31	.06	d.06	3/31	▲.39	.38	YES		
1930 Phibro Animal Health (NDO)	PAHC	24.76	2 3 5	.90	35- 55 (40-120%)	17.4	1.9	1.42	.48	40	12/31	.32	.29	3/31	.12	.12	YES		
1986 Philips Electronics NV(g)	PHG	57.41	3 3 2	1.00	50- 75 (N- 30%)	42.5	NIL	1.35	NIL	5	12/31	.79	.67	3/31	NIL	NIL	YES		
1992 Philip Morris Int'l	PM	89.98	3 3 3	.95	90- 135 (N- 50%)	16.7	5.3	5.38	4.80	10	12/31	1.26	1.22	6/30	1.20	1.17	YES		
517 Phillips 66	PSX	80.58	▲4 3 4	1.35	100- 150 (25- 85%)	NMF	4.6	d2.68	3.70	97	12/31	d1.23	1.64	3/31	.90	.90	YES		
624 Phillips 66 Partners	PSXP	30.45	5 3 5	1.00	70- 105 (130-245%)	9.1	11.5	3.35	3.50	96	12/31	.40	1.06	3/31	.875	.875	YES		
1395 Photonics Inc. (NDO)	PLAB	12.19	5 3 2	.95	19- 30 (55-145%)	17.4	NIL	.70	NIL	30	1/31	.13	.15	3/31	NIL	NIL	YES		
1931 Pilgrim's Pride Corp. (NDO)	PPC	24.61	3 3 5	.80	30- 50 (20-105%)	16.3	NIL	1.51	NIL	40	12/31	.39	.37	3/31	NIL	NIL	YES		
2218 Pinnacle West Capital	PNW	79.73	3 1 4	.90	105- 125 (30- 55%)	16.4	4.3	4.85	3.42	78	12/31	d.17	.57	3/31	.83	.783	YES		
2647 Pinterest, Inc.	PINS	72.35	- 4 -	NMF	25- 40 (N- N%)	NMF	NIL	d.67	NIL	29	12/31	.30	d.06	3/31	NIL	NIL	YES		
2407 Pioneer Natural Res.	PXD	158.66	4 3 4	1.30	150- 225 (N- 40%)	26.7	1.4	5.95	2.25	92	12/31	1.07	2.36	6/30	▲.56	.55	YES		
1812 Piper Sandler Cos.	PIPR	111.96	2 3 3	1.35	105- 150 (N- 35%)	15.1	3.1	7.41	3.45	1	12/31	4.17	2.89	3/31	▲2.25	1.125	YES		
1417 Pitney Bowes	PBI	8.83	4 5 2	1.40	6- 10 (N- 15%)	26.8	2.3	.33	.20	91	12/31	.13	.14	3/31	.05	.05	YES		
625 Plains All Amer. Pipe. (NDO)	PAA	9.35	5 4 4	1.55	25- 40 (165-330%)	11.8	7.7	.79	.72-36	96	12/31	d.11	.35	3/31	.18	.36	YES		
626 Plains GP Holdings L.P. (NDO)	PAGP	9.48	5 4 4	1.50	25- 40 (165-320%)	13.4	7.6	.71	.72-36	96	12/31	d.11	.26	3/31	.18	.36	YES		
2316 Planet Fitness	PLNT	77.99	5 3 3	1.35	110- 160 (40-105%)	60.9	NIL	1.28	NIL	82	12/31	.17	.44	3/31	NIL	NIL	YES		
453 1337 Plantronics Inc. (NDO)	PLT	43.09	3 4 2	1.15	45- 75 (5- 75%)	10.3	NIL	4.19	NIL	51	12/31	1.47	.30	3/31	NIL	.15	YES		
1338 Plexus Corp. (NDO)	PLXS	89.43	3 3 3	1.05	95- 145 (5- 60%)	18.1	NIL	4.95	NIL	51	12/31	1.23	1.00	3/31	NIL	YES			
1432 1222 Plug Power (NDO)	PLUG	38.91	3 4 1	1.35	45- 75 (15- 95%)	NMF	NIL	d.31	NIL	66	12/31	d1.12	d.07	3/31	NIL	NIL	YES		
2317 Polaris Inc.	PII	136.09	3 3 3	1.35	155- 230 (15- 70%)	13.6	1.9	10.00	2.52	82	12/31	3.34	1.83	3/31	▲.63	.62	YES		
2318 Pool Corp. (NDO)	POOL	336.22	3 2 3	.85	285- 385 (N- 15%)	38.4	0.7	8.75	2.32	82	12/31	1.45	.43	3/31	.58	.55	YES		
2522 Popular Inc. (NDO)	BPOP	69.51	2 3 3	1.35	85- 125 (20- 80%)	10.4	2.3	6.69	1.60	19	12/31	2.10	1.72	6/30	.40	.40	YES		
2219 Portland General	POR	46.81	5 3 4	.90	45- 70 (N- 50%)	20.4	3.7	2.30	1.72	78	12/31	.57	.68	6/30	.408	.385	YES		
744 POSCO ADR(g)	PKX	67.19	2 3 3	1.20	75- 115 (10- 70%)	7.9	2.3	8.52	1.56	11	6/30	1.13(p)	3.65(p)	3/31	NIL	NIL	YES		
1932 Post Holdings	POST	105.50	3 3 3	.95	115- 160 (10- 55%)	23.7	NIL	4.45	NIL	40	12/31	.72	.73	3/31	NIL	NIL	YES		
1166 PotlatchDeltic Corp. (NDO)	PCH	51.07	3 3 2	1.10	55- 80 (10- 55%)	11.4	3.2	4.48	1.64	52	12/31	1.48	.17	3/31	.41	.40	YES		
1370 Power Integrations (NDO)	POWI	82.73	3 3 2	.90	55- 80 (N- N%)	55.9	0.6	1.48	.52	18	12/31	.45	.25	3/31	▲.13	.095	YES		
824 Premier, Inc. (NDO)	PINC	33.50	▼4 3 2	.70	40- 65 (20- 95%)	14.3	2.3	2.35	.76	90	12/31	.65	.74	3/31	.19	NIL	YES		
1577 Pretium Resources	PVG	11.22	3 4 4	.60	25- 40 (125-255%)	10.3	NIL	▲1.09	NIL	65	12/31	.28	.18	3/31	NIL	NIL	YES		
2233 Price (T. Rowe) Group (NDO)	TROW	172.26	3 1 3	1.05	290- 370 (70-115%)	17.1	2.5	10.06	4.32	16	12/31	3.33	2.24	3/31	▲1.08	.90	YES		
2149 PriceSmart (NDO)	PSMT	95.03	1 3 1	.70	110- 160 (15- 70%)	30.7	0.7	3.10	.70	25	11/30	.90	.64	9/30	.35	.35	YES		
1561 Primerica, Inc.	PRI	147.09	3 3 4	1.35	175- 260 (20- 75%)	13.9	1.3	10.57	1.90	81	12/31	2.52	2.24	3/31	▲.47	.40	YES		
1980 Primo Water Corp.	PRMW	16.26	5 3 1	1.10	16- 25 (N- 55%)	35.3	1.5	.46	.24	27	12/31	d.13	.05	3/31	.06	.06	YES		
1027 Primoris Services (NDO)	PRIM	32.64	3 3 3	1.20	40- 55 (25- 70%)	12.8	0.7	2.56	.24	26	12/31	.66	.53	6/30	.06	.06	YES		
852 2562 Principal Fin'l Group (NDO)	PFG	59.57	4 3 3	1.45	60- 90 (N- 50%)	11.1	3.8	5.39	2.24	48	12/31	1.48	1.41	3/31	.56	.56	YES		
1195 Procter & Gamble	PG	130.18	2 1 3	.70	125- 155 (N- 20%)	23.0	2.4	5.67	3.16	23	12/31	1.64	1.42	3/31	.791	.746	YES		
768 Progressive Corp.	PGR	90.13	2 1 3	.75	110- 130 (20- 45%)	14.6	0.4	6.19	.40	46	12/31	1.83	1.30	6/30	.10	.10	YES		
1537 Prologis	PLD	103.65	4 2 1	1.00	100- 140 (N- 35%)	46.9	2.5	2.21	2.57	94	12/31	.38	.61	3/31	▲.63	.58	YES		
2425 ProPetro Holding	PUMP	11.16	4 5 3	1.90	6- 12 (N- 10%)	NMF	NIL	d.62	NIL	93	12/31	d.44	.23	3/31	NIL	NIL	YES		
733 Proto Labs, Inc.	PRLB	126.00	▼4 3 1	1.15	150- 230 (20- 85%)	67.0	NIL	1.88	NIL	71	12/31	.38	.56	3/31	NIL	NIL	YES		
1508 Provident Fin'l Svcs.	PFS	22.28	3 3 3	1.20	▲ 25- 35 (10- 55%)	13.0	4.2	1.72	.93	31	12/31	.53	.40	3/31	.23	.23	YES		
1562 Prudential Fin'l	PRU	90.86	4 3 3	1.55	100- 150 (10- 65%)	7.8	5.1	11.58	4.60	81	12/31	2.93	2.33	3/31	▲1.15	1.10	YES		
144 Public Serv. Enterprise	PEG	57.88	3 1 2	.90	60- 70 (5- 20%)	15.9	3.5	3.65	2.04	62	12/31	.85	.86	3/31	▲.51	.49	YES		
1538 Public Storage	PSA	236.70	3 1 3	.85	230- 285 (N- 20%)	32.8	3.4	7.22	8.05	94	12/31	1.67	1.87	3/31	2.00	2.00	YES		
1133 PulteGroup, Inc.	PHM	49.07	3 3 3	1.40	45- 65 (N- 30%)	8.4	1.2	5.82	.57	53	12/31	1.62	1.22	6/30	.14	.12	YES		
1406 Pure Storage	PSTG	23.07	3 4 1	1.20	25- 45 (10- 95%)	NMF	NIL	d.76	NIL	32	1/31	d.19	d.02	3/31	NIL	NIL	YES		
841 QIAGEN N.V. (NDO)	QGEN	50.10	2 3 1	.70	65- 95 (30- 90%)	19.6	NIL	2.56	NIL	55	12/31	.91	.19	3/31	NIL	NIL	YES		
1371 Qorvo Inc. (NDO)	QROV	183.28	2 3 3	1.10	180- 270 (N- 45%)	35.7	NIL	5.14	NIL	18	12/31	1.74	1.00	3/31	NIL	NIL	YES		
454 578 Quaker Chemical (NDO)	KWR	244.96	1 3 1	1.10	165- 250 (N- N%)	49.5	0.6	4.95	1.58	41	12/31	1.63	1.34	6/30	.395	.385			

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	RANKS			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?						
			Timeliness	Safety	Technical Beta						Qtr. Ended	Earnings Per sh.	Year Ago		Qtr. Ended	Latest Div'd	Year Ago			
																		Qtr. Ended	Earnings Per sh.	Year Ago
1539 Realty Income Corp.	O	62.46	5	3	4	1.05	75-115	(20-85%)	43.4	4.6	1.44	2.88	94	12/31	.33	.39	3/31	▲.704	.693	YES
364 Red Robin Gourmet (NDO)	RRGB	37.72	4	5	4	1.60	20-40	(N-5%)	NMF	NIL	d2.04	NIL	87	12/31	d1.79	d.36	3/31	NIL	NIL	YES
2371 Red Rock Resorts (NDO)	RRR	33.94	4	4	4	1.60	50-80	(45-135%)	28.0	NIL	1.21	NIL	84	12/31	.39	.18	3/31	NIL	.10	YES
634 1729 Regal Beloit	RBC	151.21	-	3	-	1.15	145-200	(N-30%)	22.9	0.8	6.61	1.20	45	12/31	1.78	1.25	6/30	.30	.30	YES
1540 Regency Centers Corp.	REG	55.97	5	3	4	1.10	50-75	(N-35%)	58.9	4.3	.95	2.38	94	12/31	.23	.24	6/30	.595	.595	YES
842 Regeneron Pharm. (NDO)	REGN	483.22	3	3	3	.65	600-900	(25-85%)	13.9	NIL	34.69	NIL	55	12/31	10.24	6.93	3/31	NIL	NIL	YES
2523 Regions Financial	RF	20.44	2	3	3	1.40	20-30	(N-45%)	12.0	3.0	1.70	.62	19	12/31	.61	.38	6/30	.155	.155	YES
998 Regis Corp.	RGS	12.50	-	4	-	1.40	13-20	(5-60%)	NMF	NIL	d.57	NIL	12	12/31	d.72	.13	3/31	NIL	NIL	YES
1563 Reinsurance Group	RGa	123.58	5	3	4	1.55	110-170	(N-40%)	13.5	2.5	9.14	3.10	81	12/31	1.19	.34	3/31	.70	.70	YES
745 Reliance Steel	RS	145.91	3	3	3	1.15	145-220	(N-50%)	18.3	1.9	7.96	2.75	11	12/31	2.01	2.44	3/31	▲.688	.625	YES
2023 RenaissanceRe Hldgs. (NDO)	RNR	160.49	4	2	5	.85	160-210	(N-30%)	13.5	0.9	11.92	1.44	77	12/31	d1.59	.52	3/31	▲.36	.35	YES
2151 Rent-A-Center (NDO)	RCII	59.41	2	3	4	1.20	45-70	(N-20%)	16.1	2.1	3.70	1.24	25	12/31	1.03	.58	3/31	▲.31	.29	YES
410 Republic Services	RSG	96.66	3	2	3	.90	95-130	(N-35%)	25.9	1.8	3.73	1.75	54	12/31	1.00	.91	3/31	.425	.405	YES
1339 Resideo Technologies	REZI	28.99	3	4	3	1.80	20-35	(N-20%)	25.0	NIL	1.16	NIL	51	12/31	.44	d.07	3/31	NIL	NIL	YES
231 ResMed Inc.	RMD	189.79	3	3	2	.90	120-180	(N-N%)	36.5	0.8	5.20	1.56	17	12/31	1.23	1.21	3/31	.39	.39	YES
396 Resources Connection (NDO)	RGP	13.49	4	3	4	1.05	20-30	(50-120%)	31.4	4.2	.43	.56	47	11/30	d.03	.38	3/31	.14	.14	YES
365 Restaurant Brands Int'l	QSR	64.17	4	3	3	1.20	95-145	(50-125%)	26.0	3.3	2.47	2.14	87	12/31	.30	.75	6/30	▲.53	.52	YES
999 Revlon Inc.	REV	12.50	-	5	-	1.35	16-30	(30-140%)	NMF	NIL	d2.65	NIL	12	12/31	.61	.44	3/31	NIL	NIL	YES
1040 2204 Revolve Group	RVLV	50.64	-	3	-	NMF	30-45	(N-N%)	74.5	NIL	.68	NIL	24	12/31	.26	.12	3/31	NIL	NIL	YES
634 1730 Rexnord Corp.	RXN	48.19	-	3	-	1.20	55-80	(15-65%)	27.9	0.7	1.73	.36	45	12/31	.30	.39	3/31	▲.09	.08	YES
1181 Reynolds Consumer (NDO)	REYN	30.28	-	3	-	NMF	40-60	(30-100%)	14.6	3.0	2.08	.92	38	12/31	.53	NA	3/31	▲.23	NIL	YES
958 Ribbon Communications(NDO)	RBBN	8.63	3	5	2	1.00	9-17	(5-95%)	12.2	NIL	.71	NIL	15	12/31	.81	d1.36	3/31	NIL	NIL	YES
2594 RingCentral, Inc.	RNG	322.59	3	3	1	.90	435-650	(35-100%)	NMF	NIL	1.21	NIL	21	12/31	.29	.22	3/31	NIL	NIL	YES
1593 Rio Tinto plc	RIO	76.08	3	3	2	1.05	95-145	(25-90%)	8.2	6.1	▲9.26	4.61	7	12/31	4.76(p)	3.34(p)	6/30	3.09	2.31	YES
397 Ritchie Brothers	RBA	56.72	▼	4	3	1.00	60-90	(5-60%)	29.2	1.6	1.94	.88	47	12/31	.44	.47	3/31	.22	.20	YES
2150 Rite Aid Corp.	RAD	24.88	4	5	2	.70	17-30	(N-20%)	24.4	NIL	1.02	NIL	25	11/30	.40	.54	3/31	NIL	NIL	YES
240 1647 Robert Half Int'l	RHI	75.50	1	2	3	1.25	80-110	(5-45%)	24.0	2.1	3.14	1.55	44	12/31	.84	.98	3/31	▲.38	.34	YES
1036 2563 Rocket Companies	RKT	22.99	-	3	-	NMF	25-35	(10-50%)	9.7	NIL	2.37	NIL	48	12/31	1.14	NA	3/31	NIL	NIL	YES
1314 Rockwell Automation	ROK	261.87	3	2	3	1.15	220-300	(N-15%)	29.4	1.7	8.90	4.33	50	12/31	2.38	2.11	3/31	1.07	1.02	YES
1431 1777 Rogers Communications(TSE)	RCIB.TO	60.87b	-	2	-	.80	75-100	(25-65%)	16.4	3.4	3.71	2.10	42	12/31	.99(b)	1.00(b)	6/30	5.0(b)	.50(b)	YES
853 1340 Rogers Corp.	ROG	191.54	3	3	3	1.20	190-290	(N-50%)	27.1	NIL	7.08	NIL	51	12/31	1.58	1.14	3/31	NIL	NIL	YES
2343 Roku, Inc. (NDO)	ROKU	356.32	3	4	2	.95	350-585	(N-65%)	NMF	NIL	d.49	NIL	4	12/31	.49	d.13	3/31	NIL	NIL	YES
398 Rollins, Inc.	ROL	34.37	3	2	2	.85	35-50	(N-45%)	59.3	0.9	.58	.32	47	12/31	.13	.11	3/31	▲.08	.08	YES
1731 Roper Tech.	ROP	401.29	3	1	3	1.00	430-525	(5-30%)	28.3	0.6	14.19	2.25	45	12/31	3.56	3.39	6/30	◆.563	.513	YES
2205 Ross Stores (NDO)	ROST	120.66	2	3	3	1.25	120-180	(N-50%)	30.2	NIL	3.99	NIL	24	1/31	.67	1.28	3/31	NIL	.285	YES
2524 Royal Bank of Canada (TSE)	RY.TO	115.98b	3	1	4	.90	120-145	(5-25%)	13.2	3.8	8.78	4.44	19	1/31	2.66(b)	2.40(b)	6/30	1.08(b)	1.08(b)	YES
2319 Royal Caribbean	RCL	88.90	5	5	4	1.65	90-165	(N-85%)	NMF	NIL	d10.60	NIL	82	12/31	d6.09	1.30	3/31	NIL	.78	YES
518 Royal Dutch Shell 'B'	RDSB	38.96	4	3	4	1.30	65-100	(65-155%)	95.0	3.6	.41	1.40	97	12/31	d1.04	.24	3/31	.333	.94	YES
1578 Royal Gold (NDO)	RGLD	106.80	3	3	4	.65	165-245	(55-130%)	28.6	1.1	3.73	1.20	65	12/31	.92	.63	6/30	.30	.28	YES
1207 Royce Value Trust	RVT	18.19	-	3	-	1.25	17-25	(N-35%)	NMF	0.8	NMF	.15	-	12/31	18.52(q)	16.58(q)	12/31	NIL	NIL	YES
2132 Rush Enterprises 'A' (NDO)	RUSHA	48.22	3	3	4	1.00	40-65	(N-35%)	22.6	1.5	2.13	.72	59	12/31	.72	.43	3/31	▲.18	.087	YES
746 Russel Metals (TSE)	RUS.TO	25.60b	▲	3	3	1.20	30-45	(15-75%)	20.6	5.9	1.24	1.52	11	12/31	.21(b)	d.11(b)	3/31	.38(b)	.38(b)	YES
311 Ryanair Hldgs plc ADS (NDO)	RYAA.Y	111.08	▲	3	3	1.15	115-195	(5-75%)	NMF	NIL	d2.56	NIL	79	12/31	d1.65	.44	3/31	NIL	NIL	YES
326 Ryder System	R	72.73	2	3	3	1.15	80-120	(10-65%)	22.0	3.1	3.31	2.24	60	12/31	.83	d.01	3/31	.56	.56	YES
1541 Ryman Hospitality	RHP	78.53	4	3	4	1.75	85-130	(10-65%)	NMF	NIL	d5.35	NIL	94	12/31	d1.45	.85	3/31	NIL	.90	YES
445 S&P Global	SPGI	345.54	3	2	3	1.00	380-515	(10-50%)	30.3	0.9	11.42	3.08	58	12/31	2.71	2.53	3/31	▲.77	.67	YES
2595 SAP SE	SAP	122.95	3	2	3	.95	130-180	(5-45%)	28.1	1.4	4.38	1.75	21	12/31	2.23	1.53	3/31	NIL	NIL	YES
595 SBA Communications (NDO)	SBAC	274.10	3	3	4	.85	260-395	(N-45%)	NMF	0.8	2.49	2.32	73	12/31	.94	.59	3/31	▲.58	.465	YES
2624 SEI Investments (NDO)	SEIC	60.08	4	2	3	1.25	75-105	(25-75%)	17.9	1.3	3.35	.76	39	12/31	.86	.84	3/31	▲.37	.35	YES
336 SFL Corp. Ltd	SFL	8.16	▲	2	4	1.25	11-19	(35-135%)	20.4	7.4	.40	.60	36	12/31	d1.49	.22	3/31	.15	.35	YES
1795 SJW Group	SJW	60.64	-	3	-	.85	65-95	(5-55%)	26.1	2.2	2.32	1.36	8	12/31	.46	.34	3/31	▲.34	.32	YES
240 1542 SL Green Realty	SLG	72.21	5	3	4	1.40	80-120	(10-65%)	24.6	5.1	▲2.93	3.68	94	12/31	2.41	.22	3/31	▲.919	.911	YES
2564 SLM Corporation (NDO)	SLM	17.15	3	3	3	1.20	17-25	(N-45%)	10.7	0.7	1.61	.12	48	12/31	1.13	.32	3/31	.03	.03	YES
1029 SNC-Lavalin Group (TSE)	SNC.TO	27.82b	5	3	4	1.05	30-50	(10-80%)	NMF	0.3	d1.70	.08	26	12/31	d1.84(b)	d1.67(b)	6/30	.02(b)	.02(b)	YES
1778 SPX Corp.	SPXC	59.07	4	3	4	1.35	55-85	(N-45%)	19.4	NIL	3.05	NIL	42	12/31	.89	.96	3/31	NIL	NIL	YES
1732 SPX FLOW, Inc.	FLOW	64.03	3	3	3	1.70	40-65	(N-35%)	50.4	0.6	1.27	.36	45	12/31	.47	.30	6/30	▲.09	NIL	YES
2596 SS&C Techn. Hldgs (NDO)	SSNC	69.07	3	3	3	1.15	85-125	(25-80%)	15.6	0.9	4.43	.64	21	12/31	1.13	1.08	3/31	▲.16	.125	YES
2525 SVB Fin'l Group (NDO)	SIVB	511.76	1	3	3	1.20	305-455	(N-N%)	23.9											

