ORANGE AND ROCKLAND UTILITIES, INC.
DIRECT TESTIMONY OF
YUKARI SAEGUSA

TABLE OF CONTENTS

ORANGE AND ROCKLAND UTILITIES, INC.
DIRECT TESTIMONY OF
YUKARI SAEGUSA

Q. Please state your name and business address.

A. My name is Yukari Saegusa. I am the Treasurer of Orange and Rockland Utilities, Inc. ("Orange and Rockland", "O&R" or the "Company"). I am also a Vice President and Treasurer of the Company's affiliate Consolidated Edison Company of New York, Inc. ("Con Edison"). My business address is 4 Irving Place, New York, New York.

Q. Briefly describe your educational background.

A. I graduated from the University of Pennsylvania, Wharton School in 1989 and received a B.S. degree in Economics. I received an MBA from the MIT Sloan School of Management in 1995.

Q. Please summarize your professional background.

A. I joined Con Edison in March 2013. Prior to joining Con Edison, from 2004 to 2013 I was employed by Barclays as a Managing Director in Debt Capital Markets covering the United States utility and energy sectors. I was employed from 1995 to 2004 by Citigroup, also in Debt Capital Markets covering the United States utility sector. In my roles at Barclays and Citigroup, I was broadly responsible for advising utility clients on the design and execution of debt capital-raising and liability management strategies.

Q. Have you previously sponsored testimony before the New York State Public Service Commission ("Commission")?

A. Yes. I submitted testimony on behalf of Orange and Rockland in Cases 14-E-0493, 14-G-0494, 18-E-0067, and 18-G-0068 and on behalf of Con Edison in Cases 19-E-0065 and 19-G-0066.

Q. What is the purpose of your direct testimony in this proceeding?

A. My direct testimony discusses (1) the current financial market environment, (2) the Company's historic and projected capital structure and cost of capital, and (3) the Company's financial challenges and the need to maintain access to financial markets at reasonable cost.

I. <u>CURRENT FINANCIAL MARKET ENVIRONMENT</u>

Q. Please describe the current state of the financial markets.

A. Prior to the beginning of the COVID-19 pandemic, The U.S. continued to experience a historic ten year period of economic expansion. U.S gross domestic product grew at an annual rate of 2.1% in the fourth quarter of 2019 and the unemployment rate had dropped from a high of 10.0% in October of 2009 to 3.5% in December 2018. Currently, however, the economy is in the midst of a severe economic retraction and extreme volatility caused by the unprecedented and disruptive economic impacts of the COVID-19 pandemic.

Q. Can you provide some examples of COVID-19 related economic impacts?

A. Some of the major economic impacts include U.S. gross domestic product falling at an annual rate of 31.4% in the second quarter of 2020, marking the end of the longest recorded U.S. economic expansion; the unemployment rate rising to a peak of 14.7% in April from a low of 3.5% in February 2020; and a seasonally adjusted drop in industrial production of 12.7% in April.

Q. How has the COVID-19 pandemic specifically impacted the economy of New York State?

A. In order to slow the rate of COVID-19 infections in the State, Governor Cuomo on March 22 implemented the “New York State on PAUSE” executive order which, among other restrictions on social gatherings, ordered all non-essential businesses to shut down until a series of health monitoring statistics showed sufficient improvement. As a result, according to the State Comptroller’s Office, New York State’s job count fell by over 1.9 million people in March and April, of which only 600,000 had regained employment by September.

Q. How long are these restrictions expected to be in place?

A. That is uncertain. Businesses were allowed to reopen through the summer and fall as health statistics showed continuing improvement, but limitations continued regarding how many people could gather together in one place and under what conditions they could be together. Recently, however, new COVID-19 cases have begun to increase again and a new series of economic lockdowns may be necessary to halt progress of the disease. This continues to put a strain on small businesses, particularly in the service industry, which relies on person-to-person contact.

Q. Has the pandemic also been disruptive to the capital markets?

A. Yes. The U.S. equity market has experienced much higher volatility due to the pandemic as compared to prior years. The VIX index, which measures volatility in the equity market, hit an all-time high of 82.7 on March 16, 2020 and has averaged 33.5 since March 1, 2020 as compared to an average of 17.4 over the past ten years. Recently the VIX index trended higher because of uncertainty of a vaccine timeline, increases in COVID-19 cases globally, shutdown of European cities and other geopolitical developments.

Q. What has the been the impact of the pandemic on the fixed income markets?

A. Overall, the U.S. fixed income market is now in its third decade of a bull market run. Investors have been willing to invest money at record low yields as they look to put funds to work in an artificially low interest rate environment. The yield on Moody's Baa Corporate Bond Index recently stood at 3.40% (October 16, 2020) compared to a long-term average of 7.21% since January 2, 1986. The drive to record low yields began with unprecedented actions taken by the U.S. Federal Reserve and central banks around the world in response to the 2008 financial crisis. The Federal Reserve and other central banks have injected a substantial amount of liquidity into their respective economies through multiple rounds of quantitative easing.

Q. What do you mean by quantitative easing?

A. Quantitative easing is the practice of using money, newly issued by the central banks, to buy mortgage-backed and government securities. The practice increases liquidity by injecting money supply into the economy and suppressing interest rates by driving the prices of the mortgage-backed and government securities up and yields on those securities down.

Q. Did the Federal Reserve take action to scale back the unprecedented actions it took after the 2008 financial crisis?

A. Yes, but only temporarily. Starting in January 2014, the Federal Reserve gradually began to reduce the amount of its bond purchases, ending these purchases completely in October 2014, and signaled an end to its loose monetary policy. In the December 2015 meeting of the Federal Open Markets Committee (“FOMC”), the Federal Reserve raised the Federal Funds rate by 25 basis points (“bps”) further signaling the end of an easing cycle and the beginning of a hiking cycle. Subsequent to the December 2015 Federal funds rate increase, the FOMC raised rates eight times (at the December 2016, March 2017, June 2017, December 2017, March 2018, June 2018, September 2018 and December 2018 meetings) before it reversed course and subsequently lowered rates three times (at the August 2019, September 2019 and October 2019 meetings). The Federal Funds rate is the interest rate at which a depository institution lends funds maintained at the Federal Reserve to another depository institution overnight. The Federal Funds rate is generally only applicable to the most creditworthy institutions when they borrow and lend overnight funds to each other. The Federal Funds rate is one of the most influential interest rates in the U.S. economy because it affects monetary and financial conditions, which in turn have a bearing on key aspects of the broad economy including employment, growth and inflation.

Q. Has the COVID-19 pandemic caused the Federal Reserve to make any further adjustments to the Federal Funds rate?

A. Yes, the onset of the pandemic caused large disruptions in liquidity and borrowing rates. A2/P2 rated commercial paper, which had generally been trending with Federal Funds rate increases and decreases, saw increases of up to 225 basis points between the low and high points of March 2020 (see Exhibit_(YS-1)). At the same time, longer term liquidity in the commercial peper market shrank with one to four-day commercial paper spiking up to over 85% of total issuance in mid-March from pre-COVID levels that varied around 60% (see Exhibit_(YS-2)). After the experience of the 2008 financial crisis, the Federal Reserve was highly aware that supporting the functioning of the funding markets was critical and acted quickly to support the commercial paper markets. Over the course of two meetings (March 3, 2020 and March 16, 2020) the Federal Reserve responded forcefully to increase liquidity by cutting the Federal Funds rate by an unprecented 150 basis points to a record low target range of 0.00%-0.25%

Q. Did these reductions in rates impact the commercial paper market?

A. Yes. Since the peak in March, A2/P2 rated commercial paper rates have decreased to be in line with the current Federal Funds target and the percentage of 1 to 4 day commercial paper has decreased back closer to pre-COVID levels as longer-term funding became more available.

Q. Did the Federal Reserve take any other actions to support credit in response to the COVID pandemic?

A. Yes. In an effort to limit the economic damage caused by the pandemic, the Federal Reserve took further actions designed to increase liquidity and manage interest rates since the start of the pandemic. Chief among them were:

- the announcement of $700 billion for a new round of Quantitative Easing (Federal Reserve Press Release, March 15, 2020);

- Commercial Paper Funding Facility (CPFF) to support up to $1 trillion of liquidity in the corporate paper markets as well as the Primary Dealer Credit Facility (“PDCF”), which offers collateralized loans to large broker-dealers (Federal Reserve Press Release, March 17, 2020);
- Money Market Mutual Fund Liquidity Facility (“MMLF”) offering collateralized loans to large banks buying assets from money market mutual funds (Federal Reserve Press Release, March 18, 2020); and
- The establishment of three new emergency lending facilities - the Primary Market Corporate Credit Facility (“PMCCF”), the Secondary Market Corporate Credit Facility (“SMCCF”) and the Term Asset-Backed Securities Loan Facility (“TALF”) (Federal Reserve Press Release, March 23, 2020).

The US government also stepped in to provide economic stimulus by passing the $2.1 trillion Coronavirus Aid, Relief, and Economic Security (“CARES”) Act to support individuals, businesses, governments and healthcare providers impacted by COVID-19, and also the Paycheck Protection Program and the Health Care Enhancment Act, which provided an additional $484 billion in emergency aid.

Q. What was the result of intervention from the Federal Reserve and US Government?

A. These programs increased liquidity and helped stabilize the commercial paper markets by increasing the ability for borrowers to access the commercial paper market more efficiently.

Q. Has the Federal Reserve given projections on how long the Federal Funds target will be held at these levels?

A. Yes. The Federal Reserve publishes a forecast of the Federal Funds rate for 2021, 2022, 2023 and longer run. The projections are based on the individual assessments of the Federal Reserve Board members and Federal Reserve Bank presidents. In the latest forecast (June 2020), the median of the FOMC participants' assessments of appropriate monetary policy puts the Federal Funds rate at 0.1% for all three years from 2021 to 2023.

Q. Does holding the Federal Funds rate at historically low levels mean that longer term borrowing rates will also be held at constant rates?

A. No. The Federal Reserve continues to target an inflation rate of 2% and has indicated a willingness to allow inflation to moderately exceed 2% for some time.

Q. What are the challenges faced by the Company in today’s financial markets?

A. Taking the aforementioned factors into account, one of the main challenges faced by the Company is its ability to earn a fair rate of return. A confluence of factors including Staff of the Department of Public Service’s (“Staff”) approach to setting cost rates for debt and equity, a rising interest rate environment, and elevated utility equity market valuations, expose the Company to the risk that it will not be able to earn its cost of capital.

Q. Please describe the shortcomings with Staff’s approach to setting cost rates for debt in the current financial market environment.

A. Staff’s approach to setting cost rates for debt based on current interest rates ignores the risks of rising rates as the Federal Reserve continues to aim for higher sustained inflation targets. In addition, rates have exhibited volatility in relation to recent economic uncertainty. In the year to date, there have been 140 basis point swings between the high and low yields for both 10-year and 30-year Treasury bonds. A rise in volatility would likely lead investors to require a higher rate of return to compensate them for the additional risks that they will have to bear given this increased volatility.

Q. Please describe the shortcomings with Staff's approach to setting cost rates for equity in the current financial market environment.

A. The current low interest rate environment has pushed utility equity market valuations above historical levels. These conditions are exacerbating the flaws of Staff's reliance on a formulaic approach to determining a fair return on equity. Staff's discounted cash flow ("DCF") model, in particular, is producing results that are well below historical levels.

Q. What additional challenges are faced by the Company in the current environment?

A. Volatility in the financial markets has been and will continue to be one of the Company's most significant challenges as the Company continually needs to access the capital markets. Global events like the COVID-19 pandemic have the potential to further increase volatility in the capital markets. Other impactful geopolitical events (e.g., trade tensions between the United States and China, unrest surrounding the US political environment, and the ongoing threat of a shutdown of the Federal government) can also produce shocks that could affect the Company's ability to access capital markets efficiently.

II. CAPITALIZATION AND COST OF CAPITAL

Q. What capital structure do you believe should be used in the context of these rate case proceedings?

A. A capital structure with a 50.00% equity ratio, 0.63% customer deposits ratio and a 49.37% debt ratio should be used.

Q. Please describe why this proposed capital structure is appropriate.

A. The proposed capital structure with a 50.00% equity ratio (as compared with the 48.00% equity ratio in the Company's current electric and gas rate plans) is appropriate and necessary to address the Company's weaker cash flow profile. The Company's weaker cash flow profile is a direct result of the continued low return on equity and equity ratios in its recent rate plans.

Q. Have there been other factors that have contributed to the Company's weaker cash flows?

A. Yes. The passage of the Tax Cut and Jobs Act of 2017 ("TCJA"), the COVID-19 pandemic, and the impact from Tropical Storm Isaias, have all recently contributed to the Company's weaker cash flows.

Q. What impact did the TCJA have on the Company's cash flows?

A. The passage of the TCJA in 2017 exacerbated the Company's already weak cash flows. The reduction of the maximum corporate tax rate from 35% to 21% and the curtailment of bonus depreciation have had the largest impact and required the Company to return a total of $175 million to customers. This impact is increased by the Company's proposal, as outlined in the Accountuing Panel testimony, to accelerate the return of $30 million of the $175 million from 15 years to three years to help mitigate the impact of COVID-19 on customers.

Q. What impact has the COVID-19 pandemic had on the Company's cash flows?

A. In March 2020, the Company began suspending service disconnections, certain collection notices, final bill collection agency activity, new late payment charges and certain other fees for all customers. The Company also began providing payment extensions for all customers that were scheduled to be disconnected prior to the start of the COVID-19 pandemic. In June 2020, the State of New York enacted a law prohibiting New York utilities, including O&R, from disconnecting residential customers during the COVID-19 state of emergency. In addition, such prohibition will apply for an additional 180 days after the state of emergency ends for residential customers who have experienced a change in financial circumstances due to the COVID-19 pandemic. The Company has foregone an estimated $2 million of revenue in late payment and other fees and increased its uncollectible account reserve by $1 million due to these actions.

Q. What impact did Tropical Storm Isaias have on the Company’s cash flows?

A. O&R incurred costs for Tropical Storm Isaias of $30 million, including $23 million of incremental operation and maintenance costs. The Company’s incremental operating costs attributable to storms are to be deferred for recovery as a regulatory asset under its electric rate plans. Delay in recovery of expenses incurred under severe storms like Tropical Storm Isaias puts the Company at a cash flow disadvantage. As storm events continue to increase in both frequency and intensity, they will continue to erode the cash position of the Company.

Q. Why are strong cash flows important?

A. As discussed in the direct testimony of Company witness Shipman, cash flow is a critical component of the quantitative side of the credit analysis used in determining the Company’s credit ratings.

Q. Please describe the importance of credit ratings to the Company’s customers

A. As discussed in the direct testimony of Company witness Shipman, credit ratings can directly affect the cost of capital, with lower credit ratings increasing the cost of capital.

Q. Have the Company’s low cash flows impacted its credit ratings?

A. Yes. As early as 2017, the Company’s ratings have been affected by its weak cash flow. S&P Global in an August 7, 2017 report (see Exhibit_(YS-3)), in which they lowered the Company’s standalone credit profile (“SACP”) from A- to BBB+, commented that:

> The revised SACP reflects our expectations for financial measures that we expect will consistently reflect the lower end of the range for the company's

current financial risk profile relative to peers, including funds from operations (FFO) to debt ranging from 13%-14%.

In addition, on October 30, 2018, Moody's downgraded the Company's senior unsecured rating from "A3" to "Baa1" (see Exhibit__(YS-4)). Moody's cited the Company's weak financial profile as the cause of the downgrade. At that time, Moody's commented that the Company's credit challenges were:

- Cash flow headwinds from tax reform; and
- High capex requirements and high dividend payout drive higher debt levels.

Moody's expected the Company's ratio of cash flow from operations before changes in working capital ("CFO pre-WC") to debt to fall to the mid-teens from over 20% historically and warned that the two main factors that could lead to an additional downgrade are (1) CFO pre-WC to debt declining consistently around 15% and (2) a less predictable regulatory environment.

Q. Have any of the ratings agencies commented recently on the Company’s cash flow situation?

A. Yes. S&P commented on the Company’s weak cash flows in a March 3, 2020 report (see Exhibit__(YS-5)):

> …we expect FFO to debt to average 13%-15%, which is indicative of a financial risk profile at the lower end of the category and is consistent with our use of a negative comparable ratings modifier on the company.

Fitch, in a September 11, 2020 report (Exhibit__(YS-6)), also mentioned the Company’s FFO leverage metrics provide little headroom at current rating levels.

Q. Has Moody’s made any further changes since their October 31, 2018 report?

A. Yes. On December 23, 2019, Moody’s changed the Company’s outlook from “stable” to “negative”. Subsequently, on January 26, 2021, Moody’s downgraded the Company’s senior unsecured rating from Baa1 to Baa2 and changed the outlook from “negative” to “stable”. See Exhibit__(YS-7). In the January, 2021 report, Moody’s stated that the Company’s financial metrics has declined in recent years due to:

- Weaker financials due to the rate case approved in March 2019;
- The ongoing impacts of tax reform;
- Storm events and related costs; and
- Higher capital spending.

Moody's again cited declines down to 15% in the Company's ratio of cash flow from operations before changes in working capital ("CFO pre-WC") and warned that the main factors that could lead to an additional downgrade are (1) CFO pre-WC to debt declining consistently below 13%; (2) Further decline in the predictability and stability of the New York political environment and (3) less regulatory support for cost recovery.

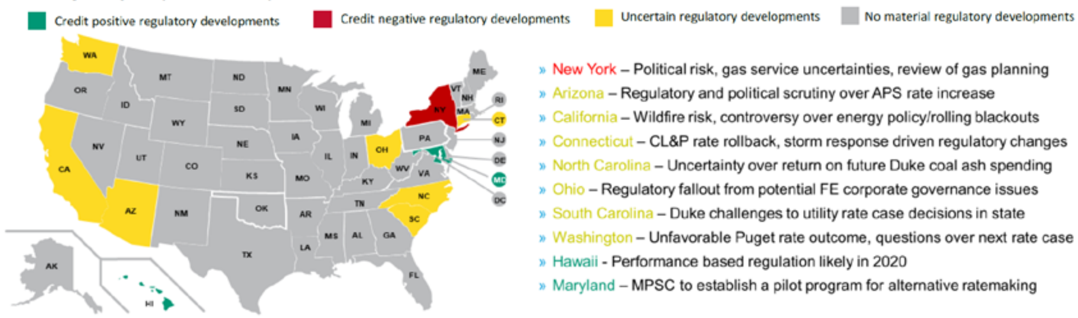
Q. Has Moody's commented specifically on state regulatory developments recently?

A. Yes, on October 29, 2020, Moody's published a report that highlighted New York was a regulatory regime with credit-negative regulatory developments and was an outlier from other states. See "2021 Outlook Stable on Strong Regulatory Support and Robust Residential Demand" (see Exhibit__(YS-8)).

Exhibit 3

Most state utility regulatory and political environments are stable and supportive

Recent regulatory and political developments



APS= Arizona Public Service Company (A2 negative); CL&P = Connecticut Light and Power Company (A3 stable); Duke = Duke Energy Corporation (Baa1 negative); FE= First Energy Corp (Baa3 negative); Puget = Puget Sound Energy (Baa1 stable); MPSC = Maryland Public Service Commission

Source: Moody's Investors Service

Q. Did Moody’s comment on the New York regulatory situation inother reports?

A. Yes. On November 13, 2020, Moody’s published a report titled, “Latest Political Intervention into Regulatory Oversight is Credit Negative for New York Utilities” (see Exhibit__(YS-9)). In it, Moody’s states:

> New York Governor Andrew Cuomo plans to propose legislation that clarifies the process for revoking a utility’s franchise if it falls short of storm response expectations. The investigations and any related customer discontent increase social risk for the affected utilities and could result in more

> contentious regulatory relationships and inadequate storm cost recovery, which would hurt cash flow.

Q. Did the Governor propose the aforementioned legislation?

A. Yes, on November 6, Governor Cuomo proposed Program Bill Number 13, An Act to Reform the Enforcement, Oversight and Franchise Revocation Process for Public Utilities ("Bill 13") into the State Assembly

Q. Can you please discuss the major themes of the November 13, 2020 Moody's report

A. As the title suggests, Moody's discusses its view that Bill 13 weighs most heavily on credit quality because it would result in a higher business risk environment for every New York utility and their respective holding companies:

> The proposal is credit negative for all New York utilities because it represents the latest in a series of actions by the governor's office to intervene in utility regulations, which undermines the consistency and predictability of the state's regulatory framework.

The report indicates that Moody’s believes that the proposal would negatively impact the legislative and judicial underpinnings of the New York utility regulatory environment.

Q. Did Moody’s comment on weaker cash flows as part of this report?

A. Yes, Moody’s states that since 2017 the financial profiles of most of the New York utilities has been degraded over time despite credit-friendly aspects of recovery mechanisms.

Q. Does Moody’s cite a specific reason why metrics have degraded?

A. Not specifically in this report. However, in other recent reports, Moody’s has cited the thin equity layer and ROE as a primary cause of the degredation. For example, on November 10, 2020, Moody’s downgraded the ratings of Brookyln Union Gas (KEDNY) (see Exhibit__(YS-10)) citing:

> Like other New York utilities, KEDNY's cash flow metrics have been depressed by (1) the regulatory framework offering one of the lowest allowed return on equity (ROE) amongst the US

> states (both equity thickness and authorised ROE); and (2) the impact of US tax reform, which has resulted in lower revenues for KEDNY since January 2019.

Moody’s continues:

> The state regulator has continued to cut allowed returns in determinations made, to-date, in 2020 (to authorised ROE of 8.8 % whilst retaining a 48% equity layer); and appears to have placed greater emphasis on affordability, with extensive coronavirus-related provisions included in rulings made since the pandemic hit the state, including back-loading, levelisation, of rate increases.

Finally, Moody’s refers to the political uncertainty as another driver for the downgrade:

> At the same time, political rhetoric and actions taken towards various state utilities have increased. New York State Governor Andrew Cuomo has formally threatened to revoke several utility operating certificates,

Q. Has there been further mention by Governor Cuomo of a potential revocation of O&R’s operating certificate?

A. Yes. On November 19, 2020 Governor Cuomo’s office announced that the the Commission had issued an Order to Show Cause as to why O&R and other utilities should not be subject to penalties related to its response to power outages caused by Tropical Storm Isaias. The order further stated that should the Commission confirm some or all of the apparent violations and should such violations be classified as repeat violations, the Commission would commence a proceeding to revoke or modify O&R’s and/or Con Edison’s certificate as it relates to its service territory.

Q. Did this order affect O&R’s credit ratings?

A. Yes. On November 24, 2020, S&P published a report titled “Consolidated Edison Inc. and Subs Outlooks Revised To Negative Amid Potential Political Headwinds; Ratings Affirmed” (see Exhibit__(YS-11)).

Q. What did S&P state as a rationale for the negative outlook?

A. Similar to the Moody’s report cited above, S&P expressed concern over increased political intervention in regulatory affairs:

> The extent to which a utility's regulatory construct is insulated from political intervention is an

> important credit consideration under our ratings methodology. Relative to other jurisdictions, we believe the New York Public Service Commission (NYPSC) may be more exposed to intervention-related risks.

S&P states further:

> As per our criteria, regulatory independence is one of the key attributes that underpins the credit quality of the utility industry, despite the industry typically operating with negative discretionary cash flow and relatively weaker financial measures compared to other industries.

Q. Has there been any other independent analysis that has evaluated the constructive approach of regulatory agencies around the country?

A. Yes. On July 7, 2020, UBS published a sector report (see Exhibit__(YS-12)) titled “North America Power & Utilities; Halftime: Regulated Utility Strategy for 2H 2020”. In this report, UBS ranks the various North American regulatory jurisdications based on five criteria: (1) whether commissioners are appointed or elected; (2) allowed return spread history; (3) mechanisms that reduce regulatory lag; (4) rates and customer levels compared to region; (5) tendency to settle versus litigate rate cases; and (6) a subjective investor friendliness factor.

Q. How did New York rank in UBS' evaluation?

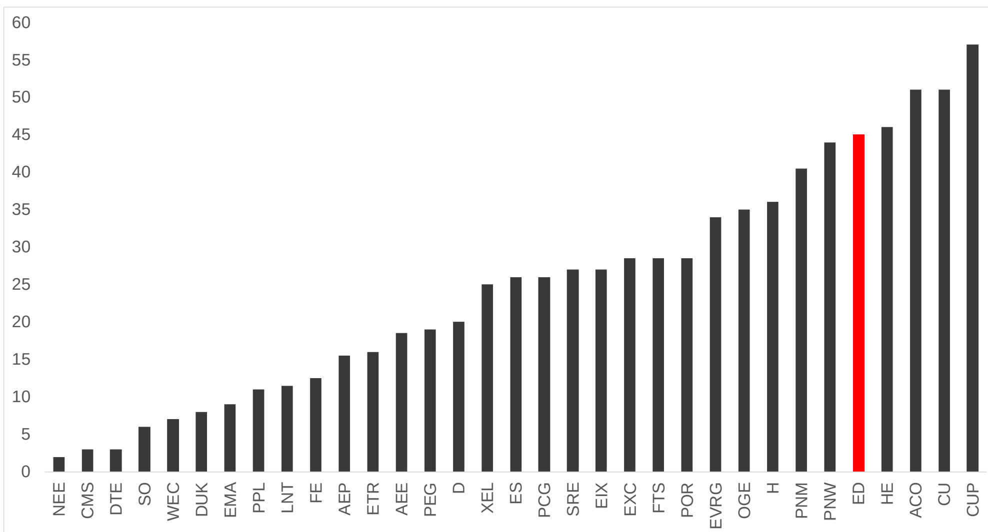
A. New York's regulatory jurisdiction ranked in the 4th tier. New York has been ranked in this tier since it was downgraded from Tier 3 in February 2018. Even with the current difficulties surrounding the wildfires, New York is considered less constructive than California.

Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
	FERC			
		Nova Scotia		
		North Dakota		
		South Carolina		
		Washington		
		Illinois		
		Virginia		
		Massachussetts		
		Tennessee		
		Texas		
		Oregon		
		New Jersey		
	Indiana	Wyoming	Prince Edward Island	
	Arkansas	California	Maryland	
Florida	Ohio	Delaware	Oklahoma	New Mexico
Georgia	Utah	Minnesota	Alaska	Alberta
Michigan	Louisiana	Newfoundland & Labrador	Connecticut	Arizona
Wisconsin	Kentucky	West Virginia	Hawaii	District of Columbia
Alabama	Iowa	Ontario	New York	South Dakota
North Carolina	Brittish Columbia	Rhode Island	Kansas	Maine
Idaho	Colorado	Nebraska	Nevada	Montana
Pennsylvania	Missouri	Mississippi	New Hampshire	Vermont

Source: UBS

Q. Did UBS rank Con Edison, Inc. against its regulated utility peers?

A. Yes. As noted in the chart below, UBS ranked Con Edison, Inc. 29th out of the 33 companies evaluated by UBS based on UBS' proprietary ranking of regulatory jurisdictions. In addition, UBS applied a negative 5 percent discount to the Company's equity valuation to account for the New York regulatory environment.



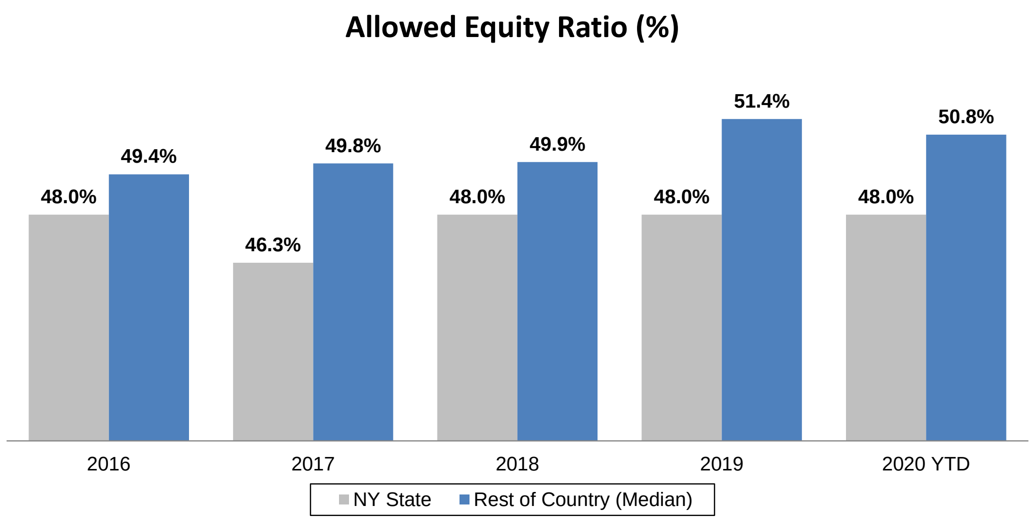
Source: UBS

Q. What is the significance of the Company and New York regulatory jurisdiction rankings by fixed income and equity analysts?

A. The rankings are an independent confirmation of the deterioration of the New York regulatory environment relative to the rest of the country. A less constructive regulatory environment imposes additional costs for both customers and shareholders. Downgrades of the Company by rating agencies increase the rates at which the Company can borrow debt. In addition, any discount applied by investors to the Company's equity valuation to account for the less constructive regulatory environment in New York will increase the Company cost of equity. The Company will be required to access both the debt and equity markets in the coming years due to weaker cash flows resulting from the TCJA paired with sustained capital spending in order to maintain the Company's infrastructure. The inability to access the capital markets in an efficient and cost effective manner will negatively impact customers and shareholders.

Q. Why is a capital structure with a 50.0% equity ratio reasonable?

A. An equity ratio of 50.0% would bring New York up to the national average. The chart below shows the median equity ratio for the rest of the country over the last five years, as compared with a median equity ratio of 48.0% in New York.



Source: SNL Financial

Q. How would a 50.0% equity ratio potentially impact the Company’s credit profile?

A. A 50.0% equity ratio would be an important signal of the credit supportiveness of the New York regulatory jurisdiction to the credit rating agencies. The rating agencies’ assessment of regulatory framework is an important component of their rating methodology. For example, Moody’s applies a 25% weighting to regulatory framework in its rating methodology. In addition, a higher equity ratio will result in stronger credit metrics for the Company. As noted earlier, Moody’s is most focused on the Company’s CFO pre-WC to total debt ratio, listing "CFO pre-WC to debt declining consistently below 15%" as one factor that could lead to an additional downgrade of the Company's credit rating.