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	RANKS			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?					
			Timeliness	Safety	Technical Beta						Qtr. Ended	Earnings Per sh.	Year Ago		Qtr. Ended	Latest Div'd	Year Ago		
																		Qtr. Ended	Earnings Per sh.
2344 Scripps (E.W.) 'A'	(NDO) SSP	22.38	3	3	1.30	25- 40	(10- 80%)	27.0	NIL	.83	NIL	4	12/31	1.35	.13	3/31	▼NIL	.05	YES
1987 Sea Limited ADS	SE	217.84	3	4	1.90	115- 190	(N- N%)	NMF	NIL	d2.04	NIL	5	12/31	d1.06	d.62	3/31	NIL	NIL	YES
2660 1408 Seagate Technology	(NDO) STX	75.94	2	3	3	70- 100	(N- 30%)	14.8	3.5	5.12	2.68	32	12/31	1.29	1.35	6/30	▲.67	.65	YES
844 Seagen Inc.	(NDO) SGEN	148.13	3	3	1.05	200- 300	(35-105%)	NMF	NIL	d.80	NIL	55	12/31	.90	.14	3/31	NIL	NIL	YES
1182 Sealed Air	SEE	45.90	3	3	3	60- 90	(30- 95%)	13.6	1.4	3.38	.64	38	12/31	.88	.80	3/31	▲.16	.16	YES
2320 SeaWorld Entertainment	SEAS	50.02	3	4	4	35- 55	(N- 10%)	NMF	NIL	d1.33	NIL	82	12/31	d.58	.02	3/31	NIL	NIL	YES
811 Select Med. Hldgs.	SEM	34.68	3	3	3	30- 45	(N- 20%)	19.8	NIL	1.75	NIL	37	12/31	.57	.24	3/31	NIL	NIL	YES
770 Selective Ins. Group	(NDO) SIGI	72.15	2	3	3	70- 100	(N- 40%)	14.3	1.4	5.04	1.00	46	12/31	1.84	1.37	3/31	▲.25	.23	YES
2220 Sempra Energy	SRE	128.10	3	2	4	155- 210	(20- 65%)	16.7	3.5	7.66	4.50	78	12/31	1.43	1.34	6/30▲	▲1.10	1.045	YES
1373 Semtech Corp.	(NDO) SMTC	72.61	▲2	3	2	70- 110	(N- 50%)	34.3	NIL	2.12	NIL	18	1/31	◆.51	.40	3/31	NIL	NIL	YES
129 Sensata Techn. plc	ST	62.28	3	3	3	60- 90	(N- 45%)	22.4	NIL	2.78	NIL	20	12/31	.85	.89	3/31	NIL	NIL	YES
1936 Sensient Techn.	SXT	78.02	3	2	2	50- 70	(N- N%)	27.3	2.0	2.86	1.56	40	12/31	.59	.62	3/31	▲.39	.39	YES
400 Service Corp. Int'l	SCI	48.90	3	3	3	55- 85	(10- 75%)	17.3	1.7	2.83	.84	47	12/31	1.13	.60	3/31	▲.21	.19	YES
1543 Service Properties	(NDO) SVC	12.61	5	4	5	17- 30	(35-140%)	NMF	0.3	▼d3.09	.04	94	12/31	d.84	d.09	3/31	▲.01	.54	YES
2625 ServiceNow, Inc.	NOW	476.65	3	3	1	280- 420	(N- N%)	NMF	NIL	1.66	NIL	39	12/31	.08	3.03	3/31	NIL	NIL	YES
366 Shake Shack	SHAK	119.39	3	3	2	85- 125	(N- 5%)	NMF	NIL	.05	NIL	87	12/31	d.50	.07	3/31	NIL	NIL	YES
1431 1010 Shaw Comm. 'B'	(TSE) SJB.TO	33.52b	-	2	-	85- 120	(N- 20%)	24.8	3.6	1.35	1.20	28	11/30	▲31(b)	.31(b)	3/31	▲.296(b)	.296(b)	YES
628 Shell Midstream L.P.	SHLX	12.83	4	4	5	25- 40	(95-210%)	9.2	14.3	1.40	1.84- .92	96	12/31	.29	.36	3/31	▲.46	.46	YES
928 Shenandoah Telecom.	(NDO) SHEN	49.05	5	3	4	25- 35	(N- N%)	NMF	0.7	.20	.34	74	12/31	.03	.27	3/31	NIL	NIL	YES
1143 Sherwin-Williams(*)	SHW	240.28	3	1	3	260- 320	(10- 35%)	27.1	1.0	8.85	2.30	33	12/31	1.70	1.42	3/31	▲.55	.446	YES
1833 Shopify Inc.	SHOP	1160.00	3	3	2	1000-1500	(N- 30%)	NMF	NIL	4.38	NIL	57	12/31	1.58	.43	3/31	NIL	NIL	YES
164 Shyft Group	(NDO) SHYF	37.73	2	3	4	35- 50	(N- 5%)	24.7	0.3	1.53	.10	34	12/31	.27	.47	3/31	▲.025	NIL	YES
1779 Siemens AG (ADS)	(PNK) SIEGY	81.01	-	2	-	60- 85	(N- 5%)	24.5	2.6	3.30	2.12	42	12/31	1.04	.77	3/31	▲2.107	2.12	YES
★ 596 Sierra Wireless	(NDO) SWIR	17.32	3	4	2	17- 30	(N- 75%)	NMF	NIL	d1.20	NIL	73	12/31	.03	d.30	3/31	NIL	NIL	YES
2526 Signature Bank	(NDO) SBNY	229.72	3	3	3	180- 270	(N- 20%)	20.0	1.0	11.46	2.24	19	12/31	3.26	2.78	3/31	▲.56	.56	YES
★ 2182 Signet Jewelers Ltd.	SIG	57.11	3	4	4	45- 75	(N- 30%)	20.7	NIL	2.76	NIL	63	1/31	◆4.15	3.67	3/31	NIL	.37	YES
1183 Silgan Holdings	(NDO) SILGN	42.21	3	2	4	50- 75	(20- 80%)	14.1	1.3	2.99	.56	38	12/31	.54	.31	3/31	▲.14	.12	YES
1374 Silicon Labs.	(NDO) SLAB	145.55	2	3	3	120- 180	(N- 25%)	NMF	NIL	.34	NIL	18	12/31	.20	.22	3/31	NIL	NIL	YES
192 Silk Road Medical	(NDO) SILK	50.54	-	3	-	20- 30	(N- N%)	NMF	NIL	d.80	NIL	6	12/31	d.49	d.27	3/31	NIL	NIL	YES
1544 Simon Property Group	SPG	115.25	4	3	4	120- 180	(5- 55%)	29.1	4.5	▼3.96	5.20	94	12/31	.86	1.66	3/31	▲1.30	2.10	YES
1937 Simply Good Foods	(NDO) SMPL	31.77	3	3	2	30- 40	(N- 25%)	30.3	NIL	1.05	NIL	40	11/30	.29	.22	3/31	NIL	NIL	YES
1119 Simpson Manufacturing	SSD	103.40	3	3	4	95- 145	(N- 40%)	23.3	0.9	4.43	.92	61	12/31	.68	.63	6/30	▲.23	.23	YES
2345 Sinclair Broadcast	(NDO) SBGI	33.82	▲2	3	3	40- 60	(20- 75%)	10.7	2.4	3.15	.80	4	12/31	6.27	.47	3/31	▲.20	.20	YES
2346 Sirius XM Holdings	(NDO) SIRI	6.31	3	3	3	17- 25	(170-295%)	23.4	1.0	.27	.06	4	12/31	.07	.05	3/31	▲.015	.013	YES
2024 SiriusPoint Ltd.	SPNT	10.47	-	3	-	15- 20	(45- 90%)	8.2	NIL	1.28	NIL	77	12/31	1.43	.32	3/31	NIL	NIL	YES
1545 SITE Centers	SITC	13.03	4	4	3	10- 17	(N- 30%)	NMF	3.4	▼d.04	.44	94	12/31	d.03	.05	6/30	▲.11	.20	YES
2183 SiteOne Landscape	SITE	172.82	3	3	3	140- 210	(N- 20%)	67.5	NIL	2.56	NIL	63	12/31	.25	.06	3/31	NIL	NIL	YES
2321 Six Flags Entertainment	SIX	47.75	3	5	4	40- 65	(N- 35%)	NMF	NIL	d1.56	NIL	82	12/31	d1.00	d.13	3/31	NIL	.25	YES
2163 Skechers U.S.A.	SKX	42.14	4	3	4	60- 90	(40-115%)	22.5	NIL	1.87	NIL	72	12/31	.24	.39	3/31	NIL	NIL	YES
312 SkyWest	(NDO) SKYW	55.83	5	3	4	50- 80	(N- 45%)	NMF	NIL	d.73	NIL	79	12/31	d.93	1.43	3/31	NIL	.14	YES
240 1375 Skyworks Solutions	(NDO) SWKS	179.82	3	3	3	170- 255	(N- 40%)	17.6	1.1	10.20	2.00	18	12/31	3.36	1.68	3/31	.50	.44	YES
1834 Slack Technologies	WORK	40.80	-	3	-	30- 45	(N- 10%)	NMF	NIL	d.33	NIL	57	1/31	d.14	d.16	3/31	NIL	NIL	YES
2184 Sleep Number Corp.	(NDO) SNBR	140.63	3	3	3	95- 145	(N- 5%)	31.3	NIL	4.50	NIL	63	12/31	2.19	.82	3/31	NIL	NIL	YES
1835 SmartSheet Inc.	SMAR	66.65	3	4	2	55- 90	(N- 35%)	NMF	NIL	d.64	NIL	57	1/31	d.23	d.24	3/31	NIL	NIL	YES
2322 Smith & Wesson Brands	(NDO) SWBI	18.14	3	3	3	18- 30	(N- 65%)	8.5	1.1	2.14	.20	82	1/31	1.12	.10	3/31	▲.05	NIL	YES
235 1733 Smith (A.O.)	AOS	67.48	3	2	4	60- 85	(N- 25%)	27.4	1.5	2.46	1.04	45	12/31	.74	.56	3/31	▲.26	.24	YES
1938 Smucker (J.M.)	SJM	127.25	2	1	3	130- 165	(N- 25%)	19.7	2.9	6.45	3.66	40	1/31	2.32	1.64	3/31	▲.90	.88	YES
1842 2648 Snap Inc.	SNAP	58.16	3	4	3	15- 25	(N- N%)	NMF	NIL	d.42	NIL	29	12/31	d.07	d.17	3/31	NIL	NIL	YES
1734 Snap-on Inc.	SNA	220.05	2	2	4	190- 260	(N- 20%)	19.3	2.2	11.43	4.92	45	12/31	3.82	3.08	3/31	▲1.23	1.08	YES
1223 SolarEdge Tech.	(NDO) SEDG	289.17	4	3	1	215- 320	(N- 10%)	78.6	NIL	3.68	NIL	66	12/31	.33	1.03	3/31	NIL	NIL	YES
2597 SolarWinds Corp.	SWI	17.40	3	3	5	25- 40	(45-130%)	17.2	NIL	1.01	NIL	21	12/31	.26	.24	3/31	NIL	NIL	YES
2133 Sonic Automotive	SAH	51.34	3	3	3	45- 65	(N- 25%)	11.2	0.8	4.57	.40	59	12/31	1.50	.97	6/30	▲.10	.10	YES
1184 Sonoco Products	SON	63.09	3	2	4	60- 80	(N- 25%)	18.2	2.9	3.47	1.80	38	12/31	.82	.75	3/31	▲.45	.43	YES
635 1342 Sonos, Inc.	(NDO) SONO	41.09	3	4	3	40- 70	(N- 70%)	NMF	NIL	.40	NIL	51	12/31	1.01	.60	3/31	NIL	NIL	YES
1988 Sony Corp. ADR(g)	SNE	106.89	1	3	3	90- 135	(N- 25%)	20.8	0.5	5.13	.52	5	12/31	2.86	1.66	3/31	NIL	NIL	YES
546 South Jersey Inds.	SJI	22.79	3	3	5	30- 50	(30-120%)	13.7	5.5	1.66	1.25	68	12/31	.62	.46	6/30	▲.303	.295	YES
145 Southern Co.	SO	59.69	3	2	2	55- 75	(N- 25%)	18.3	4.4	3.26	2.62	62	12/31	.51	.32	3/31	▲.64	.62	YES
1594 Southern Copper	SCCO	72.08	1	3	2	65- 95	(N- 30%)	22.8	2.8	▲3.16	2.00	7	12/31	.76	.40	3/31	▲.60	.40	YES
313 Southwest Airlines	LUV	59.46	▲1	3	4	55- 80	(N- 35%)	NMF	NIL	d2.79	NIL	79	12/31	d1.29	1.16	3/31	NIL	.36	YES
547 Southwest Gas	SWX	66.50	3	3	5	85- 125	(30- 90%)	15.3	3.6	4.36	2.38	68	12/31	1.82	1.67	6/30	▲.595	.57	YES
537 Southwestern Energy	SWN	4.59	4</																

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	Timeliness	Safety	Technical	Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago			
												Qtr. Ended	Earnings Per sh.	Year Ago									
1230 2649	Stitch Fix (NDO)	SFIX	52.58	3	4	2	.95	70- 105	(35-100%)	NMF	NIL	.21	NIL	29	1/31	d.20	.11	3/31	NIL	.06	YES		
1376	STMicroelectronics	STM	38.23	3	3	2	1.25	35- 55	(N- 45%)	21.5	0.4	1.78	17	18	12/31	.63	.43	3/31	.042	.06	YES		
986	Stoneridge, Inc.	SRI	34.44	2	3	3	1.15	25- 40	(N- 15%)	54.7	NIL	.63	NIL	43	12/31	.13	.15	3/31	NIL	NIL	YES		
1343	Stratysys Ltd. (NDO)	SSYS	27.98	3	3	1	.85	25- 35	(N- 25%)	NMF	NIL	d.50	NIL	51	12/31	.20	d.05	3/31	NIL	NIL	YES		
2004	Strategic Education (NDO)	STRA	85.60	5	3	4	1.00	145- 215	(70-150%)	12.9	2.8	6.65	2.40	88	12/31	1.39	2.13	3/31	.60	.60	YES		
194	Stryker Corp.	SYK	232.08	2	1	1	1.15	265- 325	(15- 40%)	25.5	1.1	9.11	2.52	6	12/31	2.81	2.49	3/31	▲.63	.575	YES		
2323	Sturm, Ruger & Co.	RGR	69.81	3	3	3	.60	60- 90	(N- 30%)	15.7	4.1	4.46	2.84	82	12/31	1.78	.46	3/31	▲.71	.18	YES		
629	Suburban Propane	SPH	15.10	2	3	3	1.20	25- 40	(65-165%)	12.1	7.9	1.25	1.20-1.55	96	12/31	.61	.65	3/31	.30	.60	YES		
1120	Summit Materials	SUM	27.40	4	3	3	1.60	35- 50	(30-80%)	20.9	NIL	1.31	NIL	61	12/31	.31	.32	3/31	NIL	NIL	YES		
2566	Sun Life Fin'l Svcs. (TSE)	SLF.TO	64.39b	3	2	3	1.10	60- 80	(N- 25%)	11.2	3.4	5.74	2.20	48	12/31	1.47(b)	1.22(b)	3/31	.55(b)	.55(b)	YES		
519	Suncor Energy (TSE)	SU.TO	27.03b	5	3	5	1.40	50- 70	(85-160%)	NMF	3.1	d.11	.84	97	12/31	d.11(b)	d1.52(b)	3/31	21(b)	.465(b)	YES		
2185	Sunoco LP	SUN	31.09	▲	3	2	1.20	35- 70	(15- 60%)	9.5	10.6	3.28	3.30	63	12/31	.77	.75	3/31	.826	.826	YES		
853 1224	SunPower Corp. (NDO)	SPWR	34.44	3	4	1	1.00	30- 50	(N- 45%)	15.4	NIL	2.23	NIL	66	12/31	2.08	.03	3/31	NIL	NIL	YES		
1225	Sunrun Inc. (NDO)	RUN	57.38	3	4	2	1.40	25- 45	(N- N%)	NMF	NIL	d1.41	NIL	66	12/31	d1.21	.10	3/31	NIL	NIL	YES		
195	SurModics, Inc. (NDO)	SRDX	53.27	4	3	2	.95	30- 40	(N- N%)	NMF	NIL	.15	NIL	6	12/31	d.02	.01	3/31	NIL	NIL	YES		
959	Switch, Inc.	SWCH	15.93	3	3	2	.85	30- 40	(90-150%)	53.1	1.3	.30	.20	15	12/31	.06	.04	3/31	.05	.029	YES		
455 960	Synaptics (NDO)	SYNA	143.20	2	3	3	1.15	105- 160	(N- 10%)	28.6	NIL	5.00	NIL	15	12/31	1.60	1.21	3/31	NIL	NIL	YES		
2567	Synchrony Financial	SYF	40.54	▲	3	3	1.60	40- 65	(N- 60%)	11.7	2.2	3.47	.88	48	12/31	1.24	1.15	3/31	.22	.22	YES		
812	Syneos Health (NDO)	SYNH	77.48	4	4	3	1.35	95- 160	(25-105%)	18.9	NIL	4.10	NIL	37	12/31	1.11	1.03	3/31	NIL	NIL	YES		
★ 401	SYNNEX Corp. (NDO)	SNX	109.86	-	3	-	NMF	115- 170	(5- 55%)	11.1	0.7	9.91	.80	47	2/28	▲1.89	3.26	6/30	◆.20	NIL	YES		
2599	Synopsys, Inc. (NDO)	SNPS	234.43	1	1	1	.95	250- 300	(5- 30%)	37.2	NIL	6.30	NIL	21	1/31	1.52	1.01	3/31	NIL	NIL	YES		
2528	Synovus Financial	SNV	46.53	2	3	3	1.55	65- 100	(40-115%)	15.5	2.8	3.01	1.32- .66	19	12/31	.96	.97	6/30	.33	.33	YES		
1959	Sysco Corp.	SYF	78.60	4	3	3	1.30	75- 110	(N- 40%)	31.3	2.3	2.51	1.80	70	12/31	.17	.85	6/30	.45	.45	YES		
929	T-Mobile US (NDO)	TMUS	126.11	-	3	-	1.80	120- 180	(N- 45%)	32.9	NIL	3.83	NIL	74	12/31	.98	.87	3/31	NIL	NIL	YES		
610	TC Energy Corp.	TRP	45.52	3	3	5	1.05	65- 95	(45-110%)	13.8	5.7	3.30	2.61	95	12/31	.95	.91	6/30	▲.653	.611	YES		
785	TCF Financial (NDO)	TCF	46.72	-	3	-	NMF	50- 75	(5- 60%)	17.1	3.0	2.74	1.40	3	12/31	.58	.72	3/31	.35	.35	YES		
1344	TE Connectivity	TEL	128.51	2	2	3	1.15	125- 165	(N- 30%)	21.6	1.6	5.95	2.00	51	12/31	1.47	1.22	6/30	▲.50	.46	YES		
2206	TJX Companies	TJX	66.50	1	3	3	1.15	80- 120	(20- 80%)	26.9	1.6	2.47	1.04	24	1/31	.27	.81	3/31	▲.26	.23	YES		
1226	TPI Composites (NDO)	TPIC	51.48	3	4	1	1.45	50- 80	(N- 55%)	87.3	NIL	.59	NIL	66	12/31	.14	d.02	3/31	NIL	NIL	YES		
1134	TRI Pointe Homes	TPH	20.07	▲	2	2	1.45	30- 45	(50-125%)	7.5	NIL	2.67	NIL	53	12/31	.92	.85	3/31	NIL	NIL	YES		
402	TTEC Holdings (NDO)	TTEC	95.15	2	3	3	1.05	85- 125	(N- 30%)	27.1	0.9	3.51	.86	47	12/31	.94	.65	6/30	▲.43	.34	YES		
1377	TTM Technologies (NDO)	TTMI	14.43	▼	3	3	1.00	25- 35	(75-145%)	11.5	NIL	1.26	NIL	18	12/31	.37	.41	3/31	NIL	NIL	YES		
427	Taiwan Fund	TWN	27.89	-	4	-	.95	30- 55	(10- 95%)	NMF	1.4	NMF	.38	-	8/31	28.79(q)	20.80(q)	3/31	.376	1.47	YES		
2451 1378	Taiwan Semic. ADR	TSM	117.18	1	1	2	.85	110- 150	(N- 30%)	30.0	1.5	3.90	1.76	18	12/31	.97	.73	3/31	.446	.417	YES		
2012	Take-Two Interactive (NDO)	TTWO	117.88	2	3	1	.60	140- 210	(N- 20%)	46.8	NIL	3.67	NIL	13	12/31	1.57	1.43	3/31	NIL	NIL	YES		
1041 196	Tandem Diabetes Care (NDO)	TNDM	90.29	▲	4	2	1.05	125- 205	(40-125%)	NMF	NIL	.07	NIL	6	12/31	.22	.04	3/31	NIL	NIL	YES		
2186	Tapestry Inc.	TPR	43.66	2	3	3	1.45	40- 55	(N- 25%)	18.0	NIL	2.42	NIL	63	12/31	1.15	1.10	3/31	NIL	.338	YES		
538	Targa Resources	TRGP	32.01	4	4	2	1.70	40- 65	(25-105%)	74.4	1.2	.43	.40	83	12/31	NIL	.17	3/31	.10	.91	YES		
2152	Target Corp.	TGT	188.04	1	2	3	1.70	150- 200	(N- 5%)	23.0	1.4	8.19	2.72	25	1/31	2.73	1.63	6/30	.68	.66	YES		
108	Tata Motors ADR	TTM	20.93	3	4	1	1.35	25- 40	(20- 90%)	NMF	NIL	d.37	NIL	2	12/31	.55	.34	3/31	NIL	NIL	YES		
1135	Taylor Morrison Home	TMHC	30.07	3	3	2	1.60	45- 65	(50-115%)	8.8	NIL	3.42	NIL	53	12/31	.87	1.06	3/31	NIL	NIL	YES		
632 2428	TechnipFMC plc (TSE)	FTI	7.73	-	4	-	1.50	15- 25	(95-225%)	13.1	1.7	.59	.13	93	12/31	d.09	d5.40	3/31	NIL	NIL	YES		
1595	Teck Resources 'B'	TECK.B.TO	25.31b	▲	30- 45	2	1.05	▲	30- 45	(20- 80%)	NMF	0.8	▼	d.17	.20	7	12/31	d.87(b)	d1.62(b)	3/31	.05(b)	.05(b)	YES
2348	TEGNA Inc.	TGNA	20.48	3	3	4	.90	30- 40	(45- 95%)	8.8	1.4	2.32	.28	4	12/31	1.11	.38	3/31	.07	.07	YES		
825	Teladoc Health	TDOC	197.28	5	4	1	.50	265- 440	(35-125%)	NMF	NIL	d.68	NIL	90	12/31	d3.07	d.26	3/31	NIL	NIL	YES		
2042 723	Teledyne Technologies	TDY	394.20	1	2	3	1.15	340- 510	(N- 30%)	33.5	NIL	11.78	NIL	49	12/31	3.48	3.06	3/31	NIL	NIL	YES		
197	Teleflex Inc.	TFX	402.66	1	3	2	1.15	440- 660	(10- 65%)	44.6	0.3	9.02	1.36	6	12/31	1.61	2.28	3/31	.34	.34	YES		
1018	Telefonica SA ADR(g)	TEF	4.78	4	4	3	.90	6- 11	(25-130%)	9.8	9.0	.49	.43	86	12/31	.19	d.06	3/31	.238	.222	YES		
930	Telephone & Data	TDS	22.34	3	3	4	1.00	35- 50	(55-125%)	19.6	3.1	1.14	.70	74	12/31	.12	.10	3/31	▲.175	.17	YES		
931	TELUS Corporation (TSE)	T.TO	26.35b	3	2	2	.70	35- 45	(35- 70%)	26.1	4.9	1.01	1.28	74	12/31	.20(b)	.31(b)	6/30	.311(b)	.291(b)	YES		
428	Templeton Emerg'g	EMF	19.32	-	4	-	.95	20- 35	(5- 80%)	NMF	1.6	NMF	.30	-	11/30	19.18(q)	17.35(q)	3/31	NIL	NIL	YES		
635 1160	Tempur Sealy Int'l	TPX	38.88	3	4	4	1.45	35- 55	(N- 40%)	18.3	0.7	2.12	.28	85	12/31	.67	.21	3/31	▲.07	NIL	YES		
734	Tenaris S.A. ADS	TS	22.05	3	3	3	1.25	30- 50	(35-125%)	NMF	1.3	.03	.28	71	12/31	.18	.26	3/31	NIL	NIL	YES		
813	Tenet Healthcare	THC	54.81	3	4	4	1.50	75- 120	(35-120%)	7.3	NIL	7.52	NIL	37	12/31	4.72	.99	3/31	NIL	NIL	YES		
1736	Tennant Co.	TNC	79.02	4	3	3	1.10	75- 115	(N- 45%)	24.9	1.2	3.17	.92	45	12/31	.48	.64	3/31	.23	.22	YES		
987	Tenneco Inc.	TEN	10.75	3	4	4	2.00	19- 30	(75-180%)	2.5	NIL	4.38	NIL										

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

R A N K S

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	RANKS			3-5 year Target Price and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?				
			Timeliness	Safety	Technical Beta						Qtr. Ended	Earnings Per sh.	Year Ago		Qtr. Ended	Latest Div'd	Year Ago	
																		Qtr. Ended
166	Toromont Inds. (TSE)	TIH.TO 91.06	3	2	3	80-110	25.4	1.4	3.58	1.24	34	12/31	1.08	1.10	6/30	.39	.39	YES
2529	Toronto-Dominion (TSE)	TD.TO 82.14 b	3	1	4	90-115	13.3	4.0	6.19	3.28	19	1/31	1.77 (b)	1.61 (b)	6/30	.71	.71 (b)	YES
520	Total S.A. ADR	TOT 47.64	▲3	3	4	60-90	49.6	6.7	.96	3.20	97	12/31	.31	.97	3/31	.801	.732	YES
1380	Tower Semiconductor (NDQ)	TSEM 29.53	3	3	2	40-60	22.2	NIL	1.33	NIL	18	12/31	.34	.22	3/31	NIL	NIL	YES
110	Toyota Motor ADR(g)	TM 154.48	3	2	2	180-240	11.9	2.9	13.01	4.45	2	12/31	5.75	4.87	3/31	NIL	NIL	YES
1144	Tractor Supply (NDQ)	TSCO 173.54	3	2	3	160-215	25.7	1.2	6.74	2.08	33	12/31	1.64	1.21	3/31	▲.52	.35	YES
2393	Trade Desk (The) (NDQ)	TTD 740.85	3	3	3	285-430	NMF	NIL	3.19	NIL	64	12/31	3.05	1.06	3/31	NIL	NIL	YES
1739	Trane Technologies plc	TT 164.30	—	3	—	155-230	35.0	1.4	4.70	2.36	45	12/31	1.01	NA	3/31	▲.59	.53	YES
1227	TransAlta Corp. (TSE)	TA.TO 11.50 b	3	3	2	12-18	NMF	1.6	d1.16	.18	66	12/31	d.61 (b)	.23 (b)	6/30	▲.045 (b)	.043 (b)	YES
724	TransDigm Group	TDG 597.36	3	3	3	420-630	66.7	NIL	8.95	NIL	49	12/31	d.42	.83	3/31	NIL	NIL	YES
447	TransUnion	TRU 88.83	3	3	3	95-145	27.8	0.3	3.20	.30	58	12/31	.80	.75	3/31	.075	.075	YES
2374	Travel + Leisure	TNL 63.06	4	4	4	55-95	19.1	1.9	3.31	1.20	84	12/31	.32	1.58	3/31	.30	.50	YES
2661	771 Travelers Cos.	TRV 147.59	2	1	3	210-255	11.1	2.3	13.26	3.40	46	12/31	4.91	3.32	3/31	.85	.82	YES
581	Tredegar Corp.	TG 15.80	—	3	—	25-35	13.2	3.2	1.20	.50	41	12/31	.02	d.09	6/30	.12	.12	YES
1940	TreeHouse Foods	THS 53.81	3	3	4	50-80	18.9	NIL	2.84	NIL	40	12/31	1.07	1.10	3/31	NIL	NIL	YES
1122	Trex Co.	TREX 89.15	3	3	2	65-100	51.8	NIL	1.72	NIL	61	12/31	.37	.31	3/31	NIL	NIL	YES
1208	Tri-Continental	TY 31.80	—	2	—	30-45	NMF	3.3	NMF	1.05	—	12/31	29.47 (q)	28.20 (q)	3/31	2.46	.265	YES
637	2384 Tribune Publishing Co. (NDQ)	TPCO 17.16	—	4	—	10-16	59.2	NIL	.29	NIL	76	12/31	.01	d.46	3/31	NIL	.25	YES
1784	TriMas Corp. (NDQ)	TRS 31.40	2	3	2	35-55	20.3	NIL	1.55	NIL	42	12/31	.38	.31	3/31	NIL	NIL	YES
1315	Trimble Inc. (NDQ)	TRMB 75.18	2	3	3	65-100	32.5	NIL	2.31	NIL	50	12/31	.61	.53	3/31	NIL	NIL	YES
1648	TriNet Group	TNET 79.68	4	3	2	80-120	26.8	NIL	▼2.97	NIL	44	12/31	.32	.68	3/31	NIL	NIL	YES
345	Trinity Inds.	TRN 28.05	2	3	2	30-50	56.1	3.0	.50	.84	9	12/31	.04	.35	3/31	▲.21	.19	YES
2438	Trinseo S.A.	TSE 67.30	3	4	3	50-85	13.0	0.5	5.16	.32	22	12/31	1.71	.14	6/30	.08	.40	YES
2650	Trip.com Ltd. ADS (NDQ)	TCOM 41.21	▲2	3	3	45-70	41.2	NIL	1.00	NIL	29	12/31	.25	.46	3/31	NIL	NIL	YES
★	2651 TripAdvisor, Inc. (NDQ)	TRIP 53.68	3	3	4	35-55	NMF	NIL	d.03	NIL	29	12/31	d.54	.11	3/31	NIL	NIL	YES
725	Triumph Group	TGI 18.00	4	5	4	18-35	56.3	NIL	.32	NIL	49	12/31	.09	.69	3/31	NIL	.04	YES
2451	582 Tronox Holding plc	TROX 17.96	3	5	2	20-40	34.5	1.8	.52	.32	41	12/31	.31	d.01	3/31	▲.08	.07	YES
1649	TrueBlue, Inc.	TBI 20.96	2	3	3	30-45	21.4	NIL	.98	NIL	44	12/31	.23	.23	3/31	NIL	NIL	YES
2530	Truist Fin'l	TFC 57.47	3	3	3	45-65	14.1	3.1	4.08	1.80	19	12/31	1.18	1.12	3/31	.45	.45	YES
1994	Turning Point Brands	TPB 53.06	1	4	2	45-70	18.7	0.4	2.83	.22	10	12/31	.84	.41	6/30	▲.055	.05	YES
1032	Tutor Perini	TPC 17.67	3	4	3	30-50	8.3	NIL	2.14	NIL	26	12/31	.69	d1.71	3/31	NIL	NIL	YES
854	1837 Twilio Inc.	TWLO 359.80	3	4	1	240-400	NMF	NIL	.31	NIL	57	12/31	.04	.04	3/31	NIL	NIL	YES
1033	2652 Twitter Inc.	TWTR 65.21	2	4	2	45-70	89.3	NIL	.73	NIL	29	12/31	.27	.15	3/31	NIL	NIL	YES
1234	2626 Tyler Technologies	TYL 420.70	2	3	3	305-460	72.9	NIL	5.77	NIL	39	12/31	1.39	1.43	3/31	NIL	NIL	YES
1941	Tyson Foods 'A'	TSN 75.47	4	3	5	90-140	13.1	2.4	5.75	1.78	40	12/31	1.94	1.66	6/30	▲.445	.42	YES
1546	UDR, Inc.	UDR 43.53	1	3	3	45-65	NMF	3.4	▼.28	1.47	94	12/31	.09	.33	6/30	▲.363	.36	YES
1123	UPF Industries (NDQ)	UFPI 70.66	3	3	4	80-120	16.2	0.8	4.37	.60	61	12/31	1.02	.61	3/31	▲.15	.125	YES
549	UGI Corp.	UGI 40.79	4	2	4	50-65	14.1	3.2	2.90	1.32	68	12/31	1.18	1.17	6/30	.33	.325	YES
413	US Ecology (NDQ)	ECOL 43.04	▲2	3	5	45-70	53.1	NIL	.81	NIL	54	12/31	.19	.38	3/31	NIL	.18	YES
1960	US Foods Hldg.	USFD 37.30	4	3	3	40-60	26.6	NIL	1.40	NIL	70	12/31	.05	.66	3/31	NIL	NIL	YES
1942	USANA Health Sciences	USNA 98.94	3	3	3	70-100	17.6	NIL	5.62	NIL	40	12/31	1.87	1.41	3/31	NIL	NIL	YES
241	2601 Uber Technologies	UBER 55.69	—	4	—	40-70	NMF	NIL	d1.79	NIL	21	12/31	d.54	d.64	3/31	NIL	NIL	YES
455	597 Ubiquiti Inc.	UI 346.39	1	3	3	360-540	32.7	0.5	10.59	1.81	73	12/31	2.54	1.32	3/31	▲.40	.30	YES
1431	2188 Ulta Beauty (NDQ)	ULTA 315.09	2	3	2	285-430	34.0	NIL	9.28	NIL	63	1/31	3.03	3.89	3/31	NIL	NIL	YES
2114	Under Armour 'A'	UAA 23.48	2	4	3	20-30	NMF	NIL	d.01	NIL	69	12/31	.12	.10	3/31	NIL	NIL	YES
2115	Unifi, Inc.	UFI 27.29	4	4	3	18-30	65.0	NIL	.42	NIL	69	12/31	.40	.02	3/31	NIL	NIL	YES
404	UniFirst Corp.	UNF 222.72	3	2	3	205-280	30.3	0.4	7.35	1.00	47	11/30	2.20	2.52	3/31	.25	.50	YES
1943	Unilever PLC ADR(g)	UL 55.67	3	4	4	70-85	19.5	3.7	2.85	2.06	40	12/31	1.20 (p)	1.11 (p)	3/31	▲.514	.452	YES
346	Union Pacific	UNP 206.27	2	1	2	260-315	22.0	1.9	9.36	3.88	9	12/31	2.36	2.02	3/31	.97	.97	YES
1409	Unisys Corp.	UIS 26.15	—	5	—	20-40	15.8	NIL	1.65	NIL	32	12/31	.73	d.17	3/31	NIL	NIL	YES
315	United Airlines Hldgs. (NDQ)	UAL 58.33	5	4	5	55-90	NMF	NIL	d17.95	NIL	79	12/31	d7.00	2.67	3/31	NIL	NIL	YES
1961	United Natural Foods	UNFI 35.25	4	5	4	35-60	12.7	NIL	2.78	NIL	70	1/31	1.00	.32	3/31	NIL	NIL	YES
316	United Parcel Serv.	UPS 161.06	2	1	2	215-260	17.9	2.6	9.01	4.19	79	12/31	2.66	2.11	3/31	▲1.02	1.01	YES
1740	United Rentals	URI 311.48	1	3	3	210-310	19.0	NIL	16.37	NIL	45	12/31	5.04	5.60	3/31	NIL	NIL	YES
786	U.S. Bancorp	USB 54.24	3	2	3	60-80	14.9	3.1	3.65	1.68	3	12/31	.95	.90	6/30	◆.42	.42	YES
932	U.S. Cellular	USM 35.25	4	3	4	45-65	24.5	NIL	1.44	NIL	74	12/31	.06	.20	3/31	NIL	NIL	YES
749	U.S. Steel Corp.	X 21.79	3	5	3	25-50	13.2	0.2	1.65	.04	11	12/31	.25	d3.93	3/31	.01	.01	YES
845	United Therapeutics (NDQ)	UTHR 168.36	3	3	3	190-290	11.5	NIL	14.66	NIL	55	12/31	3.31	1.96	3/31	NIL	NIL	YES
815	UnitedHealth Group	UNH 366.86	4	1	4	405-495	23.0	1.4	15.92	5.00	37	12/31	2.52	3.90	3/31	1.25	1.08	YES
2439	Univar Solutions	UNVR 21.23	4	3	3	40-60	16.3	NIL	1.30	NIL	22	12/31	.27	.29	3/31	NIL	NIL	YES
1995	Universal Corp.	UVV 58.07	3	3	3	50-75	14.1	5.3	4.11	3.08	10	12/31	1.34	1.04	6/30	.77	.76	YES
856	1316 Universal Display (NDQ)	OLED 233.86	3	3	2	170-250	60.3	0.4	3.88	.85	50	12/31	1.13	.56	3/31	▲.20	.15	YES
2013	Universal Electronics (NDQ)	UEIC 56.94	2	3	2	55-86	23.3	NIL	2.44	NIL	13	12/31	.86	.49	3/31	NIL	NIL	YES
816	Universal Health 'B'	UHS 137.31	3	3	3	195-295	13.0	0.6	10.59	.80	37	12/31	3.60	2.79	3/31	▲.20	.	