Q. Does Moody's indicate a CFO pre-WC to total debt level that could lead to an upgrade?

A. Yes. Moody's states in the report that a CFO pre-WC to total debt level of 19% could lead to an upgrade back to a rating of Baa1.

Q. What equity ratio would be necessary to increase CFO pre-WC to total debt to 19%?

A. The chart below shows that an equity ratio of 75% would be needed to get to that level from the current 15.3% that Moody's has calculated for O&R as of June 30, 2020

	Last 12 Months Ending 6/30/2020	Adjustment for 75% Equity Ratio	LTM 6/20 with 75% Equity Ratio
O&R Electric Ratebase	$874		$874
O&R Gas Ratebase	474		474
Total Electric and Gas Ratebase	$1,348		$1,348
Allowed Return on Equity	9.00%		
Allowed Equity Ratio	48.00%	75.00%	75.00%
Moody's Credit Ratio			
Cash Flows from Operations (pre-working capital)	168	33	201
Total Debt	1,104	(33)	1,071
CFO pre-WC / Debt	**15.3%**		**18.8%**

Q. Is the Company requesting a 75% equity ratio?

A. No, this pro forma chart was primarily presented to emphasize the severity of the Company's weakened cash flows. As discussed earlier, the Company is only requesting a moderate increase to an equity ratio of 50%, which is consistent with national industry averages.

Q. Will an equity ratio of 50% improve the Company's credit metrics?

A. Yes. The chart below shows that an equity ratio of 50% would increase the CFO-pre WC to total debt ratio by 20 basis points to 15.5% from the current 15.3% that Moody's has calculated for O&R as of June 30, 2020.

	Last 12 Months Ending 6/30/2020	Adjustment for 50% Equity Ratio	LTM 6/20 with 50% Equity Ratio
O&R Electric Rate base	$874		$874
O&R Gas Rate base	474		474
Total Electric and Gas Rate base	$1,348		$1,348
Allowed Return on Equity	9.00%		
Allowed Equity Ratio	48.00%	50.00%	50.00%
Moody's Credit Ratio			
Cash Flows from Operations (pre-working capital	$168	$2	$171
Total Debt	1,104	($2)	1,102
CFO pre-WC / Debt	**15.3%**		**15.5%**

Q. How will a 50% allowed equity ratio affect the Company's credit ratings in the near term?

A. A 50% allowed equity ratio can help stabilize the Company’s ratings by providing additional needed cash flow and by providing a positive signal to the rating agencies that the Commission is willing to support the credit of the Company. The Company’s current Outlook from Moody’s and Fitch is “negative”. An increase to 50% could help prevent further credit degradation. Fitch, in particular, lists “Unexpected improvement in New York regulatory environment” as one factor that could lead to a positive rating action.

Q. How will a 50% allowed equity ratio affect the Company’s credit ratings in the long term?

A. Over time, an increase of the allowed equity ratio to 50% will provide continued improvement in cash flows and related credit metrics, which could help to avoid downgrades and lead to future credit upgrades. The chart below shows that if, over the past two rate cases, the Company had earned on an equity ratio of 50% instead of 48%, the CFO-pre WC to total debt ratio as of June 30, 2020 would have been 16.5% as compared with the current 15.3% that Moody’s has calculated for O&R as of June 30, 2020.

	12 Months Ending 6/30/2020	Adjustment for 50% Equity Ratio	LTM 6/20 with 50% Equity Ratio
O&R Electric Rate base	$874		$874
O&R Gas Rate base	474		474
Total Electric and Gas Rate base	$1,348		$1,348
Allowed Return on Equity	9.00%		
Equity Ratio	48.00%	50.00%	50.00%
<u>Moody's Credit Ratio</u>			
Cash Flows from Operations (pre-working capital)	$168	$12	$181
Total Debt	1,104	($12)	1,092
CFO pre-WC / Debt	**15.3%**		**16.5%**

Q. Has the Company's equity ratio historically been at or near the allowed equity ratio over time?

A. Yes. Please see the chart below:

Orange & Rockland Utilities, Inc.
Actual Return on Equity Summary
12 Month Rate Year Ended

	Allowed Equity Ratio		Actual Equity Ratio	
<u>Rate Year Ending</u>	<u>Electric</u>	<u>Gas</u>	<u>Electric</u>	<u>Gas</u>
June 2015 Electric/October 2015 Gas	48%	48%	50%	50%
October 2016	48%	48%	48%	48%
October 2017	48%	48%	50%	50%
October 2018	48%	48%	49%	49%
December 2019	48%	48%	48%	48%

Q. Has the Company prepared a required rate of return exhibit?

A. Yes. The document entitled "ORANGE AND ROCKLAND UTILITIES, INC. -- RATE OF RETURN REQUIRED FOR THE RATE

YEAR –– THIRTEEN MONTH AVERAGE ENDING DECEMBER 31, 2022," is set forth as Exhibit AP-5, Schedule 1.

Q. Please describe any projected changes in Orange and Rockland's long-term debt and how such changes have been incorporated into the required rate of return for the Rate Year (*i.e.*, January 1, 2022 through December 31, 2022).

A. Exhibit AP-5, Schedule 5 presents any projected long-term debt issuance for the Rate Year.

Q. Please describe how you developed the cost of long-term debt.

A. Exhibit AP-5, Schedules 4 and 5, present the detailed calculation of the cost of the long-term debt at September 30, 2020 and for the thirteen-month average ending December 31, 2021, respectively. These schedules detail each issue of long-term debt outstanding and calculate an effective annual cost for each issue, taking into consideration the original net proceeds to the Company and annual interest costs. The sum of the effective annual cost for all issues is divided by the gross amount of debt outstanding to derive the weighted average cost of long-term debt.

Q. Did you provide the interest rate forecasts used as a basis for the cost of debt in this exhibit?

A. Yes.

Q. What method have you used to develop the interest rate forecasts?

A. The Company has used forecasts of Treasury bond rates from the publication *Blue Chip Financial Forecasts*, plus a spread to Treasury bond rates based on indicative quotes from financial institutions. The *Blue Chip Financial Forecasts* consist of the consensus forecast of approximately 45 economists. This approach provides more reasonable forecast results than simply using the most current Treasury bond rates. At the update stage of this proceeding, the Company will revise Exhibit AP-5, Schedule 5, to reflect the most recent data available, as well as any new or refinanced debt that the Company may have issued by that time.

Q. Do you believe that current Treasury rates provide the best estimate of future long-term interest rates?

A. No. The position of Staff in recent base rate proceeedings that current rates are the best estimate of future long-term interest rates relies on academic papers that the Company believes is not relevant.

Q. Can you explain the flaw in Staff's position?

A. Yes. In the direct testimony of the Staff Finance Panel (p. 58) submitted in recent Con Edison electric and gas base rate cases (*i.e.*, Case 19-E-0065 & 19-G-0066), Staff states that:

> …because movements in long-term interest rates are difficult to forecast. Such forecasts are not only poor predictors of the magnitude of the expected change in interest rates, they are not even reliable with respect to the direction of the change. Instead, the best estimate of future long-term interest rates is a no-change forecast, also known as a "random-walk" forecast, or in other words, the current rates of these debt instruments.

Q. Did Staff offer any evidence to support their position?

A. Yes. Staff referenced several studies including, "On Forecasting Long-Term Interest Rates: Is the Success of the No-Change Prediction Surprising?" by Dr. James E. Pesando in the Journal of Finance, September 1980, "Just How Bad Are Economists at Predicting Interest Rates? (And What are the Implications for Investors?)" by Kevin

Stephenson in the Journal of Investing, Summer 1997, “Professional Forecasts of Interest Rates: Evidence from the Wall Street Journal’s Panel of Economists” by Karlyn Mitchell and Douglas K. Pierce in the Journal of Macroeconomics, December 2007, “Predicting Interest Rates: A Comparison of Professional and Market-Based Forecasts” by Michael T. Belongia and published by the Federal Reserve Bank of St. Louis in March 1987, and “Beating the Random Walk: A Performance Assessment of Long-Term Interest Rate Forecasts” by Frank A.C. den Butter and Pieter W. Jensen, published by the Tinbergen Institute in October 2008.

The Company believes that these papers are not relevant to the discussion of forecasted interest rates in this rate case. The collected analyses all predate the 2008 financial crisis and ignore subsequent improvements in forecasting accuracy that have occurred since that time. An article called, “Interest Rate Forecasts in Conventional and Unconventional Monetary Policy Periods” by Nelson Oliver and Mehmet Pasaogullari published by the Federal Reserve Bank of Cleveland in May, 2015 (Exhibit__(YS-13) states:

> Monetary policy has been conducted with a different set of tools since the financial crisis, and we investigate whether the change has affected the accuracy of professionals' interest-rate forecasts. We analyze the accuracy of federal funds rate and nominal Treasury yield forecasts in the periods before and after the introduction of new policy tools and find that, in general, forecast accuracy improved in the latter policy period.

The source of forecasts for the analysis used in this publication is the same *Blue Chip Financial Forecasts* that is used by the Company

Q. What is a better method than using current rates to forecast rates?

A. A forward looking measure of rates is a better forecasting method. Examples of forward looking measures are the forward rate curve or a consensus of economists' estimates contained in the *Blue Chip Financial Forecasts*. The forward rate is the rate you can lock in today to borrow in the future and can be interpreted as the market's consensus forecast of interest rates. A consensus forecast of Treasury rates, such as that produced by Blue Chip Financial, provides a more reasonable estimate rather than simply relying on current rates.

Q. What stand-alone capital structure for the Company results from the calculations that you described?

A. Exhibit AP-5, Schedule 1, shows the forecasted capital structure for the thirteen months ending December 31, 2022 of 49.37% long-term debt, 0.63% of customer deposits, and 50.00% common stock equity. The Company has no preferred stock outstanding.

Q. Does Exhibit AP-5 also show the forecasted capital structure, based on a thirteen-month average, for the twelve months ending December 31, 2023 and December 31, 2024, respectively?

A. Yes. Schedules 2 and 3 of Exhibit AP-5 show the capital structure for those periods. These schedules show that the debt ratio would increase slightly to 49.41% of the Company’s capital structure in 2023 and then increase slightly to 40.42% in 2024. These schedules also show that the customer deposit ratio would decrease modestly to 0.59% in 2023 and 0.58% in 2024 exhibit. The equity ratio would remain unchanged at 50.00% for the twelve-month periods ending December 2023 and 2024, respectively.

Q. What return on equity is the Company proposing be used for purposes of developing a revenue requirement in these filings?

A. I would note that the Company's return on equity ("ROE") witness in this proceeding, Bente Villadsen, recommends a ROE of 9.75% for the Company. However, for the reasons discussed in the direct testimony of the Company's Accounting Panel, the Company proposes a 9.50% return on equity ("ROE") be used.

Q. What overall rate of return is the Company proposing in these proceedings?

A. Using the Company's proposed capital structure, cost of long-term debt and return on equity, the overall rate of return is 7.04% as shown on Exhibit__(AP-5), Schedule 1.

Q. Is the Company presently subject to any financial protection provisions adopted by the Commission?

A. Yes. A number of Financial Protections were continued by the Commission when it approved the Joint Proposal for cases 18-E-0067 and 18-G-0068. The current Financial Protections include that if at the end of any calendar year, investments in CEI's non-utility businesses exceed

15% of CEI's total consolidated operations as measured by revenues, assets, or cash flow, or if the ratio of holding company debt as a percentage of total consolidated debt rises above 20%, the Company shall notify the Commission that a trigger has occurred and submit a filing providing a ring-fencing plan to insulate the Company, or, in the alternative, demonstrating why additional ring-fencing measures are not necessary at that time.

Q. Does the Company believe that the Financial Protections should remain in effect in their current form?

A. Yes, with one clarification. The Company believes that the metric measuring holding company debt to total consolidated debt should be clarified to exclude non-recourse financing by non-utility entities, as adopted by the Commission for ConEdison in the Joint Proposal for Cases 19-E-0065 and 19-G-0066.

III. <u>CAPITAL NEEDS AND INVESTOR CONCERNS</u>

Q. Please describe the financial challenges facing the Company during the Rate Year and beyond.

A. The Company faces the following interrelated financial challenges: (A) the capital intensive nature of its business; (B) the costs of implementing recent environmental actions made by government and regulatory authorities; (C) flat demand growth for electricity; (D) its unusually weak cash flows; (E) the restrictions that regulation places on its ability to respond to unfavorable developments in its environment, and (F) its dependence on the market to fund its capital needs. Each of these challenges is discussed further below.

Q. Please discuss the capital intensive nature of the Company's business.

A. The Company's business requires significant capital investment every year, its assets are long-lived and the underlying technology, facilities and customer base are mature.

Capital intensity is high for utilities. According to a June 2, 2011, IHS Cambridge Energy Research Associates presentation titled "*Post Fukushima: If not nuclear, what energy mix?*, the electric utility industry is the most capital intensive industry as measured by the ratio of total assets to total revenues. As shown on Exhibit___(YS-14), which was prepared under my supervision and direction, the Company's capital intensity can be demonstrated by the fact that its ratio of net fixed assets per dollar of revenues is 2.6, as compared with 0.9 for the average S&P 500 company and 0.3 for the median company. Capital intensity amplifies risk for investors because capital intensive businesses have to recover much larger fixed costs (interest and depreciation) before achieving a return on their investment. The Company’s assets also have extraordinarily long lives. Long-lived assets, in the context of rate regulation, present two financial challenges for the Company that are also risks for potential investors in the Company’s debt issuances and equity shares. First, their investment horizons for capital recovery must be much longer. For debt investors, utility debt has much longer average maturities than other companies. Equity investors must also wait longer for repayment on their investment. Second, there is a regulatory risk in long-lived assets because United States rate regulation limits returns to a fraction of historic tangible book value rather than replacement or current market value. The Company’s depreciation recoveries, which reflect historic tangible net book values, are small relative to its current capital costs, returning only 39% of its capital expenditures in the form of depreciation for the twelve months ended December 31, 2019.

Due to the long depreciation lives established in rates, this dynamic is likely to continue for many years. As shown on Exhibit___(YS-15), which was prepared under my supervision and direction, by way of comparison, the average S&P 500 company recovered 148% of its capital expenditures through depreciation/amortization. This would have placed Orange and Rockland near the bottom 6% of companies in the S&P 500 that had meaningful recovery rates. Orange and Rockland (which had a 39% capital expenditure recovery rate) would have ranked below 20 of the 26 utilities in the S&P 500 as shown on Exhibit___(YS-16), which was prepared under my supervision and direction. The average recovery rate for the utility companies in the S&P 500 was 56%.

The Company's large installed base of mature equipment requires a continuous investment in replacement assets. In other industries, a much larger portion of investment can be dedicated to new business (generating offsetting revenues) or new technology (lowering costs).

Mature assets raise operating costs and increase operating risks, particularly in an environment that requires high levels of reliability and imposes regulatory penalties for failing to achieve it. The technology of the business is also mature, affording little opportunity to significantly reduce invested capital in the business through technological innovation. The need for continuous investment to maintain and improve the system with slight opportunities for demand growth and limited depreciation cash flow means that the Company must seek rate increases and raise new capital frequently to maintain its financial stability. Replacement capital needs alone substantially exceed the cash generated through depreciation recoveries for the Company.

Q. Please discuss the costs of implementing recent environmental actions made by government and regulatory authorities.

A. In July 2019, the State of New York adopted the Climate Leadership and Community Protection Act ("CLCPA") which establishes a framework for the state to reach a zero net emissions level for greenhouse gasses by 2050. Among the major requirements of this act are (1) emissions reductions of 40% by 2030 and 85% by 2050, (2) 70% of electricity must come from renewable resources by 2030 and 100% by 2040, (3) a reduction of statewide energy consumption by 185 BTU through energy efficiency improvements. In January, 2020 the Commission issued an order titled “New Efficiency: New York” (“NENY”), which established programs to support the CLCPA targets. According to the NENY order, the Company is required, within the bounds set by the order, to conduct energy efficiency programs and incorporate energy efficiency targets and budgets consistent with the order. Incremental budget spending authorized under the order for 2021-2025 is $12.8 million for Electric and $12.3 million for Gas. The timing of recovery for these and other related costs is is expected to be addressed in this case.

Q. Please describe how flat demand growth for electricity presents a financial challenge.

A. The Company’s total retail electric sales volume has decreased by an average annual rate of 1.0% from 2015 to 2019. Flat demand growth for electricity, coupled with the capital intensive nature of the business, puts upward pressure on the unit cost of electricity as the recovery of capital is spread over a smaller base.

Q. Please describe how the Company’s weak cash flows present a financial challenge.

A. Because the Company will continue to be challenged by its weak operating cash flows and lack of positive free cash flows, Orange and Rockland will continue to be more dependent on external funding.

Q. Have you prepared an exhibit to show this?

A. Yes, please refer to Exhibit___(YS-17), which was prepared under my supervision and direction.

Q. Please describe how restrictions on the Company's business imposed by the Commission present a financial challenge.

A. The Company is subject to various regulatory restrictions that limit its ability to react to unfavorable circumstances. For example, the Company has an obligation to serve and can be required to do so even if doing so entails significant investment upon unfavorable terms. It also is limited in its ability to reach beyond its franchise area to serve attractive new customers. The Company's assets are immovable; unlike those of most companies, they cannot be used in a different location or business, their usefulness and profitability are tied to providing utility service in its New York service territory.

Unlike non-utility companies, Orange and Rockland has a limited ability to retain the advantages of its efforts to improve its efficiency and thus lower its costs of doing business for the benefit of its equity investors. The Commission routinely requires earnings sharing mechanisms, which serve to limit earnings opportunities, as a component of base rate case settlements. Moreover, any additional efficiencies achieved are fully allocated to customers each time rates are reset, given the capital recovery and cash flow parameters of historic cost-of-service rate making.

Q. Please describe how the fact that the Company must continually raise capital increases risk for existing and prospective investors.

A. As mentioned earlier in my direct testimony, the Company must approach the markets for additional new debt capital on a frequent and recurring basis. Orange and Rockland is forecasted to raise $75 million in 2021, $100 million in 2022, and $25 million in 2024. The Company will need the assurances of positive cash flows and favorable regulatory support to continue to market this debt at reasonable rates.

Each time Orange and Rockland markets its debt securities, investors will assess the risks they would bear if they invested in the Company in light of the challenges identified above. Their assessment of these risks is, and will be, priced into the cost of debt each time the Company seeks new capital in the years ahead. To the extent that analysis of risk leads the market to reduce stock prices or raise interest rates, the existing investors are disadvantaged and other potential investors are made more wary. Through this cycle of investors assessing and pricing risks that the Company faces, customers are negatively impacted through increases in the cost of financing the Company’s capital investment needs. To raise this capital at a reasonable cost, the Company must remain an attractive investment to both debt and equity investors. To remain attractive to these investors, Orange and Rockland must receive fair and reasonable treatment from its regulators.

Q. How much and what type of debt does the Company have outstanding?

A. As of September 30, 2020 Orange and Rockland had $844 million of long-term debt.

Q. Who owns the Company’s debt?

A. Investment managers, insurance companies, pension plans, hedge funds, banks, trust companies and individuals.

Q. How do bond investors evaluate Orange and Rockland?

A. For most investors, the credit ratings assigned by the nationally recognized statistical rating organizations (*i.e.*, Moody’s, S&P and Fitch) are the threshold basis for evaluating individual corporate credits such as those offered by the Company.

Q. What are the current ratings on Company debt?

A. The long-term, senior unsecured debt ratings are Baa2, A-, and A- by Moody’s, S&P, and Fitch, respectively. The short-term debt is rated P-2, A-2, and F2, respectively. All rating agencies have the outlook at Negative.

Q. Are bond ratings the correct indicator of the risks to shareholders?

A. No. The priority of bondholders’ claim on the Company means that shareholders are subject to a higher level of risk. Shareholders, unlike bondholders, only have a residual claim to the resources and income of the Company, and thus face risks even in well-rated companies. If returns are inadequate, the bondholder may suffer a loss on paper from a credit downgrade. The stockholder will suffer the loss directly through a drop in the share price and/or through a lower dividend.

Q. Why do companies such as Orange and Rockland need to maintain a particularly strong financial condition?

A. Capital intensive companies with a statutory obligation to serve have to borrow in spite of the state of the market and need continuous access to capital. In addition, utilities may have to access the capital market in response to a natural catastrophe *e.g.*, Superstorm Sandy or Tropical Storm Isaias. When utilities are forced to pay high rates, these rates will remain with the companies and their customers for as long as 30 years. On the short-end of the maturity spectrum, access to commercial paper and bank borrowing markets is key to allowing the Company to pay for energy that must be delivered, no matter the price. Only A-1/P-1 borrowers can maintain that access in all markets. Such access has become more tenuous for Orange and Rockland due to its current A-2/P-2 (S&P’s/ Moody’s) rating for commercial paper. At the height of the financial crisis of 2008-2009, non-A-1/P-1 borrowers, if they had access to commercial paper market, paid significantly higher rates. The same was true in the early days of the COVID pandemic where A2/P2 commercial paper peaked at 3.61% on March 26, 2020 versus an average of 1.76% for the pre-pandemic months of January and February, 2020.

During both times, the seizing up of the commercial paper market was relieved only by the Federal government's intervention to provide an effective backstop for the highest-rated (A-1/P-1) commercial paper issuers, a solution that may not always be available.

If the Company were to lose access to the commercial paper market, borrowing costs would increase as the Company would have to rely more upon long-term debt, which is more expensive. In addition, the Company could be forced to issue debt with less attractive terms because it lacked the flexibility to wait for better market conditions. The recent past has demonstrated the importance of maintaining a strong credit rating and investor confidence in our credit.

Q. Please explain why maintaining its current debt ratings is important for Orange and Rockland.

A. The Company has a significant continuing construction program that must be funded in large part by debt financing. Access to credit markets will be restrictive for lower quality creditors. In addition, a part of the Company's financing program is comprised of short-term borrowing through its commercial paper program. Such borrowing is highly sensitive to credit quality and credit market conditions.

Q. Who owns the Company?

A. Orange and Rockland has one shareholder, CEI. CEI, in turn, is owned by approximately 60,000 registered shareholders. Registered shareholders are the individuals or businesses whose names are listed on the shareholder register of CEI.

Q. What are the characteristics of the registered shareholders?

A. CEI’s registered shareholders consist of individuals and institutional investors. Institutional investors often own shares for the benefit of others. These investors purchase CEI shares for the benefit of their investors who, in turn, may be pension funds or other individual investors. Since pension funds exist for the benefit of the individual participants in their plans, it makes sense to think of the ultimate beneficiaries of share ownership in CEI, and derivatively in the Company, of being millions of individuals who may own shares directly, invest in U.S. stock mutual funds, or receive or expect benefits from pension plans or life insurance policies.

Q. What do the people who own CEI shares, either directly or indirectly, provide to the Company?

A. They provide the capital that the Company needs above and beyond what debt investors provide. Their capital allows the Company to provide safe, reliable energy utility service to the Company's customers. Without these shareholders, the Company's customers would have to pay currently for all of the costs of the services they receive. For example, without these shareholders, customers would have to pay for a new substation as it is constructed rather than over the subsequent decades during which they benefit from its operation.

Q. What do these equity investors expect in return?

A. They expect compensation either in the form of a periodic dividend payment or an increase in the value of the business, or both.

Q. How do equity investors in regulated utilities set their expectations for compensation?

A. The return expectations of equity investors in rate-regulated energy utilities are grounded in "the regulatory compact." The regulatory compact's essence is that equity investors forgo the monopoly earnings they would otherwise enjoy in return for the institutionalization of their monopoly in a defined geographic area and a fair and equitable return on the capital they have invested.

Q. What standards exist to help equity investors and regulators determine whether a rate-regulated utility offers a fair and equitable return?

A. The general standards for a fair and equitable return for investors in utility shares are well-established in the United States. The underlying requirement for fair treatment for equity investors has been recognized for years. As discussed in the direct testimony of Company witness Villadsen, it dates back to the *Hope* and *Bluefield* cases. The United States Supreme Court in those cases established that in determining the fairness or reasonableness of a utility's allowed ROE, one needed to look at the consistency of a utility's allowed ROE with the returns on equity investments in other businesses having similar or comparable risks.

Q. How would a potential equity investor evaluate the return limitations on New York utilities as to their magnitude, timing and probability?

A. There are four significant factors in an equity investor's assessment of New York utility regulation: (1) headline rate of return on equity, (2) the likelihood of earning that return, (3) the symmetry of potential earned equity returns, and (4) the restrictions the regulator places on the scope of the business. To make this assessment, a potential equity investor will start with the basic parameters of the Commission's rate orders.

Q. How do the Commission's rate orders influence investors' evaluation of the first identified return consideration?

A. The first factor, the headline rate of return on equity, is important for an equity investor because it provides the most visible indication in the rate order of the regulator's willingness to balance the needs of investors and customers.

Q. How have the Commission's authorized returns compared to those in other jurisdictions?

A. As we demonstrate in this case and have demonstrated in previous rate cases, the rates of allowed return granted in New York are well below those in other states. I have provided a comparison of allowed returns in New York as compared with other states (based on data from Regulatory Research Associates (“RRA”)) to demonstrate the consistency of this practice (Exhibit___(YS-18), which was prepared under my supervision and direction).

In past cases, Staff has argued that each of the rate cases in the RRA database is unique and, therefore, no meaningful conclusion can be drawn. While I would agree that each rate case is unique, it is equally obvious that meaningful conclusions can be drawn about the New York regulatory environment when New York companies are consistently among the lowest returns in the country.

Q. Staff has pointed to the various regulatory recovery mechanisms authorized by the Commission as a justification for the low authorized ROEs granted to New York State utilities. Do you agree with Staff’s position?

A. No, I do not. The regulatory recovery mechanisms that New York State provides are not distinctive among the U.S. regulatory jurisdictions. As set forth in Exhibit___(YS-19), which was prepared under my supervision and direction, many of the mechanisms put in place by the Commission are currently in use in other jurisdictions. Accordingly, these mechanisms do not compensate for the low ROEs consistently granted by the Commission.

Q. Can investors readily measure the degree to which a regulatory regime fairly rewards shareholders?

A. In New York, yes. The Commission has a clear and long-standing policy of setting returns relative to the historic tangible book value of the investors' shares. Information about returns on share book values for publicly-traded United States companies is readily available to investors from public sources as a basis for comparison.

Q. How does Orange and Rockland compare to this universe of alternative investments?

A. Orange and Rockland does not fare well in the comparison. When looking at the five-year historical average return on book equity, the Company had a return that would have placed it near the bottom third of S&P companies with meaningful available data. The return for the average S&P company was 21.0%. The comparable return on book equity for Orange and Rockland was 9.0%.

Q. Have you prepared an exhibit to show this?

A. Yes, please refer to Exhibit___(YS-20), which was prepared under my supervision and direction.

Q. Are companies typically valued by investors at their book value?

A. No, they are valued by investors based on their future business prospects. Exhibit___(YS-21), which was prepared under my supervision and direction, shows the five-year average market to book ratios for those S&P companies with positive book equity. CEI's market to book ratio is in the bottom 17% of companies for this important measure of investor perceptions and expectations

Q. How would an investor assess the second factor: the likelihood of a utility actually earning the headline equity return?

A. The investor would analyze the adjustments made to actual costs that are allowed to be recovered, imputed productivity that may or may not be achieved, and any other revenue or expense adjustments. To the extent that such adjustments are made to real costs, the headline rate of return is unlikely to be achieved.

Q. How would an investor assess the third factor: the symmetry of potential returns?

A. There is ample opportunity through a system where potential negative revenue adjustments are far larger than potential positive incentives, as well as one-way true-ups of costs--burdens which have been imposed in New York rate decisions--to realize significantly lower returns than the headline authorized return. All of these aspects of New York rate orders produce asymmetry in expected returns, which a rational potential equity investor would judge as ultimately reducing his or her expected return. Little evidence exists that these burdens are common in other jurisdictions in the country, where the peers that are the basis for the Commission's DCF and CAPM results operate.

Q. How would an investor assess the fourth factor: the restrictions the regulator places on the scope of the business?

A. The adverse impact of the last factor is less quantifiable because it consists of opportunities foreclosed to the Company and thus to the investor. Restrictions on investments in generation in New York, and the punitive indirect restrictions on affiliate company capitalization, reduce the value of the Company to its owners, albeit in ways that are difficult to quantify explicitly.

Q. Have the shortcomings in the treatment of the Company been reflected in equity analysts' views of the CEI?

A. Yes. As of December 21, 2020, CEI ranked as 500 of the 505 companies in the S&P 500 in terms of analyst buy/sell rankings (see Exhibit___(YS-22), which was prepared under my superivision and direction).

IV. CONCLUSION

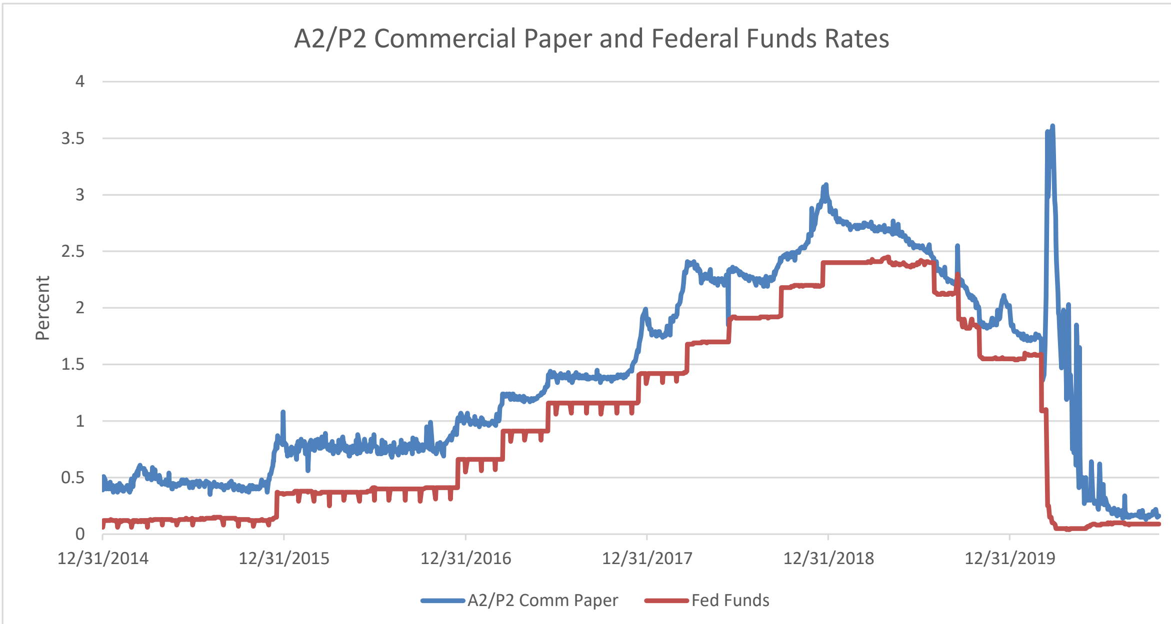
Q. Please summarize your testimony regarding the financial challenges facing the Company.