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price				RANKS				3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Do Options Trade?		
		Timeliness	Safety	Beta	Technical	Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended						Latest Div'd	Year Ago				
																	Qtr. Ended		Earnings Per sh.	Year Ago
1786 Viad Corp.	VVI	41.68	4	4	3	2.00	35- 60	(N- 45%)	26.4	NIL	1.58	NIL	42	12/31	d2.11	d.01	3/31	NIL	.10	YES
598 Viasat, Inc.	(NDQ) VSAT	51.84	5	3	3	1.40	60- 95	(15- 85%)	NMF	NIL	d.08	NIL	73	12/31	.10	.10	3/31	NIL	NIL	YES
1346 Viavi Solutions	(NDQ) VIAV	16.40	3	3	2	.95	18- 25	(10- 50%)	20.2	NIL	.81	NIL	51	12/31	.23	.23	3/31	NIL	NIL	YES
1548 VICI Properties	VICI	28.20	3	3	3	1.35	25- 40	(N- 40%)	14.2	4.7	▲ 1.98	1.32	94	12/31	.53	.21	6/30	.33	.298	YES
1317 Vicor Corp.	(NDQ) VICR	88.35	3	3	1	1.15	110- 160	(25- 80%)	79.6	NIL	1.11	NIL	50	12/31	.25	.03	3/31	NIL	NIL	YES
1962 Village Super Market	(NDQ) VLGEA	24.44	3	3	5	.45	35- 50	(45- 105%)	15.1	4.1	1.62	1.00	70	1/31	.31	.14	6/30	.25	.25	YES
2409 Viper Energy Part.	(NDQ) VNOM	16.15	4	3	4	1.50	12- 18	(N- 10%)	NMF	3.5	d.57	.56	92	12/31	d.41	.03	3/31	▲.14	.45	YES
1231 2325 Virgin Galactic	(NDQ) SPCE	32.24	-	4	-	NMF	35- 60	(10- 85%)	NMF	NIL	d.96	NIL	82	12/31	d.31	d.37	3/31	NIL	NIL	YES
2568 Virtu Financial	(NDQ) VIRT	30.21	3	3	3	.50	30- 45	(N- 50%)	5.3	3.2	.96	.48	48	12/31	.88	.21	3/31	.24	.24	YES
241 2569 Visa Inc.	V	208.00	3	1	3	1.00	225- 275	(10- 30%)	35.6	0.6	5.85	1.30	48	12/31	1.42	1.46	3/31	.32	.30	YES
1347 Vishay Intertechnology	VSH	24.41	3	3	3	1.25	40- 55	(65- 125%)	16.5	1.6	1.48	.38	51	12/31	.28	.13	3/31	.095	.095	YES
2326 Vista Outdoor	VSTO	33.39	3	3	2	.55	30- 45	(N- 35%)	14.3	NIL	2.34	NIL	82	12/31	1.03	.21	3/31	NIL	NIL	YES
855 989 Visteon Corp.	VC	126.32	2	3	2	1.15	190- 285	(50- 125%)	66.8	NIL	1.89	NIL	43	12/31	.65	1.24	3/31	NIL	NIL	YES
1228 Vistra Corp.	VST	16.70	4	3	3	1.15	35- 55	(110- 230%)	24.2	3.6	.69	.60	66	12/31	d.06	.49	3/31	▲.15	.135	YES
2602 VMware, Inc.	VMW	146.00	3	3	4	.90	175- 265	(20- 80%)	21.2	NIL	6.89	NIL	21	1/31	2.21	2.05	3/31	NIL	NIL	YES
636 961 Vocera Communications	VCRA	38.83	1	3	1	.75	35- 55	(N- 40%)	NMF	NIL	d.31	NIL	15	12/31	.48	d.05	3/31	NIL	NIL	YES
934 Vodafone Group ADR(g)(NDQ)	VOD	18.62	2	3	2	1.00	25- 40	(35- 115%)	18.8	6.2	.99	1.15	74	9/30	4.18(p)	.09(p)	3/31	.546	.496	YES
856 935 Vonage Holdings	VG	11.89	4	3	1	1.05	14- 20	(20- 70%)	59.5	NIL	.20	NIL	74	12/31	.02	.06	3/31	NIL	NIL	YES
1549 Vornado R'lty Trust	VNO	47.05	5	5	5	1.25	65- 95	(40- 100%)	NMF	4.5	▼d1.11	2.12	94	12/31	d1.09	1.01	3/31	.53	.66	YES
2234 Voya Financial	VOYA	63.10	3	3	4	1.45	75- 115	(20- 80%)	17.5	1.0	3.60	.66	16	12/31	2.57	d5.45	3/31	▲.165	.15	YES
1124 Vulcan Materials	VMC	162.04	1	3	2	1.10	155- 230	(N- 40%)	32.3	0.9	5.01	1.48	61	12/31	.87	1.07	3/31	▲.37	.34	YES
2239 1197 WD-40 Co.	(NDQ) WDFC	304.29	1	1	1	.45	125- 155	(N- N%)	53.9	0.9	5.65	2.88	23	11/30	1.72	.88	6/30	▲.72	.67	YES
915 WEC Energy Group	WEC	88.76	4	1	5	.80	90- 110	(N- 25%)	22.4	3.1	3.96	2.76	89	12/31	.76	.77	3/31	▲.678	.632	YES
1550 W.P. Carey Inc.	WPC	69.91	4	3	4	1.15	▲ 85- 130	(20- 85%)	30.9	6.0	▲ 2.26	4.19	94	12/31	.76	.75	6/30	▲1.048	1.04	YES
2394 WPP PLC ADR	WPP	63.97	2	3	4	1.30	100- 150	(55- 135%)	20.8	1.0	3.08	.65	64	6/30	13.33(p)	1.56(p)	3/31	◆NIL	NIL	YES
2235 WPX Energy	WPX	SEE FINAL SUPPLEMENT																		
2189 WW International	(NDQ) WW	32.35	5	4	3	1.25	40- 65	(25- 100%)	16.5	NIL	1.96	NIL	63	12/31	.18	.42	3/31	NIL	NIL	YES
167 Wabash National	WNC	18.77	2	3	3	1.15	25- 40	(35- 115%)	28.9	1.7	.65	.32	34	12/31	.10	.34	6/30	.08	.08	YES
347 Wabtec Corp.	WAB	74.47	1	3	2	1.25	105- 155	(40- 110%)	17.3	0.6	4.31	.48	9	12/31	.98	1.04	6/30	.12	.12	YES
2153 Walgreens Boots	(NDQ) WBA	53.11	3	3	3	.85	60- 100	(15- 90%)	10.8	3.5	4.90	1.87	25	11/30	1.22	1.37	3/31	.468	.458	YES
855 2154 Walmart Inc.	WMT	132.37	3	1	2	.55	170- 205	(30- 55%)	22.9	1.7	5.77	2.20	25	1/31	1.39	1.38	6/30	1.10	1.08	YES
2350 Warner Music Group	(NDQ) WMG	32.53	-	4	-	NMF	35- 60	(10- 85%)	65.1	1.5	.50	.48	4	12/31	.19	NA	3/31	.12	NIL	YES
1509 Washington Federal	(NDQ) WAFD	32.47	4	3	4	1.05	30- 50	(N- 55%)	17.1	2.8	1.90	.92	31	12/31	.51	.84	3/31	▲.23	.22	YES
1551 Washington R.E.I.T.	WRE	23.14	▼	3	4	1.00	25- 35	(10- 50%)	NMF	5.2	▼d1.14	1.20	94	12/31	d.13	.66	6/30	.30	.30	YES
414 Waste Connections	WCN	103.53	3	2	3	.80	115- 155	(10- 50%)	43.7	0.8	2.37	.82	54	12/31	.50	.50	3/31	.205	.185	YES
415 Waste Management	WM	123.37	3	1	3	.80	130- 160	(5- 30%)	28.0	1.9	4.40	2.30	54	12/31	1.13	1.19	3/31	▲.575	.545	YES
132 Waters Corp.	WAT	271.63	1	2	1	.95	305- 415	(10- 55%)	27.5	NIL	9.87	NIL	20	12/31	3.49	3.12	3/31	NIL	NIL	YES
1145 Watsco, Inc.	WSO	254.49	2	1	3	.85	225- 280	(N- 10%)	35.4	3.1	7.19	7.80	33	12/31	1.14	.92	3/31	1.775	1.60	YES
1741 Watts Water Techn.	WTS	118.20	3	2	2	1.00	100- 130	(N- 10%)	31.9	0.8	3.71	.94	45	12/31	1.15	1.00	3/31	.23	.23	YES
2654 Wayfair Inc.	W	345.47	3	4	3	1.55	170- 285	(N- N%)	NMF	NIL	2.03	NIL	29	12/31	2.24	d3.54	3/31	NIL	NIL	YES
2531 Webster Fin'l	WBS	57.99	▲	3	3	1.50	60- 90	(5- 55%)	18.9	2.8	3.07	1.60	19	12/31	.64	.96	3/31	.40	.40	YES
1552 Weingarten Realty	WRI	26.63	4	3	4	1.25	▲ 35- 50	(30- 90%)	56.7	4.5	▼.47	1.20	94	12/31	.18	.59	3/31	▲.30	.395	YES
1963 Weis Markets	WMK	56.72	3	3	3	.50	50- 70	(N- 25%)	15.9	2.2	3.56	1.24	70	12/31	.73	.70	3/31	.31	.31	YES
1742 Welbilt, Inc.	WBT	16.09	3	5	3	1.60	15- 25	(N- 55%)	NMF	NIL	.12	NIL	45	12/31	.15	.19	3/31	NIL	NIL	YES
2452 2532 Wells Fargo	WFC	38.97	3	3	5	1.20	45- 70	(15- 80%)	18.4	1.0	2.12	.40	19	12/31	.64	.60	3/31	.10	.51	YES
1553 Welltower Inc.	WELL	71.00	5	3	4	1.00	60- 90	(N- 25%)	51.1	3.5	▼1.39	2.48	94	12/31	.39	.55	3/31	.61	.87	YES
369 Wendy's Company	(NDQ) WEN	20.72	4	3	3	1.20	25- 40	(20- 95%)	30.0	1.7	.69	.36	87	12/31	.17	.08	3/31	▲.09	.12	YES
328 Werner Enterprises	(NDQ) WERN	45.86	4	3	4	.75	60- 90	(30- 95%)	15.1	0.9	3.04	.40	60	12/31	.89	.67	6/30	▲.10	.09	YES
1318 WESCO Int'l	WCC	90.18	3	3	3	1.55	110- 160	(20- 75%)	16.6	NIL	5.42	NIL	50	12/31	1.22	1.26	3/31	NIL	NIL	YES
1168 West Fraser Timber	(TSE) WFG.TO	82.90b	3	2	3	1.30	115- 175	(40- 110%)	4.6	1.0	18.12	.80	52	12/31	4.92(b)	d.16(b)	6/30	.20(b)	.20(b)	YES
233 West Pharm. Svcs.	WST	282.49	▼	2	3	.85	255- 345	(N- 20%)	56.4	0.2	5.01	.68	17	12/31	1.29	.84	6/30	.17	.16	YES
1410 Western Digital	(NDQ) WDC	70.33	▲	3	3	1.35	75- 115	(5- 65%)	19.5	NIL	3.60	NIL	32	12/31	.69	.62	3/31	NIL	.50	YES
630 Western Midstream Part.	WES	18.25	4	4	2	1.40	25- 45	(35- 145%)	8.4	6.8	2.17	1.24	96	12/31	.62	.62	3/31	.311	.622	YES
2570 Western Union	WU	24.77	2	3	3	.80	25- 35	(N- 40%)	12.9	3.6	1.92	.90	48	12/31	.43	.38	3/31	.225	.225	YES
583 Westlake Chemical	WLK	91.70	3	3	3	1.30	80- 125	(N- 35%)	36.5	1.2	2.51	1.08	41	12/31	.87	.56	3/31	.27	.263	YES
1964 Weston (George)	(TSE) WN.TO	102.47b	3	1	5	.65	150- 185	(45- 80%)	12.7	2.1	8.08	2.20	70	12/31	2.03(b)	1.69(b)	6/30	.55(b)	.525(b)	YES
1185 WestRock Co.	WRK	50.26	1	3	3	1.15	60- 95	(20- 90%)	14.4	1.6	3.50	.80	38	12/31	.61	.58	3/31	.20	.465	YES
2571 WEX Inc.	WEX	213.50	4	3	3	1.60	175- 260	(N- 20%)												

PAGE NUMBERS

Bold type refers to full report.

The number on the left signifies a Supplement (if available).

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price	RANKS			Beta	3-5 year Target Price and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 9-30-21	(f) Est'd Div'd next 12 mos.	LATEST RESULTS						Do Options Trade?	
			Timeliness	Safety	Technical							Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago		
																			Qtr. Ended
2221 Xcel Energy Inc. (NDQ)	XEL	63.75	3	1	4	.80	60- 75 (N- 20%)	22.1	2.9	2.89	1.83	78	12/31	.54	.56	6/30	▲.458	.43	YES
1418 Xerox Holdings	XRX	24.84	4	3	5	1.40	35- 50 (40-100%)	13.2	4.0	1.88	1.00	91	12/31	.58	1.33	6/30	.25	.25	YES
1381 Xilinx Inc. (NDQ)	XLNX	125.35	-	3	-	.90	120- 180 (N- 45%)	40.0	NIL	3.13	NIL	18	12/31	.78	.68	3/31	▼NIL	.37	YES
1382 Xperi Holding (NDQ)	XPER	24.64	-	3	-	.95	25- 35 (N- 40%)	8.3	0.8	2.98	.20	18	12/31	1.68	1.19	3/31	.05	.20	YES
1743 Xylem Inc.	XYL	102.43	2	2	3	1.05	85- 115 (N- 10%)	37.7	1.1	2.72	1.12	45	12/31	.81	.89	3/31	▲.28	.26	YES
1580 Yamana Gold	AUY	4.57	3	4	3	.65	4- 7 (N- 55%)	21.8	2.4	▼.21	.11	65	12/31	.07	.02	6/30	.026	.013	YES
2655 Yelp, Inc.	YELP	41.05	4	3	3	1.15	30- 45 (N- 10%)	NMF	NIL	.11	NIL	29	12/31	.27	.24	3/31	NIL	NIL	YES
2328 YETI Holdings	YETI	75.04	2	3	3	1.50	70- 105 (N- 40%)	39.1	NIL	1.92	NIL	82	12/31	.74	.48	3/31	NIL	NIL	YES
1796 York Water Co. (The) (NDQ)	YORW	48.19	3	3	3	.80	30- 50 (N- 5%)	36.8	1.6	1.31	.75	8	12/31	.28	.26	3/31	▲.187	.18	YES
371 Yum! Brands	YUM	108.75	3	3	2	1.05	115- 170 (5- 55%)	27.2	1.8	4.00	2.00	87	12/31	1.15	1.05	3/31	▲.50	.47	YES
372 Yum China Holdings	YUMC	61.16	3	3	3	.75	55- 85 (N- 40%)	51.0	0.8	1.20	.48	87	12/31	.35	.23	3/31	.12	.12	YES
599 Zebra Techn. 'A' (NDQ)	ZBRA	463.77	1	3	3	1.00	360- 540 (N- 15%)	28.8	NIL	16.11	NIL	73	12/31	4.46	3.56	3/31	NIL	NIL	YES
1839 Zendesk Inc.	ZEN	132.99	2	3	1	1.10	150- 220 (15- 65%)	NMF	NIL	d.91	NIL	57	12/31	d.60	d.32	3/31	NIL	NIL	YES
636 2656 Zillow Group 'C' (NDQ)	Z	137.91	3	3	1	1.15	60- 90 (N- N%)	NMF	NIL	.40	NIL	29	12/31	.18	d.49	3/31	NIL	NIL	YES
199 Zimmer Biomet Hldgs.	ZBH	160.24	1	3	2	1.20	140- 205 (N- 30%)	21.4	0.6	7.49	1.00	6	12/31	2.11	2.30	6/30	.24	.24	YES
2533 Zions Bancorp. (NDQ)	ZION	55.28	2	3	3	1.25	55- 80 (N- 45%)	12.5	2.5	4.41	1.36	19	12/31	1.66	.97	3/31	.34	.34	YES
1635 Zoetis Inc.	ZTS	155.63	4	2	3	1.00	160- 215 (5- 40%)	37.1	0.6	4.19	1.00	75	12/31	.91	.92	6/30	.25	.20	YES
936 Zoom Video Communic.(NDQ)	ZM	328.50	-	4	-	.05	345- 575 (5- 75%)	NMF	NIL	2.62	NIL	74	1/31	.87	.05	3/31	NIL	NIL	YES
2035 Zscaler, Inc. (NDQ)	ZS	182.61	▲2	4	1	.65	210- 350 (15- 90%)	NMF	NIL	d1.09	NIL	14	1/31	d.50	d.23	3/31	NIL	NIL	YES
2209 Zumiez Inc. (NDQ)	ZUMZ	43.61	3	3	2	1.15	50- 70 (15- 60%)	14.2	NIL	3.07	NIL	24	1/31	1.68	1.48	3/31	NIL	NIL	YES
2014 Zynga Inc. (NDQ)	ZNGA	10.03	2	3	2	.65	7- 11 (N- 10%)	NMF	NIL	d.33	NIL	13	12/31	d.05	NIL	3/31	NIL	NIL	YES

(a) All data adjusted for announced stock split or stock dividend. See back page of Ratings & Reports.
 ◆ New figure this week.
 (b) Canadian Dollars.
 (d) Deficit.

(f) The estimate may reflect a probable increase or decrease. If a dividend boost or cut is possible but not probable, two figures are shown, the first is the more likely.
 (g) Dividends subject to foreign withholding tax for U.S. residents.

(h) Est'd Earnings & Est'd Dividends after conversion to U.S. dollars at Value Line estimated translation rate.
 (j) All Index data expressed in hundreds.
 (p) 6 months (q) Asset Value
 N=Negative figure NA=Not available NMF=No meaningful figure

INDUSTRIES, IN ORDER OF TIMELINESS RANK*

Arrow (▲▼) before name indicates that a **significant change in Rank** has occurred since the preceding week.

1 Investment Banking	26 Engineering & Const	51 Electronics	76 Publishing
2 Automotive	27 Beverage	52 Paper/Forest Products	77 Reinsurance
3 Bank (Midwest)	28 Cable TV	53 Homebuilding	78 Electric Utility (West)
4▲ Entertainment	29 Internet	54 Environmental	79 Air Transport
5 Foreign Electronics	30▼ Semiconductor Equip	55 Biotechnology	80 Chemical (Basic)
6 Med Supp Invasive	31 Thrift	56 Cannabis	81 Insurance (Life)
7 Metals & Mining (Div.)	32▼ Computers/Peripherals	57 E-Commerce	82 Recreation
8 Water Utility	33 Retail Building Supply	58 Information Services	83 Natural Gas (Div.)
9 Railroad	34 Heavy Truck & Equip	59 Retail Automotive	84 Hotel/Gaming
10 Tobacco	35 Brokers & Exchanges	60 Trucking	85 Furn/Home Furnishings
11 Steel	36▲ Maritime	61 Building Materials	86 Telecom. Utility
12 Toiletries/Cosmetics	37 Medical Services	62 Electric Utility (East)	87 Restaurant
13 Entertainment Tech	38 Packaging & Container	63 Retail (Hardlines)	88 Educational Services
14▲ Cyber Security	39 IT Services	64▼ Advertising	89 Electric Util. (Central)
15 Telecom. Equipment	40 Food Processing	65 Precious Metals	90 Healthcare Information
16 Asset Management	41 Chemical (Specialty)	66 Power	91 Office Equip/Supplies
17 Med Supp Non-Invasive	42 Diversified Co.	67 Public/Private Equity	92 Petroleum (Producing)
18 Semiconductor	43 Auto Parts	68 Natural Gas Utility	93 Oilfield Svcs/Equip.
19 Bank	44 Human Resources	69 Apparel	94 R.E.I.T.
20 Precision Instrument	45 Machinery	70 Retail/Wholesale Food	95 Oil/Gas Distribution
21 Computer Software	46 Insurance (Prop/Cas.)	71 Metal Fabricating	96 Pipeline MLPs
22 Chemical (Diversified)	47 Industrial Services	72 Shoe	97 Petroleum (Integrated)
23 Household Products	48 Financial Svcs. (Div.)	73 Wireless Networking	
24▲ Retail (Softlines)	49 Aerospace/Defense	74 Telecom. Services	
25 Retail Store	50 Electrical Equipment	75 Drug	

*Based on the Timeliness™ ranks of the stocks in the industry

Noteworthy Rank Changes

Listed below are some of the stocks whose Timeliness ranks have changed this week. We include mostly rank changes caused by fundamentals such as new earnings reports. Even when a significant change in earnings momentum has been forecast, the stock's rank will not be affected until the actual results, confirming that forecast, are reported. In most cases, we omit stocks that have been bumped up or down in rank by the dynamism of the ranking system.

STOCKS MOVING UP IN TIMELINESS RANK

Stock Name	Old Rank	New Rank	Reason for Change	Earnings Est. 12 months to 9-30-21
Albemarle Corp.	2	1	Dynamism of the ranking system.	
Amer. Express	2	1	Dynamism of the ranking system.	
CBRE Group	2	1	Dynamism of the ranking system.	
Discover Fin'l Svcs.	2	1	Dynamism of the ranking system.	
Discovery, Inc.	2	1	Dynamism of the ranking system.	
Fifth Third Bancorp	2	1	Dynamism of the ranking system.	
Huntington Bancshs.	2	1	Dynamism of the ranking system.	
Invesco Ltd.	2	1	Dynamism of the ranking system.	
Neogen Corp.	4	3	Earnings turnaround. Feb. quarter 25¢ vs. year ago 23¢. Our estimate was 27¢.	\$1.22
Paycom Software	2	1	Dynamism of the ranking system.	
Southwest Airlines	2	1	Dynamism of the ranking system.	
Synchrony Financial	2	1	Dynamism of the ranking system.	
Textron, Inc.	2	1	Dynamism of the ranking system.	

STOCKS MOVING DOWN IN TIMELINESS RANK

Stock Name	Old Rank	New Rank	Reason for Change	Earnings Est. 12 months to 9-30-21
Celanese Corp.	1	2	Dynamism of the ranking system.	
Colgate-Palmolive	1	2	Dynamism of the ranking system.	
Freep't-McMoRan Inc.	1	2	Dynamism of the ranking system.	(A)
Generac Holdings	1	2	Dynamism of the ranking system.	
Globus Medical	1	2	Dynamism of the ranking system.	
HP Inc.	1	2	Dynamism of the ranking system.	
Lennar Corp.	1	2	Dynamism of the ranking system.	
Logitech Int'l	1	2	Dynamism of the ranking system.	
Masimo Corp.	1	2	Dynamism of the ranking system.	
PerkinElmer Inc.	1	2	Dynamism of the ranking system.	
Raymond James Fin'l	1	2	Dynamism of the ranking system.	
West Pharmac. Svcs.	1	2	Dynamism of the ranking system.	

(A) New full-page report in this week's Ratings & Reports.

TIMELY STOCKS IN TIMELY INDUSTRIES

Page No.	Industry (Industry Rank)	Recent Price	RANKS			Current P/E Ratio	% Est'd Yield	Est'd. 3-5 Year Price Apprec.	Page No.	Industry (Industry Rank)	Recent Price	RANKS			Current P/E Ratio	% Est'd Yield	Est'd. 3-5 Year Price Apprec.										
			Timeliness	Safety	Technical							Timeliness	Safety	Technical													
Investment Banking (INDUSTRY RANK 1)																											
1808	Goldman Sachs	339.33	1	2	3	1.20	10.8	1.5	N-	30%	737	ArcelorMittal	27.02	2	4	3	1.50	7.6	1.1	10-	85%						
1810	Houlihan Lokey	65.96	2	2	3	0.70	20.7	2.0	15-	60%	741	Gibraltar Inds.	86.31	1	3	2	1.10	23.1	NIL	N-	50%						
1811	Morgan Stanley	81.92	2	2	3	1.30	13.5	1.7	20-	60%	743	Nucor Corp.	69.55	1	3	4	1.20	17.0	2.3	10-	65%						
1812	Piper Sandler Cos.	111.96	2	3	3	1.35	15.1	3.1	N-	35%	744	POSCO ADR	67.19	2	3	3	1.20	7.9	2.3	10-	70%						
1813	Raymond James Fin'l	119.56	2	3	3	1.20	18.4	1.3	N-	40%	747	Schnitzer Steel	40.65	2	3	3	1.05	16.9	1.8	N-	50%						
1814	Stifel Financial Corp.	64.18	2	3	3	1.35	16.2	0.9	N-	30%	748	Steel Dynamics	47.03	2	3	3	1.25	14.1	2.2	5-	70%						
Automotive (INDUSTRY RANK 2)																											
102	Daimler AG	88.43	2	3	3	1.30	11.3	1.8	N-	20%	750	Worthington Inds.	67.72	2	3	3	1.30	19.0	1.5	N-	50%						
103	Ferrari N.V.	208.06	2	3	2	0.90	42.6	0.5	N-	35%	Toiletries/Cosmetics (INDUSTRY RANK 12)																
104	Ford Motor	12.85	2	4	3	1.30	30.6	NIL	N-	40%	993	e.l.f. Beauty	28.35	1	4	4	1.25	45.7	NIL	N-	25%						
105	Gen'l Motors	58.10	2	3	3	1.30	9.8	NIL	5-	65%	996	Lauder (Estee)	286.18	1	2	2	0.95	46.8	0.8	N-	N%						
107	Nissan Motor ADR	11.18	2	3	2	0.90	NMF	NIL	45-	125%	Entertainment Tech (INDUSTRY RANK 13)																
109	Tesla, Inc.	670.00	2	4	1	1.25	NMF	NIL	N-	N%	2012	Take-Two Interactive	171.88	2	3	1	0.60	46.8	NIL	N-	20%						
Bank (Midwest) (INDUSTRY RANK 3)																											
775	Comerica Inc.	67.88	2	3	3	1.35	12.4	4.0	5-	45%	2013	Universal Electronics	56.94	2	3	2	1.00	23.3	NIL	N-	50%						
777	Fifth Third Bancorp	37.22	1	3	4	1.45	13.6	2.9	N-	35%	2014	Zynga Inc.	10.03	2	3	2	0.65	NMF	NIL	N-	10%						
779	First Midwest Bancorp	22.34	2	3	4	1.20	18.2	2.5	N-	55%	Cyber Security (INDUSTRY RANK 14)																
781	Huntington Bancshs.	15.74	1	3	3	1.30	14.7	3.8	N-	60%	2032	Okta, Inc.	222.50	2	3	1	0.65	NMF	NIL	45-	115%						
782	Northern Trust Corp.	99.58	2	3	3	1.10	16.8	2.8	N-	55%	2033	Palo Alto Networks	323.44	1	3	1	1.00	NMF	NIL	N-	50%						
783	Old Nat'l Bancorp	19.78	2	3	3	1.00	12.6	2.8	N-	75%	2035	Zscaler, Inc.	182.61	2	4	1	0.65	NMF	NIL	15-	90%						
784	Park National	133.32	2	3	3	0.85	16.0	3.1	N-	15%	Telecom. Equipment (INDUSTRY RANK 15)																
Entertainment (INDUSTRY RANK 4)																											
2331	Discovery, Inc.	74.65	1	3	4	1.10	36.2	NIL	N-	15%	940	ADTRAN, Inc.	17.74	2	3	3	1.15	45.5	2.0	N-	N%						
2332	Disney (Walt)	192.86	1	2	3	0.95	96.4	NIL	N-	5%	943	Calix, Inc.	46.33	2	4	4	1.10	45.0	NIL	N-	50%						
2338	Live Nation Entertain.	84.28	2	3	3	1.25	NMF	NIL	N-	5%	945	Cisco Systems	50.30	2	1	3	0.95	15.3	2.9	20-	50%						
2339	MSG Networks	19.77	2	3	4	0.80	7.9	NIL	25-	100%	946	CommScope Holding	15.65	2	3	3	1.35	8.1	NIL	30-	125%						
2341	Netflix, Inc.	523.11	1	3	1	0.70	62.7	NIL	N-	35%	948	Ericsson ADR	13.38	2	3	1	0.85	17.6	1.8	N-	50%						
2345	Sinclair Broadcast	33.82	2	3	3	1.20	10.7	2.4	20-	75%	949	F5 Networks	202.94	1	3	2	0.95	33.0	NIL	N-	55%						
2349	ViacomCBS Inc.	100.34	2	3	5	1.45	22.5	1.0	N-	25%	951	Juniper Networks	25.29	2	2	2	1.00	15.4	3.2	20-	60%						
Foreign Electronics (INDUSTRY RANK 5)																											
1982	Canon Inc. ADR	22.10	2	1	4	0.80	22.6	3.4	60-	105%	953	Marvell Technology	47.67	2	3	3	1.05	37.8	0.5	25-	90%						
1985	Panasonic Corp.	12.96	2	3	2	1.05	14.6	1.7	40-	95%	954	Motorola Solutions	185.71	2	2	3	0.90	22.0	1.5	15-	55%						
1988	Sony Corp. ADR	106.89	1	3	3	0.75	20.8	0.5	N-	25%	957	Qualcomm Inc.	134.09	1	3	2	1.00	18.4	2.0	40-	115%						
Med Supp Invasive (INDUSTRY RANK 6)																											
169	ABIOMED Inc.	306.16	1	3	2	1.05	63.0	NIL	5-	55%	960	Synaptics	143.20	2	3	3	1.15	28.6	NIL	N-	10%						
173	Boston Scientific	38.23	1	3	4	1.05	54.6	NIL	30-	110%	961	Vocera Communications	38.83	1	3	1	0.75	NMF	NIL	N-	40%						
174	Catalent, Inc.	109.82	2	3	2	1.05	38.7	NIL	15-	75%	Asset Management (INDUSTRY RANK 16)																
175	CONMED Corp.	125.40	2	3	3	1.50	67.4	0.6	N-	30%	2223	Affiliated Managers	148.82	2	3	3	1.40	31.7	NIL	65-	75%						
177	Dentsply Sirona	62.44	2	3	3	1.05	27.8	0.6	N-	45%	2225	Ameriprise Fin'l	229.18	2	3	3	1.40	12.7	1.8	N-	30%						
178	Edwards Lifesciences	79.66	1	2	1	1.05	38.9	NIL	20-	55%	2227	BlackRock, Inc.	730.92	2	2	3	1.25	20.1	2.3	N-	35%						
181	Globus Medical	61.34	2	3	1	0.80	31.3	NIL	15-	80%	2231	Invesco Ltd.	25.11	1	3	3	1.50	17.1	2.5	40-	100%						
184	Insulet Corp.	269.32	1	3	2	0.95	NMF	NIL	N-	N%	Med Supp Non-Invasive (INDUSTRY RANK 17)																
185	Integra LifeSciences	67.14	2	3	2	1.05	23.6	NIL	5-	55%	203	Align Techn.	530.60	2	3	1	1.30	57.8	NIL	N-	N%						
186	Intuitive Surgical	714.73	2	2	1	1.20	62.0	NIL	25-	65%	204	AmerisourceBergen	116.35	2	2	4	0.90	13.9	1.5	25-	70%						
189	Nevro Corp.	144.85	1	4	1	1.30	NMF	NIL	N-	40%	205	Avanos Medical	45.08	2	2	2	1.25	50.1	NIL	10-	65%						
193	STERIS plc	186.55	2	2	3	1.05	26.8	0.9	5-	40%	206	Bio-Rad Labs. 'A'	580.00	2	2	1	0.75	49.7	NIL	N-	N%						
194	Stryker Corp.	232.08	2	1	1	1.15	25.5	1.1	15-	40%	209	Charles River	288.13	2	3	3	1.20	45.3	NIL	N-	N%						
197	Teleflex Inc.	402.66	1	3	2	1.15	44.6	0.3	10-	65%	210	Cooper Cos.	386.37	2	2	3	0.95	43.9	NIL	N-	5%						
199	Zimmer Biomet Hldgs.	160.24	1	3	2	1.20	21.4	0.6	N-	30%	213	Haemonetics Corp.	115.77	2	3	1	0.80	39.2	NIL	10-	70%						
Metals & Mining (Div.) (INDUSTRY RANK 7)																											
1588	Freep't-McMoRan Inc.	35.01	2	4	3	1.50	15.1	0.9	N-	55%	215	Hologic, Inc.	73.93	2	3	2	1.05	8.2	NIL	105-	205%						
1590	Lundin Mining	14.17	1	3	3	1.20	15.2	2.0	75-	145%	216	IDEXX Labs.	491.37	1	3	3	1.00	63.6	NIL	N-	40%						
1592	Natural Resource	18.57	2	4	4	0.85	7.9	9.7	10-	90%	222	Masimo Corp.	230.00	2	2	2	0.85	58.7	NIL	N-	N%						
1594	Southern Copper	72.08	1	3	2	1.15	22.8	2.8	N-	30%	227	NovoCure Limited	140.30	2	4	1	1.15	NMF	NIL	N-	15%						
1595	Teck Resources 'B'	25.31	2	3	2	1.05	NMF	0.8	20-	80%	228	Omniceil, Inc.	138.88	1	3	3	0.95	45.2	NIL	N-	40%						
1596	Vale S.A. ADR	17.01	1	4	1	1.25	13.5	4.4	10-	75%	233	West Pharmac. Svcs.	282.49	2	2	3	0.85	56.4	0.2	N-	20%						
Water Utility (INDUSTRY RANK 8)																											
1790	Amer. Water Works	140.05	2	3	2	0.85	33.6	1.7	N-	N%	Semiconductor (INDUSTRY RANK 18)																
1791	California Water	53.31	1	3	1	0.65	28.8	1.7	N-	15%	1350	Advanced Micro Dev.	80.30	2	3	2	1.15	44.1	NIL	N-	25%						
1793	Essential Utilities	42.50	2	3	1	0.95	34.8	2.4	N-	30%	1352	Analog Devices	154.50	2	1	2	0.95	25.5	1.8	N-	15%						
1794	Middlesex Water	77.88	1	2	3	0.70	35.1	1.4	N-	N%	1359	Intel Corp.	65.63	1	1	3	0.80	13.2	2.1	50-	85%						
Railroad (INDUSTRY RANK 9)																											
342	Greenbrier (The) Cos.	46.94	2	3	3	1.25	NMF	2.3	N-	30%	1361	MACOM Tech. Solutions	58.66	2	3	2	1.20	30.9	NIL	N-	55%						
345	Trinity Inds.	28.05	2	3	2	0.90	56.1	3.0	5-	80%	1364	Microchip Technology	154.86	2	3	2	1.10	21.7	1.0	N-	30%						
346	Union Pacific	206.27	2	1	2	1.10	22.0	1.9	25-	55%	1365	Micron Technology	91.28	2	3	3	1.20	21.5	NIL	35-	110%						
347	Wabtec Corp.	74.47	1	3	2	1.25	17.3	0.6	40-	110%	1368	NXP Semiconductors NV	200.40	2	3	2	1.10	22.1	1.1	N-	40%						
Tobacco (INDUSTRY RANK 10)																											
1993	Schweitzer-Mauduit Int'l	47.31	2	3	3	1.10	15.3	3.7	N-	15%	1371	Qorvo Inc.	183.28	2	3	3	1.10	35.7	NIL	N-	45%						
1994	Turning Point Brands	53.06	1	4	2	0.95	18.7	0.4	N-	30%	1372	Rambus Inc.	20.46	2	3	3	1.10	NMF	NIL	N-	20%						
											1373	Semtech Corp.	72.61	2	3	2	1.05	34.3	NIL	N-	50%						
											1374	Silicon Labs.	145.55	2	3	3	1.05	NMF	NIL	N-	25%						
											1378	Taiwan Semic. ADR	117.18	1	1	2	0.85	30.0	1.5	N-	30%						

TIMELY STOCKS IN TIMELY INDUSTRIES

Page No.	Industry (Industry Rank)	Recent Price	RANKS			Current P/E Ratio	% Est'd Yield	Est'd. 3-5 Year Price Apprec.	Page No.	Industry (Industry Rank)	Recent Price	RANKS			Current P/E Ratio	% Est'd Yield	Est'd. 3-5 Year Price Apprec.
			Timeliness	Safety	Technical							Timeliness	Safety	Technical			
Bank (INDUSTRY RANK 19)																	
2505	Bank of Hawaii	91.96	2	2	3	1.10	22.7	2.9	N- 20%								
2506	Bank of Montreal	110.76	2	2	4	1.05	12.4	3.9	5- 45%								
2507	Bank of New York Mellon	45.21	2	2	3	1.15	11.7	2.7	75-130%								
2513	East West Bancorp	75.97	2	3	3	1.20	20.4	1.7	N- 25%								
2514	First Commonwealth	14.49	2	3	3	1.05	15.9	3.0	40-105%								
2515	First Republic Bank	166.96	1	3	3	1.00	26.1	0.5	N- 25%								
2516	HSBC Holdings PLC	29.34	2	4	4	0.85	NMF	2.6	70-140%								
2517	JPMorgan Chase	150.97	2	1	3	1.15	13.7	2.4	N- N%								
2522	Popular Inc.	69.51	2	3	3	1.35	10.4	2.3	20- 80%								
2523	Regions Financial	20.44	2	3	3	1.40	12.0	3.0	N- 45%								
2525	SVB Fin'l Group	511.76	1	3	3	1.20	23.9	NIL	N- N%								
2528	Synovus Financial	46.53	2	3	3	1.55	15.5	2.8	40-115%								
2531	Webster Fin'l	57.99	2	3	3	1.50	18.9	2.8	5- 55%								
2533	Zions Bancorp.	55.28	2	3	3	1.25	12.5	2.5	N- 45%								
Precision Instrument (INDUSTRY RANK 20)																	
112	Agilent Technologies	123.61	2	2	3	0.90	33.0	0.6	N- 20%								
115	Cognex Corp.	79.00	2	3	2	1.05	63.2	0.3	N- N%								
117	FARO Technologies	89.08	2	3	3	1.10	NMF	NIL	N- 40%								
124	Mettler-Toledo Int'l	1130.87	2	2	2	0.95	43.2	NIL	N- 20%								
128	PerkinElmer Inc.	128.13	2	2	1	0.95	11.7	0.2	60-120%								
130	Thermo Fisher Sci.	454.66	2	1	2	0.85	24.2	0.2	N- 20%								
132	Waters Corp.	271.63	1	2	1	0.95	27.5	NIL	10- 55%								
133	Woodward, Inc.	120.19	2	3	3	1.35	37.6	0.5	N- N%								
Computer Software (INDUSTRY RANK 21)																	
2576	ANSYS, Inc.	334.86	2	2	2	0.85	48.8	NIL	N- N%								
2579	Cadence Design Sys.	127.97	2	2	2	0.90	45.1	NIL	N- N%								
2580	Citrix Sys.	137.74	1	3	3	0.70	22.5	1.1	15- 75%								
2589	Nuance Communic.	45.20	2	3	2	1.05	NMF	NIL	N- 55%								
2590	Oracle Corp.	66.32	2	1	3	0.75	14.9	1.9	30- 50%								
2591	PTC Inc.	130.14	2	3	2	1.10	93.0	NIL	N- N%								
2592	Paycom Software	378.75	1	3	3	1.15	89.1	NIL	15- 75%								
2598	Square, Inc.	226.13	2	4	2	1.50	NMF	NIL	N- 55%								
2599	Synopsys, Inc.	234.43	1	1	1	0.95	37.2	NIL	5- 30%								
Chemical (Diversified) (INDUSTRY RANK 22)																	
2430	Air Products & Chem.	278.82	2	1	4	0.90	29.8	2.2	10- 30%								
2431	Albemarle Corp.	152.15	1	3	2	1.20	38.3	1.0	N- N%								
2433	Celanese Corp.	146.94	2	3	4	1.15	16.9	1.9	N- 20%								
2434	Eastman Chemical	112.23	2	3	3	1.25	18.6	2.5	N- 15%								
2436	Huntsman Corp.	28.42	2	3	2	1.20	19.6	2.3	25- 95%								
2437	PPG Inds.	147.94	2	1	3	1.10	25.3	1.5	10- 35%								
Household Products (INDUSTRY RANK 23)																	
1188	Church & Dwight	84.51	2	1	3	0.60	26.8	1.2	N- 20%								
1190	Colgate-Palmolive	75.77	2	1	2	0.70	23.3	2.4	N- 10%								
1194	Newell Brands	26.10	1	3	3	1.20	24.9	3.5	70-170%								
1195	Procter & Gamble	130.18	2	1	3	0.70	23.0	2.4	N- 20%								
1197	WD-40 Co.	304.29	1	1	0.45	53.9	0.9	N- N%									
Retail (Softlines) (INDUSTRY RANK 24)																	
2193	Amer. Eagle Outfitters	28.81	2	3	3	1.10	24.8	1.4	N- 20%								
2194	Buckle (The), Inc.	40.59	2	3	3	0.95	13.6	3.3	N- 35%								
2197	Citi Trends	89.66	2	3	4	1.30	42.1	NIL	N- N%								
2199	Foot Locker	58.05	2	3	3	1.30	14.9	1.4	N- 40%								
2200	Gap (The), Inc.	30.20	2	4	4	1.55	30.8	NIL	N- 50%								
2205	Ross Stores	120.66	2	3	3	1.25	30.2	NIL	N- 50%								
2206	TJX Companies	66.50	1	3	3	1.15	26.9	1.6	20- 80%								
Retail Store (INDUSTRY RANK 25)																	
2138	CVS Health	73.47	1	2	3	0.95	10.7	2.7	35- 70%								
2139	Canadian Tire 'A'	179.11	2	3	3	1.10	13.1	2.6	N- 45%								
2140	Costco Wholesale	334.49	2	1	2	0.60	32.6	0.9	30- 60%								
2142	Dollar General	193.96	2	2	3	0.65	19.8	0.9	10- 50%								
2149	PriceSmart	95.03	1	3	1	0.70	30.7	0.7	15- 70%								
2151	Rent-A-Center	59.41	2	3	4	1.20	16.1	2.1	N- 20%								
2152	Target Corp.	188.04	1	2	3	0.70	23.0	1.4	N- 5%								
Engineering & Const (INDUSTRY RANK 26)																	
1023	Granite Construction	37.30	1	3	3	1.25	14.6	1.4	20- 90%								
1026	MasTec	91.15	2	3	3	1.35	17.0	NIL	N- 50%								
1028	Quanta Services	85.05	2	3	3	1.25	19.5	0.3	N- 45%								
1030	St. Joe Corp.	47.29	1	3	2	0.90	43.8	0.7	N- N%								
Beverage (INDUSTRY RANK 27)																	
1966	AB InBev ADR	63.39	2	3	3	1.05	19.9	1.6	35- 95%								
1967	Boston Beer 'A'	1070.67	2	3	3	0.60	60.1	NIL	N- N%								
1975	MGP Ingredients	62.23	1	3	3	0.80	26.0	0.8	N- 30%								
1976	Molson Coors Beverage	49.85	1	3	3	1.05	12.3	NIL	30-100%								
1978	National Beverage	49.99	2	3	1	0.80	27.9	NIL	N- 30%								
Cable TV (INDUSTRY RANK 28)																	
1004	Charter Communic.	637.62	2	3	2	0.90	29.9	NIL	N- 35%								
1006	Comcast Corp.	56.37	2	1	3	0.80	22.0	1.8	50- 85%								
1011	WideOpenWest, Inc.	15.54	1	4	3	1.45	35.3	NIL	N- 60%								
Internet (INDUSTRY RANK 29)																	
2631	Alphabet Inc.	2038.59	1	1	2	0.85	34.0	NIL	15- 40%								
2632	Amazon.com	3110.87	2	1	2	0.75	72.5	NIL	10- 30%								
2633	Baidu, Inc.	266.13	1	3	2	0.95	28.9	NIL	N- 25%								
2634	Booking Holdings	2231.89	2	3	3	1.15	39.1	NIL	N- 50%								
2637	eBay Inc.	60.29	2	3	2	1.00	16.3	1.2	25- 90%								
2638	Etsy, Inc.	219.77	2	3	2	1.10	98.6	NIL	N- N%								
2639	Expedia Group	173.09	2	3	4	1.30	NMF	NIL	N- N%								
2644	Match Group	154.89	2	4	2	1.05	70.7	NIL	N- N%								
2650	Trip.com Ltd. ADS	41.21	2	3	3	1.05	41.2	NIL	10- 70%								
2652	Twitter Inc.	65.21	2	4	2	1.00	89.3	NIL	N- 5%								
Semiconductor Equip (INDUSTRY RANK 30)																	
1386	Applied Materials	119.33	2	3	3	1.20	19.9	0.8	N- 20%								
1388	Entegris, Inc.	105.00	2	3	3	1.10	36.1	0.3	N- 30%								
1390	IPG Photonics	211.90	2	3	1	0.90	43.1	NIL	20- 80%								
1391	Kulicke & Soffa	49.68	2	3	3	1.05	15.5	1.1	N- 50%								
1392	Lam Research	560.03	2	3	3	1.35	22.0	1.0	N- 15%								
1396	Teradyne Inc.	117.01	2	3	2	1.10	26.8	0.3	N- N%								
Thrift (INDUSTRY RANK 31)																	
1502	Capitol Fed. Fin'l	13.34	2	3	3	0.85	26.7	2.5	N- 20%								
1503	Flushing Financial	23.35	2	3	4	1.20	13.7	3.6	30- 70%								
1504	Investors Bancorp																

Timely Stocks

Stocks Ranked 1 (Highest) for Relative Price Performance (Next 12 Months)