A. My testimony concerns the financial challenges and the need to maintain access to financial markets at reasonable cost. Both equity and debt investors perceive that the New York regulatory environment is a difficult one in which to operate. Such a perception, if it continues, will make the financing of needed expenditures more expensive in normal times and less certain in times of financial crises.

To avoid such an outcome, and to re-establish debt and equity investors' trust in the fairness of New York regulation, a fair and equitable rate of return, competitive with those available elsewhere in the market, and a reasonable chance to actually earn that return, are needed. And to achieve such, the Commission should grant the rate of return and capital structure requested by the Company.

Q. Does that conclude your direct testimony?

A. Yes, it does.



Source: Bloomberg L.P.

BARCLAYS

Interest Rates Research

Joseph Abate
+1 212 412 7459
joseph.abate@barclays.com
BCI, US

Money Markets Monthly Update

May 2020

PLEASE SEE ANALYST CERTIFICATIONS AND IMPORTANT DISCLOSURES STARTING AFTER PAGE 65.

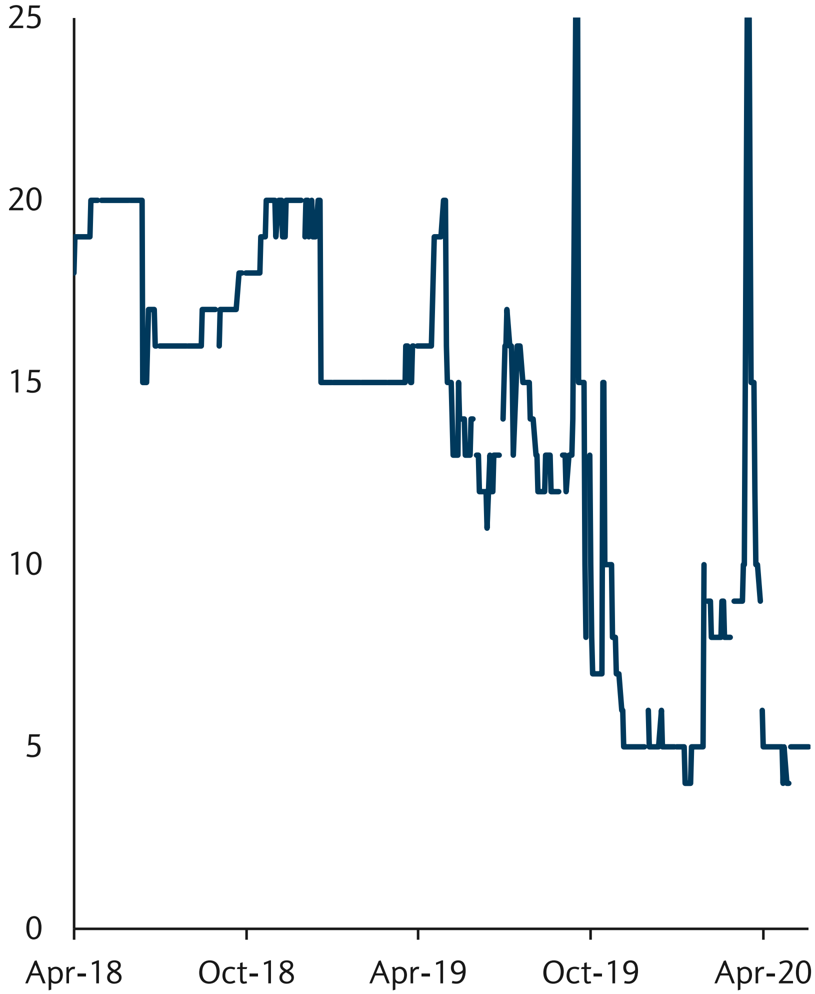
Summary

- Markets on the mend:
  - Fed funds is trading near the bottom of its target
  - Repo is likely range bound between 0 and 10bp.
  - CP rates are lower along with LOIS
  - Market liquidity has improved
  - How big will the Fed's balance sheet get?
- Negative rates in the US: maybe never
- Trillion dollar bill issuance
- Libor transition update
  - Survey results
  - Legacy Libor legislative solution

On the mend

Fed funds is near the bottom of the target band…

Fed funds less lower band (bp)



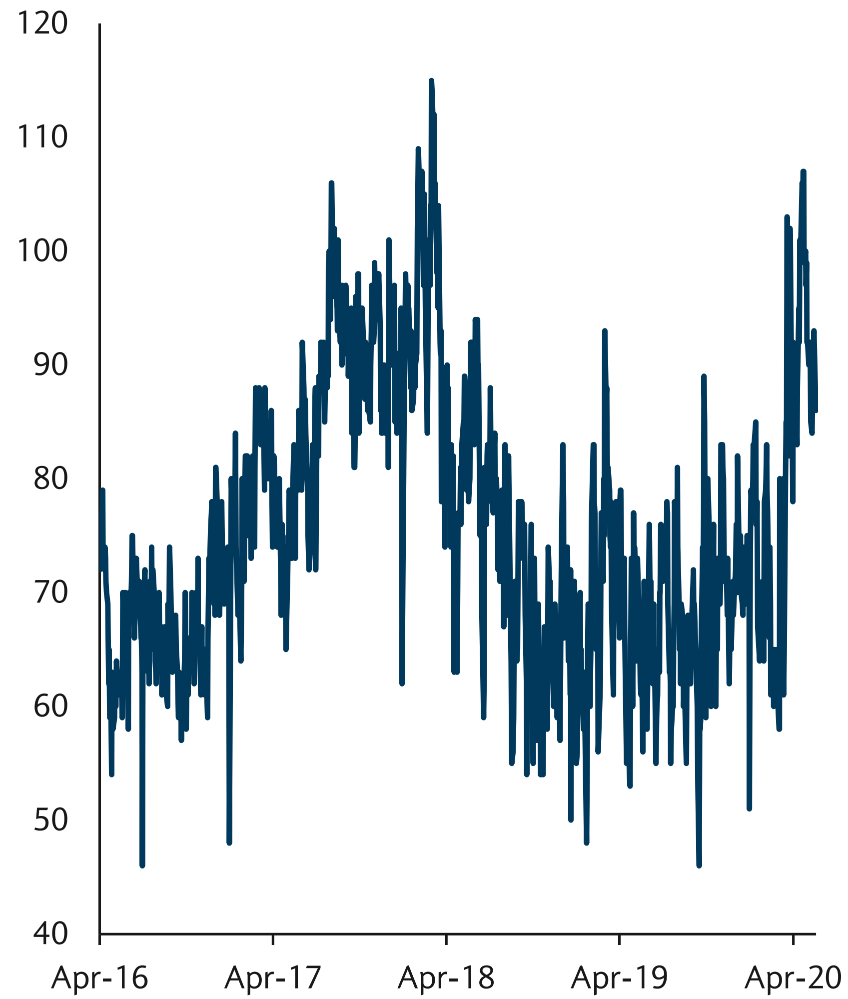
Note: We have clipped the y axis to show the Fed's target band. Month-ends excluded. Source: Federal Reserve, Barclays Research

- The funds rate is 5bp over the bottom of the target band
  - It first moved to this level last October
- The market expects the funds rate to hold near zero for the next few years

…but volumes are rising

- Abundant bank reserves – exceeding the QE peak – have not dampened trading in fed funds
  - There is little interbank trading in this market
    - Instead, activity is driven by trading between banks and the FHLBs

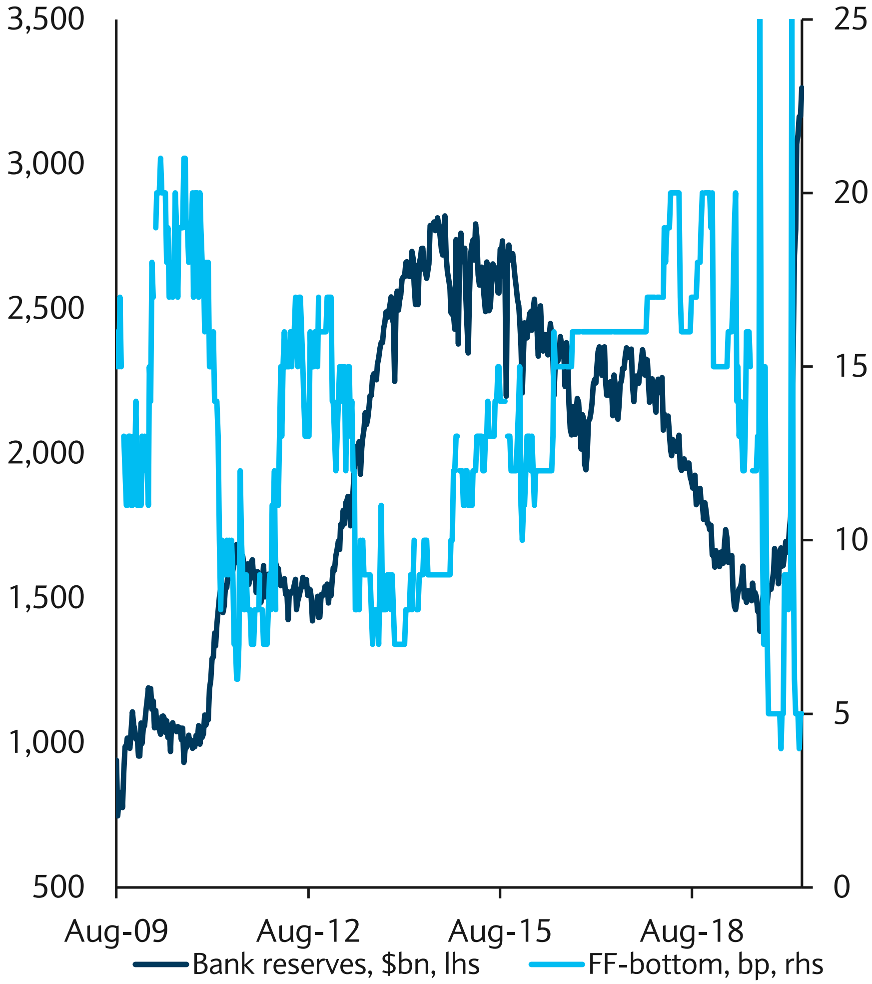
Fed fund volumes ($bn)



Source: Federal Reserve, Barclays Research

Expanding bank reserves will push the funds rate lower

FF-lower band, bank reserves ($bn, bp)



- We expect bank reserves to grow rapidly once the Fed's credit programs are launched
  - With reserve balances potentially exceeding $6trn by summer
- *In the past, high levels of reserves have pushed the funds rate toward the bottom of its target band*

Note: We have clipped the second y axis to show the Fed's target band. Month-ends excluded.
Source: Federal Reserve, Barclays Research

Will the Fed raise the RRP and IOER rates?

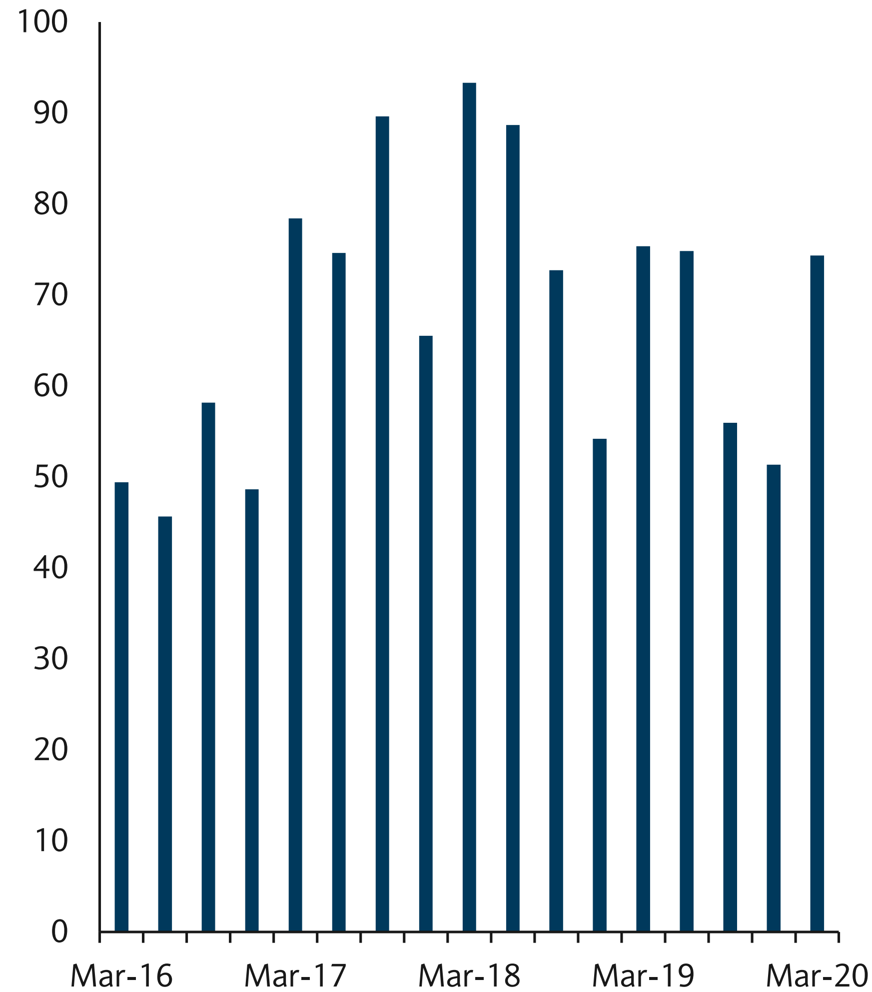
- Despite the low level of the funds rate within its target bands, the Fed did not raise either the RRP or IOER rates in April
  - The April FOMC minutes suggest what the Fed would need to see before raising these rates and attempting to guide the funds rate away from the range floor
    - There would need to be dislocations in short-term rate markets
    - And trading volumes in the funds market would have to decline

- *Although these conditions were not in place last month, they may crop up later this year as rising excess reserves push the funds rate closer to zero*

FHLBs now account for most of the lending in fed funds…

- The FHLBs account for most of the lending in the fed funds market
- Although they don’t earn IOER, they can leave their cash at the Fed in an unremunerated account
    - Or in the RRP program also at 0%
- As the funds rate approaches zero, they may simply decide to leave their cash at the Fed
    - And stop selling cash into the funds market causing volumes to plunge

FHLB fed funds sold ($bn)

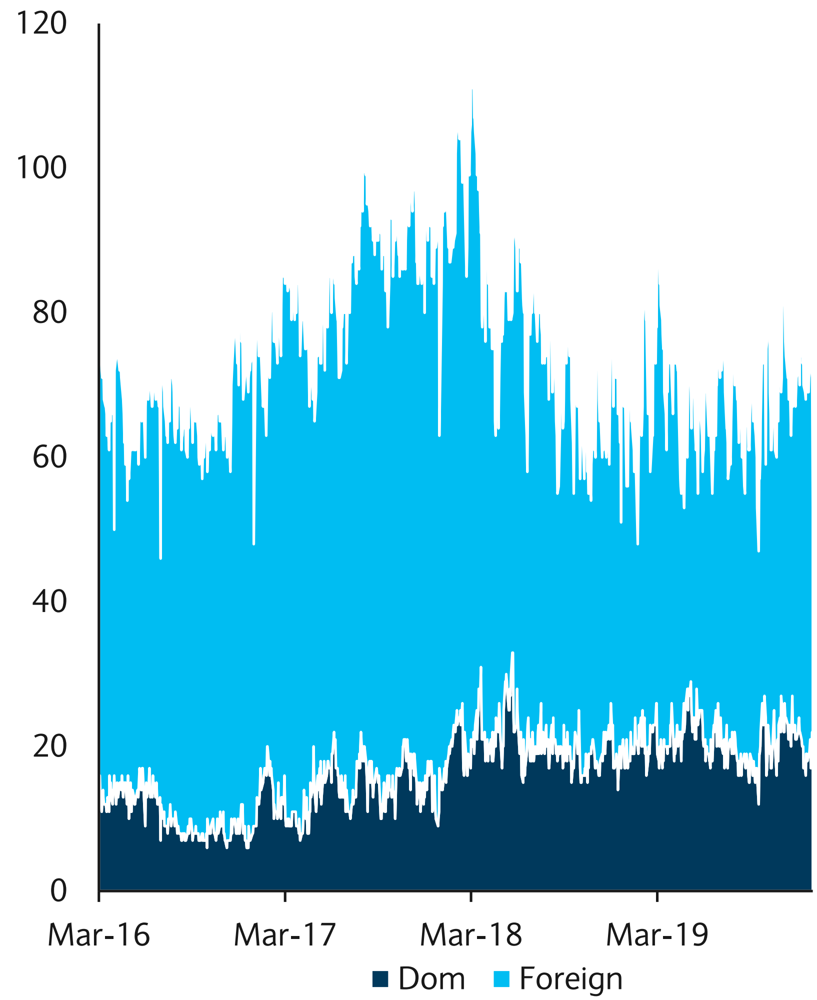


Source: Federal Reserve, Barclays Research

Foreign bank trading in fed funds is rate sensitive

- Foreign banks also trade heavily in the fed funds market
- Their activity is sensitive to where the spread between fed funds and IOER is trading
  - As bank reserves fell and this spread narrowed, their fed funds trading fell

Bank trading in fed funds ($bn)

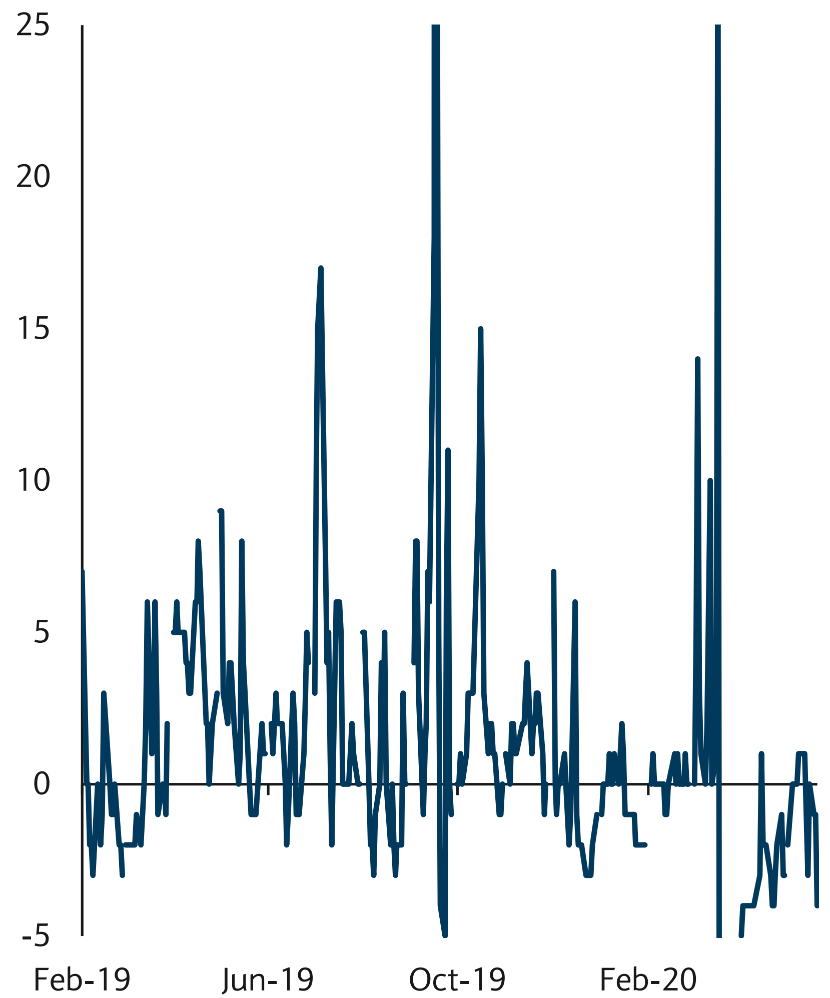


Note: These data are released with a lag, figures are through December 2019 only. Source: Federal Reserve, Barclays Research

Repo rates have edged lower

- As reserve balances have expanded, overnight SOFR has moved from above fed funds to a few basis points below it
- Tri-party rates are floored at 0% given money fund access to the RRP program

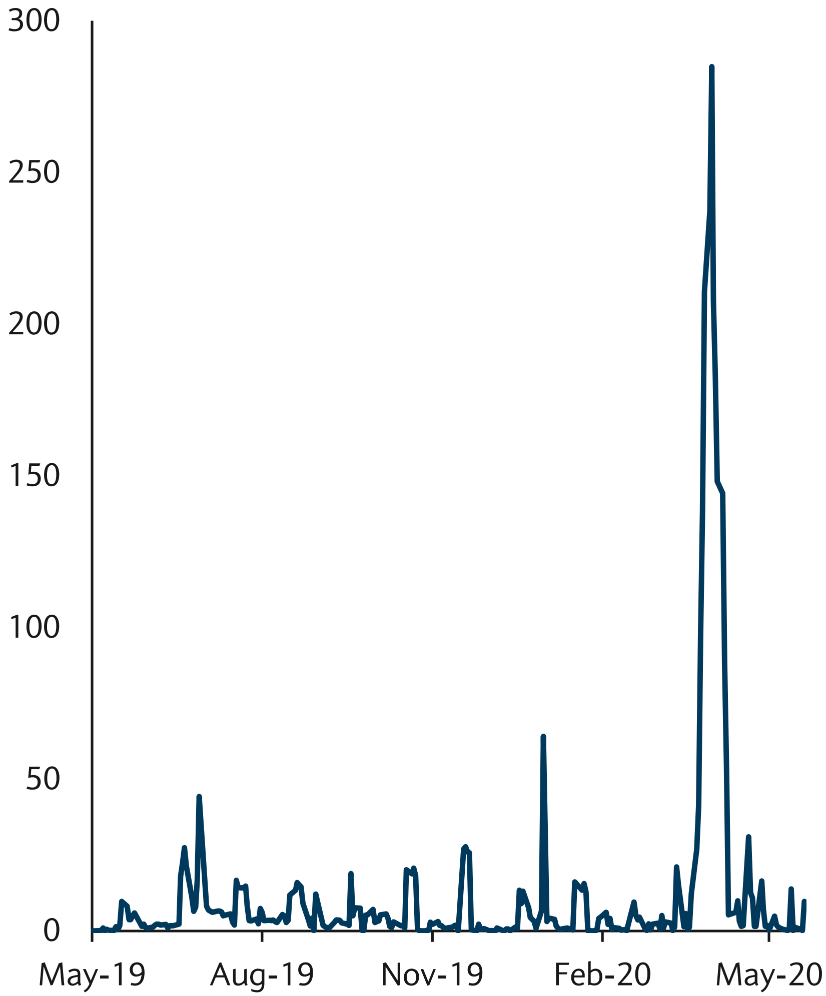
SOFR less fed funds (bp)



Note: Month-ends excluded. Y-axis capped at 25bp. Source: Federal Reserve, Barclays Research

RRP balances are light despite low repo rates…

RRP balances ($bn)

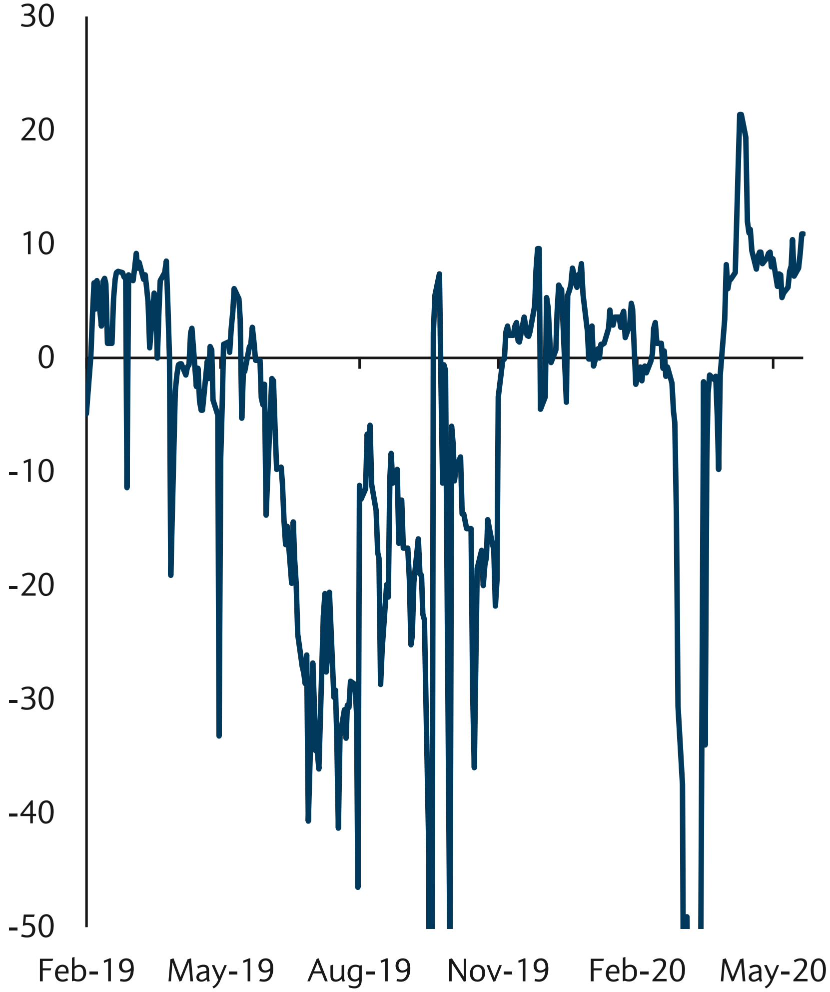


- The RRP program acts as a floor for market rates
- Despite low repo rates, money funds have been able to place their cash outside the Fed's RRP
  - In April, the FOMC discussed increasing the counterparty cap from $30bn
    - This appears unnecessary for now

Source: Federal Reserve, Barclays Research

…as bills are more attractive

3m bill less overnight GC (bp)



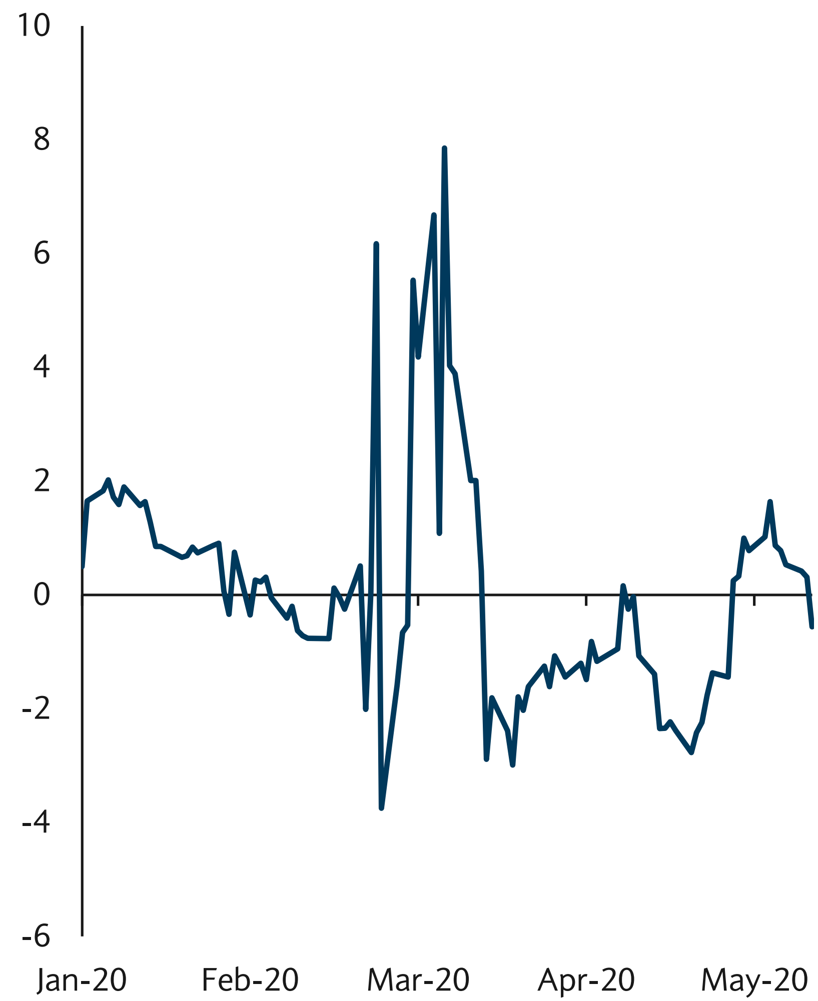
Note: Tri-party GC rate. The y-axis is clipped at -50bp for clarity. Source: Federal Reserve, Barclays Research

- Heavy bill issuance has cheapened bills relative to other short-term interest rates
- In April, gov-only money funds increased their Treasury allocations from 34% to 46.5%
  - And lowered Treasury repo holdings from 26.2% to 17.8%

Term repo rates have also fallen

- Term repo rates are drifting lower
  - After a late April pick up
- The term repo curve is flat out to 6m at 5bp
- The June quarter-end is expected to put only mild pressure on repo rates
  - And year-end is expected to be mild for now – although this can quickly change as firms reassess balance sheet availability