Page No.	Stock Name	Recent Price Ticker	R a n k s			Industry Group	Industry Rank	Page No.	Stock Name	Recent Price Ticker	R a n k s			Industry Group	Industry Rank				
			Technical Safety	P/E Ratio	Est'd Yield						Technical Safety	P/E Ratio	Est'd Yield						
169	ABIOMED Inc.	ABMD	306.16	3	2	63.0	NIL	Med Supp Invasive	6	1975	MGP Ingredients	MGPI	62.23	3	3	26.0	0.8	Beverage	27
2431	Albermarle Corp. ■	ALB	152.15	3	2	38.3	1.0	Chemical (Diversified)	22	2559	MasterCard Inc.	MA	358.40	1	3	42.9	0.5	Financial Svcs. (Div.)	48
2631	Alphabet Inc.	GOOG	2038.59	1	2	34.0	NIL	Internet	29	1794	Middlesex Water	MSEX	77.88	2	3	35.1	1.4	Water Utility	8
2536	Amer. Express ■	AXP	139.95	1	3	20.9	1.3	Financial Svcs. (Div.)	48	807	Molina Healthcare	MOH	234.48	3	3	18.9	NIL	Medical Services	37
790	Anthem, Inc.	ANTM	351.14	3	4	16.2	1.3	Medical Services	37	1976	Molson Coors Beverage	TAP	49.85	3	3	12.3	NIL	Beverage	27
1817	Arista Networks	ANET	290.25	3	2	30.8	NIL	E-Commerce	57	1770	Myers Inds.	MYE	20.30	3	2	22.3	2.7	Diversified Co.	42
555	Avery Dennison	AVY	180.43	2	3	24.4	1.4	Chemical (Specialty)	41	1405	NetApp, Inc.	NTAP	70.54	3	3	17.1	2.9	Computers/Peripherals	32
2633	Baidu, Inc.	BIDU	266.13	3	2	28.9	NIL	Internet	29	2341	Netflix, Inc.	NFLX	523.11	3	1	62.7	NIL	Entertainment	4
558	Balchem Corp.	BCPC	126.57	3	3	47.2	0.5	Chemical (Specialty)	41	189	Nevro Corp.	NVRO	144.85	4	1	NMF	NIL	Med Supp Invasive	6
831	Bio-Techne Corp.	TECH	385.38	2	2	72.4	0.3	Biotechnology	55	1194	Newell Brands	NWL	26.10	3	3	24.9	3.5	Household Products	23
173	Boston Scientific	BSX	38.23	3	4	54.6	NIL	Med Supp Invasive	6	2382	News Corp. 'A'	NWSA	26.71	3	4	NMF	0.7	Publishing	76
378	CBRE Group ■	CBRE	75.93	3	3	24.7	NIL	Industrial Services	47	1743	Nucor Corp.	NUE	69.55	3	4	17.0	2.3	Steel	11
2398	CSW Industrials	CSWI	130.11	2	3	37.3	0.4	Petroleum (Producing)	92	228	Omniceil, Inc.	OMCL	138.88	3	3	45.2	NIL	Med Supp Non-Invasive	17
2138	CVS Health	CVS	73.47	2	3	10.7	2.7	Retail Store	25	2033	Palo Alto Networks	PANW	323.44	3	1	NMF	NIL	Cyber Security	14
1791	California Water	CWT	53.31	3	1	28.8	1.7	Water Utility	8	2592	Paycom Software ■	PAYC	378.75	3	3	89.1	NIL	Computer Software	21
791	Centene Corp.	CNC	64.46	3	4	13.0	NIL	Medical Services	37	2149	PriceSmart	PSMT	95.03	3	1	30.7	0.7	Retail Store	25
541	Chesapeake Utilities	CPK	114.96	2	3	27.5	1.6	Natural Gas Utility	68	578	Quaker Chemical	KWR	244.96	3	1	49.5	0.6	Chemical (Specialty)	41
792	Cigna Corp.	CI	242.40	3	4	13.0	1.7	Medical Services	37	957	Qualcomm Inc.	QCOM	134.09	3	2	18.4	2.0	Telecom. Equipment	15
2580	Citrix Sys.	CTXS	137.74	3	3	22.5	1.1	Computer Software	21	1647	Robert Half Int'l	RHI	75.50	2	3	24.0	2.1	Human Resources	44
153	Deere & Co.	DE	371.59	1	4	28.8	1.0	Heavy Truck & Equip	34	2525	SVB Fin'l Group	SIVB	511.76	3	3	23.9	NIL	Bank	19
2545	Discover Fin'l Svcs. ■	DFS	94.68	3	3	10.1	1.9	Financial Svcs. (Div.)	48	1030	St. Joe Corp.	JOE	47.29	3	2	43.8	0.7	Engineering & Const	26
2331	Discovery, Inc. ■	DISCA	74.65	3	4	36.2	NIL	Entertainment	4	1806	Schwab (Charles)	SCHW	64.77	3	3	25.0	1.2	Brokers & Exchanges	35
2332	Disney (Walt)	DIS	192.86	2	3	96.4	NIL	Entertainment	4	1988	Sony Corp. ADR	SNE	106.89	3	3	20.8	0.5	Foreign Electronics	5
993	e.l.f. Beauty	ELF	28.35	4	4	45.7	NIL	Toiletries/Cosmetics	12	1594	Southern Copper	SCCO	72.08	3	2	22.8	2.8	Metals & Mining (Div.)	7
178	Edwards Lifesciences	EW	79.66	2	1	38.9	NIL	Med Supp Invasive	6	313	Southwest Airlines ■	LUV	59.46	3	4	NMF	NIL	Air Transport	79
331	Euronav NV	EURN	9.56	4	4	NMF	1.3	Maritime	36	2567	Synchrony Financial ■	SYF	40.54	3	3	11.7	2.2	Financial Svcs. (Div.)	48
949	F5 Networks	FFIV	202.94	3	2	33.0	NIL	Telecom. Equipment	15	2599	Synopsis, Inc.	SNPS	234.43	1	1	37.2	NIL	Computer Software	24
777	Fifth Third Bancorp ■	FFIB	37.22	3	4	13.6	2.9	Bank (Midwest)	3	2206	TJX Companies	TJX	66.50	3	3	26.9	1.6	Retail (Softlines)	21
2515	First Republic Bank	FRC	166.96	3	3	26.1	0.5	Bank	19	1378	Taiwan Semic. ADR	TSM	117.18	1	2	30.0	1.5	Semiconductor	18
1912	Freshpet, Inc.	FRPT	149.57	4	2	NMF	NIL	Food Processing	40	2152	Target Corp.	TGT	188.04	2	3	23.0	1.4	Retail Store	25
741	Gibraltar Inds.	ROCK	86.31	3	2	23.1	NIL	Steel	11	723	Teledyne Technologies	TDY	394.20	2	3	33.5	NIL	Aerospace/Defense	49
1808	Goldman Sachs	GS	339.33	2	3	10.8	1.5	Investment Banking	1	197	Teleflex Inc.	TFX	402.66	3	2	44.6	0.3	Med Supp Invasive	6
1023	Granite Construction	GVA	37.30	3	3	14.6	1.4	Engineering & Const	26	1782	Textron, Inc. ■	TXT	54.42	3	3	21.2	0.1	Diversified Co.	42
1914	Hain Celestial Group	HAIN	44.83	3	2	36.4	NIL	Food Processing	40	1939	Tootsie Roll	TR	33.17	1	4	37.3	1.1	Food Processing	40
2360	Hilton Worldwide Hldgs.	HLT	122.92	3	4	70.2	NIL	Hotel/Gaming	84	1994	Turning Point Brands	TPB	53.06	4	2	18.7	0.4	Tobacco	10
1918	Hostess Brands	TWPK	14.95	3	2	18.2	NIL	Food Processing	40	1546	UDR, Inc.	UDR	43.53	3	3	NMF	3.4	R.E.I.T.	94
781	Huntington Bancshs. ■	HBAN	15.74	3	3	14.7	3.8	Bank (Midwest)	3	597	Ubiquiti Inc.	UI	346.39	3	3	32.7	0.5	Wireless Networking	73
216	IDEXX Labs.	IDXX	491.37	3	3	63.6	NIL	Med Supp Non-Invasive	17	1740	United Rentals	URI	311.48	3	3	19.0	NIL	Machinery	45
2619	Infosys Ltd. ADR	INFY	19.07	1	3	28.5	1.3	IT Services	39	2116	V.F. Corp.	VFC	79.82	3	3	36.3	2.5	Apparel	69
2174	Insight Enterprises	NSIT	95.70	3	3	19.4	NIL	Retail (Hardlines)	63	1596	Vale S.A. ADR	VALE	17.01	4	1	13.5	4.4	Metals & Mining (Div.)	7
184	Insulet Corp.	PODD	269.32	3	2	NMF	NIL	Med Supp Invasive	6	1785	Valmont Inds.	VMI	237.24	2	3	30.5	0.8	Diversified Co.	42
1359	Intel Corp.	INTC	65.63	1	3	13.2	2.1	Semiconductor	18	961	Vocera Communications	VCRA	38.83	3	1	NMF	NIL	Telecom. Equipment	15
1801	Interactive Brokers	IBKR	78.01	3	3	34.5	0.5	Brokers & Exchanges	35	1124	Vulcan Materials	VMC	162.04	2	2	32.3	0.9	Building Materials	61
2231	Invesco Ltd. ■	IVZ	25.11	3	3	17.1	2.5	Asset Management	16	1197	WD-40 Co.	WDFC	304.29	1	1	53.9	0.9	Household Products	23
924	j2 Global	JCOM	118.47	3	3	32.9	NIL	Telecom. Services	74	347	Wabtec Corp.	WAB	74.47	3	2	17.3	0.6	Railroad	9
1153	La-Z-Boy Inc.	LZB	43.53	3	3	15.3	1.4	Furn/Home Furnishings	85	132	Waters Corp.	WAT	271.63	2	1	27.5	NIL	Precision Instrument	20
996	Lauder (Estee)	EL	286.18	2	2	46.8	0.8	Toiletries/Cosmetics	12	1185	WestRock Co.	WRK	50.26	3	3	14.4	1.6	Packaging & Container	38
1623	Lilly (Eli)	LLY	185.84	1	3	20.9	1.8	Drug	75	1011	WideOpenWest, Inc.	WOW	15.54	4	3	35.3	NIL	Cable TV	28
1590	Lundin Mining	LUN.TO	14.17	3	3	15.2	2.0	Metals & Mining (Div.)	7	599	Zebra Techn. 'A'	ZBRA	463.77	3	3	28.8	NIL	Wireless Networking	73
532	MDU Resources	MDU	29.82	3	3	14.6	2.9	Natural Gas (Div.)	83	199	Zimmer Biomet Hldgs.	ZBH	160.24	3	2	21.4	0.6	Med Supp Invasive	6

■ Newly added this week.

Rank 1 Deletions:

Celanese Corp.; Colgate-Palmolive; Freep't-McMoRan Inc.; Generac Holdings; Globus Medical; HP Inc.; Lennar Corp.; Logitech Int'l; Masimo Corp.; PerkinElmer Inc.; Raymond James Fin'l; West Pharm. Svcs.

Rank removed--see supplement or report:

None.

Continued from preceding page

TIMELY STOCKS

Stocks Ranked 2 (Above Average) for Relative Price Performance in the Next 12 Months

Page No.	Stock Name	Recent Price Ticker	R a n k s		Current P/E Ratio	% Est'd Yield	Industry Group	Page No.	Stock Name	Recent Price Ticker	R a n k s		Current P/E Ratio	% Est'd Yield	Industry Group	Page No.			
			Technical Safety	↓							↓	↓							
1966	AB InBev ADR	BUD	63.39	3	3	19.9	1.6	Beverage	27	1147	Culp Inc.	CULP	15.91	3	2	26.1	2.8	Furn/Home Furnishings	85
2604	ACI Worldwide	ACIW	38.79	3	2	36.9	NIL	IT Services	39	152	Cummins Inc.	CMI	263.48	2	3	19.7	2.0	Heavy Truck & Equip	34
147	AGCO Corp.	AGCO	143.01	3	4	25.4	0.4	Heavy Truck & Equip	34	908	DTE Energy	DTE	127.66	2	3	17.8	3.5	Electric Util. (Central)	89
1302	AZZ Inc.	AZZ	51.01	3	3	19.9	1.3	Electrical Equipment	50	2612	DXC Technology	DXC	27.72	3	5	4.8	NIL	IT Services	39
1608	AbbVie Inc.	ABBV	105.90	3	3	8.8	4.9	Drug	75	102	Daimler AG	DDAIF	88.43	3	3	11.3	1.8	Automotive	2
940	ADTRAN, Inc.	ADTN	17.74	3	3	45.5	2.0	Telecom. Equipment	15	793	DaVita Inc.	DVA	110.04	3	3	14.4	NIL	Medical Services	37
1350	Advanced Micro Dev.	AMD	80.30	3	2	44.1	NIL	Semiconductor	18	2159	Deckers Outdoor	DECK	332.80	3	4	28.3	NIL	Shoe	72
2223	Affiliated Managers	AMG	148.82	3	3	31.7	NIL	Asset Management	16	177	Dentsply Sirona	XRAY	62.44	3	3	27.8	0.6	Med Supp Invasive	6
1555	Aflac Inc.	AFL	50.55	2	3	9.9	2.7	Insurance (Life)	81	2142	Dollar General	DG	193.96	2	3	19.8	0.9	Retail Store	25
112	Agilent Technologies	A	123.61	2	3	33.0	0.6	Precision Instrument	20	972	Dorman Products	DORM	106.94	3	3	24.6	NIL	Auto Parts	43
2430	Air Products & Chem.	APD	278.82	1	4	29.8	2.2	Chemical (Diversified)	22	2513	East West Bancorp	EWBC	75.97	3	3	20.4	1.7	Bank	19
1704	Albany Int'l 'A'	AIN	83.61	3	3	24.1	1.0	Machinery	45	2434	Eastman Chemical	EMN	112.23	3	3	18.6	2.5	Chemical (Diversified)	22
203	Align Techn.	ALGN	530.60	3	1	57.8	NIL	Med Supp Non-Invasive	17	2637	eBay Inc.	EBAY	60.29	2	2	16.3	1.2	Internet	29
828	Alkermes plc	ALKS	20.27	3	2	59.6	NIL	Biotechnology	55	561	Ecolab Inc.	ECL	208.07	1	2	44.2	0.9	Chemical (Specialty)	41
303	Allegiant Travel	ALGT	247.96	3	4	NMF	NIL	Air Transport	79	1306	Emerson Electric	EMR	89.35	1	3	25.5	2.3	Electrical Equipment	50
1321	Allegion plc	ALLE	120.45	3	3	21.4	1.2	Electronics	51	1758	EnPro Industries	NPO	86.87	3	3	41.4	1.2	Diversified Co.	42
964	Allison Transmission	ALSN	41.40	3	3	11.6	1.8	Auto Parts	43	1388	Entegris, Inc.	ENTG	105.00	3	3	36.1	0.3	Semiconductor Equip	30
2632	Amazon.com	AMZN	3110.87	1	2	72.5	NIL	Internet	29	436	Equifax, Inc.	EFX	175.13	3	3	26.4	0.9	Information Services	58
919	America Movil	AMX	13.77	3	4	10.4	2.8	Telecom. Services	74	948	Ericsson ADR	ERIC	13.38	3	1	17.6	1.8	Telecom. Equipment	15
2193	Amer. Eagle Outfitters ▲	AEO	28.81	3	3	24.8	1.4	Retail (Softlines)	24	761	Eric Indemnity	ERIE	230.28	2	1	39.8	1.8	Insurance (Prop/Cas.)	46
1790	Amer. Water Works	AWK	140.05	3	2	33.6	1.7	Water Utility	8	1793	Essential Utilities	WTRG	42.50	3	1	34.8	2.4	Water Utility	8
2225	Ameriprise Fin'l	AMP	229.18	3	3	12.7	1.8	Asset Management	16	2638	Etsy, Inc.	ETSY	219.77	3	2	98.6	NIL	Internet	29
204	AmerisourceBergen	ABC	116.35	2	4	13.9	1.5	Med Supp Non-Invasive	17	139	Eversource Energy	ES	82.25	3	3	21.8	2.9	Electric Utility (East)	62
1322	Amphenol Corp.	APH	64.71	1	3	30.4	0.9	Electronics	51	2639	Expedia Group	EXPE	173.09	3	4	NMF	NIL	Internet	29
1352	Analog Devices	ADI	154.50	1	2	25.5	1.8	Semiconductor	18	382	Expeditors Int'l	EXPD	103.07	1	3	25.3	1.0	Industrial Services	47
2576	ANSYS, Inc.	ANSS	334.86	2	2	48.8	NIL	Computer Software	21	1524	Extra Space Storage	EXR	128.16	3	3	31.0	3.1	R.E.I.T.	94
1398	Apple Inc.	AAPL	123.39	1	1	27.4	0.7	Computers/Peripherals	32	117	FARO Technologies ▲	FARO	89.08	3	3	NMF	NIL	Precision Instrument	20
1706	Applied Ind'l Techn.	AIT	91.39	3	4	28.1	1.4	Machinery	45	1138	Fastenal Co.	FAST	47.98	2	3	32.2	2.3	Retail Building Supply	33
1386	Applied Materials	AMT	119.33	3	3	19.9	0.8	Semiconductor Equip	30	308	FedEx Corp.	FDX	274.02	2	3	15.5	0.9	Air Transport	79
966	Aptiv PLC	APTIV	145.04	3	2	41.6	NIL	Auto Parts	43	103	Ferrari N.V.	RACE	208.06	3	2	42.6	0.5	Automotive	2
737	ArceclorMittal	MT	27.02	4	3	7.6	1.1	Steel	11	2548	Fidelity Nat'l Info.	FIS	141.18	2	3	75.5	1.1	Financial Svcs. (Div.)	48
148	Astec Inds.	ASTE	71.64	3	3	29.4	0.6	Heavy Truck & Equip	34	2514	First Commonwealth	FCF	14.49	3	3	15.9	3.0	Bank	19
967	Autoliv, Inc.	ALV	89.87	3	3	15.0	NIL	Auto Parts	43	779	First Midwest Bancorp	FMBI	22.34	3	4	18.2	2.5	Bank (Midwest)	3
2607	Automatic Data Proc.	ADP	184.39	1	3	31.3	2.1	IT Services	39	141	FirstEnergy Corp. ▲	FE	34.37	3	5	13.8	4.5	Electric Utility (East)	62
205	Avanos Medical ▲	AVNS	45.08	3	2	50.1	NIL	Med Supp Non-Invasive	17	1910	Flowers Foods	FLO	24.05	3	3	20.9	3.5	Food Processing	40
2413	Baker Hughes	BKR	22.31	3	3	49.6	3.2	Oilfield Svcs/Equip.	93	1503	Flushing Financial ▲	FFIC	23.35	3	4	13.7	3.6	Thrift	31
2505	Bank of Hawaii	BOH	91.96	2	3	22.7	2.9	Bank	19	2199	Foot Locker ▲	FL	58.05	3	3	14.9	1.4	Retail (Softlines)	24
2506	Bank of Montreal	BMO.TO	110.76	2	4	12.4	3.9	Bank	19	104	Ford Motor	F	12.85	4	3	30.6	NIL	Automotive	2
2507	Bank of New York Mellon	BK	45.21	2	3	11.7	2.7	Bank	19	1588	Freep't-McMoran Inc. ▼	FCX	35.01	4	3	15.1	0.9	Metals & Mining (Div.)	7
1174	Berry Global Group	BERY	60.25	3	3	11.1	NIL	Packaging & Container	38	2200	Gap (The), Inc.	GPS	30.20	4	4	30.8	NIL	Retail (Softlines)	24
206	Bio-Rad Labs. 'A'	BIO	580.00	2	1	49.7	NIL	Med Supp Non-Invasive	17	440	Gartner Inc.	IT	183.04	3	3	41.7	NIL	Information Services	58
1613	Biogen	BIIB	272.34	3	4	13.5	NIL	Drug	75	1217	Genac Holdings ▼	GNRC	313.73	3	3	38.9	NIL	Power	66
1819	Black Knight, Inc.	BKI	74.78	2	1	32.7	NIL	E-Commerce	57	710	Gen'l Dynamics	GD	176.56	1	4	15.9	2.7	Aerospace/Defense	49
2227	BlackRock, Inc.	BLK	730.92	2	3	20.1	2.3	Asset Management	16	105	Gen'l Motors	GM	58.10	3	3	9.8	NIL	Automotive	2
2634	Booking Holdings	BKNG	2231.89	3	3	39.1	NIL	Internet	29	975	Genentech Inc.	THRM	74.43	3	3	27.4	NIL	Auto Parts	43
1967	Boston Beer 'A'	SAM	1070.67	3	3	60.1	NIL	Beverage	27	1557	Globe Life Inc.	GL	98.17	1	3	13.6	0.8	Insurance (Life)	81
2354	Boyd Gaming ▲	BYD	60.55	3	3	30.7	NIL	Hotel/Gaming	84	181	Globus Medical ▼	GMED	61.34	3	1	31.3	NIL	Med Supp Invasive	6
431	Broadridge Fin'l	BR	147.59	2	3	27.1	1.6	Information Services	58	175	Graco Inc.	GGG	69.43	2	3	37.3	1.1	Machinery	45
377	Brookfield Asset Mgmt.	BAM	45.29	3	3	36.8	1.1	Industrial Services	47	342	Greenbrier (The) Cos.	GBX	46.94	3	3	NMF	2.3	Railroad	9
1707	Brooks Automation	BRKS	88.43	3	2	59.0	0.5	Machinery	45	1178	Greif, Inc.	GEF	55.76	3	3	14.9	3.2	Packaging & Container	38
2541	Brown & Brown	BRO	45.34	1	3	24.5	0.8	Financial Svcs. (Div.)	48	798	HCA Healthcare	HCA	188.18	3	4	14.2	1.0	Medical Services	37
2194	Buckle (The), Inc.	BKE	40.59	3	3	13.6	3.3	Retail (Softlines)	24	1400	HP Inc. ▼	HPQ	30.47	4	4	9.7	2.6	Computers/Peripherals	32
707	CAE Inc. ▲	CAE.TO	35.00	3	3	44.9	NIL	Aerospace/Defense	49	2516	HSBC Holdings PLC	HSBC	29.34	4	4	NMF	2.6	Bank	19
1326	CTS Corp.	CTS	32.03	3	2	21.4	0.5	Electronics	51	213	Haemonetics Corp. ▲	HAE	115.77	3	1	39.2	NIL	Med Supp Non-Invasive	17
2579	Cadence Design Sys.	CDNS	127.92	2	2	45.1	NIL	Computer Software	21	1529	Healthpeak Properties	PEAK	31.64	3	3	60.8	3.8	R.E.I.T.	94
943	Calix, Inc.	CALX	46.33	4	4	45.0	NIL	Telecom. Equipment	15	711	HEICO Corp.	HEI	125.23	3	3	55.7	0.1	Aerospace/Defense	49
2139	Canadian Tire 'A'	CTCA.TO	179.11	3	3	13.1	2.6	Retail Store	25	1641	Heidrick & Struggles	HSII	36.12	3	3	21.5	1.7	Human Resources	44
1982	Canon Inc. ADR	CAJ	22.10	1	4	22.6	3.4	Foreign Electronics	5	215	Hologic, Inc.	HOLX	73.93	3	2	8.2	NIL	Med Supp Non-Invasive	17
2543	Capital One Fin'l	COF	125.22	3	3	11.2	1.3	Financial Svcs. (Div.)	48	1763	Honeywell Int'l	HON	212.13	1	3	26.8	1.8	Diversified Co.	42
1502	Capitol Fed. Fin'l	CFNN	13.34	3	3	26.7	2.5	Thrift	31	1621	Horizon Therapeutics ▲	HZNP	90.38	3	2	38.6	NIL	Drug	75
174	Catalent, Inc.	CTLT	109.82	3	2	38.7	NIL	Med Supp Invasive	6	1810	Houlihan Lokey	HLI	65.96	2	3	20.7	2.0	Investment Banking	1
151	Caterpillar Inc.	CAT	226.02	2	4	28.9	1.8	Heavy Truck & Equip	34	2436	Huntsman Corp.	HUN	28.42	3	2	19.6	2.3	Chemical (Diversified)	22
2433	Celanese Corp. ▼	CE	146.94	3	4	16.9	1.9	Chemical (Diversified)	22	2361	Hyatt Hotels	H	85.52	3	3	NMF	NIL	Hotel/Gaming	84
907	CenterPoint Energy	CNP	21.96	3	4	15.5	3.0	Electric Util. (Central)	89	1390	IPG Photonics	IPGP	211.90	3	1	43.1	NIL	Semiconductor Equip	30
209	Charles River	CRL	288.13	3	3	45.3	NIL	Med Supp Non-Invasive	17	801	IQVIA Holdings								

Continued from preceding page

TIMELY STOCKS

Stocks Ranked 2 (Above Average) for Relative Price Performance in the Next 12 Months

Page No.	Stock Name	Ticker	Recent Price		R a n k s		Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Ticker	Recent Price		R a n k s		Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank
			Technical	Safety	Technical	Safety								Technical	Safety						
2338	Live Nation Entertain.	LYV	84.28	3	3	NMF	NIL	Entertainment	4	1341	Sanmina Corp.	SANM	41.01	3	4	11.4	NIL	Electronics	51		
1403	Logitech Int'l ▼	LOGI	104.55	2	2	19.1	0.8	Computers/Peripherals	32	747	Schnitzer Steel	SCHN	40.65	3	3	16.9	1.8	Steel	11		
1164	Louisiana-Pacific	LPX	54.55	3	4	7.2	1.2	Paper/Forest Products	52	1993	Schweitzer-Mauduit Int'l	SWM	47.31	3	3	15.3	3.7	Tobacco	10		
2339	MSG Networks ▲	MSGN	19.77	3	4	7.9	NIL	Entertainment	4	1408	Seagate Technology	STX	75.94	3	3	14.8	3.5	Computers/Peripherals	32		
1534	Mack-Cali R'lty ■	CLI	15.39	3	2	90.5	NIL	R.E.I.T.	94	770	Selective Ins. Group	SIGI	72.15	3	3	14.3	1.4	Insurance (Prop/Cas.)	46		
1361	MACOM Tech. Solutions	MTSI	58.66	3	2	30.9	NIL	Semiconductor	18	1373	Semtech Corp. ▲	SMTC	72.61	3	2	34.3	NIL	Semiconductor	18		
2161	Madden (Steven) Ltd.	SHOO	37.11	3	3	29.2	1.6	Shoe	72	164	Shyft Group	SHYF	37.73	3	4	24.7	0.3	Heavy Truck & Equip	34		
1646	ManpowerGroup Inc.	MAN	98.97	3	3	22.1	2.4	Human Resources	44	1374	Silicon Labs.	SLAB	145.55	3	3	NMF	NIL	Semiconductor	18		
2366	Marriott Int'l	MAR	151.50	3	4	95.9	NIL	Hotel/Gaming	84	2345	Sinclair Broadcast ▲	SBGI	33.82	3	3	10.7	2.4	Entertainment	40		
953	Marvell Technology	MVRL	47.67	3	3	37.8	0.5	Telecom. Equipment	15	1938	Smucker (J.M.)	SJM	127.25	1	3	19.7	2.9	Food Processing	4		
222	Masimo Corp. ▼	MASI	230.00	2	2	58.7	NIL	Med Supp Non-Invasive	17	1734	Snap-on Inc.	SNA	220.05	2	4	19.3	2.2	Machinery	45		
1026	MasTec	MTZ	91.15	3	3	17.0	NIL	Engineering & Const	26	2598	Square, Inc.	SQ	226.13	4	2	NMF	NIL	Computer Software	21		
2644	Match Group	MTCH	154.89	4	2	70.7	NIL	Internet	29	748	Steel Dynamics	STLD	47.03	3	3	14.1	2.2	Steel	11		
2313	Mattel, Inc.	MAT	20.88	4	4	41.8	NIL	Recreation	82	193	STERIS plc	STE	186.55	2	3	26.8	0.9	Med Supp Invasive	6		
1927	Medfast, Inc.	MED	232.30	3	1	22.5	2.4	Food Processing	40	1814	Stifel Financial Corp.	SF	64.18	3	3	16.2	0.9	Investment Banking	1		
806	Medpace Holdings	MEDP	164.45	3	2	37.4	NIL	Medical Services	37	986	Stoneridge, Inc.	SRI	34.43	3	3	54.7	NIL	Auto Parts	43		
1826	Mercadolibre Inc.	MELI	1476.11	3	1	NMF	NIL	E-Commerce	57	194	Stryker Corp.	SYK	232.08	1	1	25.5	1.1	Med Supp Invasive	6		
1335	Method Electronics	MEI	42.58	3	3	14.2	1.0	Electronics	51	629	Suburban Propane	SPH	15.10	3	3	12.1	7.9	Pipeline MLPs	96		
124	Mettler-Toledo Int'l	MTI	1130.87	2	2	43.2	NIL	Precision Instrument	20	960	Synaptics	SYNA	143.20	3	3	28.6	NIL	Telecom. Equipment	15		
1364	Microchip Technology	MCHP	154.86	3	2	21.7	1.0	Semiconductor	18	2528	Synovus Financial	SNV	46.53	3	3	15.5	2.8	Bank	19		
1365	Micron Technology	MU	91.28	3	3	21.5	NIL	Semiconductor	18	1344	TE Connectivity	TEL	128.21	2	3	21.6	1.6	Electronics	51		
1625	Mirati Therapeutics	MRTX	184.24	4	2	NMF	NIL	Drug	75	1134	TRI Pointe Homes ▲	TPH	20.07	3	2	7.5	NIL	Homebuilding	53		
718	Moog Inc. 'A'	MOGA	81.05	3	2	14.9	1.2	Aerospace/Defense	49	402	TTEC Holdings	TTEC	95.15	3	3	27.1	0.9	Industrial Services	47		
1811	Morgan Stanley	MS	81.92	2	3	13.5	1.7	Investment Banking	1	2012	Take-Two Interactive	TTWO	171.88	3	1	46.8	NIL	Entertainment Tech	13		
954	Motorola Solutions	MSI	185.71	2	3	22.0	1.5	Telecom. Equipment	15	2186	Tapestry Inc.	TPR	43.66	3	3	18.0	NIL	Retail (Hardlines)	63		
1368	NXP Semiconductors NV	NXPI	200.40	3	2	22.1	1.1	Semiconductor	18	1595	Teck Resources 'B'	TECKB.TO	25.31	3	2	NMF	0.8	Metals & Mining (Div.)	7		
1978	National Beverage	FIZZ	49.99	3	1	27.9	NIL	Beverage	27	1996	Teradyne Inc.	TER	117.01	3	2	26.8	0.3	Semiconductor Equip	30		
1592	Natural Resource ▲	NRP	18.57	4	4	7.9	9.7	Metals & Mining (Div.)	7	165	Terex Corp.	TEX	45.71	4	4	42.7	1.1	Heavy Truck & Equip	34		
107	Nissan Motor ADR	NSANY	11.18	3	2	NMF	NIL	Automotive	2	109	Tesla, Inc.	TSLA	670.00	4	1	NMF	NIL	Automotive	2		
782	Northern Trust Corp.	NTRS	99.58	3	3	16.8	2.8	Bank (Midwest)	3	412	Tetra Tech	TTEK	130.17	3	3	37.2	0.5	Environmental	54		
227	NovoCure Limited	NVCR	140.30	4	1	NMF	NIL	Med Supp Non-Invasive	17	368	Texas Roadhouse	TXRH	93.83	3	3	48.6	NIL	Restaurant	87		
2589	Nuance Commun. Inc.	NUAN	45.20	3	2	NMF	NIL	Computer Software	21	2150	Thermo Fisher Sci.	TMO	454.66	1	2	24.2	0.2	Precision Instrument	20		
2032	Okta, Inc.	OKTA	222.50	3	1	NMF	NIL	Cyber Security	14	771	Travelers Cos.	TRV	147.59	1	3	11.1	2.3	Insurance (Prop/Cas.)	46		
783	Old Nat'l Bancorp	ONB	19.78	3	3	12.6	2.8	Bank (Midwest)	3	384	TruMas Corp.	TRS	31.40	3	2	20.3	NIL	Diversified Co.	42		
2391	Omnicom Group	OMC	77.15	3	4	14.4	3.6	Advertising	64	1315	Trimble Inc.	TRMB	75.18	3	3	32.5	NIL	Electrical Equipment	50		
2590	Oracle Corp.	ORCL	66.32	1	3	14.9	1.9	Computer Software	21	345	Trinity Inds.	TRN	28.05	3	2	56.1	3.0	Railroad	9		
2437	PPG Inds.	PPG	147.94	1	3	25.3	1.5	Chemical (Diversified)	22	2650	Trip.com Ltd. ADS ▲	TCOM	41.21	3	3	41.2	NIL	Internet	29		
143	PPL Corp.	PPL	29.07	2	4	11.5	5.7	Electric Utility (East)	62	1649	TrueBlue, Inc.	TBI	20.96	3	3	21.4	NIL	Human Resources	44		
2591	PTC Inc.	PTC	130.14	3	2	93.0	NIL	Computer Software	21	2652	Twitter Inc.	TWTR	65.21	4	2	89.3	NIL	Internet	29		
2112	PVH Corp.	PVH	103.47	3	3	22.3	NIL	Apparel	69	2626	Tyler Technologies	TYL	420.70	3	3	72.9	NIL	IT Services	39		
1985	Panasonic Corp.	PCRFY	12.96	3	2	14.6	1.7	Foreign Electronics	5	413	US Ecology ▲	ECOL	43.04	3	5	53.1	NIL	Environmental	54		
784	Park National	PRK	133.32	3	3	16.0	3.1	Bank (Midwest)	3	2188	Ultra Beauty	ULTA	315.09	3	2	34.0	NIL	Retail (Hardlines)	63		
1773	Parker-Hannifin	PH	310.96	3	4	24.9	1.1	Diversified Co.	42	2114	Under Armour 'A'	UAA	23.48	4	3	NMF	NIL	Apparel	69		
2131	Penske Auto	PAG	80.13	3	3	11.7	2.1	Retail Automotive	59	346	Union Pacific	UNP	206.27	1	2	22.0	1.9	Railroad	9		
128	PerkinElmer Inc. ▼	PKI	128.13	2	1	11.7	0.2	Precision Instrument	20	316	United Parcel Serv.	UPS	161.06	1	2	17.9	2.6	Air Transport	79		
1930	Phibro Animal Health	PAHC	24.76	3	5	17.4	1.9	Food Processing	40	2013	Universal Electronics	UEIC	56.94	3	2	23.3	NIL	Entertainment Tech	13		
1812	Piper Sandler Cos.	PIPR	111.96	3	3	15.1	3.1	Investment Banking	1	2373	Vail Resorts	MTN	313.49	3	3	NMF	NIL	Hotel/Gaming	84		
2522	Popular Inc.	BPOP	69.51	3	3	10.4	2.3	Bank	19	2349	ViacomCBS Inc.	VIAC	100.34	3	5	22.5	1.0	Entertainment	4		
744	POSCO ADR	PKX	67.19	3	3	7.9	2.3	Steel	11	989	Visteon Corp.	VC	126.32	3	2	66.8	NIL	Auto Parts	43		
1195	Procter & Gamble	PG	130.18	1	3	23.0	2.4	Household Products	23	934	Vodafone Group ADR	VOD	18.62	3	2	18.8	6.2	Telecom. Services	74		
768	Progressive Corp.	PGR	90.13	1	3	14.6	0.4	Insurance (Prop/Cas.)	46	2394	WPP PLC ADR	WPP	63.97	3	4	20.8	1.0	Advertising	64		
841	QIAGEN N.V.	QGEN	50.10	3	1	19.6	NIL	Biotechnology	55	167	Wabash National	WNC	18.77	3	3	28.9	1.7	Heavy Truck & Equip	34		
1371	Qorvo Inc.	QRVO	183.28	3	3	35.7	NIL	Semiconductor	18	1145	Watsco, Inc.	WSO	254.49	1	3	35.4	3.1	Retail Building Supply	33		
1028	Quanta Services	PWR	85.05	3	3	19.5	0.3	Engineering & Const	26	2531	Webster Fin'l ▲	WBS	57.99	3	3	18.9	2.8	Bank	19		
579	RPM Int'l	RPM	88.76	3	3	21.9	1.7	Chemical (Specialty)	41	2330	West Pharm. Svcs. ▼	WST	282.49	2	3	56.4	0.2	Med Supp Non-Invasive	17		
2113	Ralph Lauren	RL	121.52	3	3	23.0	NIL	Apparel	69	2577	Western Union	WU	24.77	3	3	12.9	3.6	Financial Svcs. (Div.)	48		
1372	Rambus Inc.	RMBS	20.46	3	3	NMF	NIL	Semiconductor	18	2385	Wiley (John) & Sons	JWA	53.03	3	3	22.7	2.6	Publishing	76		
1813	Raymond James Fin'l ▼	RJF	119.56	3	3	18.4	1.3	Investment Banking	1	133	Woodward, Inc.	WWD	120.19	3	3	37.6	0.5	Precision Instrument	20		
2523	Regions Financial	RF	20.44	3	3	12.0	3.0	Bank	19	750	Worthington Inds.	WOR	67.72	3	3	19.0	1.5	Steel	11		
2151	Rent-A-Center	RCII	59.41	3	4	16.1	2.1	Retail Store	25	1743	Xylem Inc.	XYL	102.43	2	3	37.7	1.1	Machinery	45		
2205	Ross Stores	ROST	120.66	3	3	30.2	NIL	Retail (Softlines)	24	2328	YETI Holdings	YETI	75.04	3	3	39.1	NIL	Recreation	82		
311	Ryanair Hldgs plc ADS ▲	RYAAY	111.08	3	3	NMF	NIL	Air Transport	79	1839	Zions Bancorp.	ZION	55.28	3	1	NMF	NIL	E-Commerce	57		
326	Ryder System	R	72.73	3	3	22.0	3.1	Trucking	60	2533	Zions Bancorp.	ZION	55.28	3	1	NMF	NIL	Bank	19		
336	SFL Corp. Ltd ▲	SFL	8.16	4	5	20.4	7.4	Maritime	36	2035	Zscaler, Inc. ▲	ZS	182.61	4	1	NMF	NIL	Cyber Security	14		
1933	Sanderson Farms	SAFM	160.19	3	3	40.0	1.1	Food Processing	40	2014	Zynga Inc.	ZNGA	10.03	3	2	NMF	NIL				

Stocks Ranked 1 (Highest) for Relative Safety

Page No.	Stock Name	Rank Current					Industry Group	Industry Rank	Page No.	Stock Name	Rank Current					Industry Group	Industry Rank
		Recent Price	Time-liness	Tech-nical	P/E Ratio	% Est'd Yield					Recent Price	Time-liness	Tech-nical	P/E Ratio	% Est'd Yield		
917	AT&T Inc.	29.99	4	5	9.6	6.9	Telecom. Services	74	912	MGE Energy (NDQ)	70.32	5	4	26.3	2.2	Electric Util. (Central)	89
201	Abbott Labs.	121.47	3	2	23.3	1.5	Med Supp Non-Invasive	17	2558	Marsh & McLennan	117.28	3	4	24.0	1.6	Financial Svcs. (Div.)	48
2605	Accenture Plc	265.20	3	2	31.6	1.4	IT Services	39	2559	MasterCard Inc.	358.40	1	3	42.9	0.5	Financial Svcs. (Div.)	47
2430	Air Products & Chem.	278.82	2	4	29.8	2.2	Chemical (Diversified)	22	395	MAXIMUS Inc.	87.24	3	3	23.6	1.3	Industrial Services	48
753	Allstate Corp.	112.24	3	3	7.4	2.9	Insurance (Prop/Cas.)	46	1926	McCormick & Co.	87.85	4	3	30.1	1.5	Food Processing	40
2631	Alphabet Inc.	(NDQ) 2038.59	1	2	34.0	NIL	Internet	29	362	McDonald's Corp.	225.07	4	3	28.7	2.3	Restaurant	87
2632	Amazon.com	(NDQ) 3110.87	2	2	72.5	NIL	Internet	29	188	Medtronic plc	116.84	3	2	26.2	2.1	Med Supp Invasive	6
2606	Amdocs Ltd.	(NDQ) 80.00	3	3	19.8	1.8	IT Services	39	1624	Merck & Co.	77.51	-	-	12.2	3.4	Drug	75
905	Amer. Elec. Power	83.63	4	4	17.7	3.6	Electric Util. (Central)	89	2587	Microsoft Corp.	(NDQ) 235.99	3	2	31.8	0.9	Computer Software	21
2536	Amer. Express	139.95	1	3	20.9	1.3	Financial Svcs. (Div.)	48	1928	Mondelez Int'l	(NDQ) 58.84	3	3	21.1	2.2	Food Processing	40
830	Amgen	(NDQ) 249.69	3	3	15.0	2.9	Biotechnology	55	1929	Nestle SA ADS	(PNK) 111.35	3	2	24.1	2.5	Food Processing	40
1322	Amphenol Corp.	64.71	2	3	30.4	0.9	Electronics	51	576	NewMarket Corp.	388.85	4	4	16.3	2.0	Chemical (Specialty)	41
1352	Analog Devices	(NDQ) 154.50	2	2	25.5	1.8	Semiconductor	18	142	NextEra Energy	71.69	3	1	28.0	2.1	Electric Utility (East)	62
2538	Aon plc	223.40	3	2	21.7	0.8	Financial Svcs. (Div.)	48	2162	NIKE, Inc. 'B'	138.27	3	2	44.6	0.8	Shoe	72
1398	Apple Inc.	(NDQ) 123.39	2	1	27.4	0.7	Computers/Peripherals	32	719	Northrop Grumman	314.21	3	4	13.1	1.8	Aerospace/Defense	49
540	Atmos Energy	93.54	3	4	18.7	2.8	Natural Gas Utility	68	1627	Novartis AG ADR	86.51	3	2	22.1	3.7	Drug	75
2607	Automatic Data Proc.	(NDQ) 184.39	2	3	31.3	2.1	IT Services	39	1628	Novo Nordisk ADR	71.05	3	1	23.9	1.8	Drug	75
171	Baxter Int'l Inc.	81.24	4	5	25.0	1.2	Med Supp Invasive	6	1206	Nuveen Muni Value Fund	10.96	-	-	NMF	3.5	Investment Co.	-
172	Becton, Dickinson	241.62	3	2	19.0	1.4	Med Supp Invasive	6	325	Old Dominion Freight (NDQ)	231.25	3	3	34.5	0.4	Trucking	60
756	Berkley (W.R.)	73.27	3	3	20.9	0.7	Insurance (Prop/Cas.)	46	2590	Oracle Corp.	66.32	2	3	14.9	1.9	Computer Software	21
757	Berkshire Hathaway 'B'	250.36	3	3	26.3	NIL	Insurance (Prop/Cas.)	46	2437	PPG Inds.	147.94	2	3	25.3	1.5	Chemical (Diversified)	22
1615	Bristol-Myers Squibb	63.38	3	4	NMF	3.1	Drug	75	1979	PepsiCo, Inc.	(NDQ) 137.80	3	3	23.2	3.0	Beverage	27
2541	Brown & Brown	45.34	2	3	24.5	0.8	Financial Svcs. (Div.)	48	1631	Pfizer, Inc.	36.00	4	5	15.5	4.3	Drug	75
1968	Brown-Forman 'B'	69.18	4	2	37.4	1.0	Beverage	27	2218	Pinnacle West Capital	79.73	3	4	16.4	4.3	Electric Utility (West)	78
339	Can. National Railway	113.16	3	3	24.1	1.7	Railroad	9	2233	Price (T. Rowe) Group (NDQ)	172.26	3	3	17.1	2.5	Asset Management	16
1982	Canon Inc. ADR	22.10	2	4	22.6	3.4	Foreign Electronics	5	1195	Procter & Gamble	130.18	2	3	23.0	2.4	Household Products	23
2026	Check Point Software	(NDQ) 117.20	3	2	18.8	NIL	Cyber Security	14	768	Progressive Corp.	90.13	2	3	14.6	0.4	Insurance (Prop/Cas.)	46
759	Chubb Ltd.	157.05	2	3	13.0	2.0	Insurance (Prop/Cas.)	46	144	Public Serv. Enterprise	57.88	3	2	15.9	3.5	Electric Utility (East)	62
1188	Church & Dwight	84.51	2	3	26.8	1.2	Household Products	23	1538	Public Storage	236.70	3	3	32.8	3.4	R.E.I.T.	94
945	Cisco Systems	50.30	2	3	15.3	2.9	Telecom. Equipment	15	721	Raytheon Technologies	76.92	-	-	23.7	2.5	Aerospace/Defense	49
1189	Clorox Co.	189.44	3	3	22.9	2.3	Household Products	23	1731	Roper Tech.	401.29	3	3	28.3	0.6	Machinery	45
1969	Coca-Cola	51.00	3	3	24.8	3.3	Beverage	27	2524	Royal Bank of Canada (TSE)	115.98	3	4	13.2	3.8	Bank	19
1190	Colgate-Palmolive	75.77	2	2	23.3	2.4	Household Products	23	1633	Sanofi ADR	(NDQ) 49.29	3	4	16.8	3.9	Drug	75
1006	Comcast Corp.	(NDQ) 56.37	3	3	22.0	1.8	Cable TV	28	1935	Saputo Inc.	(TSE) 38.16	3	4	21.6	1.8	Food Processing	40
776	Commerce Bancshs.	(NDQ) 76.87	3	3	20.0	1.4	Bank (Midwest)	3	1143	Sherwin-Williams	240.08	3	3	27.1	1.0	Retail Building Supply	33
136	Consol. Edison	72.05	4	4	17.2	4.3	Electric Utility (East)	62	1938	Smucker (J.M.)	127.25	2	3	19.7	2.9	Food Processing	40
2140	Costco Wholesale	(NDQ) 334.49	2	2	32.6	0.9	Retail Store	25	367	Starbucks Corp.	(NDQ) 107.57	3	3	37.7	1.8	Restaurant	87
1756	Danaher Corp.	223.55	-	-	37.0	0.4	Diversified Co.	42	194	Stryker Corp.	232.08	2	1	25.5	1.1	Med Supp Invasive	6
153	Deere & Co.	371.59	1	4	28.8	1.0	Heavy Truck & Equip	34	2599	Synopsys, Inc.	(NDQ) 234.43	1	1	37.2	NIL	Computer Software	21
1973	Diageo plc	166.62	3	2	46.3	2.2	Beverage	27	1378	Taiwan Semic. ADR	117.18	2	2	30.0	1.5	Semiconductor	18
561	Ecolab Inc.	208.07	2	2	44.2	0.9	Chemical (Specialty)	41	1379	Texas Instruments	(NDQ) 180.10	2	2	27.9	2.3	Semiconductor	18
1306	Emerson Electric	89.35	3	3	25.5	2.3	Electrical Equipment	50	130	Thermo Fisher Sci.	454.66	2	2	24.2	0.2	Precision Instrument	20
2020	Everest Re Group Ltd.	243.88	3	3	15.4	2.5	Reinsurance	77	1783	3M Company	189.47	3	3	20.6	3.1	Diversified Co.	42
139	Eversource Energy	82.25	2	3	21.8	2.9	Electric Utility (East)	62	1939	Tootsie Roll	33.17	1	4	37.3	1.1	Food Processing	40
382	Expeditors Int'l	(NDQ) 103.07	2	3	25.3	1.0	Industrial Services	47	2529	Toronto-Dominion	(TSE) 82.14	3	4	13.3	4.0	Bank	19
2551	Gallagher (Arthur J.)	122.05	3	4	27.8	1.6	Financial Svcs. (Div.)	48	771	Travelers Cos.	147.59	2	3	11.1	2.3	Insurance (Prop/Cas.)	46
710	Gen'l Dynamics	176.56	2	4	15.9	2.7	Aerospace/Defense	49	1943	Unilever PLC ADR	55.67	3	4	19.5	3.7	Food Processing	40
1913	Gen'l Mills	61.45	3	4	16.9	3.4	Food Processing	40	346	Union Pacific	206.27	2	2	22.0	1.9	Railroad	9
1620	GlaxoSmithKline ADR	36.67	3	5	21.8	5.7	Drug	75	316	United Parcel Serv.	161.06	2	2	17.9	2.6	Air Transport	79
1557	Globe Life Inc.	98.17	2	3	13.6	0.8	Insurance (Life)	81	915	UnitedHealth Group	366.86	4	4	23.0	1.4	Medical Services	37
2618	Henry (Jack) & Assoc. (NDQ)	149.23	3	5	33.1	1.2	IT Services	39	833	Verizon Commun.	56.59	3	5	11.2	4.5	Telecom. Services	74
1916	Hershey Co.	156.38	3	2	24.1	2.1	Food Processing	40	2569	Visa Inc.	208.00	3	3	35.6	0.6	Financial Svcs. (Div.)	48
1140	Home Depot	288.94	3	4	23.2	2.3	Retail Building Supply	33	1197	WD-40 Co.	(NDQ) 304.29	1	1	53.9	0.9	Household Products	23
1763	Honeywell Int'l	212.13	2	3	26.8	1.8	Diversified Co.	42	915	WEC Energy Group	88.76	4	5	22.4	3.1	Electric Util. (Central)	89
1917	Hormel Foods	48.55	4	3	27.7	2.0	Food Processing	40	2154	Walmart Inc.	132.37	3	2	22.9	1.7	Retail Store	25
323	Hunt (J.B.)	(NDQ) 158.41	3	3	26.7	0.7	Trucking	60	415	Waste Management	123.37	3	3	28.0	1.9	Environmental	54
2215	IDACORP, Inc.	97.81	3	5	20.8	3.0	Electric Utility (West)	78	1145	Watsco, Inc.	254.49	2	3	35.4	3.1	Retail Building Supply	33
730	Illinois Tool Works	219.11	3	4	28.2	2.1	Metal Fabricating	71	1946	Watsco (George)	(TSE) 102.47	3	5	12.7	2.1	Retail/Wholesale Food	70
2619	Infosys Ltd. ADR	19.07	1	3	28.5	1.3	IT Services	39	2221	Xcel Energy Inc.	(NDQ) 63.75	3	4	22.1	2.9	Electric Utility (West)	78
1359	Intel Corp.	(NDQ) 65.63	1	3	13.2	2.1	Semiconductor	18									
1402	Int'l Business Mach.	130.55	3	5	15.1	5.0	Computers/Peripherals	32									
569	Int'l Flavors & Frag.	137.30	-	-	23.2	2.3	Chemical (Specialty)	41									
1920	J&J Snack Foods	(NDQ) 154.39	4	2	56.1	1.5	Food Processing	40									
2517	JPMorgan Chase	150.97	2	3	13.7	2.4	Bank	19									
221	Johnson & Johnson	160.50	3	3	17.7	2.5	Med Supp Non-Invasive	17									
1921	Kellogg	62.39	4	5	15.4	3.7	Food Processing	40									
1193	Kimberly-Clark	133.03	4	4	16.8	3.4	Household Products	23									
1623	Lilly (Eli)	185.84	1	3	20.9	1.8	Drug	75									
1954	Loblaw Cos. Ltd.	(TSE) 66.95	3	5	21.5	2.0	Retail/Wholesale Food	70									
716	Lockheed Martin	357.66	3	5	13.7	3.0	Aerospace/Defense	49									

Stocks Ranked 2 (Above Average) for Relative Safety

Page No.	Stock Name	Rank Current					Industry Group	Industry Rank	Page No.	Stock Name	Rank Current					Industry Group	Industry Rank
		Recent Price	Time-liness	Tech-nical	P/E Ratio	% Est'd Yield					Recent Price	Time-liness	Tech-nical	P/E Ratio	% Est'd Yield		
1745	ABB Ltd. ADR	31.56	3	3	39.5	2.6	Diversified Co.	42	1173	Ball Corp.	84.32	3	2	31.2	0.7	Packaging & Container	38
1200	Adams Divers. Equity Fd	18.10	-	-	NMF	1.1	Investment Co.	-	2505	Bank of Hawaii	91.96	2	3	22.7	2.9	Bank	19
2574	Adobe Inc.	(NDQ) 452.41	3	1	40.8	NIL	Computer Software	21	2506	Bank of Montreal (TSE)	110.76	2	4	12.4	3.9	Bank	19
1555	Aflac Inc.	50.55	2	3	9.9	2.7	Insurance (Life)	81	2507	Bank of New York Mellon	45.21	2	3	11.7	2.7	Bank	19
112	Agilent Technologies	123.61	2	3	33.0	0.6	Precision Instrument	20	2508	Bank of Nova Scotia (TSE)	78.56	3	3	12.2	4.6	Bank	19
752	Allegheny Corp.	632.09	3	4	14.5	NIL	Insurance (Prop/Cas.)	46	431	Bio-Rad Labs. 'A'	580.00	2	1	49.7	NIL	Med Supp Non-Invasive	17
902	ALLETE	67.60	4	4	21.1	3.8	Electric Util. (Central)	89	831	Bio-Techne Corp. (NDQ)	385.38	1	2	72.4	0.3	Biotechnology	55
903	Alliant Energy	(NDQ) 51.51	4	5	21.4	3.1	Electric Util. (Central)	89	2212	Black Hills	65.20	3	4	17.2	3.5	Electric Utility (West)	78
318	AMERCO	(NDQ) 591.48	3	4	19.0	NIL	Trucking	60	1819	Black Knight, Inc.	74.78	2	1	32.7	NIL	E-Commerce	57
904	Ameren Corp.	77.97	3	5	21.0	2.9	Electric Util. (Central)	89	2227								

HIGHEST DIVIDEND YIELDING STOCKS (Based upon estimated year-ahead dividends per share)

Table with 20 columns: Page No., Stock Name, Recent Price, Time-liness, Safety Rank, P/E Ratio, Est'd Yield, Industry Group, Industry Rank, and 12 more columns for the second set of data.

STOCKS WITH HIGH 3- TO 5-YEAR PRICE APPRECIATION POTENTIAL

Some of the stocks tabulated below are very risky and appreciation potentialities tentative. Please read the full-page reports in Ratings & Reports to gain an understanding of the risks entailed. Some of these stocks may not be timely investment commitments. (See the Performance Ranks below.)

Table with 20 columns: Page No., Stock Name, Recent Price, 5-year Potential, Time-liness, Safety Rank, Industry Group, Industry Rank, and 12 more columns for the second set of data.

© 2021 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.