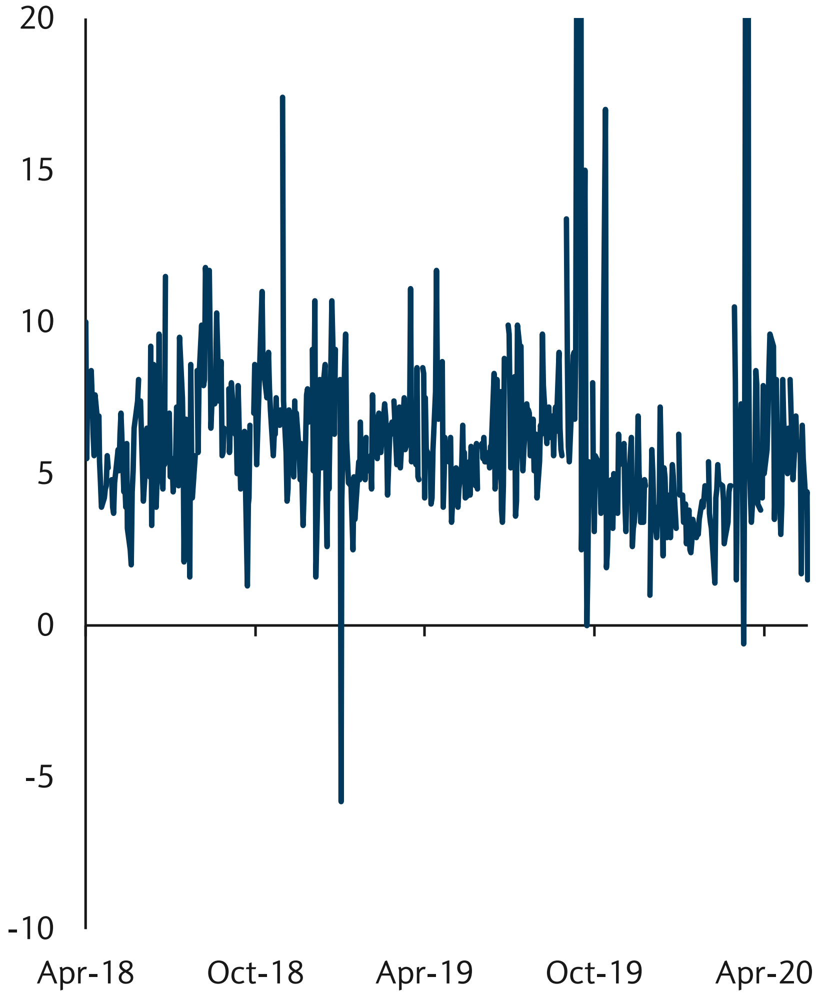
3m term SOFR-OIS (bp)



Source: Federal Reserve, Barclays Research

Repo rates have a soft ceiling…

GCF-SOFR (bp)

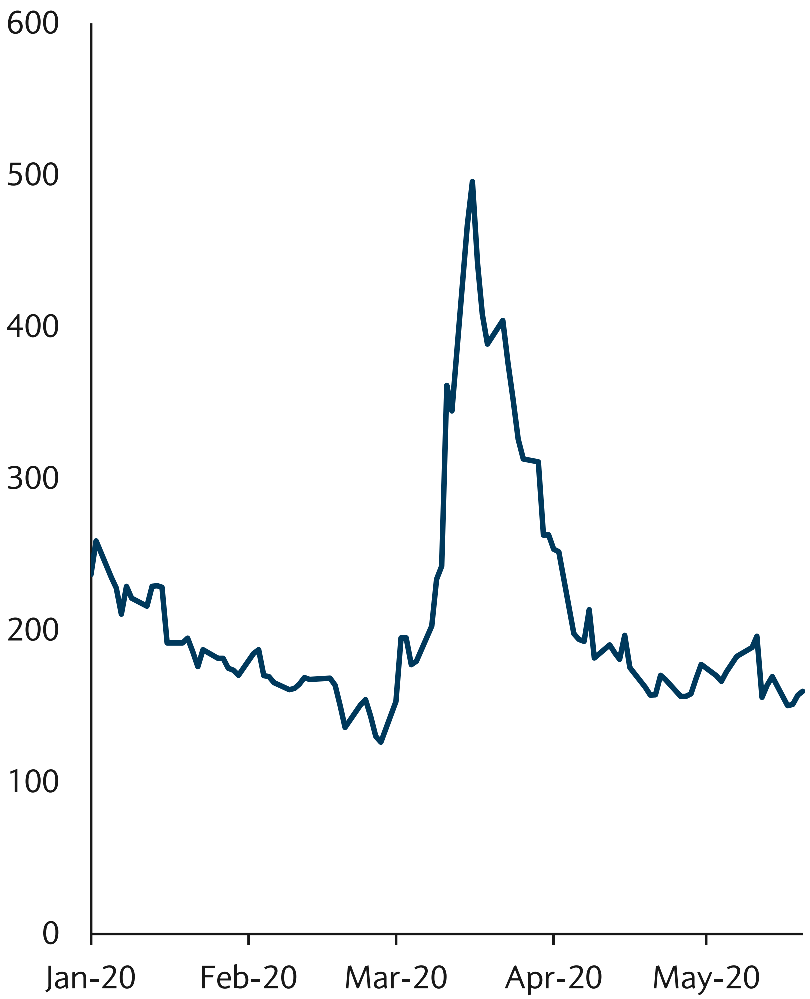


- We think term and overnight repo rates have a soft ceiling at around 10bp
  - Created by the Fed's daily open market operations (OMOs)
- Dealers can get effectively unlimited funding from the Fed
- But how much of this low cost funding is passed onto clients depends on dealer balance sheet availability
  - *GCF-SOFR has narrowed to about 2bp recently*

Source: Federal Reserve, Barclays Research

…created by the Fed's OMOs

OMO balances ($bn)



Source: Federal Reserve, Barclays Research

- Demand for the Fed's OMOs has cooled as the level of bank reserves (and overall liquidity) has increased
  - And market rates are below 10bp

Will the Fed raise the OMO rate?

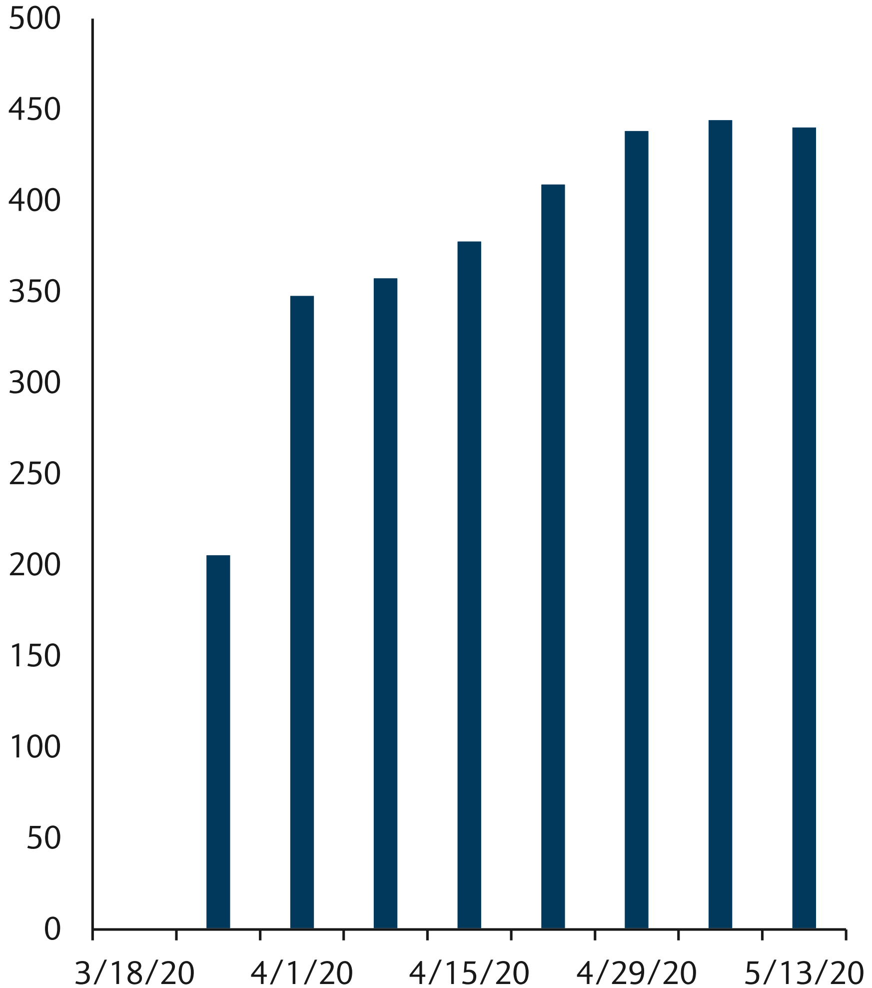
- In April, the FOMC discussed increasing the rate on the OMOs "relative to IOER"
  - The intention is to make the program more of a backstop for the repo market

- *But does this mean the Fed will take the OMO rate above IOER?*

- Our sense is that the Fed will leave the rate at 10bp for now
  - It is not clear what the Fed would accomplish by pushing the rate above IOER
    - The Fed has already reduced the frequency of its term operations
    - And balances are falling as market rates are cheaper than the 10bp offered in the daily OMOs

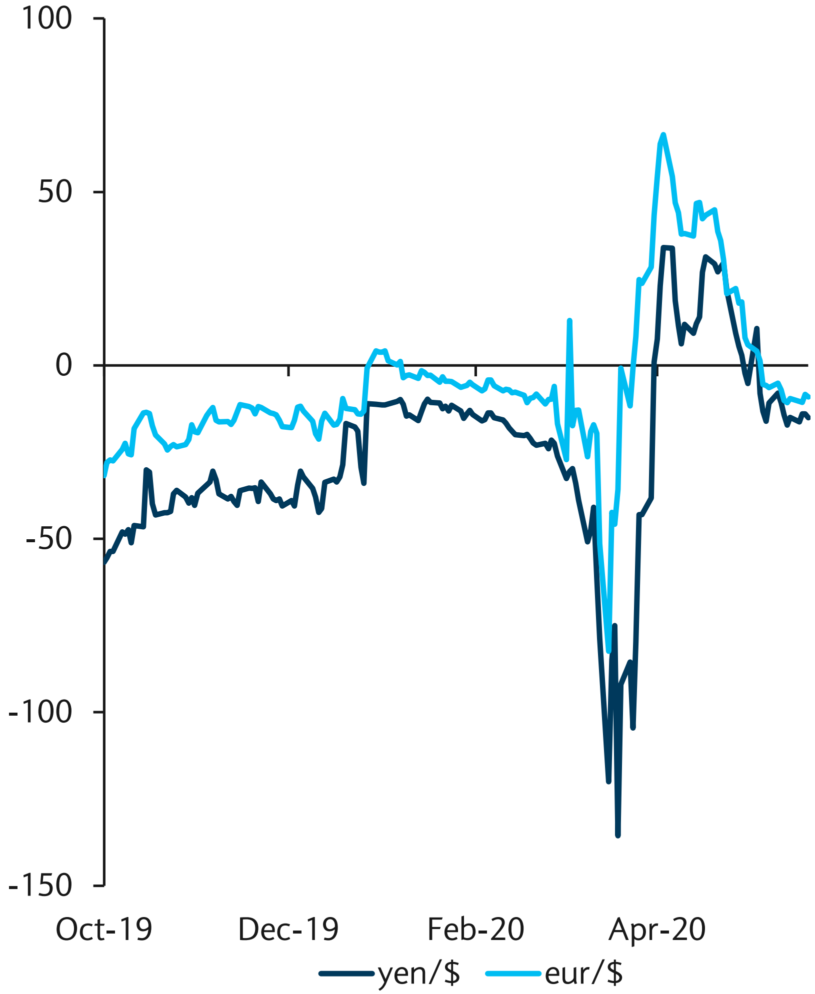
Central bank swap lines have loosened offshore funding

Balances ($bn)



Source: Federal Reserve, Barclays Research

3m cross-currency bases (bn)



Source: Bloomberg, Barclays Research

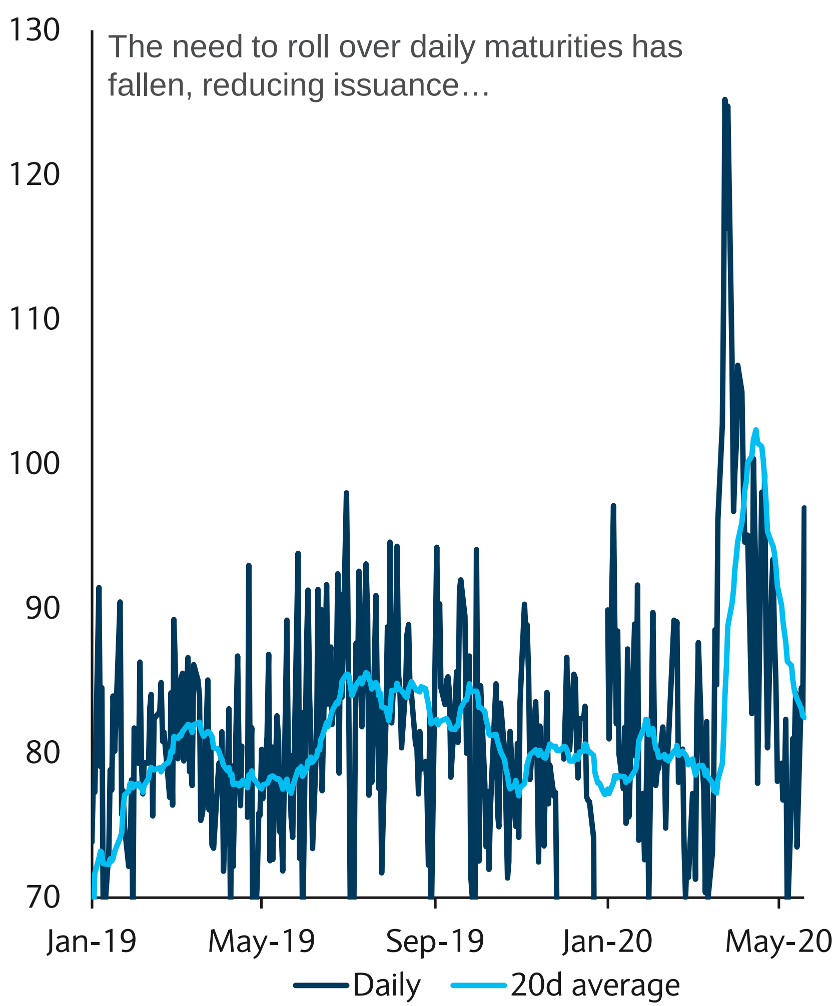
Mid-June spike?

- The 3m central bank dollar swaps start to roll off in mid-June
  - Roughly $225bn – or nearly half – of the outstanding balances will mature between June 11 and 18
- *But does this mean cross-currency spreads will widen?*[1/]
- Our sense is that spreads will not widen
  - The availability of bank liquidity has improved significantly since mid-March as bank reserves have increased
  - Counterparty risk fears have abated
  - And unsecured dollar funding markets (such as CP and wholesale CDs) have improved

1/ A recent Federal Reserve post concludes that the swap lines "were not associated with significant improvements in market functioning as initially term liquidity obtained by banks was only partially channeled beyond the banking system". See "Have the Fed Swap Lines Reduced Dollar Funding Strains during the COVID-19 Outbreak?", N. Cetorelli, L. Goldberg, and F. Ravazzolo, Federal Reserve Bank of New York, May 22, 2020.

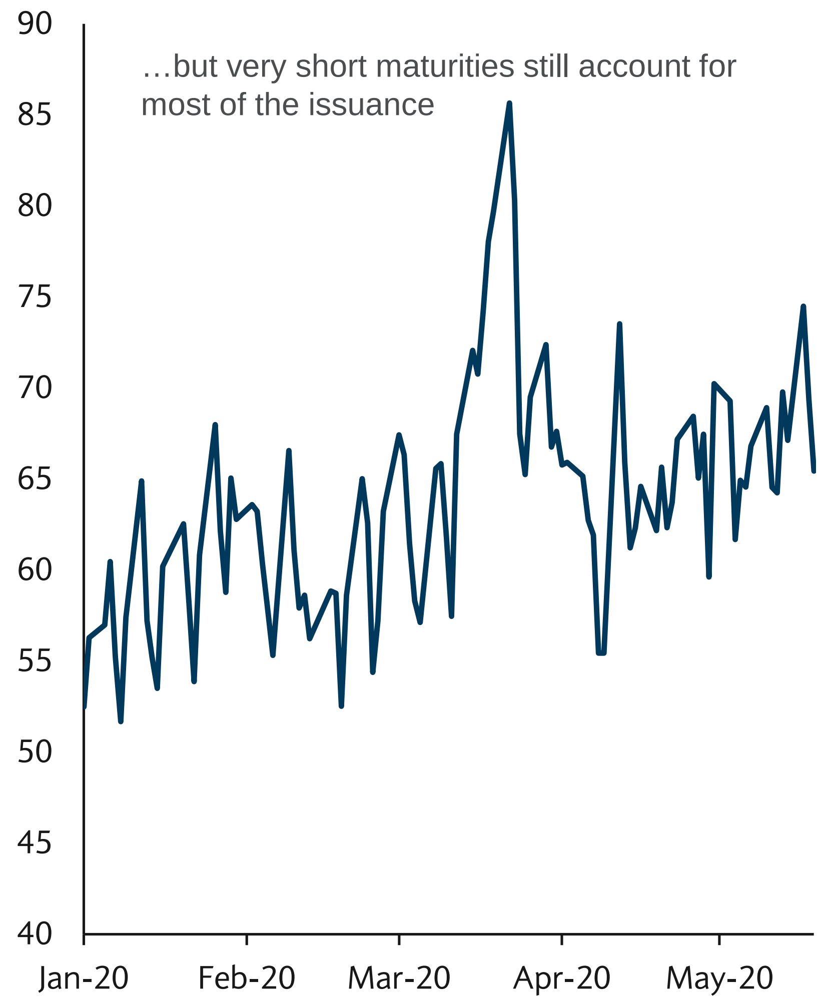
CP markets are slowly healing…

Daily issuance ($bn)



Source: Federal Reserve, Barclays Research

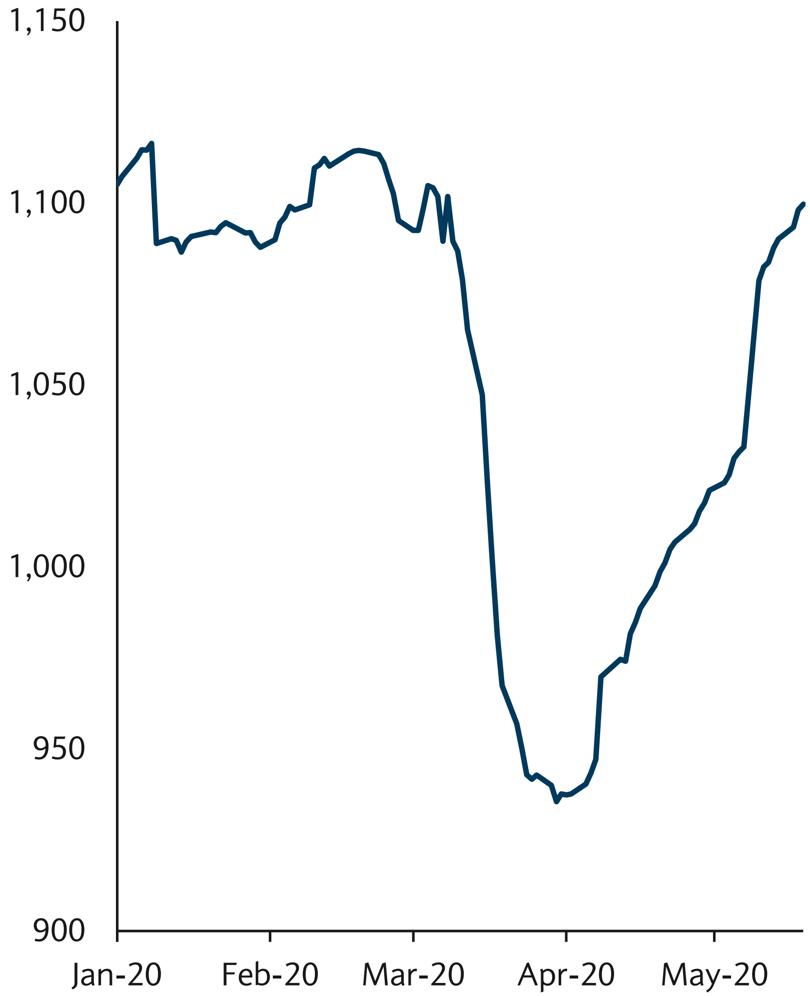
1-4d share (% total)



Source: Federal Reserve, Barclays Research

…and demand for CP is rising

Prime fund balances ($bn)

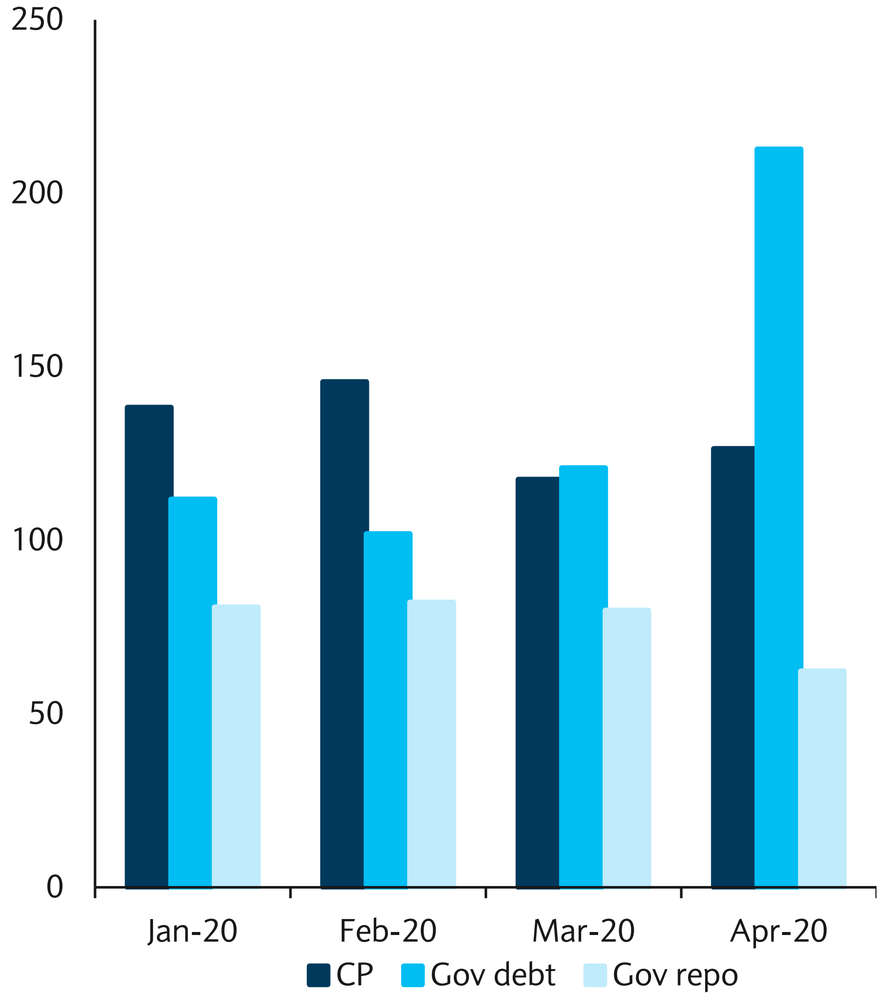


- Demand for CP and wholesale bank deposits is slowly rising as prime fund balances recover

Source: Crane's Data, Barclays Research

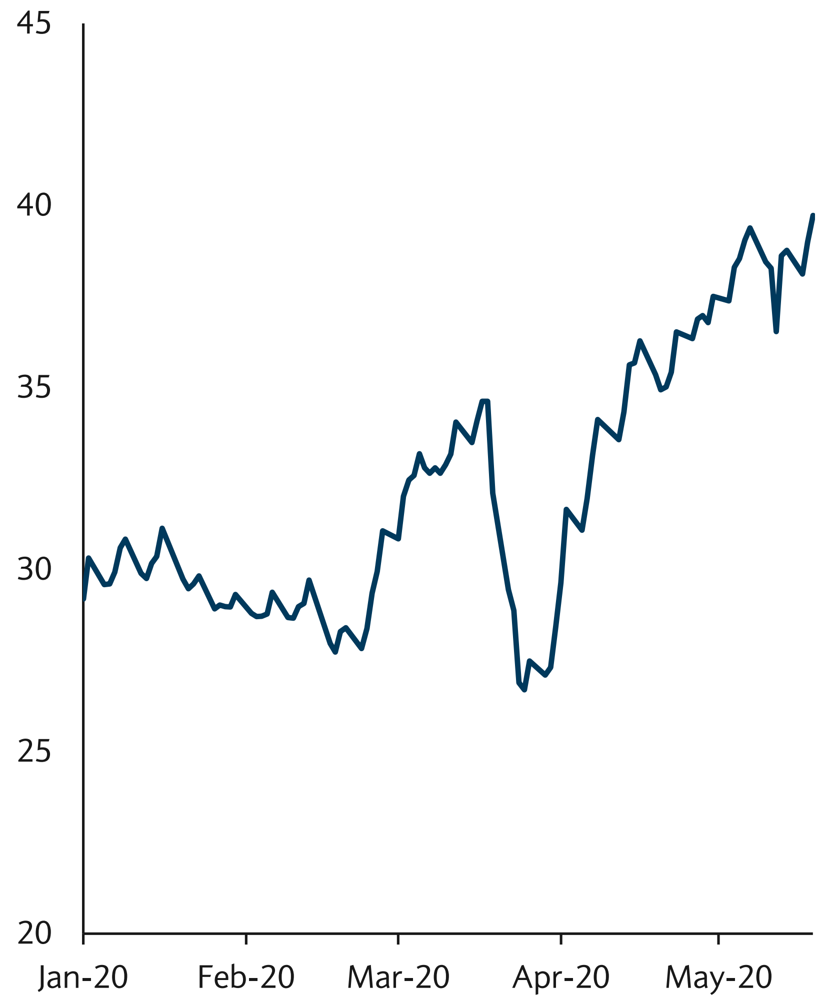
But prime funds are cautious about buying CP

Prime fund holdings ($bn)



Note: Institutional prime funds. Gov-holdings are Treasuries and Agencies. Source: Crane's Data, Barclays Research

Prime fund WAMs (d)

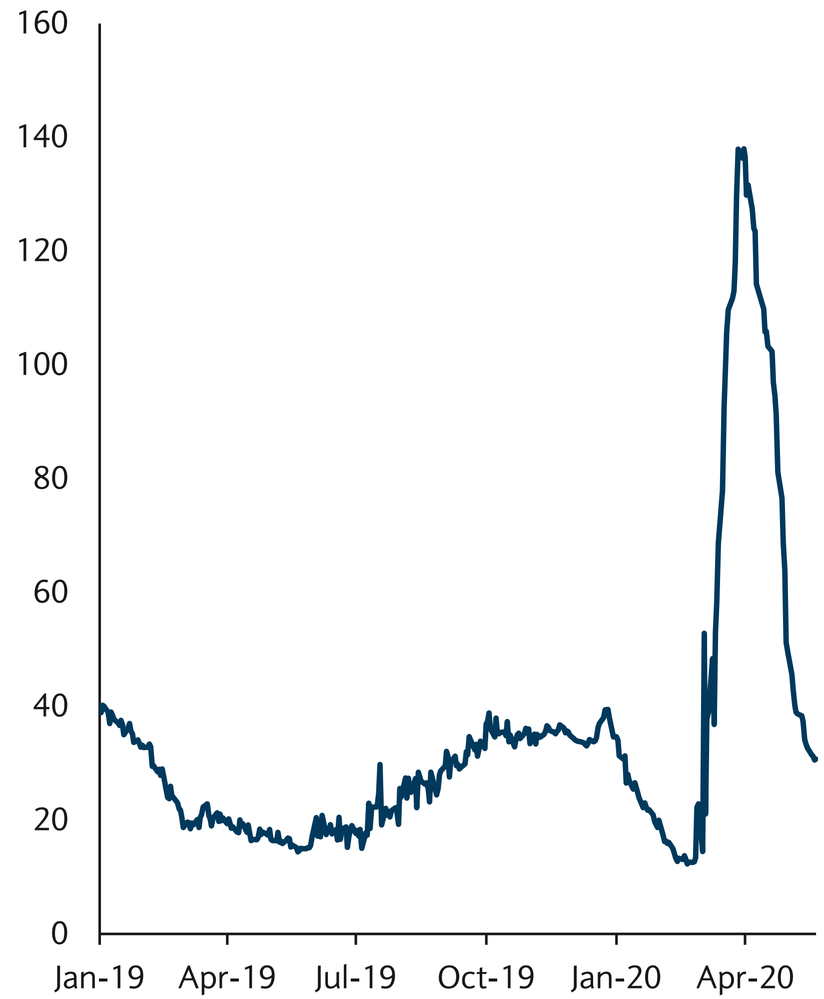


Note: Institutional prime funds. Source: Crane's Data, Barclays Research

Unsecured funding rates have come down

- LOIS has fallen sharply in the last month
  - But the pace of decline is starting to slow
- Funding pressure has been more severe for non-financial companies' businesses that have been shut down or that are connected to commodity markets
- *We expect LOIS will hold at 25bp this summer*

LOIS (bp)

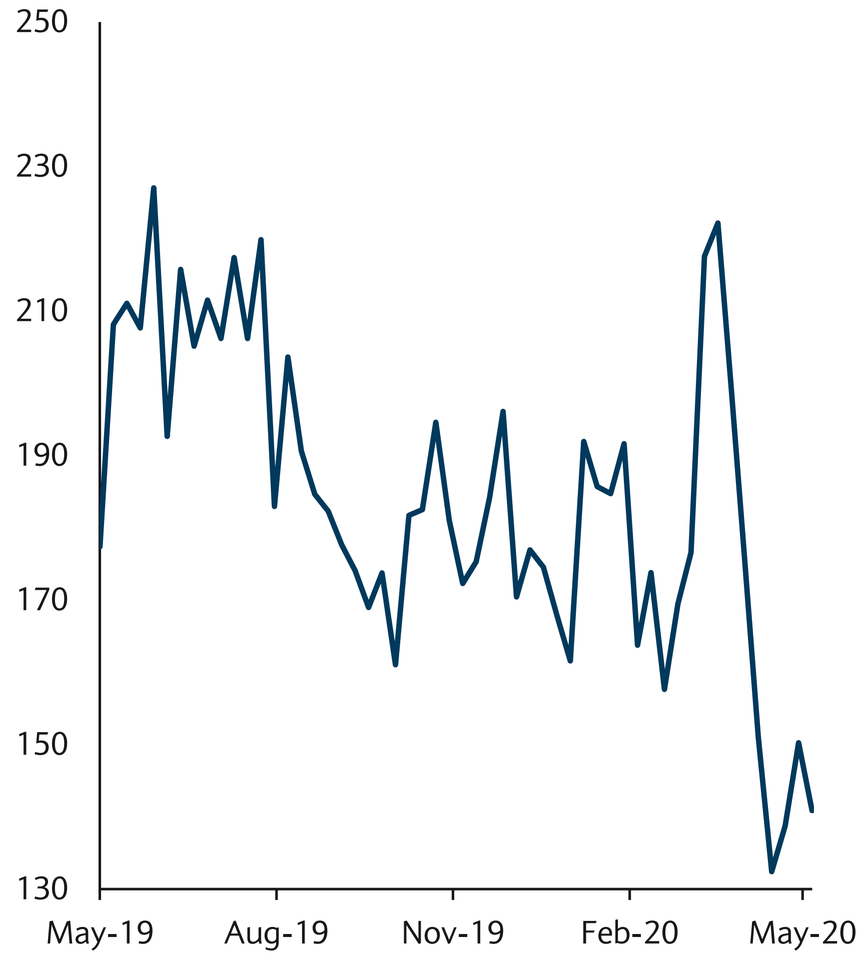


Source: Bloomberg, Barclays Research

Treasury market functioning has improved

- The Fed's asset purchases have improved Treasury market liquidity
  - Dealer Treasury stockpiles have fallen
    - And overnight and term secured funding rates have come down