To subscribe call 1-800-VALUELINE

WIDEST DISCOUNTS FROM BOOK VALUE

Stocks whose ratios of recent price to book value are lowest

Page No.	Stock Name	Ticker	Recent Price	Book Value Per sh.*	Percent Price-to-Book Value	Time-liness	Safety Rank	Beta	P/E Ratio	% Est'd Yield	Industry Group	Industry Rank
1556	Genworth Fin'l	GNW	3.39	31.00	11%	-	5	1.30	3.5	NIL	Insurance (Life)	81
617	Enable Midstream Part.	ENBL	6.97	15.65	45%	-	4	1.90	12.9	9.5	Pipeline MLPs	96
2418	Helix Energy Solutions	HLX	5.32	11.80	45%	-	5	2.10	29.6	NIL	Oilfield Svcs/Equip.	93
1564	Unum Group	UNM	27.25	60.55	45%	4	3	1.70	6.0	4.2	Insurance (Life)	81
523	Antero Resources	AR	10.02	21.55	46%	4	5	1.20	40.1	NIL	Natural Gas (Div.)	83
930	Telephone & Data	TDS	22.34	48.00	47%	3	3	1.00	19.6	3.1	Telecom. Services	74
2017	Assured Guaranty	AGO	43.52	85.45	51%	3	3	1.55	10.9	2.0	Reinsurance	77
530	EQT Corp.	EQT	18.47	35.75	52%	4	5	0.85	45.0	NIL	Natural Gas (Div.)	83
1032	Tutor Perini	TPC	17.67	31.25	57%	3	4	1.30	8.3	NIL	Engineering & Const	26
512	Murphy Oil Corp.	MUR	17.37	29.70	58%	5	4	1.75	NMF	2.9	Petroleum (Integrated)	97
2537	Amer. Int'l Group	AIG	46.23	76.45	60%	4	3	1.50	10.7	2.8	Financial Svcs. (Div.)	48
107	Nissan Motor ADR	NSANY	11.18	18.15	62%	2	3	0.90	NMF	NIL	Automotive	2
1595	Teck Resources 'B'	TECKB.TO	25.31	41.10	62%	2	3	1.05	NMF	0.8	Metals & Mining (Div.)	7
2024	SiriusPoint Ltd.	SPNT	10.47	16.20	65%	-	3	1.20	8.2	NIL	Reinsurance	77
1418	Xerox Holdings	XRX	24.84	38.15	65%	4	3	1.40	13.2	4.0	Office Equip/Supplies	91
1008	EchoStar Corp.	SATS	25.97	39.50	66%	4	3	0.90	NMF	NIL	Cable TV	28
709	Embraer SA	ERJ	9.76	14.80	66%	-	4	1.55	NMF	NIL	Aerospace/Defense	49
106	Honda Motor ADR	HMC	30.93	46.65	66%	3	3	1.00	8.5	3.1	Automotive	2
1560	MetLife Inc.	MET	60.11	90.60	66%	3	3	1.40	9.1	3.1	Insurance (Life)	81
2018	Athene Holding Ltd.	ATH	52.05	77.45	67%	-	3	1.85	6.9	NIL	Reinsurance	77
932	U.S. Cellular	USM	35.25	52.95	67%	4	3	0.75	24.5	NIL	Telecom. Services	74
1643	Kelly Services 'A'	KELYA	20.87	30.75	68%	5	3	1.20	14.3	NIL	Human Resources	44
2535	AerCap Hldgs. NV	AER	59.47	85.55	70%	-	4	2.00	8.4	NIL	Financial Svcs. (Div.)	48
737	ArcelorMittal	MT	27.02	38.40	70%	2	4	1.50	7.6	1.1	Steel	11
2516	HSBC Holdings PLC	HSBC	29.34	41.75	70%	2	4	0.85	NMF	2.6	Bank	19
525	CNX Resources	CNX	14.60	20.65	71%	3	4	0.85	13.0	NIL	Natural Gas (Div.)	83
1592	Natural Resource	NRP	18.57	25.75	72%	2	4	0.85	7.9	9.7	Metals & Mining (Div.)	7
934	Vodafone Group ADR	VOD	18.62	25.80	72%	2	3	1.00	18.8	6.2	Telecom. Services	74
2234	Voya Financial	VOYA	63.10	87.50	72%	3	3	1.45	17.5	1.0	Asset Management	16
1327	Celestica Inc.	CLS	8.62	11.80	73%	5	3	1.40	9.0	NIL	Electronics	51
1976	Molson Coors Beverage	TAP	49.85	68.10	73%	1	3	1.05	12.3	NIL	Beverage	27
514	PBF Energy	PBF	14.35	19.60	73%	5	4	1.90	NMF	NIL	Petroleum (Integrated)	97
305	Atlas Air Worldwide	AAWW	59.50	80.20	74%	3	3	0.75	5.9	NIL	Air Transport	79
2556	Loews Corp.	L	51.70	69.20	75%	3	2	1.15	15.3	0.5	Financial Svcs. (Div.)	48
2424	Patterson-UTI Energy	PTEN	7.58	10.10	75%	4	5	1.55	NMF	1.1	Oilfield Svcs/Equip.	93
1911	Fresh Del Monte Prod.	FDP	28.60	37.75	76%	5	3	0.55	19.3	1.4	Food Processing	40
1162	Domtar Corp.	UFS	36.42	46.85	78%	4	3	1.25	16.6	NIL	Paper/Forest Products	52
616	DCP Midstream LP	DCP	22.41	28.35	79%	4	5	1.60	12.5	7.0	Pipeline MLPs	96
331	Euronav NV	EURN	9.56	12.10	79%	1	4	1.05	NMF	1.3	Maritime	36
2405	Marathon Oil Corp.	MRO	10.83	13.45	81%	4	4	1.50	NMF	1.1	Petroleum (Producing)	92
2510	Citigroup Inc.	C	71.96	87.50	82%	3	3	1.45	11.3	2.8	Bank	19
2170	Conn's, Inc.	CONN	15.33	18.55	83%	-	4	1.60	14.6	NIL	Retail (Hardlines)	63
2546	Equitable Holdings	EQH	32.39	39.10	83%	3	3	1.60	6.4	2.1	Financial Svcs. (Div.)	48
1765	Jefferies Fin'l Group	JEF	33.91	40.50	84%	3	3	1.20	14.1	2.4	Diversified Co.	42
773	Assoc. Banc-Corp	ASB	21.90	25.30	87%	3	3	1.20	14.9	3.3	Bank (Midwest)	3
504	Genovus Energy	CVE.TO	9.79	11.20	87%	4	5	1.65	NMF	0.7	Petroleum (Integrated)	97
2511	Citizens Fin'l Group	CFG	43.44	49.95	87%	3	3	1.50	15.6	3.6	Bank	19
2022	Greenlight Capital Re	GLRE	8.85	10.15	87%	3	4	1.00	22.1	NIL	Reinsurance	77
625	Plains All Amer. Pipe.	PAA	9.35	10.75	87%	5	4	1.55	11.8	7.7	Pipeline MLPs	96
1505	New York Community	NYCB	12.10	13.70	88%	3	3	0.80	11.1	5.6	Thrift	31
2442	Apollo Investment	AINV	13.76	15.45	89%	4	3	1.40	10.8	9.0	Public/Private Equity	67
2019	AXIS Capital Hldgs.	AXS	50.51	56.55	89%	4	2	0.95	10.8	3.3	Reinsurance	77
2542	CIT Group	CIT	49.67	55.60	89%	-	3	1.75	41.7	2.8	Financial Svcs. (Div.)	48
1982	Canon Inc. ADR	CAJ	22.10	24.90	89%	2	1	0.80	22.6	3.4	Foreign Electronics	5
2383	Scholastic Corp.	SCHL	29.51	33.10	89%	5	3	1.00	NMF	2.0	Publishing	76
332	Frontline Ltd.	FRO	7.78	8.65	90%	4	5	1.25	NMF	2.6	Maritime	36
1395	Phonics Inc.	PLAB	12.19	13.55	90%	5	3	0.95	17.4	NIL	Semiconductor Equip	30
758	CNA Fin'l	CNA	44.94	49.25	91%	3	2	1.10	10.3	3.4	Insurance (Prop/Cas.)	46
518	Royal Dutch Shell 'B'	RDSB	38.96	42.95	91%	4	3	1.30	95.0	3.6	Petroleum (Integrated)	97
2507	Bank of New York Mellon	BK	45.21	49.10	92%	2	2	1.15	11.7	2.7	Bank	19
1957	SpartanNash Co.	SPTN	20.16	22.00	92%	3	4	0.50	8.8	4.0	Retail/Wholesale Food	70
2557	MGIC Investment	MTG	12.69	13.70	93%	5	3	1.55	6.2	1.9	Financial Svcs. (Div.)	48
1630	Perrigo Co. plc	PRGO	42.54	45.95	93%	-	3	1.00	15.0	2.3	Drug	75
333	Golar LNG Ltd.	GLNG	11.64	12.35	94%	-	5	1.25	NMF	NIL	Maritime	36
2522	Popular Inc.	BPOP	69.51	74.15	94%	2	3	1.35	10.4	2.3	Bank	19
1134	TRI Pointe Homes	TPH	20.07	21.30	94%	2	3	1.45	7.5	NIL	Homebuilding	53
513	Occidental Petroleum	OXY	27.46	28.90	95%	4	4	1.60	NMF	0.3	Petroleum (Integrated)	97
1507	People's United Fin'l	PBCT	17.46	18.35	95%	-	3	1.05	12.3	4.2	Thrift	31
1776	Realogy Holdings	RLGY	15.71	16.50	95%	3	4	1.55	10.8	NIL	Diversified Co.	42
1555	Aflac Inc.	AFL	50.55	52.55	96%	2	2	1.25	9.9	2.7	Insurance (Life)	81
2016	Argo Group Int'l	ARGO	51.76	53.80	96%	3	3	0.95	21.2	2.4	Reinsurance	77
135	AVANGRID, Inc.	AGR	47.83	49.75	96%	3	2	0.85	22.1	3.7	Electric Utility (East)	62
1126	Beazer Homes USA	BZH	20.30	21.25	96%	3	5	1.60	8.6	NIL	Homebuilding	53
1922	Kraft Heinz Co.	KHC	39.55	41.35	96%	3	3	0.90	13.7	4.0	Food Processing	40
1580	Yamana Gold	AUY	4.57	4.75	96%	3	4	0.65	21.8	2.4	Precious Metals	65
1412	ACCO Brands	ACCO	8.35	8.60	97%	3	3	1.50	9.1	3.1	Office Equip/Supplies	91
1377	TTM Technologies	TTMI	14.43	14.95	97%	4	3	1.00	11.5	NIL	Semiconductor	18
1634	Teva Pharm. ADR	TEVA	11.93	12.25	97%	5	4	1.15	4.5	NIL	Drug	75
1324	Avnet, Inc.	AVT	40.39	41.40	98%	3	2	1.10	17.3	2.1	Electronics	51
607	Kinder Morgan Inc.	KMI	15.78	16.10	98%	5	3	1.20	15.9	6.7	Oil/Gas Distribution	95
336	SFL Corp. Ltd	SFL	8.16	8.35	98%	2	4	1.25	20.4	7.4	Maritime	36
2532	Wells Fargo	WFC	38.97	39.90	98%	3	3	1.20	18.4	1.0	Bank	19
510	Imperial Oil Ltd.	IMO	23.48	23.70	99%	4	3	1.45	41.2	2.9	Petroleum (Integrated)	97
219	Invacare Corp.	IVC	8.47	8.55	99%	-	5	1.50	NMF	NIL	Med Supp Non-Invasive	17
1513	Annaly Capital Mgmt.	NLY	8.92	8.90	100%	5	3	1.10	6.4	9.9	R.E.I.T.	94
2402	Crescent Point Energy	CPG.TO	5.25	5.25	100%	3	5	1.70	32.8	0.2	Petroleum (Producing)	92
1559	Manulife Fin'l	MFC	21.52	21.45	100%	3	3	1.45	8.6	4.2	Insurance (Life)	81
1416	ODP Corp.	ODP	37.07	37.25	100%	-	5	1.40	10.6	NIL	Office Equip/Supplies	91
779	First Midwest Bancorp	FMBI	22.34	22.34	101%	2	3	1.20	18.2	2.5	Bank (Midwest)	3
780	Hancock Whitney Corp.	HWC	42.80	42.20	101%	3	3	1.50	10.8	2.5	Bank (Midwest)	3
1135	Taylor Morrison Home	TMHC	30.07	29.80	101%	3	3	1.60	8.8	NIL	Homebuilding	53
2195	Cato Corp.	CATO	11.55	11.35	102%	4	3	0.80	7.6	NIL	Retail (Softlines)	24
506	Delek US Holdings	DK	22.15	21.65	102%	4	3	1.35	NMF	NIL	Petroleum (Integrated)	97
2408	Range Resources	RRC	10.40	10.15	102%	5	5	0.90	20.4	NIL	Petroleum (Producing)	92
767	Old Republic	ORI	21.61	21.00	103%	4	3	1.15	9.9	4.1	Insurance (Prop/Cas.)	46
516	Petroleo Brasileiro ADR	PBR	8.37	8.15	103%	5	5	1.55	26.2	1.3	Petroleum (Integrated)	97
783	Old Nat'l Bancorp	ONB	19.78	19.00	104%	2	3	1.00	12.6	2.8	Bank (Midwest)	3
1991	Brit. Am. Tobacco ADR	BTI	39.81	38.05	105%	3	3	0.95	8.2	6.8	Tobacco	10
1110	CEMEX ADS	CX	6.67	6.35	105%	3	4	1.40	29.0	NIL	Building Materials	61
2612	DXC Technology	DXC	27.72	26.40	105%	2	3	1.50	4.8	NIL	IT Services	39

*If fiscal 2021 Book Value not available, estimate used.

LOWEST P/Es

Stocks with the lowest estimated current P/E ratios

Page No.	Stock Name	Recent Price	Current P/E Ratio	Time-liness	Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Current P/E Ratio	Time-liness	Safety Rank	Industry Group	Industry Rank
987	Tenneco Inc.	10.75	2.5	3	4	Auto Parts	43	1130	M.D.C. Holdings	56.88	8.5	3	3	Homebuilding	53
1556	Genworth Fin'l	3.39	3.5	-	5	Insurance (Life)	81	2322	Smith & Wesson Brands	18.14	8.5	3	3	Recreation	82
1634	Teva Pharm. ADR	11.93	4.5	5	4	Drug	75	1126	Beazer Homes USA	20.30	8.6	3	5	Homebuilding	53
1618	West Fraser Timber	82.90	4.6	3	3	Paper/Forest Products	52	1559	Manulife Fin'l	21.52	8.6	3	3	Insurance (Life)	81
2612	DXC Technology	27.72	4.8	2	3	IT Services	39	1945	Albertsons Companies	19.19	8.7	-	3	Retail/Wholesale Food	70
2568	Virtu Financial	30.21	5.3	3	3	Financial Svcs. (Div.)	48	1017	Lumen Technologies	14.37	8.7	5	3	Telecom. Utility	86
305	Atlas Air Worldwide	59.50	5.9	3	3	Air Transport	79	1608	AbbVie Inc.	105.90	8.8	2	3	Drug	75
2179	National Vision Holdings	43.60	5.9	3	3	Retail (Hardlines)	63	1957	SpartanNash Co.	20.16	8.8	3	4	Retail/Wholesale Food	70
1564	Unum Group	27.25	6.0	4	3	Insurance (Life)	81	1135	Taylor Morrison Home	30.07	8.8	3	3	Homebuilding	53
2181	Qurate Retail	12.59	6.1	-	3	Retail (Hardlines)	63	2348	TEGNA Inc.	20.48	8.8	3	3	Entertainment	4
2557	MGIC Investment	12.69	6.2	5	3	Financial Svcs. (Div.)	48	1327	Celestica Inc.	8.62	9.0	5	3	Electronics	51
1108	Boise Cascade	58.54	6.3	3	3	Building Materials	61	804	Laboratory Corp.	243.10	9.0	3	2	Medical Services	37
1513	Annaly Capital Mgmt.	8.92	6.4	5	3	R.E.I.T.	94	1412	ACCO Brands	8.35	9.1	3	3	Office Equip/Supplies	91
2546	Equitable Holdings	32.39	6.4	3	3	Financial Svcs. (Div.)	48	2547	Fidelity Nat'l Fin'l	39.03	9.1	3	3	Financial Svcs. (Div.)	48
2335	Gray Television	19.75	6.4	3	4	Entertainment	4	1560	MetLife Inc.	60.11	9.1	3	3	Insurance (Life)	81
1632	Sage Therapeutics	79.51	6.4	3	4	Drug	75	624	Phillips 66 Partners	30.45	9.1	5	3	Pipeline MLPs	96
2560	Navient Corp.	13.82	6.7	3	3	Financial Svcs. (Div.)	48	230	Quidel Corp.	139.88	9.1	3	3	Med Supp Non-Invasive	17
2018	Athene Holding Ltd.	52.05	6.9	-	3	Reinsurance	77	1952	Ingles Markets	63.22	9.2	3	3	Retail/Wholesale Food	70
2164	Louisiana-Pacific	54.55	7.2	2	3	Paper/Forest Products	52	628	Shiell Midstream L.P.	12.83	9.2	4	4	Pipeline MLPs	96
813	Tenet Healthcare	54.81	7.3	3	4	Medical Services	37	537	Southwestern Energy	4.59	9.2	4	5	Natural Gas (Div.)	83
753	Allstate Corp.	112.24	7.4	3	1	Insurance (Prop/Cas.)	46	430	Alliance Data Sys.	110.53	9.3	4	4	Information Services	58
1798	BGC Partners	4.42	7.4	4	4	Brokers & Exchanges	35	2342	Nexstar Media Group	154.84	9.4	3	3	Entertainment	4
1612	Bausch Health	32.96	7.4	3	5	Drug	75	810	Quest Diagnostics	125.91	9.4	3	2	Medical Services	37
1131	Meritage Homes	88.67	7.4	3	3	Homebuilding	53	2185	Sunoco LP	31.09	9.5	4	3	Retail (Hardlines)	63
1134	TRI Pointe Homes	20.07	7.5	2	3	Homebuilding	53	917	AT&T Inc.	29.99	9.6	4	1	Telecom. Services	74
737	ArcelorMittal	27.02	7.6	2	4	Steel	11	1400	HP Inc.	30.47	9.7	2	3	Computers/Peripherals	32
2195	Cato Corp.	11.55	7.6	4	3	Retail (Softlines)	24	2563	Rocket Companies	22.99	9.7	-	3	Financial Svcs. (Div.)	48
1562	Prudential Fin'l	90.86	7.8	4	3	Insurance (Life)	81	618	Energy Transfer LP	8.10	9.8	5	4	Pipeline MLPs	96
762	First American Fin'l	53.51	7.9	3	3	Insurance (Prop/Cas.)	46	105	Gen'l Motors	58.10	9.8	2	3	Automotive	2
2339	MSG Networks	19.77	7.9	2	3	Entertainment	4	1127	Horton D.R.	84.49	9.8	3	3	Homebuilding	53
1592	Natural Resource	18.57	7.9	2	4	Metals & Mining (Div.)	7	1018	Telefonica SA ADR	4.78	9.8	4	4	Telecom. Utility	86
2003	Perdoco Education	12.55	7.9	3	4	Educational Services	88	1555	Aflac Inc.	50.55	9.9	2	2	Insurance (Life)	81
744	POSCO ADR	67.19	7.9	2	3	Steel	11	2446	Gladstone Capital	9.94	9.9	-	3	Public/Private Equity	67
946	CommScope Holding	15.65	8.1	2	3	Telecom. Equipment	15	2176	Michaels Cos. (The)	21.92	9.9	-	5	Retail (Hardlines)	63
2126	Group 1 Automotive	157.63	8.1	4	3	Retail Automotive	59	767	Old Republic	21.61	9.9	4	3	Insurance (Prop/Cas.)	46
965	Amer. Axle	10.71	8.2	4	4	Auto Parts	43	208	Cardinal Health	59.14	10.0	3	3	Med Supp Non-Invasive	17
1568	AngloGold Ashanti ADS	21.51	8.2	3	4	Precious Metals	65	1399	Dell Technologies	87.35	10.0	-	3	Computers/Peripherals	32
1991	Brit. Am. Tobacco ADR	39.81	8.2	3	3	Tobacco	10	2330	AMC Networks	69.19	10.1	3	3	Entertainment	4
215	Hologic, Inc.	73.93	8.2	2	3	Med Supp Non-Invasive	17	2545	Discover Fin'l Svcs.	94.68	10.1	1	3	Financial Svcs. (Div.)	48
1593	Rio Tinto plc	76.08	8.2	3	3	Metals & Mining (Div.)	7	1617	Emergent BioSolutions	95.03	10.1	4	3	Drug	75
2024	SiriusPoint Ltd.	10.47	8.2	-	3	Reinsurance	77	1334	Jabil Inc.	50.55	10.1	3	3	Electronics	51
1573	Kinross Gold	6.94	8.3	3	4	Precious Metals	65	1128	KB Home	44.97	10.1	5	3	Homebuilding	53
1032	Tutor Perini	17.67	8.3	3	4	Engineering & Const	26	764	Market Corp.	1111.40	10.1	3	2	Insurance (Prop/Cas.)	46
1382	Xperi Holding	24.64	8.3	-	3	Semiconductor	18	1946	Ali. Couche-Tard	40.21	10.2	4	3	Retail/Wholesale Food	70
2535	AerCap Hldgs. NV	59.47	8.4	-	4	Financial Svcs. (Div.)	48	766	NMI Holdings	23.63	10.2	5	3	Insurance (Prop/Cas.)	46
1413	Diebold Nixdorf	13.75	8.4	4	5	Office Equip/Supplies	91	1323	Arrow Electronics	109.02	10.3	3	3	Electronics	51
6130	PulteGroup, Inc.	49.07	8.4	3	3	Homebuilding	53	758	CNA Fin'l	44.94	10.3	3	2	Insurance (Prop/Cas.)	46
1333	Western Midstream Part.	18.25	8.4	4	4	Pipeline MLPs	96	1526	GEO Group (The)	8.06	10.3	5	4	R.E.I.T.	94
1401	Hewlett Packard Ent.	15.34	8.5	3	3	Computers/Peripherals	32	1337	Plantronics Inc.	43.09	10.3	3	4	Electronics	51
106	Honda Motor ADR	30.93	8.5	3	3	Automotive	2	1577	Pretium Resources	11.22	10.3	3	4	Precious Metals	65

HIGHEST P/Es

Stocks with the highest estimated current P/E ratios

Page No.	Stock Name	Recent Price	Current P/E Ratio	Time-liness	Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Current P/E Ratio	Time-liness	Safety Rank	Industry Group	Industry Rank
2638	Ishy, Inc.	219.77	98.6	2	3	Internet	29	2183	SiteOne Landscape	172.82	67.5	3	3	Retail (Hardlines)	63
2336	iHeartMedia, Inc.	17.69	98.3	-	4	Entertainment	4	175	CONMED Corp.	125.40	67.4	2	3	Med Supp Invasive	6
126	Novanta Inc.	132.18	97.9	3	3	Precision Instrument	20	733	Proto Labs, Inc.	126.00	67.0	4	3	Metal Fabricating	71
370	Wingstop Inc.	131.41	96.6	3	3	Restaurant	87	989	Visteon Corp.	126.32	66.8	2	3	Auto Parts	43
2332	Disney (Walt)	192.86	96.4	1	2	Entertainment	4	724	TransDigm Group	597.36	66.7	3	3	Aerospace/Defense	49
2366	Marriott Int'l	151.50	95.9	2	3	Hotel/Gaming	84	131	Veeco Instruments	21.09	65.9	3	4	Precision Instrument	20
518	Royal Dutch Shell 'B'	38.96	95.0	4	3	Petroleum (Integrated)	97	1523	Essex Property Trust	275.98	65.4	4	3	R.E.I.T.	94
1516	Camden Property Trust	108.19	94.9	3	2	R.E.I.T.	94	1751	Brookfield Infrastruc.	52.80	65.2	3	3	Diversified Co.	42
2591	PTC Inc.	130.14	93.0	2	3	Computer Software	21	2350	Warner Music Group	32.53	65.1	-	4	Entertainment	4
2414	Cactus, Inc.	30.55	92.6	4	4	Oilfield Svcs/Equip.	93	593	InterDigital Inc.	64.99	65.0	4	3	Wireless Networking	73
1534	Mack-Cali R'lty	15.39	90.5	2	3	R.E.I.T.	94	2115	Unifi, Inc.	27.29	65.0	4	4	Apparel	69
2652	Twitter Inc.	65.21	89.3	2	4	Internet	29	2029	Fortinet Inc.	179.12	64.9	3	3	Cyber Security	14
2592	Paycom Software	378.75	89.1	1	3	Computer Software	21	2001	Laureate Education	14.09	64.0	-	3	Educational Services	88
826	Veeva Systems	267.27	88.8	3	3	Healthcare Information	90	216	IDEXX Labs.	491.37	63.6	1	3	Med Supp Non-Invasive	17
1328	Cubic Corp.	75.20	88.5	-	3	Electronics	51	594	Itron Inc.	89.30	63.3	3	3	Wireless Networking	73
1226	TPI Composites	51.48	87.3	3	4	Power	66	115	Cognex Corp.	79.00	63.2	2	3	Precision Instrument	20
2196	Children's Place	76.64	85.2	4	4	Retail (Softlines)	24	1804	MarketAxess Holdings	521.28	63.1	3	3	Brokers & Exchanges	35
353	Chipotle Mex. Grill	1444.33	82.6	2	2	Restaurant	87	169	ABIOMED Inc.	306.16	63.0	1	3	Med Supp Invasive	6
589	Crown Castle Int'l	167.89	81.9	4	2	Wireless Networking	73	2399	Can. Natural Res.	37.09	62.9	4	3	Petroleum (Producing)	92
918	ATN International	51.27	81.4	4	3	Telecom. Services	74	2341	Netflix, Inc.	523.11	62.7	1	3	Entertainment	4
217	Ilumina Inc.	429.92	79.6	3	3	Med Supp Non-Invasive	17	1366	Monolithic Power Sys.	348.24	62.5	3	3	Semiconductor	18
1317	Vicor Corp.	88.35	79.6	3	3	Electrical Equipment	50	1999	Chegg, Inc.	92.60	62.1	3	3	Educational Services	88
1167	Rayonier Inc.	31.43	78.6	3	3	Paper/Forest Products	52	186	Intuitive Surgical	714.73	62.0	2	2	Med Supp Invasive	6
1223	SolarEdge Tech.	289.17	78.6	4	3	Power	66	2030	NICE Ltd. ADR	229.06	61.1	3	2	Cyber Security	14
1547	Ventas, Inc.	53.81	78.0	5	3	R.E.I.T.	94	2316	Planet Fitness	77.99	60.9	5	3	Recreation	82
990	XPEL, Inc.	55.26	77.8	-	3	Auto Parts	43	1529	Healthpeak Properties	31.64	60.8	2	3	R.E.I.T.	94
2548	Fidelity Nat'l Info.	141.18	75.5	2	2	Financial Svcs. (Div.)	48	160	Manitowoc Co.	21.16	60.5	3	4	Heavy Truck & Equip	34
2204	Revolve Group	50.64	74.5	-	3	Retail (Softlines)	24	1316	Universal Display	233.86	60.3				

STOCKS WITH HIGHEST ANNUAL TOTAL RETURNS (NEXT 3 TO 5 YEARS)
 (Estimated compound annual stock price appreciation plus estimated annual dividend income.)

Page No.	Stock Name	Recent Price	Est'd Total Return	Time-liness	Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Est'd Total Return	Time-liness	Safety Rank	Industry Group	Industry Rank
835	Intercept Pharmac.	23.55	44%	3	4	Biotechnology	55	533	National Fuel Gas	48.65	25%	4	3	Natural Gas (Div.)	83
2179	National Vision Holdings	43.60	44%	3	3	Retail (Hardlines)	63	2315	Peloton Interactive	109.54	25%	-	3	Recreation	82
230	Quidel Corp.	139.88	44%	3	3	Med Supp Non-Invasive	17	516	Petroleo Brasileiro ADR	8.37	25%	5	4	Petroleum (Integrated)	97
828	Alkermes plc	20.27	43%	2	3	Biotechnology	55	843	Sarepta Therapeutics	83.53	25%	4	5	Biotechnology	55
625	Plains All Amer. Pipe.	9.35	43%	5	4	Pipeline MLPs	96	629	Suburban Propane	15.10	25%	2	3	Pipeline MLPs	96
838	Moderna, Inc.	145.60	42%	3	4	Biotechnology	55	519	Suncor Energy	27.03	25%	5	3	Petroleum (Integrated)	97
626	Plains GP Holdings L.P.	9.48	42%	5	4	Pipeline MLPs	96	2353	Accel Entertainment	10.60	24%	-	3	Hotel/Gaming	84
1412	ACCO Brands	8.35	36%	3	3	Office Equip/Supplies	91	758	CNA Fin'l	44.94	24%	3	3	Insurance (Prop/Cas.)	46
1991	Brit. Am. Tobacco ADR	39.81	36%	3	3	Tobacco	10	1792	Consolidated Water	13.61	24%	5	3	Water Utility	8
624	Phillips 66 Partners	30.45	36%	5	3	Pipeline MLPs	96	619	Enterprise Products	22.89	24%	3	3	Pipeline MLPs	96
2346	Sirius XM Holdings	6.31	36%	3	3	Entertainment	4	220	iRhythm Technologies	142.54	24%	3	4	Med Supp Non-Invasive	17
537	Southwestern Energy	4.59	36%	4	5	Natural Gas (Div.)	83	1622	Ironwood Pharmac.	11.52	24%	4	4	Drug	75
592	Inseego Corp.	10.60	35%	4	5	Wireless Networking	73	1152	Kimball Int'l	13.61	24%	5	3	Furn/Home Furnishings	85
2003	Perdoceo Education	12.55	34%	3	4	Educational Services	88	1194	Newell Brands	26.10	24%	1	3	Household Products	23
1567	Agnico Eagle Mines	60.40	33%	3	3	Precious Metals	65	514	PBF Energy	14.35	24%	5	4	Petroleum (Integrated)	97
2612	DXC Technology	27.72	33%	2	3	IT Services	39	609	Pembina Pipeline	36.93	24%	5	3	Oil/Gas Distribution	95
607	Kinder Morgan Inc.	15.78	33%	5	3	Oil/Gas Distribution	95	518	Royal Dutch Shell 'B'	38.96	24%	4	3	Petroleum (Integrated)	97
528	Shell Midstream L.P.	12.83	33%	4	4	Pipeline MLPs	96	2439	Univar Solutions	21.23	24%	4	3	Chemical (Diversified)	22
626	Cabot Oil & Gas 'A'	18.00	32%	5	3	Natural Gas (Div.)	83	630	Western Midstream Part.	18.25	24%	4	4	Pipeline MLPs	96
2229	Federated Hermes	30.45	32%	3	3	Asset Management	16	1568	AngloGold Ashanti ADS	21.51	23%	3	4	Precious Metals	65
1828	Nutanix, Inc.	26.43	32%	4	4	E-Commerce	57	2195	Cato Corp.	11.55	23%	4	3	Retail (Softlines)	24
1526	GEO Group (The)	8.06	31%	5	4	R.E.I.T.	94	432	Clarivate Plc	25.43	23%	3	3	Information Services	58
767	Old Republic	21.61	31%	4	3	Insurance (Prop/Cas.)	46	2616	Fastly, Inc.	71.52	23%	-	4	IT Services	39
627	Rattler Midstream LP	10.99	31%	-	4	Pipeline MLPs	96	2335	Gray Television	19.75	23%	3	4	Entertainment	4
601	Altus Midstream	53.55	30%	4	5	Oil/Gas Distribution	95	2516	HSBC Holdings PLC	29.34	23%	2	4	Bank	19
2309	Harley-Davidson	35.27	30%	4	3	Recreation	82	1572	Hecla Mining	6.33	23%	4	4	Precious Metals	65
1573	Kinross Gold	6.94	30%	3	4	Precious Metals	65	1534	Mack-Cali R'lty	15.39	23%	2	3	R.E.I.T.	94
623	NuStar Energy L.P.	17.04	30%	5	4	Pipeline MLPs	96	608	ONEOK Inc.	48.49	23%	4	3	Oil/Gas Distribution	95
1577	Pretium Resources	11.22	30%	3	4	Precious Metals	65	1957	SpartanNash Co.	20.16	23%	3	4	Retail/Wholesale Food	70
1228	Vistra Corp.	16.70	30%	4	3	Power	66	959	Switch, Inc.	15.93	23%	3	3	Telecom. Equipment	15
2181	Qurate Retail	12.59	29%	-	3	Retail (Hardlines)	63	987	Tenneco Inc.	10.75	23%	3	4	Auto Parts	43
602	Antero Midstream Corp.	8.85	28%	-	5	Oil/Gas Distribution	95	1032	Tutor Perini	17.67	23%	3	4	Engineering & Const	26
704	Astronics Corp.	18.42	28%	4	5	Aerospace/Defense	49	611	Williams Cos.	22.99	23%	5	3	Oil/Gas Distribution	95
2127	KAR Auction Svcs.	15.33	28%	-	3	Retail Automotive	59	2507	Bank of New York Mellon	45.21	22%	2	2	Bank	19
2428	TechnipFMC plc	7.73	28%	-	4	Oilfield Svcs/Equip.	93	5205	CNX Resources	14.60	22%	3	4	Natural Gas (Div.)	83
502	BP PLC ADR	25.35	27%	4	3	Petroleum (Integrated)	97	503	CVR Energy	21.17	22%	5	3	Petroleum (Integrated)	97
1809	Greenhill & Co.	16.60	27%	3	4	Investment Banking	1	2544	Credit Acceptance	371.40	22%	3	3	Financial Svcs. (Div.)	48
834	Onyxe Corp.	81.67	27%	3	3	Biotechnology	55	506	Delek US Holdings	22.15	22%	4	3	Petroleum (Integrated)	97
1151	Interface Inc. 'A'	12.85	27%	4	4	Furn/Home Furnishings	85	2379	Deluxe Corp.	40.72	22%	4	3	Publishing	76
1533	Macerich Comp. (The)	12.98	27%	4	4	R.E.I.T.	94	366	Harsco Corp.	18.21	22%	5	3	Industrial Services	47
970	Cooper-Standard	38.08	26%	4	4	Auto Parts	43	1590	Lundin Mining	14.17	22%	1	3	Metals & Mining (Div.)	7
615	Crestwood Equity Part.	24.45	26%	4	4	Pipeline MLPs	96	512	Murphy Oil Corp.	17.37	22%	5	4	Petroleum (Integrated)	97
1413	DCP Midstream LP	22.41	26%	4	5	Pipeline MLPs	96	336	SFL Corp. Ltd.	8.16	22%	2	4	Maritime	36
215	Hologic, Inc.	73.93	26%	2	3	Med Supp Non-Invasive	17	2004	Strategic Education	85.60	22%	5	3	Educational Services	88
1946	Ali. Couche-Tard	40.21	25%	4	3	Retail/Wholesale Food	70	2575	Alteryx, Inc.	84.93	21%	3	3	Computer Software	21
1421	Aurora Cannabis	9.70	25%	-	4	Cannabis	56	1990	Altria Group	51.64	21%	3	3	Tobacco	10
1191	Edgewell Personal Care	37.41	25%	5	3	Household Products	23	524	Brigham Minerals	14.30	21%	-	4	Natural Gas (Div.)	83
617	Enable Midstream Part.	6.97	25%	-	4	Pipeline MLPs	96	762	First American Fin'l	53.51	21%	3	3	Insurance (Prop/Cas.)	46
622	Magellan Midstream	43.86	25%	5	3	Pipeline MLPs	96	837	Jazz Pharmac. plc	170.59	21%	3	2	Biotechnology	55
								2620	LiveRamp Holdings	52.93	21%	3	3	IT Services	39