Dealer coupon holdings ($bn)

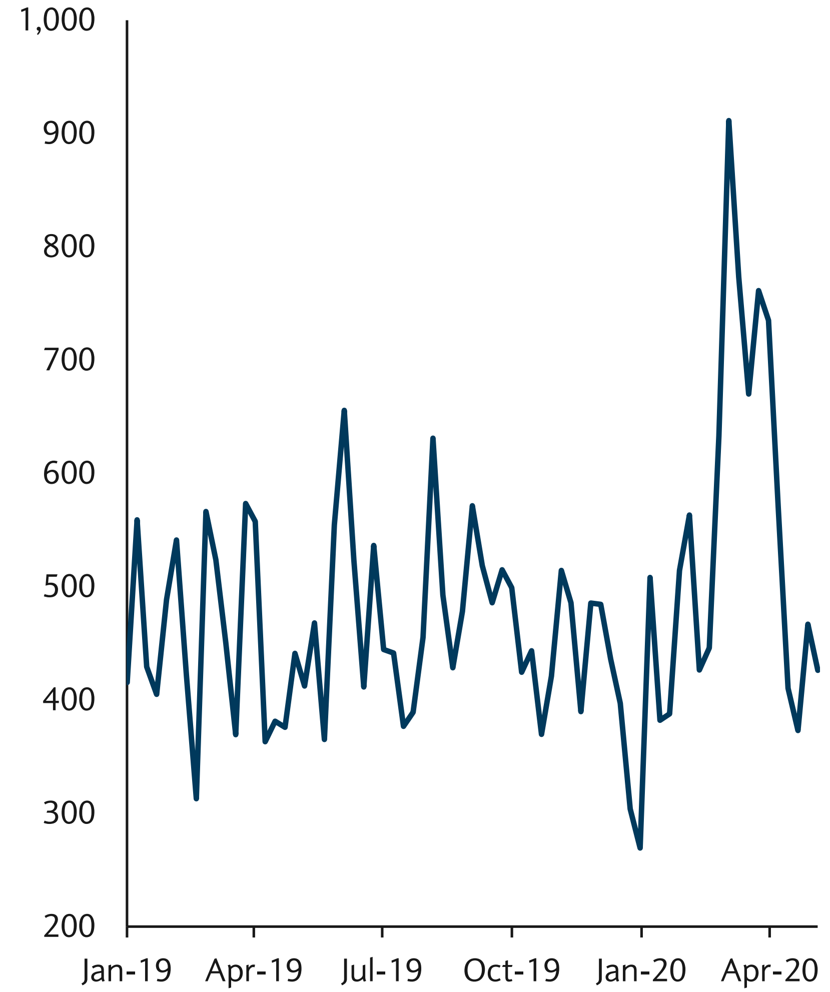


Source: Federal Reserve, Barclays Research

Daily Treasury transactions have slowed

- Daily Treasury transactions volumes have returned to pre-pandemic levels
  - But heavy bill issuance has boosted average daily trading volumes

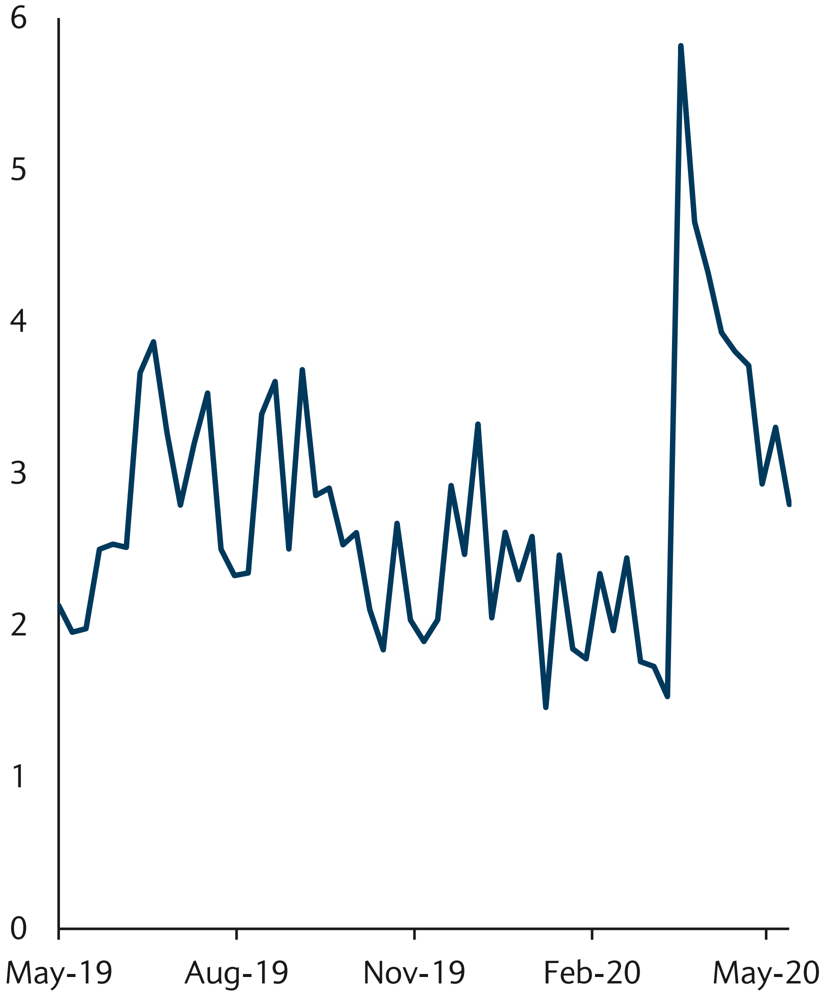
Treasury coupon transactions ($bn/d)



Source: Federal Reserve, Barclays Research

Treasury fails activity has declined

Fails (% daily volume)



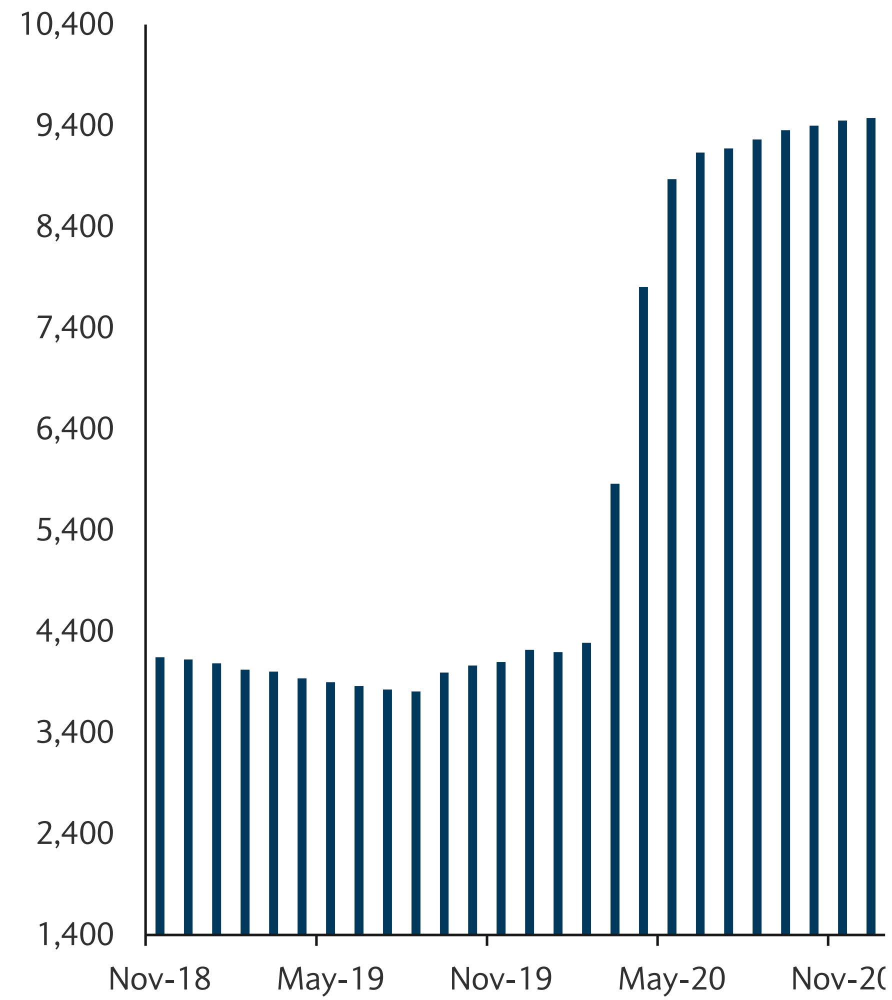
Source: Federal Reserve, Barclays Research

- Incomplete deliveries or fails jumped in March
  - But as market functioning has improved, fails volumes have declined

How big will the Fed's balance sheet get?

- It is difficult to predict how much demand the Fed will have for its credit programs
  - Our sense is that the liquidity programs – such as the PDCF and MMLF -- are close to their maximums[1/]
- If we assume that all the credit programs are maxed out, the Fed's balance sheet could reach or exceed $9trn by fall and $10trn by December 2021[2/]
  - *The Fed's balance sheet peaked at $4.5trn at the end of QE*

Federal Reserve assets ($bn)



1/ See Federal Reserve Liquidity Programs, May 13, 2020
2/ See The Fed's balance sheet: To infinity and beyond, May 1, 2020

Source: Federal Reserve, Barclays Research

Fed liquidity program (summary)

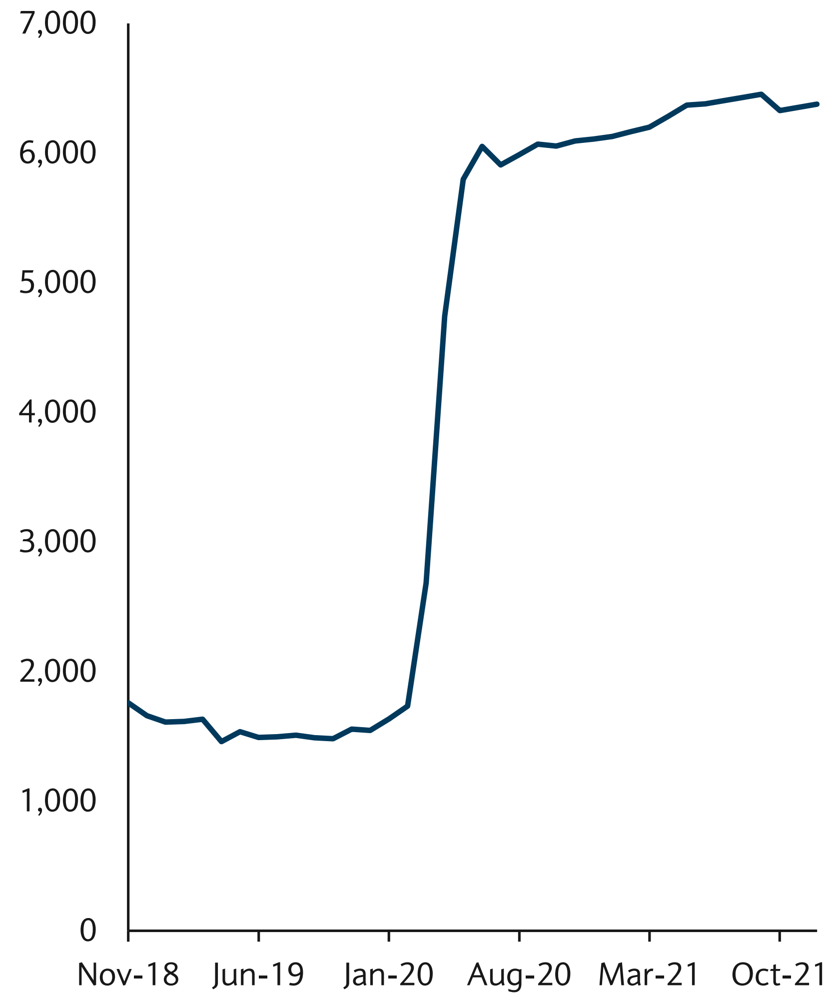
	Outs. ($bn)	Description
Discount window	19.5	Fed lends banks up to 3m money against a wide mix of invest. grade collateral
MMLF	36.4	Banks buy prime money fund assets, which they pledge to the Fed for funding
PDCF	7.5	Fed lends to primary dealers against a mix of collateral
CB swap lines	446.1	Foreign banks borrow in dollars from their local central bank
TALF[1/]	--	US companies can borrow from the Fed collateralized with newly issued ABS
Corporate credit facilities	1.8	Fed purchases corporate bonds and ETFs from issuers and the secondary market
Muni LF[1/]	--	Fed buys newly issued short-term municipal debt directly from issuers
Main Street facilities[1/]	--	Fed provides funding to banks so they can make loans to small businesses
PPPLF	45.1	Fed provides funding to banks collateralized by Paycheck Protection Plan loans
CPFF	4.3	Fed purchases commercial paper from issuers

1/ Not launched as of May 20, 2020, outstanding balances as of the same date. For more details, see Federal Reserve Liquidity Programs, May 13, 2020
Source: Federal Reserve, Barclays Research

How much bank reserves?

- If all the Fed's programs are maxed out, the level of bank reserves could exceed $6trn
  - As many of these programs have 4y or 5y maturities, the level of reserves is likely to be super-abundant for some time

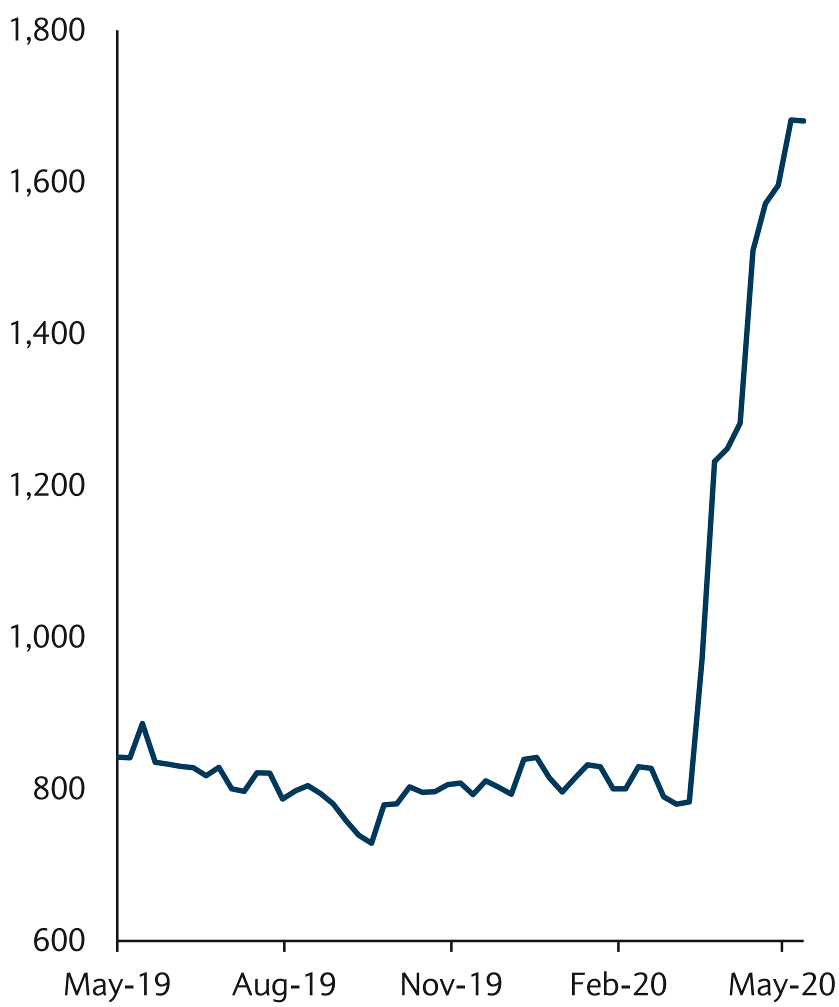
Bank reserves ($bn)



Source: Federal Reserve, Barclays Research

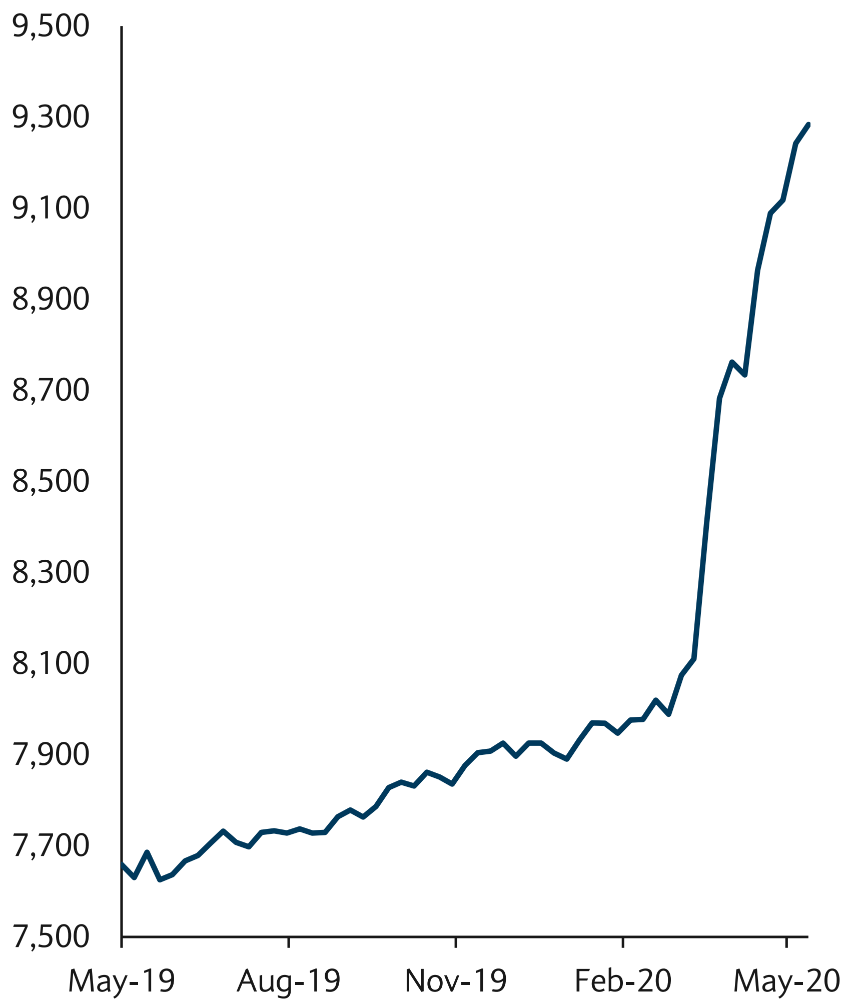
Most of the reserves will flow to large domestic banks

Large bank reserves ($bn)



Source: Federal Reserve, Barclays Research

Large bank deposits ($bn)



Source: Federal Reserve, Barclays Research

Negative rates

Fed policy and negative rates[1/]

- Fed Chair Powell noted recently that negative rate policy is “not an attractive monetary policy tool”.
  - And, that “for now it’s [negative rates] not something we are considering”

- This is consistent with Fed policy discussions across three different Fed chairs over the last 10y
  - While the Fed would never completely rule out using a policy instrument, our sense is that pushing the target rate below zero is a very low probability

- *But markets have started to price in some small chance of negative policy rates*
  - *That reflect a distribution of economic recovery paths including those in which the Fed’s current mix of tools are inadequate*

1/ See Less than zero, May 21, 2020.

2/ See *Fed Chair Powell: Significant downside risk to the outlook, but negative rates are not the answer*, May 13, 2020.

Can rates be taking below zero?

- As recently as 2016, there was some question about whether the Fed had the ability to lower IOER into negative territory
- But in an economy with a super-abundance of bank reserves, the RRP rate – or the effective interest rate floor – is more significant than IOER
  - And repo rates frequently trade below zero[1/]
- *So we see no legal reason why the Fed couldn't take the fed funds rate below zero*

1/ To be sure, repo rates for specific securities can trade below zero. General collateral rates – at least in the US – have traded above 0%.

Mechanics of negative rates

- There are three things the Fed would need to do in order to push the fed funds rate below zero:

1. Lower the RRP rate into negative territory
2. Reduce the remuneration rate on the GSE and foreign official institution balances held at the Fed
    - This is set at 0% – if this rate is not lowered, these institutions would leave their cash at the Fed
        - And trading in the fed funds market would dry up
3. Implement some form of reserve tiering in which a portion of bank reserves is exempt from the negative IOER rate
    - This would reduce the strain on banks from the large reserves balances they hold as a result of the Fed's balance sheet expansion

Implications of negative rates for money markets

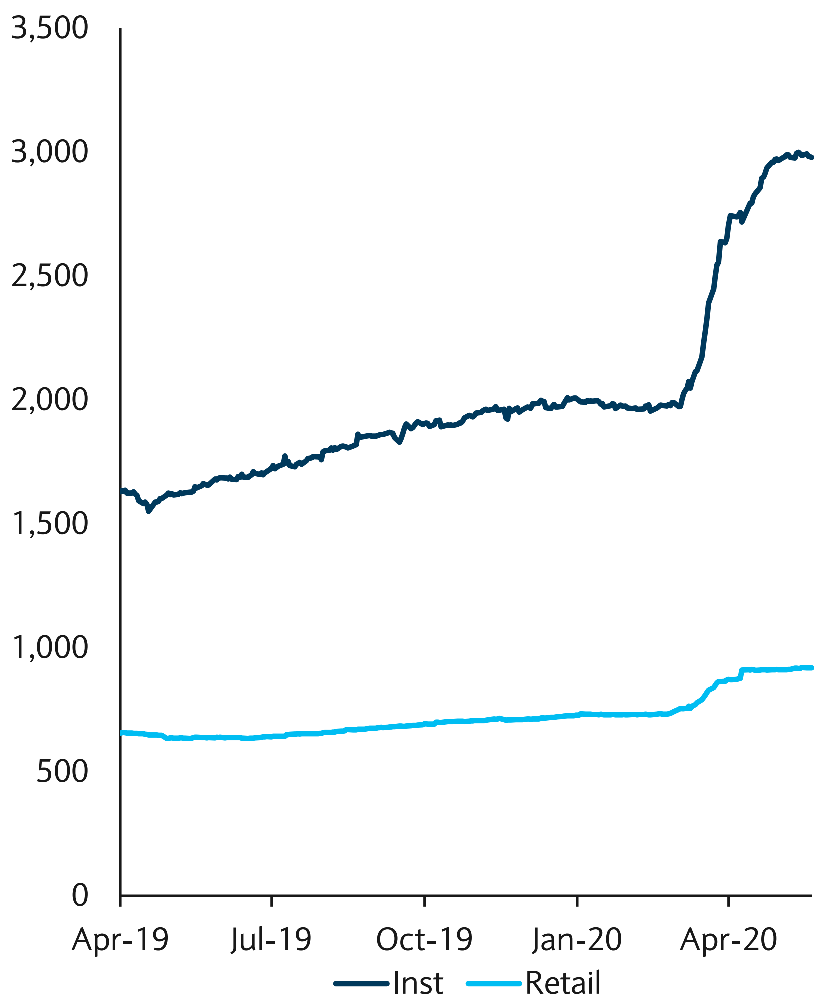
- Negative interest rates would have significant consequences for market activity and bank intermediation:

- Money market instruments are generally issued and sold at a discount and mature to par
    - Negative rates would turn this upside down – instruments would "de-accrete" to par
    - This would create significant problems for money funds
        - As money funds use the "accretion to par" and historical cost accounting to maintain stable NAVs

- *How much money would leave money funds and where would it all go?*
- *Can banks pass along negative deposit rates?*

Money funds have two options…

Gov-only fund balances ($bn)



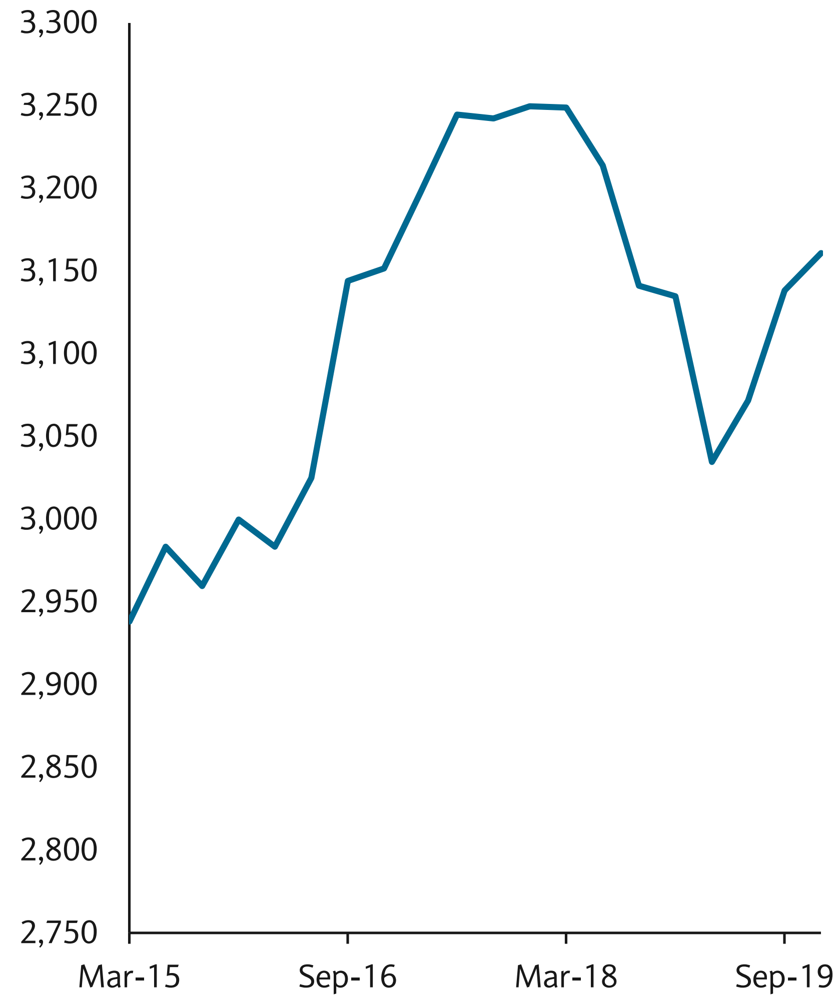
- Stable NAV funds (gov-only) have two ways to adapt to negative interest rates
  - Float their NAVs
  - Or cancel shares while maintaining the stable NAV
- Some money fund investors are legally required to keep their cash in stable NAV funds
- *Regardless, retail and institutional investors both dislike either approach and balances would flow out of money funds*

Source: Crane's Data, Barclays Research

…but most of their balances would go to banks

- The closest substitute for a stable NAV fund with same-day liquidity is a bank deposit
- But banks are already "over-deposited" from the Fed's balance sheet expansion
  - And already have over $3trn in non-interest bearing transactions accounts
- *There is a political question around the ability of banks to impose negative rates on retail and small business depositors*

Non-interest bearing deposits ($bn)



Source: FDIC, Barclays Research

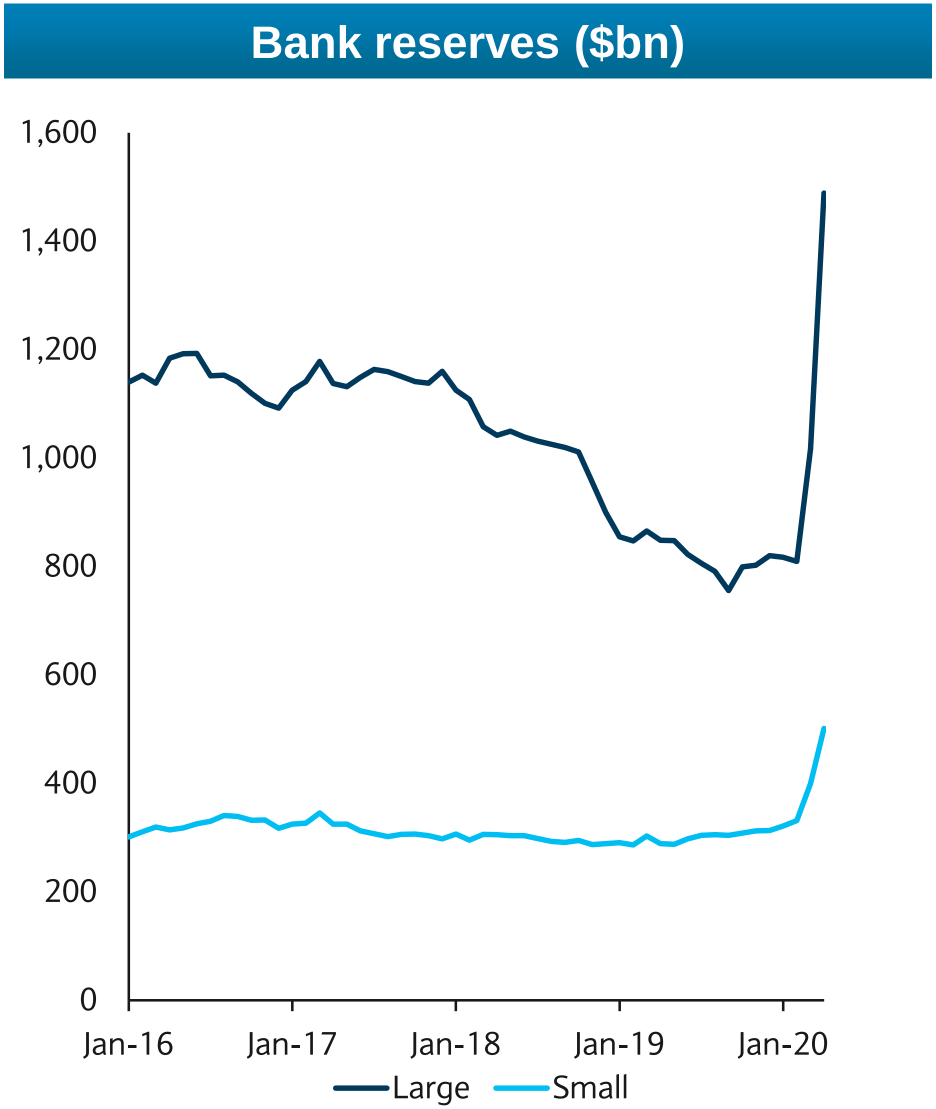
Reversal rate

- If banks are unable or unwilling to pass along negative interest rates to all their depositors and deposit inflows accelerate as money flows out of money market funds, what happens to their lending and asset growth?

- Reversal rate
  - It is possible for interest rates to be so low that banks are unable to operate normally and they pull back from lending
    - Policy becomes unintentionally tighter as a result

- The ECB adopted reserve tiering last October in order to minimize the drag on banks caused by negative interest rates

Reserve tiering would be complicated



Source: Federal Reserve, Barclays Research

- Bank reserves are concentrated at the largest US banks
- The Fed eliminated required reserves in March[1/]
  - The ECB determines the exclusion base as a multiple of the bank's reserves
    - The Fed would need to consider an alternative exclusion amount
- Tiering could create other market distortions

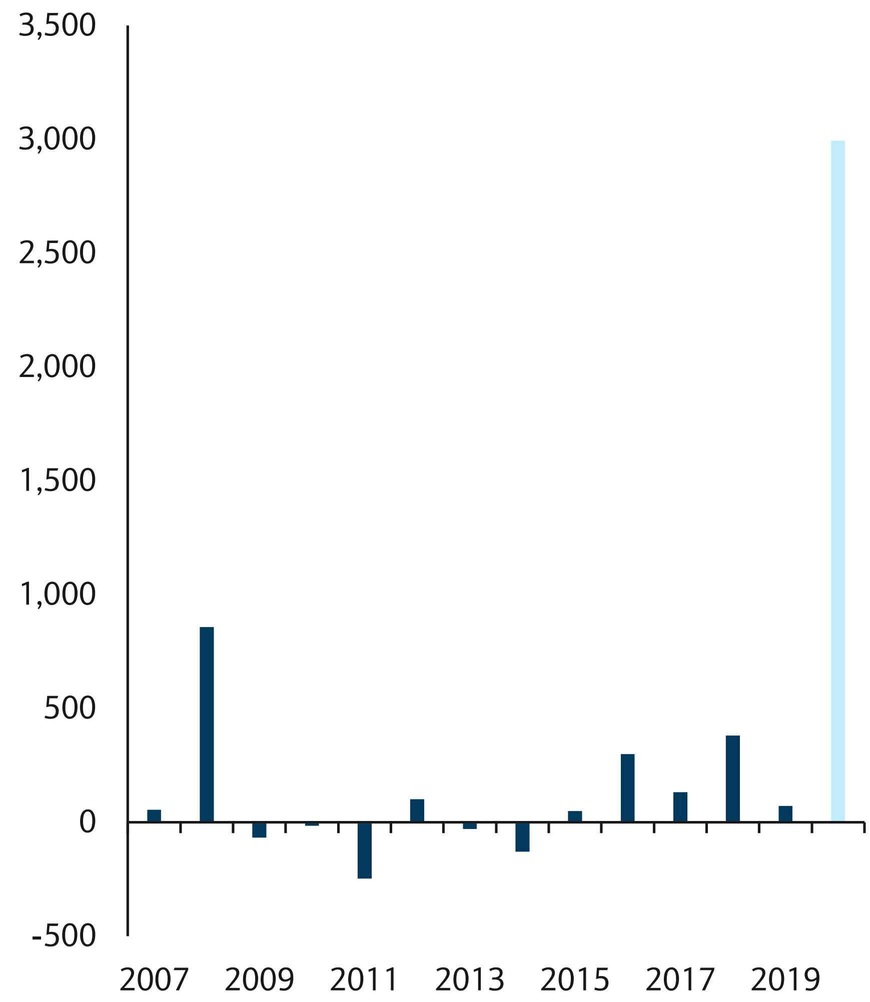
1/ Required reserves were less than $200bn; aggregate reserves are over $3trn

Bill issuance

Trillions of bills

- The Treasury expects a significant portion of the $3trn in COVID-19 spending approved as part of the CARES Act will occur in the current quarter
  - This requires the Treasury to issue $2.7trn in bills between April 1 and June 30
    - And about $3trn for CY 2020
- This is more than the Treasury has cumulatively issued over the past 12y

Annual bill issuance ($bn)

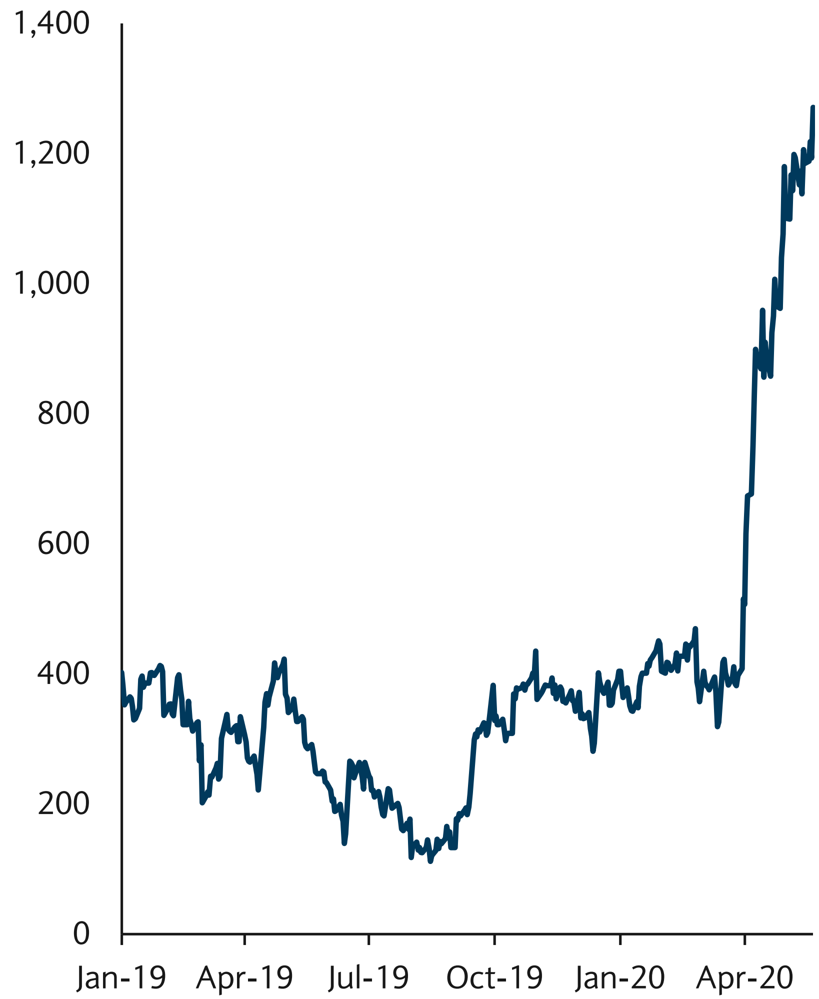


Source: US Treasury, Barclays Research

Treasury cash balance

- The Treasury is keeping an unusually large cash balance at the Fed
  - In anticipation of heavy outflows associated with CAREs[1/]
    - Along with heavy cash management bill maturities
      - As well as a precautionary buffer against market turbulence

Treasury cash balance ($bn)

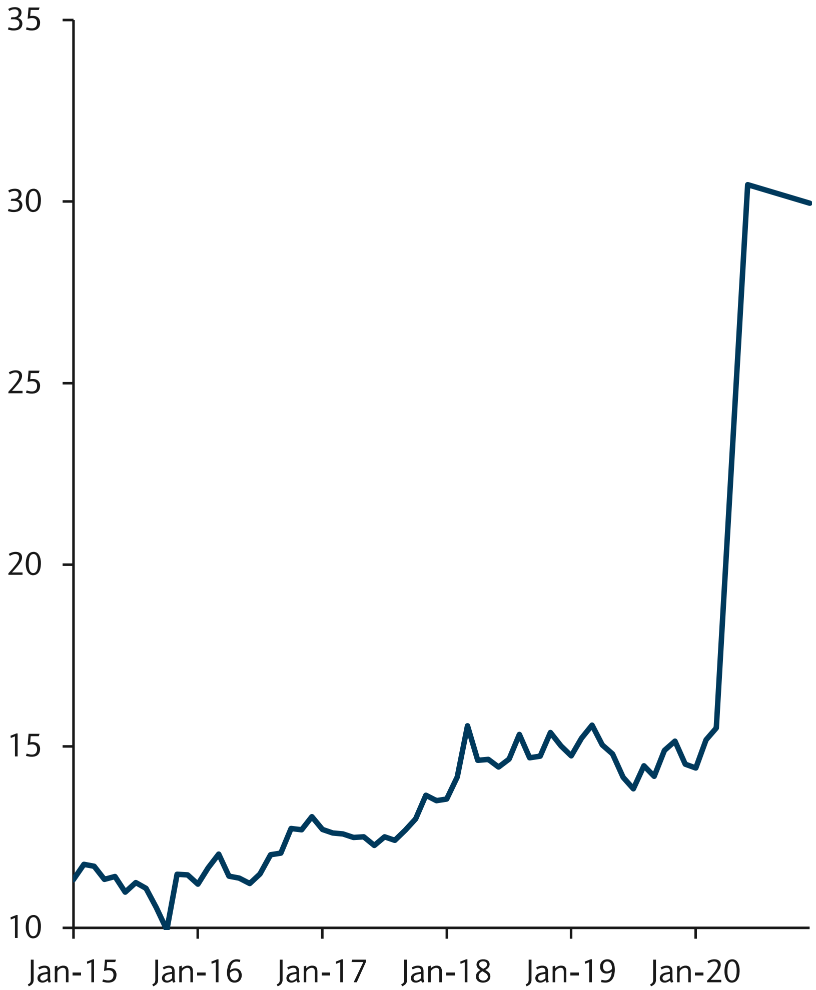


1/ The Treasury normally maintains a cash buffer at the Fed equal to 5d of anticipated outflows.

Source: US Treasury, Barclays Research

Bill issuance will double outstandings by June 30

Outstanding bills (% total debt)



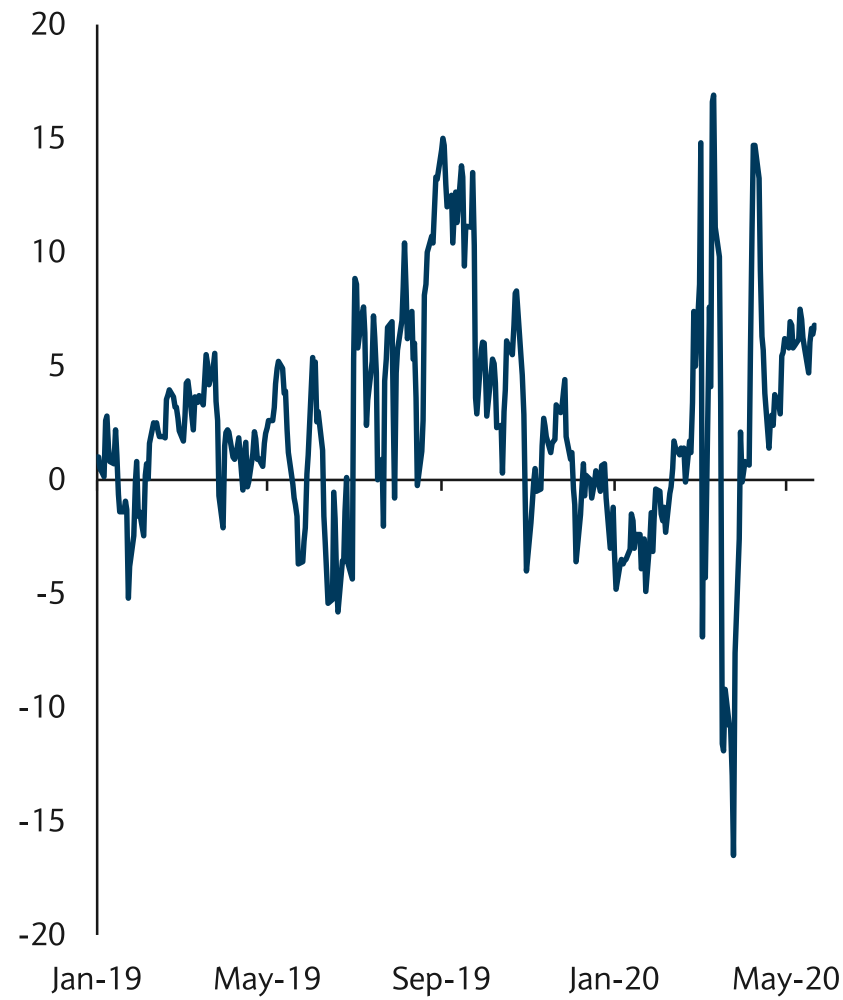
Source: US Treasury, Barclays Research

- Substantial issuance this quarter will double the bill universe
  - To over $5.5trn
  - *And just over 30% of outstanding Treasury debt*
  - *Heavier coupon issuance in 2021 will allow the Treasury to reduce bill issuance by about $100bn*
    - *With bills shrinking to around 25% of outstanding debt*

Heavy bill issuance has cheapened bill yields…

- Heavy bill issuance thus far has cheapened bill yields by about 20bp since late March
  - But flight-to-quality demand likely depressed bill yields in late March
    - So the supply-drive back up is likely less than 20bp
  - *And the yields are not that much cheaper than they were last year*

3m bills less OIS (bp)



Source: Federal Reserve, Barclays Research

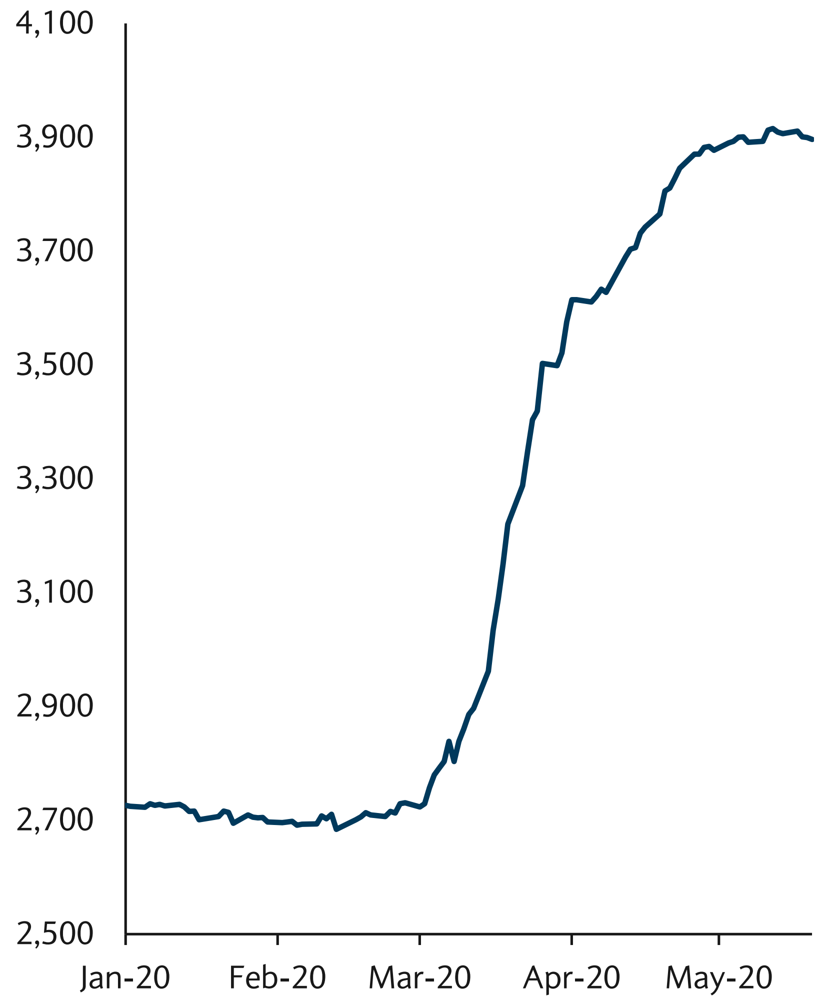
…but supply pass-through has been modest

- This quarter’s bill supply expansion has had a smaller pass-through to yields than in the past
  - In Q1 2018, a post-debt ceiling surge in issuance (of $330bn) caused bill yields to cheapen about 20bp
    - April 2020 issuance was about 3x greater
      - But the cheapening in bill yields was similar

- *Why have pass through effects been muted?*

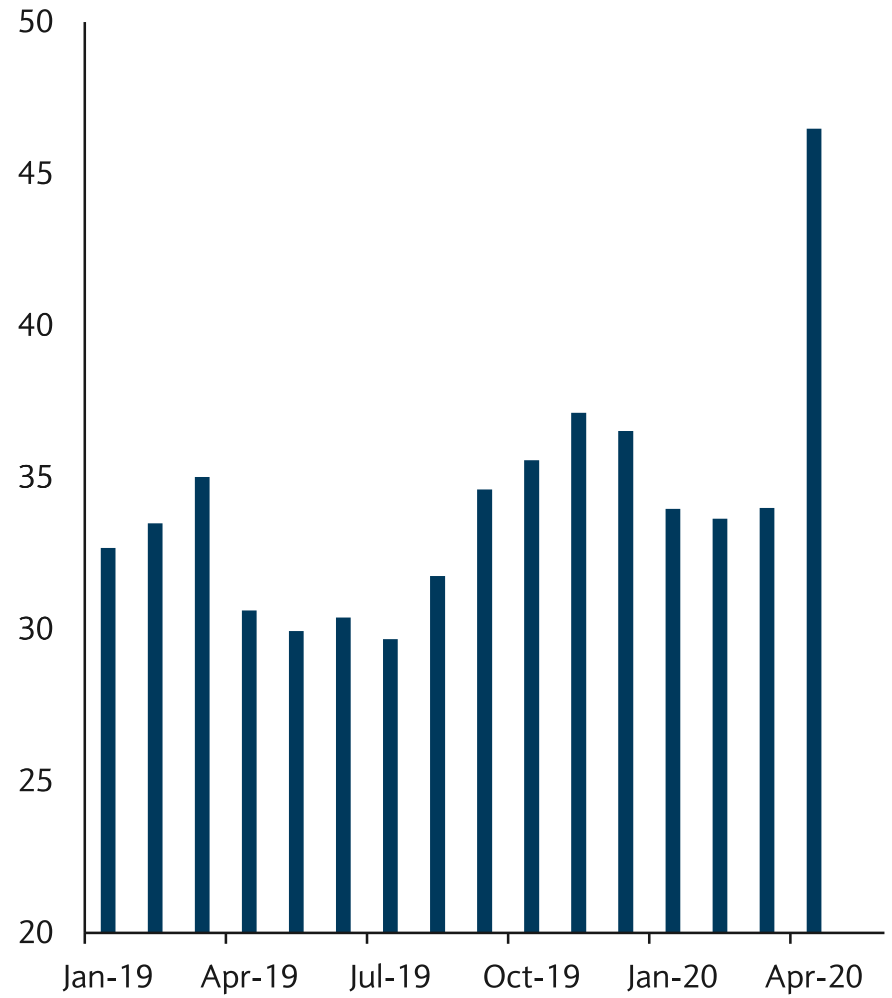
Gov-only fund inflows and allocations

Gov-only balances ($bn)



Source: Crane's Data, Barclays Research

Gov-only allocations (%)

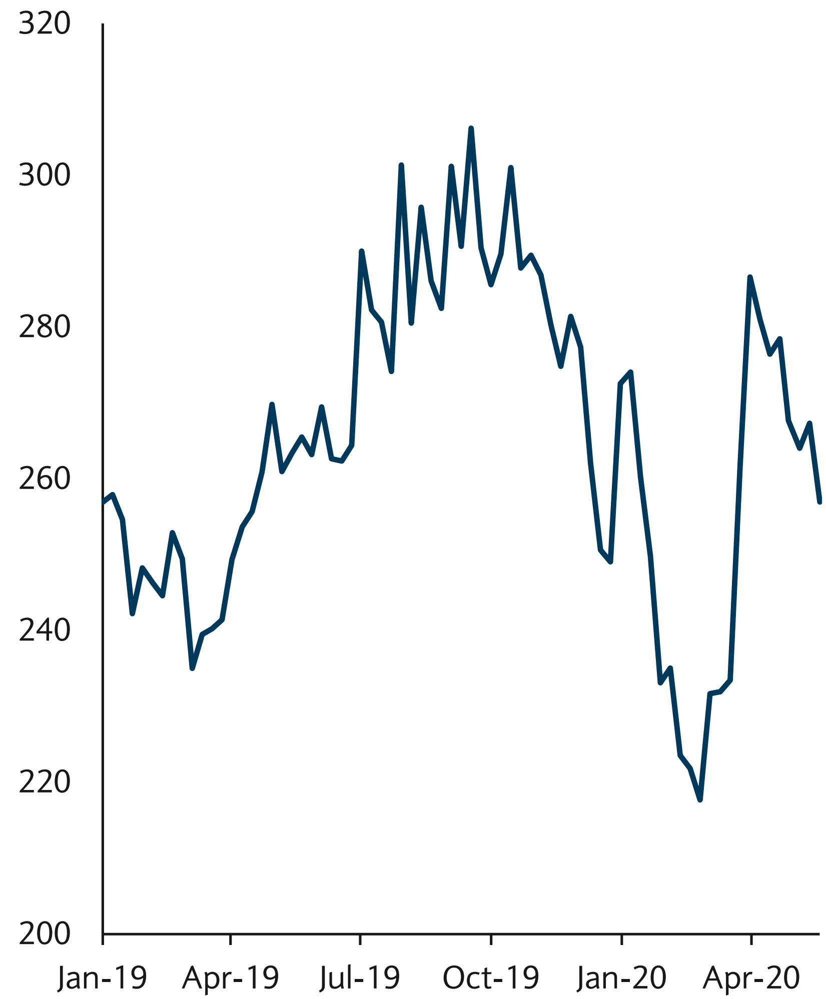


Source: ICI.org, Barclays Research

Demand from other investors has also increased

- Demand for non-money fund buyers also increased
    - Including foreign buyers who might normally keep their cash in repo
        - In either the market or in the Fed's foreign RRP program[1/]
    - And perhaps the GSEs

Foreign RRP balances ($bn)

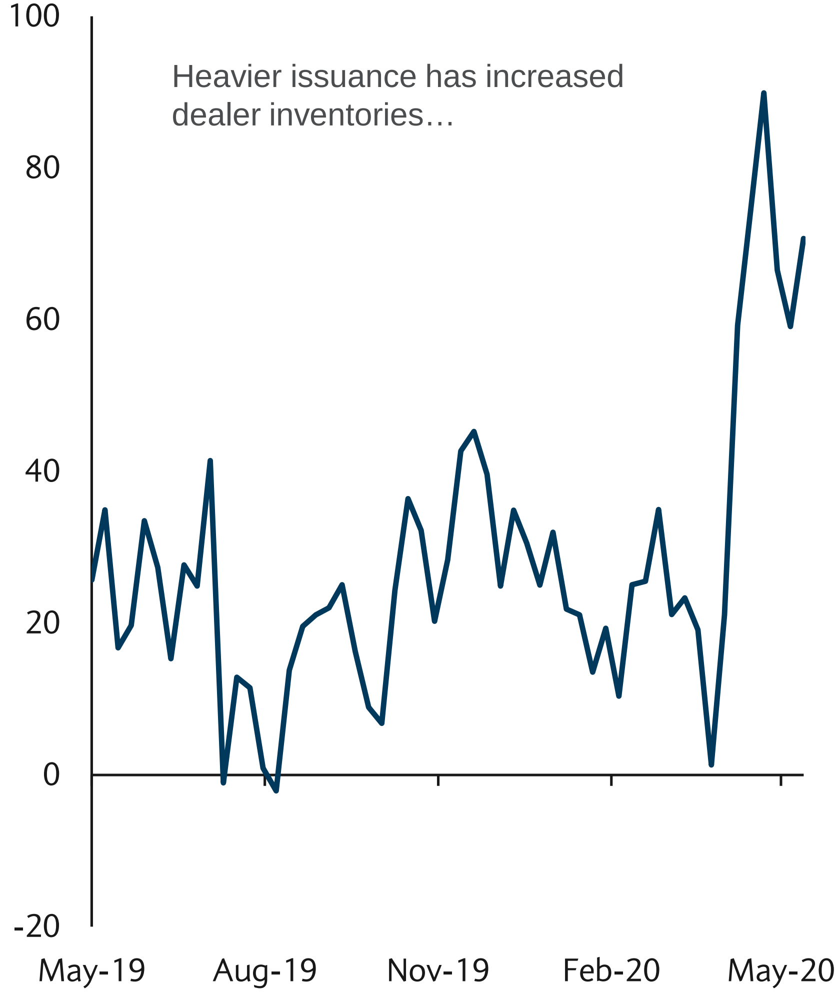


Source: Federal Reserve, Barclays Research

1/ The yield on the foreign RRP program is 0% and matches the domestic program.

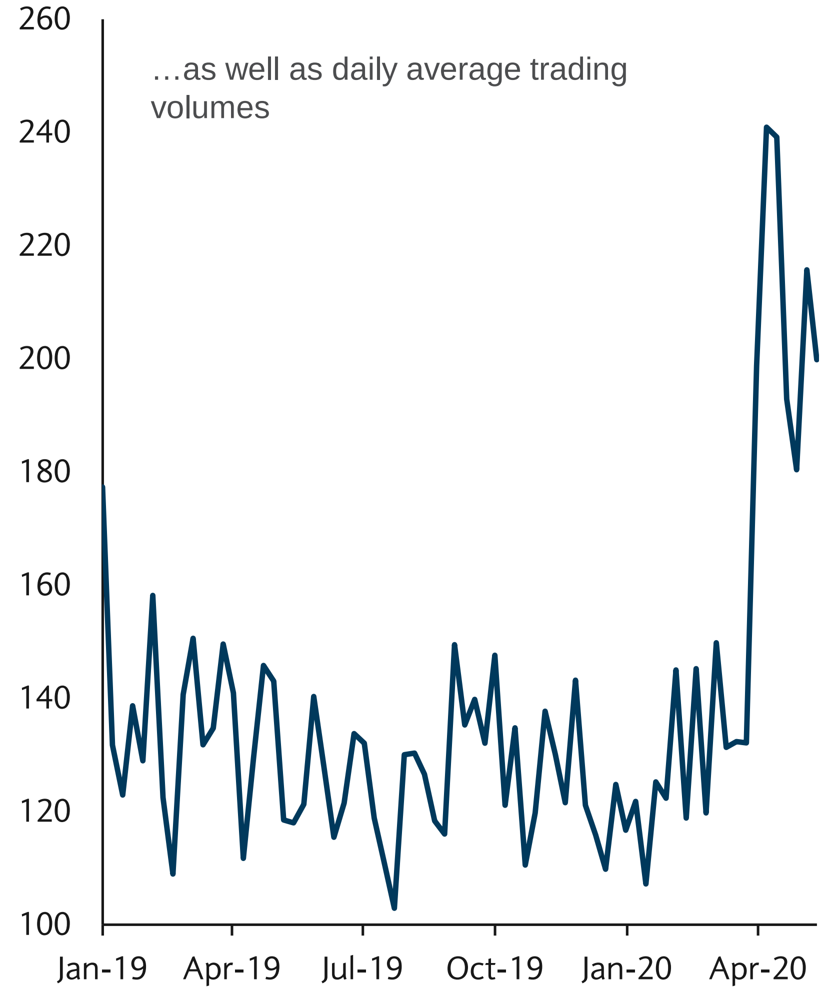
Dealer bill inventories and turnover is higher…

Bill inventories ($bn)



Source: Federal Reserve, Barclays Research

Bill transactions (daily average, $bn)

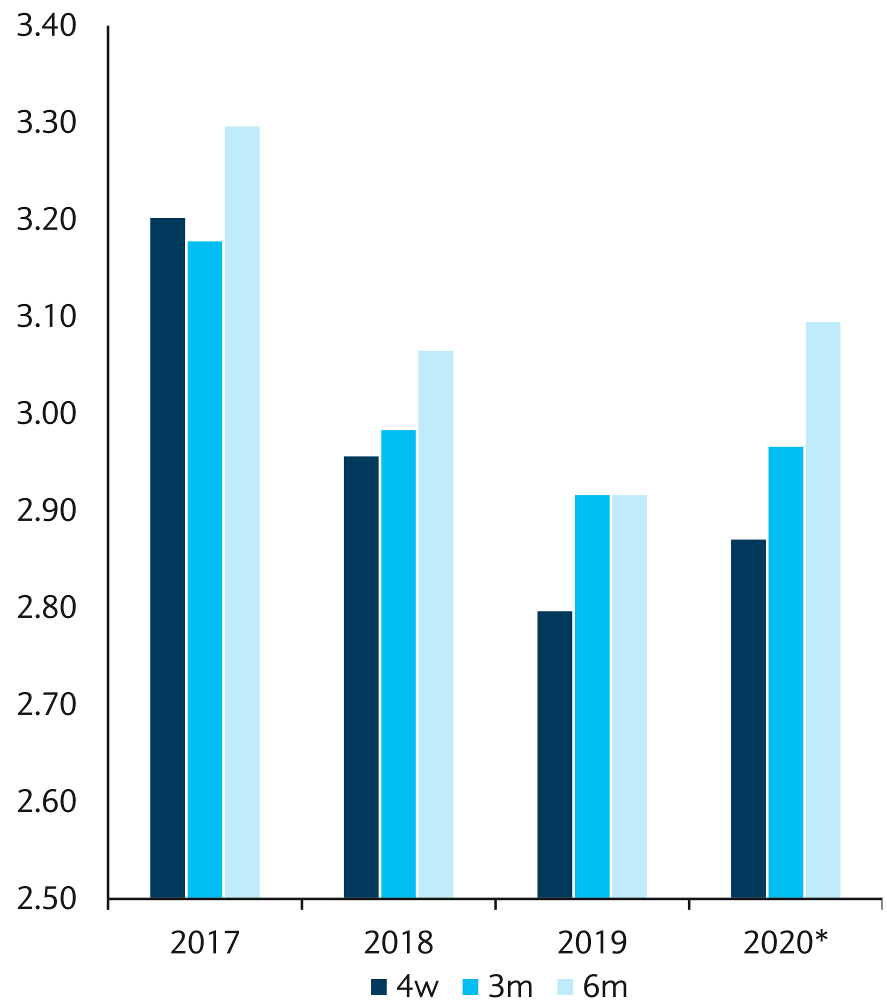


Source: Federal Reserve, Barclays Research

…but there is no sign of diminished auction demand

- Heavy issuance has not reduced auction demand
  - Bid-to-cover ratios since the April surge are in line with recent annual averages
- Bill auctions are about 3x over-subscribed