STOCKS WITH HIGHEST PROJECTED 3- TO 5-YEAR DIVIDEND YIELD
 Based upon the projected dividend per share 3 to 5 years hence divided by the recent price

Page No.	Stock Name	Recent Price	Est'd Future Yield	Time-liness	Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Est'd Future Yield	Time-liness	Safety Rank	Industry Group	Industry Rank
1533	Macerich Comp. (The)	12.98	18%	4	4	R.E.I.T.	94	546	South Jersey Inds.	22.79	7%	3	3	Natural Gas Utility	68
624	Phillips 66 Partners	30.45	16%	5	3	Pipeline MLPs	96	519	Suncor Energy	27.03	7%	5	3	Petroleum (Integrated)	97
630	Western Midstream Part.	18.25	16%	4	4	Pipeline MLPs	96	610	TC Energy Corp.	45.52	7%	3	3	Oil/Gas Distribution	95
616	DCP Midstream LP	22.41	14%	4	5	Pipeline MLPs	96	1596	Vale S.A. ADR	17.01	7%	1	4	Metals & Mining (Div.)	7
619	Enterprise Products	22.89	13%	3	3	Pipeline MLPs	96	1552	Weingarten Realty	26.63	7%	4	3	R.E.I.T.	94
615	Crestwood Equity Part.	24.45	12%	4	4	Pipeline MLPs	96	1608	AbbVie Inc.	105.90	6%	2	3	Drug	75
618	Energy Transfer LP	8.10	12%	5	4	Pipeline MLPs	96	1171	Amcor plc	11.41	6%	-	3	Packaging & Container	38
1526	GEO Group (The)	8.06	12%	5	4	R.E.I.T.	94	2441	Apollo Global Mgmt	49.42	6%	3	3	Public/Private Equity	67
336	SFL Corp. Ltd.	8.16	12%	2	4	Maritime	36	1903	B&G Foods	33.37	6%	3	3	Food Processing	40
1543	Service Properties	12.61	12%	5	4	R.E.I.T.	94	2443	Blackstone Group	73.55	6%	3	3	Public/Private Equity	67
601	Altus Midstream	53.55	11%	4	5	Oil/Gas Distribution	95	2540	Block (H&R)	20.35	6%	5	3	Financial Svcs. (Div.)	48
2442	Apollo Investment	13.76	11%	4	3	Public/Private Equity	67	2445	Compass Diversified	24.19	6%	3	3	Public/Private Equity	67
2185	Sunoco LP	31.09	11%	4	3	Retail (Hardlines)	63	1792	Consolidated Water	13.61	6%	5	3	Water Utility	8
2516	HSBC Holdings PLC	29.34	10%	2	4	Bank	19	1601	Dow Inc.	63.51	6%	-	3	Chemical (Basic)	80
607	Kinder Morgan Inc.	15.78	10%	5	3	Oil/Gas Distribution	95	2358	Extended Stay America	19.73	6%	-	3	Hotel/Gaming	84
1990	Altria Group	51.64	9%	3	3	Tobacco	10	507	Exxon Mobil Corp.	55.91	6%	3	3	Petroleum (Integrated)	97
1513	Annaly Capital Mgmt.	8.92	9%	5	3	R.E.I.T.	94	141	FirstEnergy Corp.	34.37	6%	2	3	Electric Utility (East)	62
524	Brigham Minerals	14.30	9%	-	4	Natural Gas (Div.)	83	2021	Great-West Lifeco	33.12	6%	3	3	Reinsurance	77
1991	Brit. Am. Tobacco ADR	39.81	9%	3	3	Tobacco	10	571	Kronos Worldwide	15.33	6%	2	4	Chemical (Specialty)	41
1593	Rio Tinto plc	76.08	9%	3	3	Metals & Mining (Div.)	7	2390	Lamar Advertising	92.54	6%	5	3	Advertising	64
934	Vodafone Group ADR	18.62	9%	2	3	Telecom. Services	74	1559	Manulife Fin'l	21.52	6%	3	3	Insurance (Life)	81
611	Williams Cos.	22.99	9%	5	3	Oil/Gas Distribution	95	512	Murphy Oil Corp.	17.37	6%	5	4	Petroleum (Integrated)	97
917	AT&T Inc.	29.99	8%	4	1	Telecom. Services	74	1505	New York Community	12.10	6%	3	3	Thrift	31
2224	AllianceBernstein Hldg.	41.87	8%	3	3	Asset Management	16	1506	Northwest Bancshares	14.65	6%	3	3	Thrift	31
1982	Canon Inc. ADR	22.10	8%	2	1	Foreign Electronics	5	913	OGE Energy	32.08	6%	3	2	Electric Util. (Central)	89
614	Cheniere Energy Part.	43.29	8%	5	3	Pipeline MLPs	96	767	Old Republic	21.61	6%	4	3	Insurance (Prop/Cas.)	46
605	Enbridge Inc.	45.57	8%	4	2	Oil/Gas Distribution	95	143	PPL Corp.	29.07	6%	2	2	Electric Utility (East)	62
2446	GlaxoSmithKline ADR	9.94	8%	-	3	Public/Private Equity	67	1992	Philip Morris Int'l	89.98	6%	3	3	Tobacco	10
620	Holly Energy Part.	18.66	8%	5	4	Pipeline MLPs	96	517	Phillips 66	80.58	6%	4	3	Petroleum (Integrated)	97
391	Iron Mountain	36.58	8%	2	3	Industrial Services	47	1539	Realty Income Corp.	62.46	6%	5	3	R.E.I.T.	94
1531	Kimco Realty	18													

HIGH RETURNS EARNED ON TOTAL CAPITAL

Stocks with high average returns on capital in last 5 years ranked by earnings retained to common equity

Page No.	Stock Name	Ticker	Recent Price	Avg. Retained to Com. Eq.	Avg. Return On Cap.	Time-liness	Safety Rank	Beta	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank
1642	Insperty Inc.	NSP	83.66	574%	48%	5	3	1.40	27.3	1.9	Human Resources	44
1719	Lennox Int'l	LII	303.36	572%	52%	3	3	1.00	27.2	1.0	Machinery	45
1190	Colgate-Palmolive	CL	75.77	392%	37%	2	1	0.70	23.3	2.4	Household Products	23
445	S&P Global	SPGI	345.54	284%	51%	3	2	1.00	30.3	0.9	Information Services	58
216	IDEXX Labs.	IDXX	491.37	241%	52%	1	3	1.00	63.6	NIL	Med Supp Non-Invasive	17
316	United Parcel Serv.	UPS	161.06	233%	32%	2	1	0.80	17.9	2.6	Air Transport	79
443	Moody's Corp.	MCO	290.29	218%	34%	4	3	1.15	30.0	0.9	Information Services	58
1915	Herbalife Nutrition	HLF	46.30	213%	35%	4	3	0.95	11.7	NIL	Food Processing	50
2130	O'Reilly Automotive	ORLY	490.84	202%	32%	3	3	0.95	21.3	NIL	Retail Automotive	49
363	Papa John's Int'l	PZZA	86.55	201%	87%	3	3	0.60	40.8	1.0	Restaurant	87
2137	Burlington Stores	BURL	304.00	195%	28%	3	3	1.15	54.0	NIL	Retail Store	25
1140	Home Depot	HD	288.94	161%	38%	3	1	1.00	23.2	2.3	Retail Building Supply	33
1193	Kimberly-Clark	KMB	133.03	154%	37%	4	1	0.70	16.8	3.4	Household Products	23
716	Lockheed Martin	LMT	357.66	123%	37%	3	1	0.95	13.7	3.0	Aerospace/Defense	49
124	Mettler-Toledo Int'l	MTD	1130.87	120%	34%	2	2	0.95	43.2	NIL	Precision Instrument	20
2602	VMware, Inc.	VMW	146.00	117%	28%	3	3	0.90	21.2	NIL	Computer Software	21
597	Ubiquiti Inc.	UI	346.39	110%	56%	1	3	0.85	32.7	0.5	Wireless Networking	73
1608	AbbVie Inc.	ABBV	105.90	88%	28%	2	3	0.95	8.8	4.9	Drug	75
2559	MasterCard Inc.	MA	358.40	85%	47%	1	1	1.10	42.9	0.5	Financial Svcs. (Div.)	48
2580	Citrix Sys.	CTXS	137.74	69%	38%	1	3	0.70	22.5	1.1	Computer Software	21
2621	Manhattan Assoc.	MANH	120.86	65%	65%	4	3	1.25	NMF	NIL	IT Services	39
367	Starbucks Corp.	SBUX	107.57	65%	39%	3	1	1.00	37.7	1.8	Restaurant	87
1405	NetApp, Inc.	NTAP	70.54	64%	33%	1	3	1.15	17.1	2.9	Computers/Peripherals	32
1189	Clorox Co.	CLX	189.44	59%	32%	3	1	0.45	22.9	2.3	Household Products	23
1314	Rockwell Automation	ROK	261.87	51%	32%	3	2	1.15	29.4	1.7	Electrical Equipment	50
2585	Intuit Inc.	INTU	383.02	45%	51%	3	2	1.00	45.3	0.6	Computer Software	21
204	AmerisourceBergen	ABC	116.35	43%	31%	2	2	0.90	13.9	1.5	Med Supp Non-Invasive	17
1916	Hershey Co.	HSY	156.38	43%	28%	3	1	0.85	24.1	2.1	Food Processing	40
2184	Sleep Number Corp.	SNBR	140.63	43%	43%	3	3	1.15	31.3	NIL	Retail (Hardlines)	63
1398	Apple Inc.	AAPL	123.39	41%	29%	2	1	0.90	27.4	0.7	Computers/Peripherals	32
1122	Trex Co.	TREX	89.15	41%	41%	3	3	1.10	51.8	NIL	Building Materials	61
2592	Paycom Software	PAYC	378.75	39%	34%	1	3	1.15	89.1	NIL	Computer Software	21
1978	National Beverage	FIZZ	49.99	38%	38%	2	3	0.80	27.9	NIL	Beverage	27
1628	Novo Nordisk ADR	NVO	71.05	38%	75%	3	1	0.80	23.9	1.8	Drug	75
2206	TJX Companies	TJX	66.50	38%	37%	1	3	1.15	26.9	1.6	Retail (Softlines)	24
2205	Ross Stores	ROST	120.66	35%	40%	2	3	1.25	30.2	NIL	Retail (Softlines)	24
2188	Ulta Beauty	ULTA	315.09	30%	30%	2	3	1.30	34.0	NIL	Retail (Hardlines)	63
1942	USANA Health Sciences	USNA	98.94	29%	29%	3	3	0.95	17.6	NIL	Food Processing	40
2202	lululemon athletica	LULU	313.60	28%	28%	3	3	0.95	50.7	NIL	Retail (Softlines)	24
1927	Medifast, Inc.	MED	232.30	24%	47%	2	3	1.10	22.5	2.4	Food Processing	40
1379	Texas Instruments	TXN	180.10	24%	35%	3	1	0.85	27.9	2.3	Semiconductor	18
2605	Accenture Plc	ACN	265.20	22%	38%	3	1	0.95	31.6	1.4	IT Services	39
2624	SEI Investments	SEIC	60.08	22%	28%	4	2	1.25	17.9	1.3	IT Services	39
1375	Skyworks Solutions	SKWKS	179.82	22%	28%	3	3	1.10	17.6	1.1	Semiconductor	18
1647	Robert Half Int'l	RHI	75.50	21%	33%	1	2	1.25	24.0	2.1	Human Resources	44
2196	Children's Place	PLCE	76.64	20%	28%	4	4	1.65	85.2	NIL	Retail (Softlines)	24
1804	MarketAxess Holdings	MKTX	521.28	19%	29%	3	3	0.75	63.1	0.5	Brokers & Exchanges	35
2607	Automatic Data Proc.	ADP	184.39	16%	30%	2	1	1.05	31.3	2.1	IT Services	39
398	Rollins, Inc.	ROL	34.37	13%	28%	3	2	0.85	59.3	0.9	Industrial Services	47
2623	Paychex, Inc.	PAYX	96.58	8%	37%	3	2	1.15	31.6	2.7	IT Services	39

BARGAIN BASEMENT STOCKS

Stocks with current price-earnings multiples and price-to-"net" working capital ratios that are in the bottom quartile of the Value Line universe

("Net" working capital equals current assets less all liabilities including long-term debt and preferred)

Page No.	Stock Name	Ticker	Recent Price	Percent Price-to "Net" Wkg. Capital	Current P/E Ratio	Percent Price-to Book Value	Time-liness	Safety Rank	Beta	% Est'd Yield	Industry Group	Industry Rank
1134	TRI Pointe Homes	TPH	20.07	148%	7.5	94%	2	3	1.45	NIL	Homebuilding	53
1131	Meritage Homes	MTH	88.67	151%	7.4	129%	3	3	1.35	NIL	Homebuilding	53
1032	Tutor Perini	TPC	17.67	153%	8.3	57%	3	4	1.30	NIL	Engineering & Const	26
1128	KB Home	KBH	44.97	175%	10.1	134%	5	3	1.70	1.3	Homebuilding	53
1135	Taylor Morrison Home	TMHC	30.07	184%	8.8	101%	3	3	1.60	NIL	Homebuilding	53
1327	Celestica Inc.	CLS	8.62	186%	9.0	73%	5	3	1.40	NIL	Electronics	51
1126	Beazer Homes USA	BZH	20.30	204%	8.6	96%	3	5	1.60	NIL	Homebuilding	53
1136	Toll Brothers	TOL	55.08	208%	12.2	131%	3	3	1.60	1.2	Homebuilding	53
1995	Universal Corp.	UVV	58.07	210%	14.1	105%	3	3	0.75	5.3	Tobacco	10
1130	M.D.C. Holdings	MDC	56.88	233%	8.5	177%	3	3	1.25	2.6	Homebuilding	53
1771	National Presto Ind.	NPK	101.23	238%	16.7	192%	3	3	0.60	6.2	Diversified Co.	42
1808	Goldman Sachs	GS	339.33	247%	10.8	123%	1	2	1.20	1.5	Investment Banking	1
1133	PulteGroup, Inc.	PHM	49.07	254%	8.4	164%	3	3	1.40	1.2	Homebuilding	53
1129	Lennar Corp.	LEN	97.01	333%	10.6	149%	2	3	1.30	1.1	Homebuilding	53
1127	Horton D.R.	DHI	84.49	361%	9.8	212%	3	3	1.15	1.0	Homebuilding	53
2177	Movado Group	MOV	23.42	375%	12.8	122%	3	3	1.35	1.7	Retail (Hardlines)	63
1341	Sanmina Corp.	SANM	41.01	394%	11.4	146%	2	3	0.95	NIL	Electronics	51
1407	ScanSource	SCSC	30.12	403%	13.5	109%	5	3	1.25	NIL	Computers/Peripherals	32
1643	Kelly Services 'A'	KELYA	20.87	430%	14.3	68%	5	3	1.20	NIL	Human Resources	44
2003	Perdoceo Education	PRDO	12.55	457%	7.9	134%	3	4	1.10	NIL	Educational Services	88
985	Standard Motor Prod.	SMP	43.12	501%	11.5	158%	3	3	0.80	2.4	Auto Parts	43
1391	Kulicic & Soffa	KLIC	49.68	543%	15.5	339%	2	3	1.05	1.1	Semiconductor Equip	30
2323	Sturm, Ruger & Co.	RGR	69.81	656%	15.7	399%	3	3	0.60	4.1	Recreation	82
1323	Arrow Electronics	ARW	109.02	687%	10.3	141%	3	3	1.20	NIL	Electronics	51
2175	MarineMax	HZO	58.13	693%	14.9	237%	3	4	1.40	NIL	Retail (Hardlines)	63
1123	UFP Industries	UFPI	70.66	728%	16.2	276%	3	3	1.10	0.8	Building Materials	61
845	United Therapeutics	UTHR	168.36	791%	11.5	216%	3	3	0.80	NIL	Biotechnology	55
1347	Vishay Intertechnology	VSH	24.41	842%	16.5	192%	3	3	1.25	1.6	Electronics	51
2004	Strategic Education	STRA	85.60	953%	12.9	119%	5	3	1.00	2.8	Educational Services	88
1108	Boise Cascade	BCC	58.54	1037%	6.3	200%	3	3	1.15	0.7	Building Materials	61
974	Gentex Corp.	GNTX	34.88	1218%	16.8	406%	3	3	0.95	1.4	Auto Parts	43
842	Regeneron Pharmac.	REGN	483.22	1395%	13.9	441%	3	3	0.65	NIL	Biotechnology	55
1418	Xerox Holdings	XRX	24.84	1451%	13.2	65%	4	3	1.40	4.0	Office Equip/Supplies	91

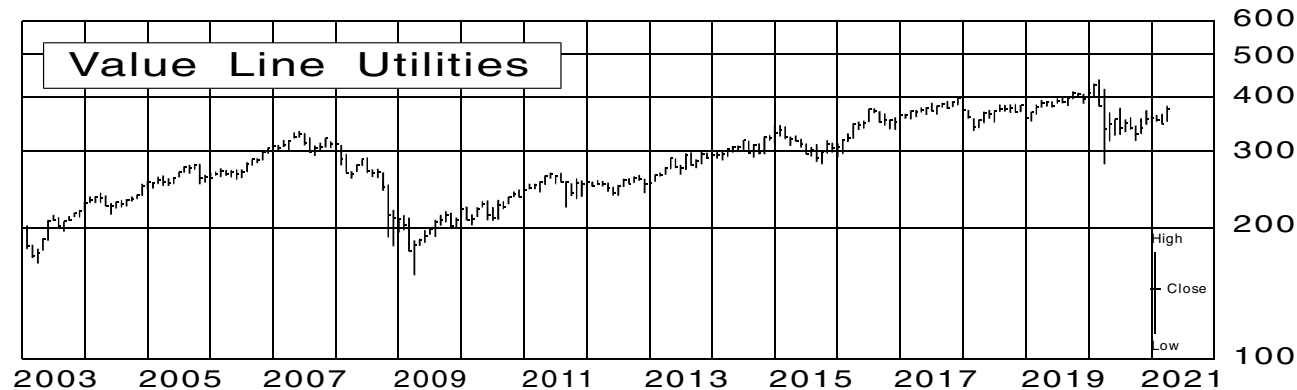
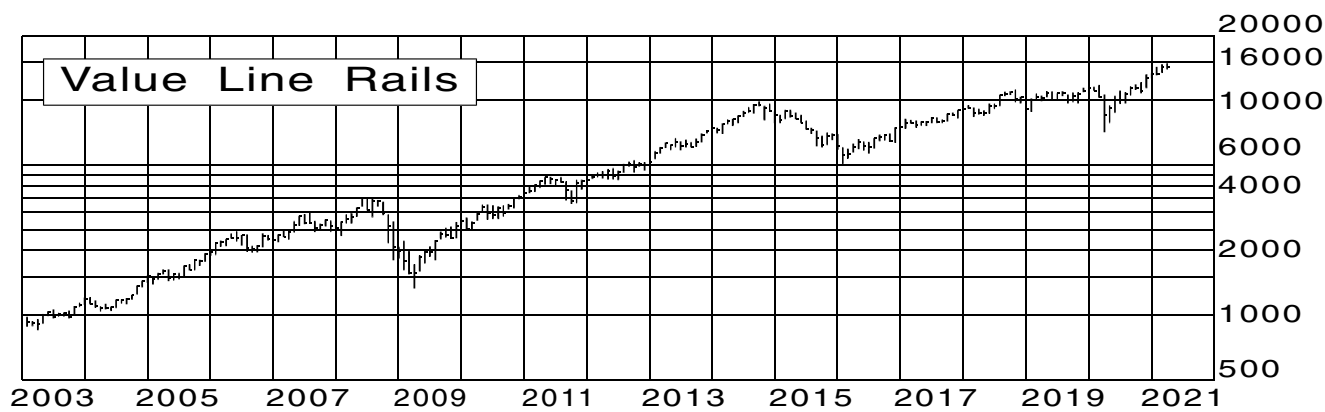
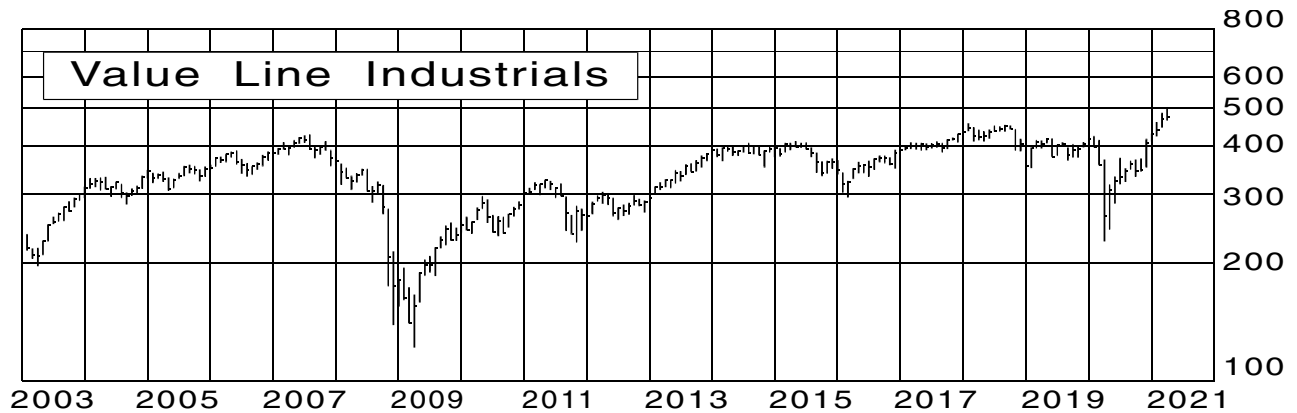
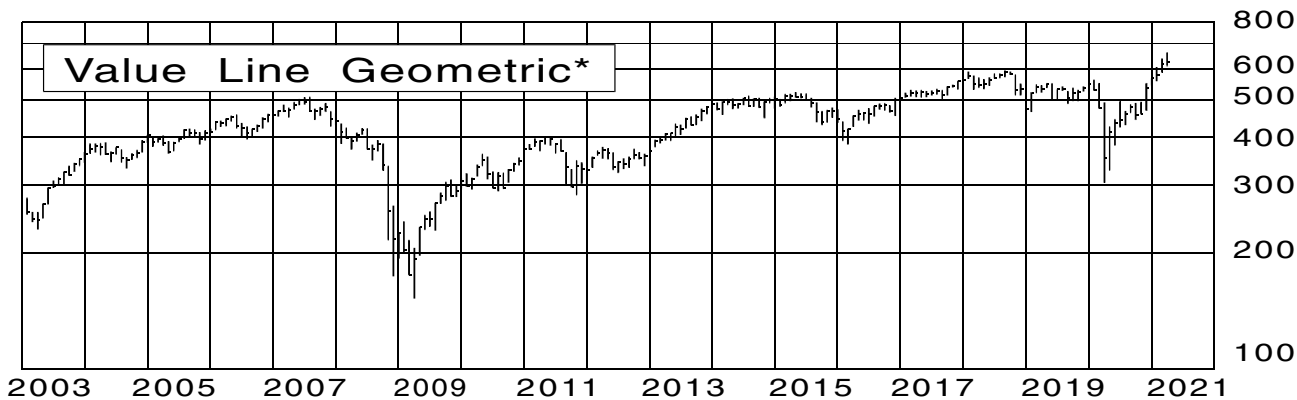
HIGHEST GROWTH STOCKS

(To be included, a company's annual growth of sales, cash flow, earnings, dividends and book value must together have averaged 9% or more over the past 10 years and be expected to average at least 9% in the coming 3-5 years.)

Table with 14 columns: Page No., Stock Name, Ticker, Recent Price, Growth Past 10 Years, Est'd Growth 3-5 Years, Time-liness, Safety Rank, Beta, Current P/E Ratio, % Est'd Yield, Estimated 3-5 Year Appreciation, Industry Group, Industry Rank. Rows include companies like AAON, ACI Worldwide, Activision Blizzard, Adobe Inc., Akamai Technologies, etc.

© 2021 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.

To subscribe call 1-800-VALUELINE



Officers, directors, or employees of Value Line, Inc. and its affiliates and subsidiaries ("VLI"), and EULAV Asset Management ("EULAV"), may hold stocks that are reviewed or recommended in this publication. EULAV also manages investment companies and other accounts that use the rankings and recommendations in this publication as part of their investment strategies. These accounts, as well as the officers, directors, employees of VLI, may dispose of a security notwithstanding the fact that The Value Line Investment Survey (the "Survey") ranks the issuer favorably; conversely, such accounts or persons may purchase or hold a security that is poorly ranked by the Survey. Some of the investment companies managed by EULAV only hold securities with a specified minimum Timeliness Rank by the Survey and dispose of those positions when the Timeliness Rank declines or is suspended. Subscribers to the Survey and its related publications as well as some institutional customers of VLI will have access to all updated Ranks in the Survey by 8:00 AM each Monday. At the same time, portfolio managers for EULAV will receive reports providing Timeliness Ranking information. EULAV's portfolio managers also may have access to publicly available information that may ultimately result in or influence a change in rankings or recommendations, such as earnings releases, changes in market value or disclosure of corporate transactions. The investment companies or accounts may trade upon such information prior to a change in ranking. While the rankings in the Survey are intended to be predictive of future relative performance of an issuer's securities, the Survey is not intended to constitute a recommendation of any specific security. Any investment decision with respect to any issuer covered by the Survey should be made as part of a diversified portfolio of equity securities and in light of an investor's particular investment objectives and circumstances. Value Line, the Value Line logo, The Value Line Investment Survey, Timeliness, and Safety are trademarks of Value Line, Inc. in the United States and other countries. All other trademarks are the property of their respective owners. *Value Line Arithmetic & Geometric Indices calculated by Thomson Reuters. Information supplied by Thomson Reuters.