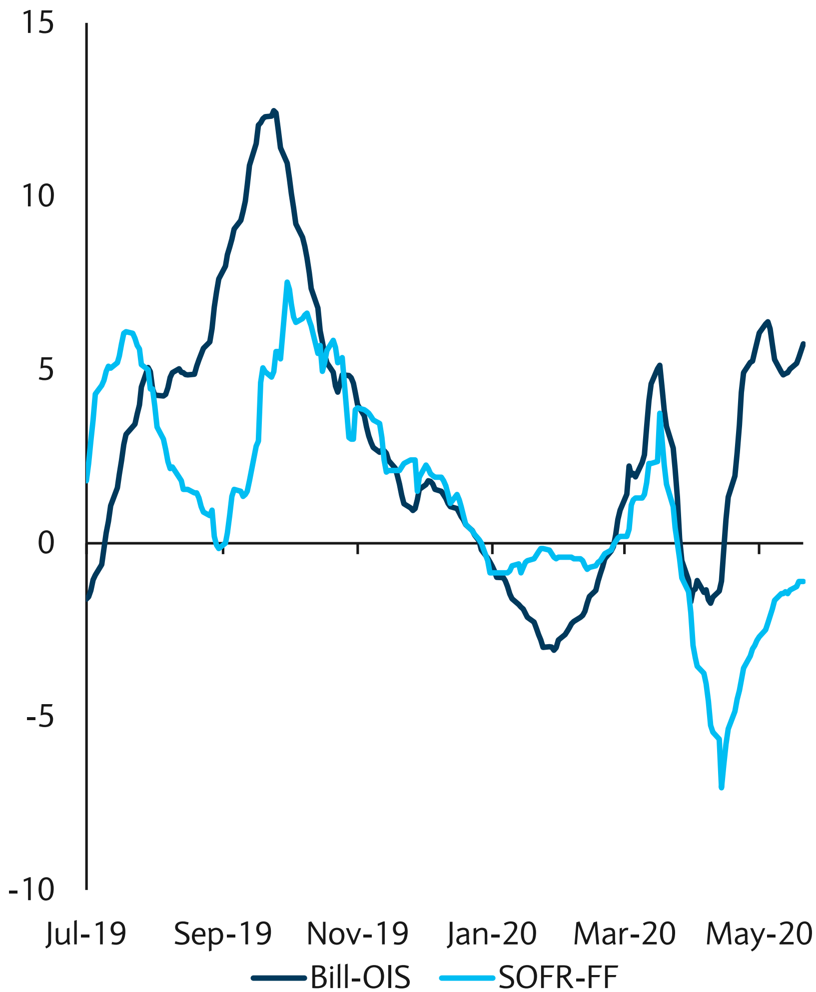
Bid-to-cover auction ratios



Note: 2020 is the average bid-to-cover ratio since the start of April when issuance began to surge. Source: US Treasury, Barclays Research

Higher bill rates cheapened repo rates by about 5bp…

3m bill - OIS, SOFR - FF (bp)



Note: 20d average. Source: US Treasury, Barclays Research

- Higher bill rates cheapened repo rates by about 5bp but:
    1. The Fed's OMOs – and the promise of effectively unlimited dealer funding – has capped rates
    2. The Fed has removed a substantial amount of collateral circulating in the market
    3. And overall secondary Treasury market functioning has improved

…Or LOIS

- Higher bill rates have not crowded out unsecured funding rates
  - It is difficult to connect changes in bill supply to swings in LOIS.
    - The apparent connection has appeared twice since 2017 (Q1 2017 and Q1 2018)
      - But both times, there have been other factors that can explain the movement in LOIS
        - Post money fund reform recovery
        - Money fund flows related to 2018 tax law changes.
- Instead LOIS is moving lower as the CP market has improved

Libor transition update

Libor transition survey[1/]

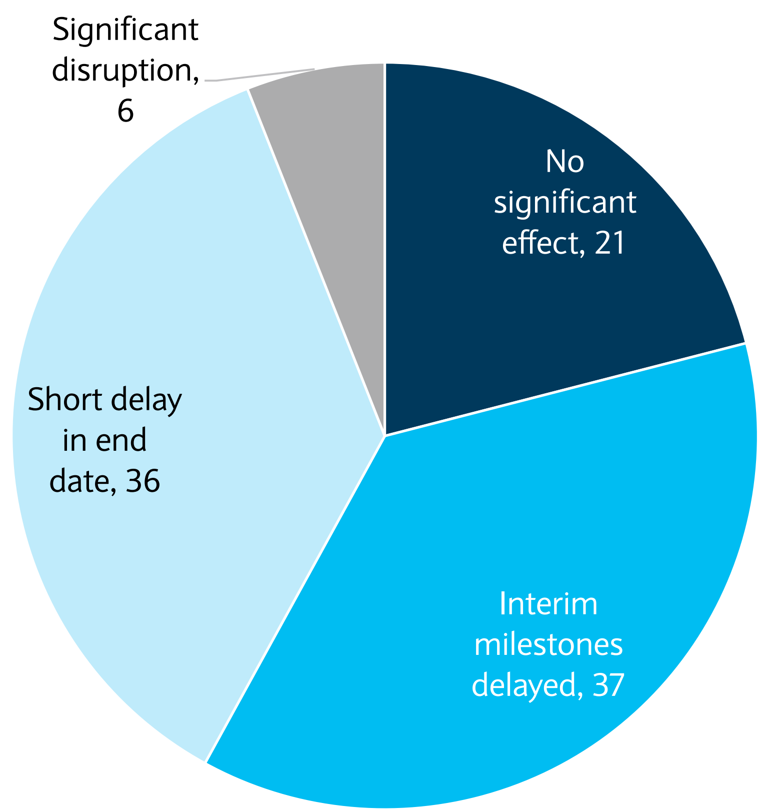
- Barclays Research conducted its second survey of the Libor transition in the first two weeks of May, with a focus on the effect of COVID-19 on the transition
    - Only a small portion of respondents felt that COVID-19 would significantly affect the Libor transition timeline
    - Recent volatility in SOFR has renewed interest in a credit-sensitive spread adjustment for the risk-free benchmark rate
    - A plurality of respondents view the creation of the Credit Sensitivity Group (CSG) by the Fed positively
        - And felt the transition timeline should be delayed until the CSG releases its findings

1/ See Libor transition survey: COVID-19 is having an effect, May 20, 2020

How will COVID-19 affect the transition timeline?

- Most respondents expected a short delay in either the end date or interim milestones

Timeline effect (%)

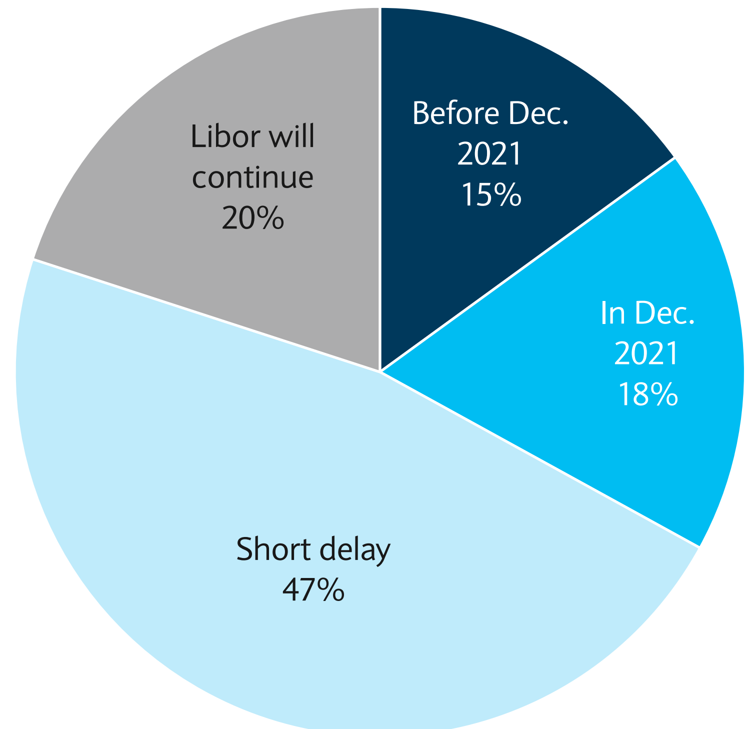


Source: Barclays Research

What is the likely end date of Libor?

- A plurality expected the December 2021 deadline for Libor to be pushed back because of COVID-19
  - To give end-users a chance to catch up from operational delays created by the pandemic

Expected end date (%)

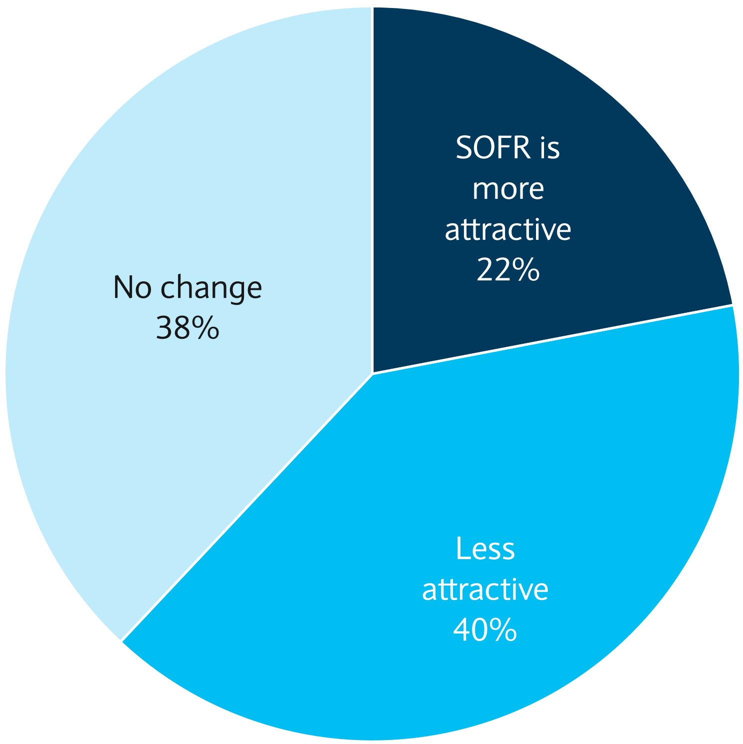


Source: Barclays Research

Have your perceptions about SOFR changed?

- Has the recent widening in LOIS and bank credit spreads more generally affected your view about using a risk free rate like SOFR as a reference rate?

SOFR perceptions (%)



Source: Barclays Research

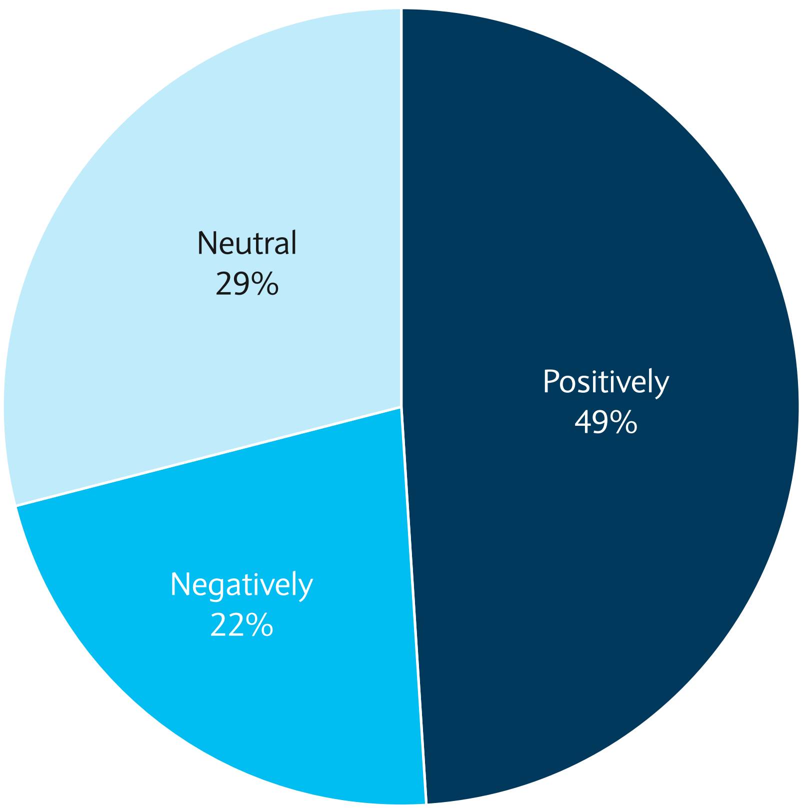
Credit Sensitivity Group

- Several months ago, the Fed and other bank regulators agreed to create a Credit Sensitivity Group (CSG).
  - CSG will examine the needs of lenders and borrowers who may find that a risk-free reference rate such as SOFR is not sufficient for their needs.
    - And while the CSG is new, the issue of incorporating credit risk into the benchmark replacement for Libor has been circulating for several years[1/]

1/ See "Reforming Libor and Other Financial Benchmarks", D. Duffie and J. Stein, Stanford and Harvard University working paper, September 19, 2014

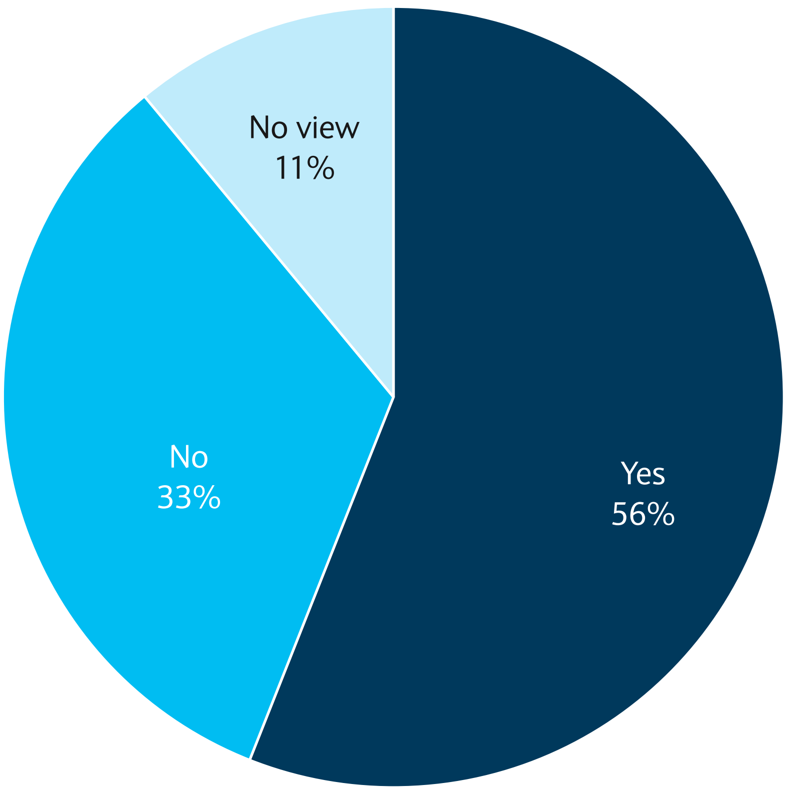
Survey views regarding the CSG

Views about the CGS (%)



Source: Barclays Research

Should AARC wait for CGS? (%)



Source: Barclays Research

Bank asset and liability mismatch concerns

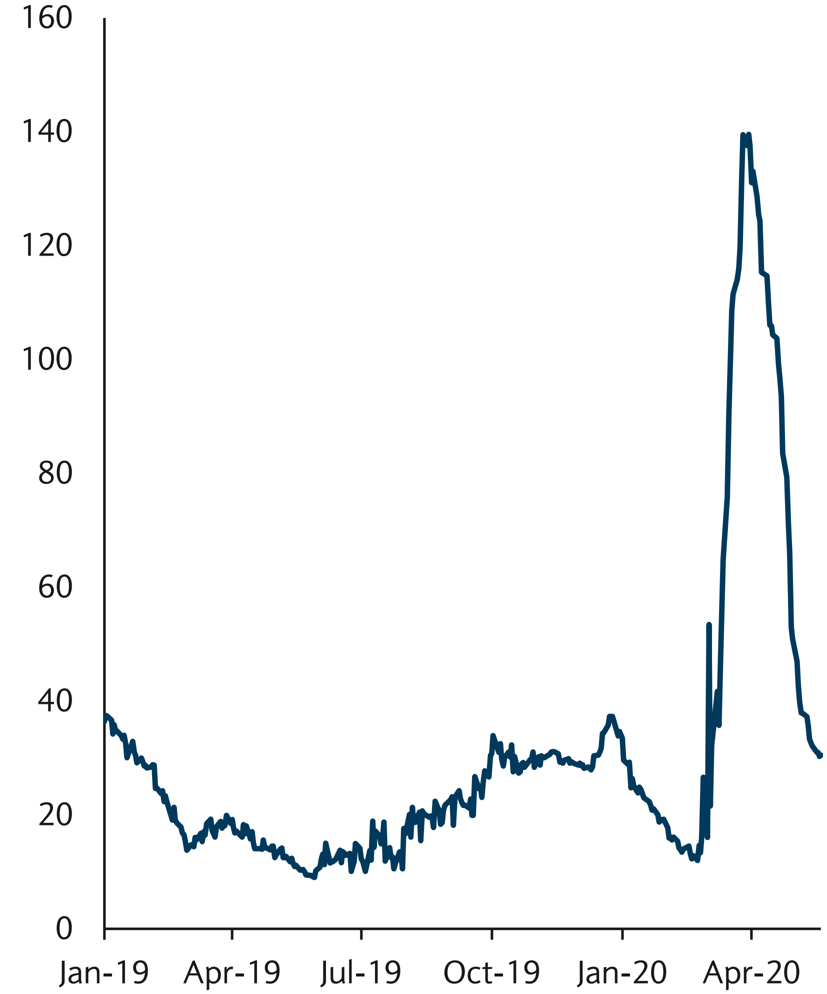
- The recent widening in the spread between Libor and SOFR has renewed concerns about a potential mismatch between bank assets and liabilities that could emerge during a financial shock
    - In a Libor world, the reference rate underlying bank assets and liabilities is the same
        - A financial market shock would push *both* sides of the balance sheet in the same direction
            - Bank funding costs rise but so to do bank revenues

- *But in a financial crisis SOFR may rally, creating a mismatch between the bank's funding costs and its revenues*

COVID-19 reference rate mismatch

- In the early stages of the pandemic, Libor and bank unsecured funding costs surged
  - While term SOFR rallied
- This caused the 3m spread between the reference rates to widen to 140bp
- *Survey respondents indicated that their number one concern about the Libor transition was the need for a credit sensitive benchmark*[1/]

Libor less term SOFR (bp)



Source: Bloomberg, Federal Reserve, Barclays Research

1/ More than worries about value transfer and concerns that the recession would divert resources away from the transition

Adding a credit spread: Bank Yield Index

- One approach to address the asset-liability mismatch is to add a dynamic credit spread to term SOFR
  - The credit spread adjustment would widen in a financial crisis – just like Libor
    - And the rates underlying bank assets and liabilities would each move in the same direction

- Bank Yield Index (BYI)[1/]
  - BYI adds a credit spread to term SOFR that is based on primary and secondary market corporate (bank) bond transactions
    - As this data is thin, the BYI sums activity over the prior 5d
      - Subject to minimum size and transactions volume thresholds
        - These transactions are put into a regression to fit a curve that calculates 1m, 3m, and 6m spreads
          - These are then added to the corresponding term SOFR rate

1/ See ICE Benchmark Administration Publishes Fourth Update Regarding the U.S. Dollar ICE Bank Yield Index, May 6, 2020

BYI looks like Libor

- Over the 3y sample period (2017-2020) the BYI is very similar to Libor
  - The median daily spread between 3m Libor and 3m BYI is 2bp
    - And the median absolutes spread (without regard to sign) is 2.7bp

- But even with the 5d observation window, volume is still thin (between $20-30bn)
  - And it introduces a non-current credit spread to a term SOFR rate that is adjusting much faster
- Most of the underlying data come from the market for unsecured deposits
  - This market is not very transparent nor is transaction data published with the same level of detail as SOFR

BYI questions

- BYI uses issuance data from 14 of the 16 Libor panel member banks for the testing phase
  - But will banks agree to supply their issuance data to construct BYI after Libor publication ceases?
- How will BYI be calculated if, term SOFR is not robust or IOSCO compliant by the December 2021 deadline?
  - The credit spread is forward looking but markets may be using compounded SOFR in arrears

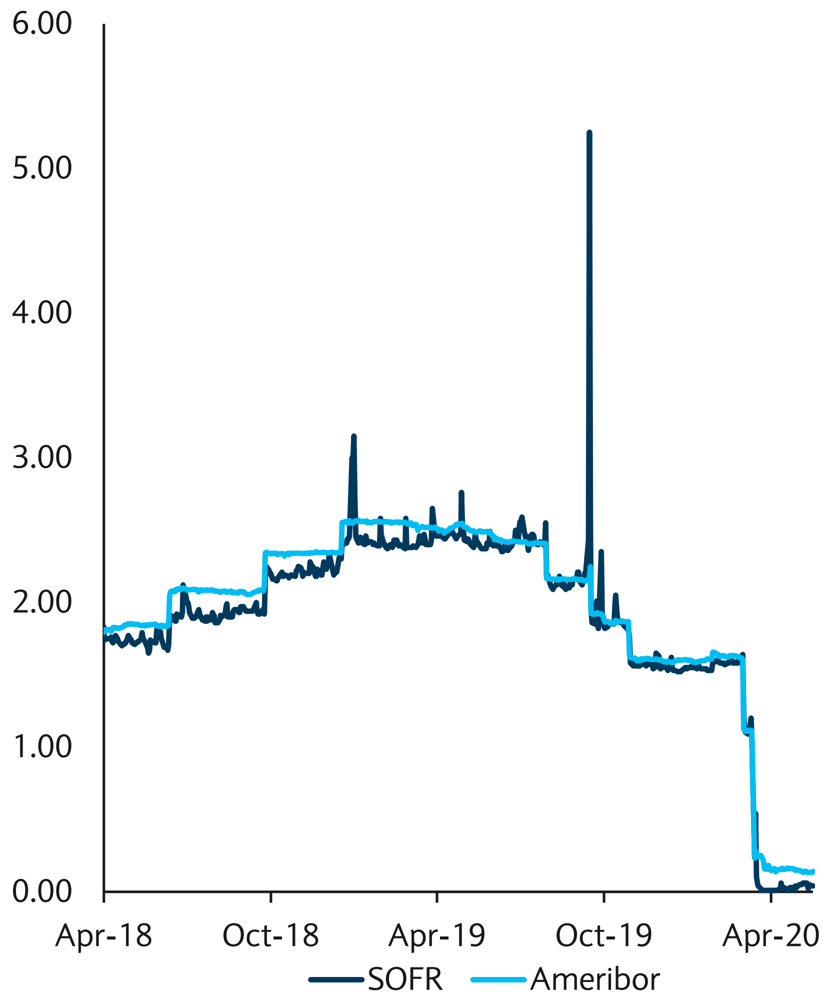
Ameribor

- Instead of adding a credit spread adjustment to term SOFR, Ameribor uses futures contracts to construct a wholly transactions based measure of unsecured bank funding costs
  - Futures are based on bank loans cleared through an inter-bank platform maintained by the American Financial Exchange[1/,2/]
    - The Ameribor rate is a weighted average of transactions on this platform. Daily activity across the roughly 180 participants is around $2bn/day
      - Bank loans are for overnight and 30d tenors

1/ See *Ameribor Methodology*, AFX
2/ The futures contracts are for 7d or 3m. They use the compounded in arrears daily Ameribor rate

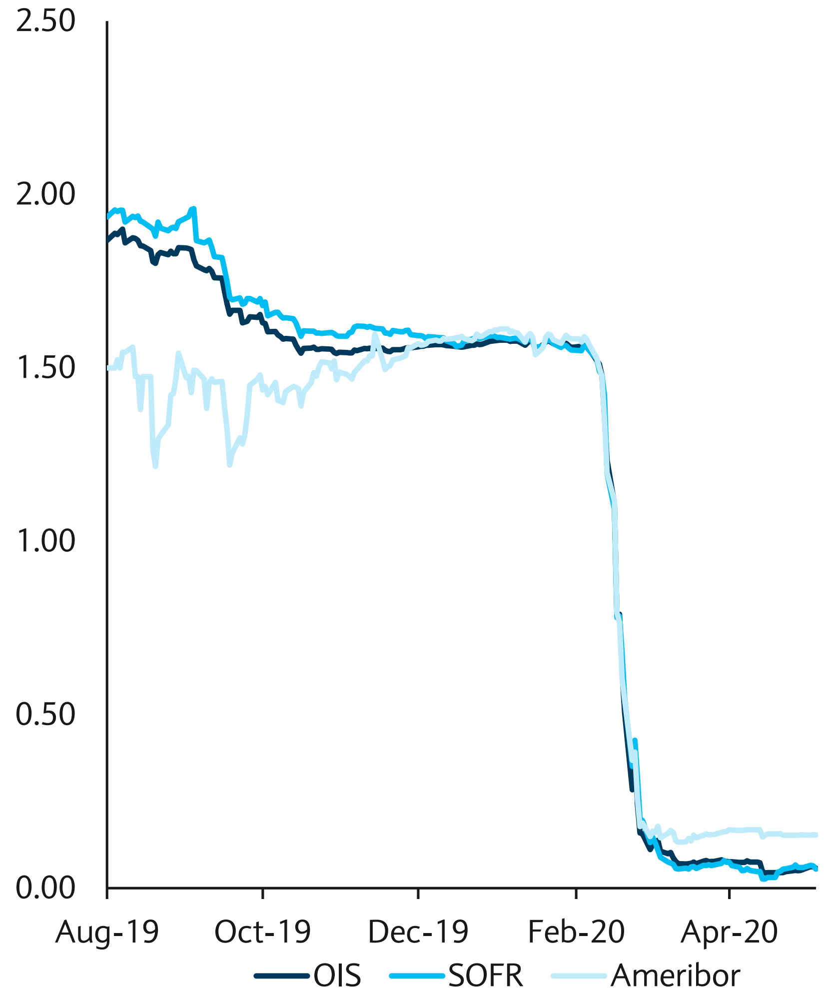
Ameribor looks similar to SOFR

Overnight Ameribor and SOFR (%)



Source: Bloomberg, Federal Reserve Barclays Research

Ameribor 3m, SOFR, OIS (%)



Note: 3m Ameribor future. Source: Bloomberg, Federal Reserve, Barclays Research

Multiple benchmarks

- The Alternative Reference Rate Committee notes that investors are free to use any benchmark
  - And that they are not obligated to use SOFR
- Indeed, historically, there have been multiple benchmarks for different types of activity
- Including:
  - Constant maturity Treasury yields
  - And a bank cost of funding index
- Even though Libor was the dominant benchmark
- We expect multiple benchmarks to emerge post-Libor
  - Even though SOFR is likely to become the dominant reference rate
    - And the dominant instrument used for hedging risk

Analyst Certifications and Important Disclosures

Analyst Certification(s)
I, Joseph Abate, hereby certify (1) that the views expressed in this research report accurately reflect my personal views about any or all of the subject securities or issuers referred to in this research report and (2) no part of my compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this research report.

Important Disclosures:

Barclays Research is produced by the Investment Bank of Barclays Bank PLC and its affiliates (collectively and each individually, "Barclays").

All authors contributing to this research report are Research Analysts unless otherwise indicated. The publication date at the top of the report reflects the local time where the report was produced and may differ from the release date provided in GMT.

Availability of Disclosures:

For current important disclosures regarding any issuers which are the subject of this research report please refer to https://publicresearch.barclays.com or alternatively send a written request to: Barclays Research Compliance, 745 Seventh Avenue, 13th Floor, New York, NY 10019 or call +1-212-526-1072.

Barclays Capital Inc. and/or one of its affiliates does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that Barclays may have a conflict of interest that could affect the objectivity of this report. Barclays Capital Inc. and/or one of its affiliates regularly trades, generally deals as principal and generally provides liquidity (as market maker or otherwise) in the debt securities that are the subject of this research report (and related derivatives thereof). Barclays trading desks may have either a long and / or short position in such securities, other financial instruments and / or derivatives, which may pose a conflict with the interests of investing customers. Where permitted and subject to appropriate information barrier restrictions, Barclays fixed income research analysts regularly interact with its trading desk personnel regarding current market conditions and prices. Barclays fixed income research analysts receive compensation based on various factors including, but not limited to, the quality of their work, the overall performance of the firm (including the profitability of the Investment Banking Department), the profitability and revenues of the Markets business and the potential interest of the firm's investing clients in research with respect to the asset class covered by the analyst. To the extent that any historical pricing information was obtained from Barclays trading desks, the firm makes no representation that it is accurate or complete. All levels, prices and spreads are historical and do not necessarily represent current market levels, prices or spreads, some or all of which may have changed since the publication of this document. Barclays Research Department produces various types of research including, but not limited to, fundamental analysis, equity-linked analysis, quantitative analysis, and trade ideas. Recommendations and trade ideas contained in one type of Barclays Research may differ from those contained in other types of Barclays Research, whether as a result of differing time horizons, methodologies, or otherwise.

In order to access Barclays Statement regarding Research Dissemination Policies and Procedures, please refer to *https://publicresearch.barcap.com/S/RD.htm*. In order to access Barclays Research Conflict Management Policy Statement, please refer to: *https://publicresearch.barcap.com/S/CM.htm*.

All pricing information is indicative only. Unless otherwise indicated, prices are sourced from Refinitiv and reflect the closing price in the relevant trading market, which may not be the last available price at the time of publication.

Types of investment recommendations produced by Barclays FICC Research:

In addition to any ratings assigned under Barclays' formal rating systems, this publication may contain investment recommendations in the form of trade ideas, thematic screens, scorecards or portfolio recommendations that have been produced by analysts in FICC Research. Any such investment recommendations produced by non-Credit Research teams shall remain open until they are subsequently amended, rebalanced or closed in a future research report. Any such investment recommendations produced by the Credit Research teams are valid at current market conditions and may not be otherwise relied upon.

Disclosure of other investment recommendations produced by Barclays FICC Research:

Barclays FICC Research may have published other investment recommendations in respect of the same securities/instruments recommended in this research report during the preceding 12 months. To view all investment recommendations published by Barclays FICC Research in the preceding 12 months please refer to *https://live.barcap.com/go/research/Recommendations*.

•

Important Disclosures Continued

Legal entities involved in producing Barclays Research:

Barclays Bank PLC (Barclays, UK)

Barclays Capital Inc. (BCI, US)

Barclays Bank Ireland PLC, Frankfurt Branch (BBI, Frankfurt)

Barclays Bank Ireland PLC, Paris Branch (BBI, Paris)

Barclays Bank Ireland PLC, Milan Branch (BBI, Milan)

Barclays Securities Japan Limited (BSJL, Japan)

Barclays Bank PLC, Hong Kong branch (Barclays Bank, Hong Kong)

Barclays Capital Canada Inc. (BCCI, Canada)

Barclays Bank Mexico, S.A. (BBMX, Mexico)

Barclays Securities (India) Private Limited (BSIPL, India)

Barclays Bank PLC, India branch (Barclays Bank, India)

Barclays Bank PLC, Singapore branch (Barclays Bank, Singapore)

Barclays Bank PLC, DIFC Branch (Barclays Bank, DIFC)

Disclaimer

This publication has been produced by Barclays Research Department in the Investment Bank of Barclays Bank PLC and/or one or more of its affiliates (collectively and each individually, "Barclays"). It has been prepared for institutional investors and not for retail investors. It has been distributed by one or more Barclays affiliated legal entities listed below. It is provided to our clients for information purposes only, and Barclays makes no express or implied warranties, and expressly disclaims all warranties of merchantability or fitness for a particular purpose or use with respect to any data included in this publication. To the extent that this publication states on the front page that it is intended for institutional investors and is not subject to all of the independence and disclosure standards applicable to debt research reports prepared for retail investors under U.S. FINRA Rule 2242, it is an “institutional debt research report” and distribution to retail investors is strictly prohibited. Barclays also distributes such institutional debt research reports to various issuers, media, regulatory and academic organisations for their own internal informational news gathering, regulatory or academic purposes and not for the purpose of making investment decisions regarding any debt securities. Media organisations are prohibited from re-publishing any opinion or recommendation concerning a debt issuer or debt security contained in any Barclays institutional debt research report. Any such recipients that do not want to continue receiving Barclays institutional debt research reports should contact debtresearch@barclays.com. Clients that are subscribed to receive equity research reports, will not receive certain cross asset research reports co-authored by equity and FICC research analysts that are distributed as “institutional debt research reports” unless they have agreed to accept such reports. Eligible clients may get access to such cross asset reports by contacting debtresearch@barclays.com. Barclays will not treat unauthorized recipients of this report as its clients and accepts no liability for use by them of the contents which may not be suitable for their personal use. Prices shown are indicative and Barclays is not offering to buy or sell or soliciting offers to buy or sell any financial instrument.

Without limiting any of the foregoing and to the extent permitted by law, in no event shall Barclays, nor any affiliate, nor any of their respective officers, directors, partners, or employees have any liability for (a) any special, punitive, indirect, or consequential damages; or (b) any lost profits, lost revenue, loss of anticipated savings or loss of opportunity or other financial loss, even if notified of the possibility of such damages, arising from any use of this publication or its contents.

Other than disclosures relating to Barclays, the information contained in this publication has been obtained from sources that Barclays Research believes to be reliable, but Barclays does not represent or warrant that it is accurate or complete. Barclays is not responsible for, and makes no warranties whatsoever as to, the information or opinions contained in any written, electronic, audio or video presentations of third parties that are accessible via a direct hyperlink in this publication or via a hyperlink to a third-party web site (‘Third-Party Content’). Any such Third-Party Content has not been adopted or endorsed by Barclays, does not represent the views or opinions of Barclays, and is not incorporated by reference into this publication. Third-Party Content is provided for information purposes only and Barclays has not independently verified its accuracy or completeness.

The views in this publication are solely and exclusively those of the authoring analyst(s) and are subject to change, and Barclays Research has no obligation to update its opinions or the information in this publication. Unless otherwise disclosed herein, the analysts who authored this report have not received any compensation from the subject companies in the past 12 months. If this publication contains recommendations, they are general recommendations that were prepared independently of any other interests, including those of Barclays and/or its affiliates, and/or the subject companies. This publication does not contain personal investment recommendations or investment advice or take into account the individual financial circumstances or investment objectives of the clients who receive it. The securities and other investments discussed herein may not be suitable for all investors. Barclays is not a fiduciary to any recipient of this publication. Investors must independently evaluate the merits and risks of the investments discussed herein, consult any independent advisors they believe necessary, and exercise independent judgment with regard to any investment decision. The value of and income from any investment may fluctuate from day to day as a result of changes in relevant economic markets (including changes in market liquidity). The information herein is not intended to predict actual results, which may differ substantially from those reflected. Past performance is not necessarily indicative of future results. The information provided does not constitute a financial benchmark and should not be used as a submission or contribution of input data for the purposes of determining a financial benchmark.

United Kingdom: This document is being distributed (1) only by or with the approval of an authorised person (Barclays Bank PLC) or (2) to, and is directed at (a) persons in the United Kingdom having professional experience in matters relating to investments and who fall within the definition of "investment professionals" in Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the "Order"); or (b) high net worth companies, unincorporated associations and partnerships and trustees of high value trusts as described in Article 49(2) of the Order; or (c) other persons to whom it may otherwise lawfully be communicated (all such persons being "Relevant Persons"). Any investment or investment activity to which this communication relates is only available to and will only be engaged in with Relevant Persons. Any other persons who receive this communication should not rely on or act upon it. Barclays Bank PLC is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority and is a member of the London Stock Exchange.

European Economic Area (“EEA”): This material is being distributed in the EEA by Barclays Bank PLC. Barclays Bank PLC is not registered in France with the Autorité des marchés financiers or the Autorité de contrôle prudentiel.

Americas: The Investment Bank of Barclays Bank PLC undertakes U.S. securities business in the name of its wholly owned subsidiary Barclays Capital Inc., a FINRA and SIPC member. Barclays Capital Inc., a U.S. registered broker/dealer, is distributing this material in the United States and, in connection therewith accepts responsibility for its contents. Any U.S. person wishing to effect a transaction in any security discussed herein should do so only by contacting a representative of Barclays Capital Inc. in the U.S. at 745 Seventh Avenue, New York, New York 10019.

Non-U.S. persons should contact and execute transactions through a Barclays Bank PLC branch or affiliate in their home jurisdiction unless local regulations permit otherwise.

This material is distributed in Canada by Barclays Capital Canada Inc., a registered investment dealer, a Dealer Member of IIROC (www.iiroc.ca), and a Member of the Canadian Investor Protection Fund (CIPF).

This material is distributed in Mexico by Barclays Bank Mexico, S.A. This material is distributed in the Cayman Islands and in the Bahamas by Barclays Capital Inc., which it is not licensed or registered to conduct and does not conduct business in, from or within those jurisdictions and has not filed this material with any regulatory body in those jurisdictions.

Disclaimer (continued)

Japan: This material is being distributed to institutional investors in Japan by Barclays Securities Japan Limited. Barclays Securities Japan Limited is a joint-stock company incorporated in Japan with registered office of 6-10-1 Roppongi, Minato-ku, Tokyo 106-6131, Japan. It is a subsidiary of Barclays Bank PLC and a registered financial instruments firm regulated by the Financial Services Agency of Japan. Registered Number: Kanto Zaimukyokucho (kinsho) No. 143.

Asia Pacific (excluding Japan): Barclays Bank PLC, Hong Kong Branch is distributing this material in Hong Kong as an authorised institution regulated by the Hong Kong Monetary Authority. Registered Office: 41/F, Cheung Kong Center, 2 Queen's Road Central, Hong Kong.

All Indian securities-related research and other equity research produced by Barclays' Investment Bank are distributed in India by Barclays Securities (India) Private Limited (BSIPL). BSIPL is a company incorporated under the Companies Act, 1956 having CIN U67120MH2006PTC161063. BSIPL is registered and regulated by the Securities and Exchange Board of India (SEBI) as a Research Analyst: INH000001519; Portfolio Manager INP000002585; Stock Broker/Trading and Clearing Member: National Stock Exchange of India Limited (NSE) Capital Market INB231292732, NSE Futures & Options INF231292732, NSE Currency derivatives INE231450334, Bombay Stock Exchange Limited (BSE) Capital Market INB011292738, BSE Futures & Options INF011292738; Depository Participant (DP) with the National Securities & Depositories Limited (NSDL): DP ID: IN-DP-NSDL-299-2008; Investment Adviser: INA000000391. The registered office of BSIPL is at 208, Ceejay House, Shivsagar Estate, Dr. A. Besant Road, Worli, Mumbai – 400 018, India. Telephone No: +91 2267196000. Fax number: +91 22 67196100. Any other reports produced by Barclays' Investment Bank are distributed in India by Barclays Bank PLC, India Branch, an associate of BSIPL in India that is registered with Reserve Bank of India (RBI) as a Banking Company under the provisions of The Banking Regulation Act, 1949 (Regn No BOM43) and registered with SEBI as Merchant Banker (Regn No INM000002129) and also as Banker to the Issue (Regn No INBI00000950). Barclays Investments and Loans (India) Limited, registered with RBI as Non Banking Financial Company (Regn No RBI CoR-07-00258), and Barclays Wealth Trustees (India) Private Limited, registered with Registrar of Companies (CIN U93000MH2008PTC188438), are associates of BSIPL in India that are not authorised to distribute any reports produced by Barclays' Investment Bank.

This material is distributed in Singapore by the Singapore branch of Barclays Bank PLC, a bank licensed in Singapore by the Monetary Authority of Singapore. For matters in connection with this material, recipients in Singapore may contact the Singapore branch of Barclays Bank PLC, whose registered address is 10 Marina Boulevard, #23-01 Marina Bay Financial Centre Tower 2, Singapore 018983.

This material is distributed to persons in Australia by Barclays Bank PLC or one of the Barclays group entities. None of Barclays Bank PLC, nor such Barclays group entity, holds an Australian financial services licence and instead relies on an exemption from the requirement to hold such a licence. This material is intended to only be distributed to "wholesale clients" as defined by the Australian Corporations Act 2001. This material is distributed in New Zealand by Barclays Bank PLC, but it has not been registered, filed or approved by any New Zealand regulatory authority or under or in accordance with the Financial Markets Conduct Act of 2013, and this material is not a disclosure document under New Zealand law.

Middle East: Nothing herein should be considered investment advice as defined in the Israeli Regulation of Investment Advisory, Investment Marketing and Portfolio Management Law, 1995 ("Advisory Law"). This document is being made to eligible clients (as defined under the Advisory Law) only. Barclays Israeli branch previously held an investment marketing license with the Israel Securities Authority but it cancelled such license on 30/11/2014 as it solely provides its services to eligible clients pursuant to available exemptions under the Advisory Law, therefore a license with the Israel Securities Authority is not required. Accordingly, Barclays does not maintain an insurance coverage pursuant to the Advisory Law.

This material is distributed in the United Arab Emirates (including the Dubai International Financial Centre) and Qatar by Barclays Bank PLC. Barclays Bank PLC in the Dubai International Financial Centre (Registered No. 0060) is regulated by the Dubai Financial Services Authority (DFSA). Principal place of business in the Dubai International Financial Centre: The Gate Village, Building 4, Level 4, PO Box 506504, Dubai, United Arab Emirates. Barclays Bank PLC-DIFC Branch, may only undertake the financial services activities that fall within the scope of its existing DFSA licence. Related financial products or services are only available to Professional Clients, as defined by the Dubai Financial Services Authority. Barclays Bank PLC in the UAE is regulated by the Central Bank of the UAE and is licensed to conduct business activities as a branch of a commercial bank incorporated outside the UAE in Dubai (Licence No.: 13/1844/2008, Registered Office: Building No. 6, Burj Dubai Business Hub, Sheikh Zayed Road, Dubai City) and Abu Dhabi (Licence No.: 13/952/2008, Registered Office: Al Jazira Towers, Hamdan Street, PO Box 2734, Abu Dhabi). This material does not constitute or form part of any offer to issue or sell, or any solicitation of any offer to subscribe for or purchase, any securities or investment products in the UAE (including the Dubai International Financial Centre) and accordingly should not be construed as such. Furthermore, this information is being made available on the basis that the recipient acknowledges and understands that the entities and securities to which it may relate have not been approved, licensed by or registered with the UAE Central Bank, the Dubai Financial Services Authority or any other relevant licensing authority or governmental agency in the UAE. The content of this report has not been approved by or filed with the UAE Central Bank or Dubai Financial Services Authority. Barclays Bank PLC in the Qatar Financial Centre (Registered No. 00018) is authorised by the Qatar Financial Centre Regulatory Authority (QFCRA). Barclays Bank PLC-QFC Branch may only undertake the regulated activities that fall within the scope of its existing QFCRA licence. Principal place of business in Qatar: Qatar Financial Centre, Office 1002, 10th Floor, QFC Tower, Diplomatic Area, West Bay, PO Box 15891, Doha, Qatar. Related financial products or services are only available to Business Customers as defined by the Qatar Financial Centre Regulatory Authority.

Russia: This material is not intended for investors who are not Qualified Investors according to the laws of the Russian Federation as it might contain information about or description of the features of financial instruments not admitted for public offering and/or circulation in the Russian Federation and thus not eligible for non-Qualified Investors. If you are not a Qualified Investor according to the laws of the Russian Federation, please dispose of any copy of this material in your possession.

IRS Circular 230 Prepared Materials Disclaimer: Barclays does not provide tax advice and nothing contained herein should be construed to be tax advice. Please be advised that any discussion of U.S. tax matters contained herein (including any attachments) (i) is not intended or written to be used, and cannot be used, by you for the purpose of avoiding U.S. tax-related penalties; and (ii) was written to support the promotion or marketing of the transactions or other matters addressed herein. Accordingly, you should seek advice based on your particular circumstances from an independent tax advisor.

S&P Global
Ratings

RatingsDirect®

Research Update:

Orange & Rockland Utilities Inc. 'A-' Ratings Affirmed; Stand-Alone Credit Profile Revised To 'BBB+'

Primary Credit Analyst:
Obioma Ugboaja, New York 212-438-7406; obioma.ugboaja@spglobal.com

Secondary Contact:
Gabe Grosberg, New York (1) 212-438-6043; gabe.grosberg@spglobal.com

Research Contributor:
Mohammed K Hussain, New York; mohammed.hussain@spglobal.com

Table Of Contents

Research Update:

Orange & Rockland Utilities Inc. 'A-' Ratings Affirmed; Stand-Alone Credit Profile Revised To 'BBB+'

Overview

- We expect Pearl River, N.Y.-based Orange and Rockland Utilities Inc.'s (O&R) financial measures will reflect the lower end of the range for its financial risk profile category. As a result, we are revising its stand-alone credit profile to 'bbb+' from 'a-'.
- At the same time, we are affirming our ratings on O&R, including our 'A-' issuer credit rating and 'A-' rating on its senior unsecured debentures. The outlook remains stable. We also affirmed our 'A-2' short-term rating on O&R.
- The stable outlook reflects our expectations that parent Consolidated Edison Inc.'s ability to effectively manage regulatory risk will be largely consistent with peers in New York State, and that its forward strategy will continue to predominantly reflect low-risk regulated utility transmission and distribution (T&D) operations.

Rating Action

On Aug. 7, 2017, S&P Global Ratings affirmed its ratings on Pearl River, N.Y.-based Orange and Rockland Utilities Inc. (O&R), including the 'A-' issuer credit rating and 'A-' rating on O&R's senior unsecured debentures. We also affirmed our 'A-2' short-term rating on O&R. At the same time, we revised our stand-alone credit profile (SACP) on O&R to 'bbb+' from 'a-'.

Rationale

The revised SACP reflects our expectations for financial measures that we expect will consistently reflect the lower end of the range for the company's current financial risk profile relative to peers, including funds from operations (FFO) to debt ranging from 13%-14%. This largely reflects the company's increased capital spending requirement which dims our overall financial risk assessment of the company on a stand-alone basis.

Our assessment of O&R's business risk reflects the company's low-risk and regulated T&D business. Our assessment also reflects the company's monopolistic utility operations, serving as the sole provider of essential utility services to parts of southeastern New York State and northern New Jersey.

O&R has limited scale, reflecting its small customer base with about 300,000 electric and 100,000 natural gas customers. Our assessment of O&R's business risk further reflects our view of the company's management of regulatory risk that we view as generally consistent with peer utilities. O&R is regulated primarily by the New York State Public Service Commission (NYSPSC) and to a lesser extent by the New Jersey Board of Public Utilities (NJBPU).

We assess O&R's financial risk profile under more relaxed financial benchmark ratios relative to the typical corporate issuer. This reflects the company's low-risk and regulated T&D utility operations and management of regulatory risk. Under our base-case scenario, which includes a New York multiyear electric and gas rate plan through 2017 and 2018, respectively, and a capital spending program that averages about $200 million annually, we expect FFO to total debt of about 13%-14%, consistent with the lower end of the range for its financial risk profile category. We assess the comparative ratings analysis modifier as negative to reflect the weakening financial measures.

We assess O&R as a core subsidiary of parent Con Edison. Our assessment of O&R as core reflects our view that Con Edison is highly unlikely to sell O&R, that O&R is integral to Con Edison's future strategy, and that O&R has a strong long-term commitment from Con Edison's senior management.

We rate the senior unsecured debt at O&R the same as the issuer credit rating, consistent with our criteria.

Liquidity

O&R has adequate liquidity, in our view, and can more than cover its needs for the next 12 months even if EBITDA declines by 10%. We expect the company's liquidity sources over the next 12 months will exceed its uses by more than 1.1x. We also expect that O&R will meet other requirements that support this liquidity designation, including the ability to absorb high-impact, low-probability events, with limited need for refinancing. Under our stress scenario, we do not expect that the company would require access to the capital markets during that period to meet its liquidity needs. O&R also benefits from sound relationships with its banks, and a generally satisfactory standing in the credit markets.

Principal liquidity sources:

- Revolving credit facility of about $200 million;
- Cash FFO of about $160 million; and
- Available cash of close to $50 million.

Principal liquidity uses:

- Capital spending averaging about $200 million;
- Annual dividends of about $45 million; and
- Minimal long-term debt maturities in 2017;

Outlook

The stable outlook on O&R reflects our view of its parent, Con Edison. We expect that Con Edison will continue to manage its regulatory risk consistent with its peer utilities in New York State and that its consolidated FFO to debt will approximate 19%. The stable outlook also reflects our expectations that Con Edison's non-regulated businesses will consistently account for less than 10% of the consolidated company.

Downside scenario

We could lower the ratings on O&R if Con Edison's overall effective management of regulatory risk weakened relative to peers. We could also lower the rating if the company signaled an aggressive shift in strategy that focused on even its higher-risk businesses, or if material increases in the company's capital spending results in greater use of debt, weakening the company's credit ratios, including FFO to debt that is consistently below 16%.

Upside scenario

We could raise the rating if the company maintains its effective management of regulatory risk, maintains a strategy that predominantly reflects regulated utility T&D operations, and achieves stronger credit ratios, including FFO to debt that is consistently greater than 20%.

Ratings Score Snapshot

Issuer Credit Rating: A-/Stable/A-2

Business risk: Excellent
- Country risk: Very low
- Industry risk: Very low
- Competitive position: Strong

Financial risk: Significant
- Cash flow/Leverage: Significant

Anchor: a-

Modifiers
- Diversification/Portfolio effect: Neutral (no impact)
- Capital structure: Neutral (no impact)
- Liquidity: Adequate (no impact)
- Financial policy: Neutral (no impact)
- Management and governance: Satisfactory (no impact)
- Comparable rating analysis: Negative (-1 notch)

Stand-alone credit profile: bbb+

Exhibit__(YS-3)
Page 5 of 6

- Group credit profile: a-
- Entity status within group: Core (+1 notch from SACP)

Related Criteria

- General Criteria: Methodology For Linking Long-Term And Short-Term Ratings , April 7, 2017
- Criteria - Corporates - General: Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers, Dec. 16, 2014
- Criteria - Corporates - Utilities: Key Credit Factors For The Regulated Utilities Industry, Nov. 19, 2013
- Criteria - Corporates - General: Corporate Methodology: Ratios And Adjustments, Nov. 19, 2013
- Criteria - Corporates - General: Corporate Methodology, Nov. 19, 2013
- General Criteria: Country Risk Assessment Methodology And Assumptions, Nov. 19, 2013
- General Criteria: Methodology: Industry Risk, Nov. 19, 2013
- General Criteria: Group Rating Methodology, Nov. 19, 2013
- General Criteria: Methodology: Management And Governance Credit Factors For Corporate Entities And Insurers, Nov. 13, 2012
- General Criteria: Use Of CreditWatch And Outlooks, Sept. 14, 2009
- Criteria - Corporates - General: 2008 Corporate Criteria: Rating Each Issue, April 15, 2008

Ratings List

Ratings Affirmed

Orange and Rockland Utilities Inc.	
Corporate Credit Rating	A-/Stable/A-2
Orange and Rockland Utilities Inc.	
Senior Unsecured	A-
Commercial Paper	A-2

Certain terms used in this report, particularly certain adjectives used to express our view on rating relevant factors, have specific meanings ascribed to them in our criteria, and should therefore be read in conjunction with such criteria. Please see Ratings Criteria at www.standardandpoors.com for further information. Complete ratings information is available to subscribers of RatingsDirect at www.globalcreditportal.com and at www.spcapitaliq.com. All ratings affected by this rating action can be found on the S&P Global Ratings' public website at www.standardandpoors.com. Use the Ratings search box located in the left column.

MOODY'S
INVESTORS SERVICE

Rating Action: Moody's downgrades ConEd to Baa1, CECONY to A3 and O&R to Baa1; outlooks stable

30 Oct 2018

New York, October 30, 2018 -- Moody's Investors Service ("Moody's") today downgraded the long-term ratings of Consolidated Edison, Inc. (ConEd, senior unsecured to Baa1 from A3) and its subsidiaries Consolidated Edison Company of New York, Inc. (CECONY, senior unsecured to A3 from A2) and Orange and Rockland Utilities, Inc. (O&R, senior unsecured to Baa1 from A3) due to a weaker financial profile. Moody's also downgraded CECONY's short-term commercial paper rating to P-2 from P-1. The P-2 commercial paper ratings for ConEd and O&R were affirmed. See a full debt list of affected ratings at the end of this press release. The outlooks for ConEd, CECONY and O&R are stable.

RATINGS RATIONALE

"ConEd's financial profile is weaker due to cash flow headwinds from tax reform, coupled with incremental holding company debt" said Ryan Wobbrock, Vice President -- Senior Analyst. "We see ConEd's ratio of consolidated cash flow to debt falling to around 15%, down from over 20% historically" added Wobbrock.

ConEd's credit is primarily driven by CECONY, since the utility represents roughly 90% of consolidated cash flow. In August, CECONY received some clarity on rate treatment of tax reform via a New York Public Service Commission (NYPSC) order, which includes sur-credits for electric and gas revenue in 2019 and amortization of accumulated deferred tax benefits to be determined in an upcoming general rate case. This means that CECONY will have a series of revenue and cash flow reductions that will offset some of the expected general rate increases that the utility would otherwise have.

As such, we expect CECONY's cash flow to remain steady, at the same time that the utility's capital spending -- and debt - is expected to increase for infrastructure resiliency, energy efficiency and other New York policy priorities. The combination will result in CECONY cash flow to debt ratios around 16-17% through 2020, which is also down from over 20% in recent years.

O&R faces the same type of cash flow headwinds and rate treatment as CECONY, which will reduce currently strong ratios of cash flow from operations before working capital (CFO pre-WC) to debt of over 20% to the mid-teen's over the next 2-3 years.

ConEd's financial decline reflects that of its utility subsidiaries and will be exacerbated by its intent to issue around $825 million of incremental amortizing debt as part of a 981 megawatt (MW) of renewable generation assets purchase. The $2.1 billion purchase, of mostly solar electric generation assets, includes the assumption of roughly $576 million of project level debt. This will increase the amount of ConEd's non-utility debt to around 16% of consolidated debt, from almost 13%, based on June 30 amounts.

ConEd's credit is supported by its ownership of rate regulated utility operations in transparent and supportive regulatory environments. It's unregulated business exposure remains relatively low, at just above 10% of expected 2019 consolidated EBITDA, and is backed by contracted revenue with credit-worthy counterparties.

The credit profiles of CECONY and O&R reflect their low business risk electric and gas (and steam, for CECONY) transmission and distribution assets that benefit from a suite of timely cost recovery mechanisms. These mechanisms allow the companies to generate stable and predictable cash flow and earned returns.

Factors that Could Lead to an Upgrade

Material improvements to financial metrics could lead to upgrades for ConEd, CECONY and O&R. This could occur with better than anticipated regulatory outcomes that drive sustainable CFO pre-WC to debt ratios to around 20% for ConEd, the low-to-mid 20% range for CECONY and at least 19% for O&R.

Factors that Could Lead to a Downgrade

ConEd could be downgraded if CECONY is downgraded, if unregulated operations become riskier and grow to

15-20% of consolidated EBITDA, or if incremental parent-debt results in CFO pre-WC to debt consistently below 15%.

CECONY could be downgraded if regulatory support declines or if CFO pre-WC to debt declines consistently below 17%.

O&R could be downgraded if regulatory support declines or if CFO pre-WC to debt declines consistently to around 15%.

The principal methodology used in these ratings was Regulated Electric and Gas Utilities published in June 2017. Please see the Rating Methodologies page on www.moodys.com for a copy of this methodology.

Downgrades:

..Issuer: Consolidated Edison Company of New York, Inc.

.... Issuer Rating, Downgraded to A3 from A2

....Senior Unsecured Commercial Paper, Downgraded to P-2 from P-1

....Senior Unsecured Regular Bond/Debenture, Downgraded to A3 from A2

....Underlying Senior Unsecured Regular Bond/Debenture, Downgraded to A3 from A2

..Issuer: Consolidated Edison, Inc.

.... Issuer Rating, Downgraded to Baa1 from A3

....Senior Unsecured Shelf, Downgraded to (P)Baa1 from (P)A3

....Senior Unsecured Regular Bond/Debenture, Downgraded to Baa1 from A3

..Issuer: New York State Energy Research & Dev. Auth.

....Senior Unsecured Revenue Bonds, Downgraded to A3 from A2

....Underlying Senior Unsecured Revenue Bonds, Downgraded to A3 from A2

..Issuer: New York State Research & Development Auth.

....Senior Unsecured Revenue Bonds, Downgraded to A3 from A2

....Underlying Senior Unsecured Revenue Bonds, Downgraded to A3 from A2

..Issuer: Orange and Rockland Utilities, Inc.

.... Issuer Rating, Downgraded to Baa1 from A3

....Senior Unsecured Regular Bond/Debenture, Downgraded to Baa1 from A3

Outlook Actions:

..Issuer: Consolidated Edison Company of New York, Inc.

....Outlook, Changed To Stable From Negative

..Issuer: Consolidated Edison, Inc.

....Outlook, Changed To Stable From Negative

..Issuer: Orange and Rockland Utilities, Inc.

....Outlook, Changed To Stable From Negative

Affirmations:

..Issuer: Consolidated Edison, Inc.

....Senior Unsecured Commercial Paper, Affirmed P-2

..Issuer: Orange and Rockland Utilities, Inc.

....Senior Unsecured Commercial Paper, Affirmed P-2

REGULATORY DISCLOSURES

For ratings issued on a program, series or category/class of debt, this announcement provides certain regulatory disclosures in relation to each rating of a subsequently issued bond or note of the same series or category/class of debt or pursuant to a program for which the ratings are derived exclusively from existing ratings in accordance with Moody's rating practices. For ratings issued on a support provider, this announcement provides certain regulatory disclosures in relation to the credit rating action on the support provider and in relation to each particular credit rating action for securities that derive their credit ratings from the support provider's credit rating. For provisional ratings, this announcement provides certain regulatory disclosures in relation to the provisional rating assigned, and in relation to a definitive rating that may be assigned subsequent to the final issuance of the debt, in each case where the transaction structure and terms have not changed prior to the assignment of the definitive rating in a manner that would have affected the rating. For further information please see the ratings tab on the issuer/entity page for the respective issuer on www.moodys.com.

For any affected securities or rated entities receiving direct credit support from the primary entity(ies) of this credit rating action, and whose ratings may change as a result of this credit rating action, the associated regulatory disclosures will be those of the guarantor entity. Exceptions to this approach exist for the following disclosures, if applicable to jurisdiction: Ancillary Services, Disclosure to rated entity, Disclosure from rated entity.

Regulatory disclosures contained in this press release apply to the credit rating and, if applicable, the related rating outlook or rating review.

Please see www.moodys.com for any updates on changes to the lead rating analyst and to the Moody's legal entity that has issued the rating.

Please see the ratings tab on the issuer/entity page on www.moodys.com for additional regulatory disclosures for each credit rating.

Ryan Wobbrock
Vice President - Senior Analyst
Infratructure Finance Group
Moody's Investors Service, Inc.
250 Greenwich Street
New York, NY 10007
U.S.A.
JOURNALISTS: 1 212 553 0376
Client Service: 1 212 553 1653

Jim Hempstead
MD - Utilities
Infrastructure Finance Group
JOURNALISTS: 1 212 553 0376
Client Service: 1 212 553 1653

Releasing Office:
Moody's Investors Service, Inc.
250 Greenwich Street
New York, NY 10007
U.S.A.
JOURNALISTS: 1 212 553 0376
Client Service: 1 212 553 1653

CREDIT RATINGS ISSUED BY MOODY'S INVESTORS SERVICE, INC. AND/OR ITS CREDIT RATINGS AFFILIATES ARE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND MATERIALS, PRODUCTS, SERVICES AND INFORMATION PUBLISHED BY MOODY'S (COLLECTIVELY, "PUBLICATIONS") MAY INCLUDE SUCH CURRENT OPINIONS. MOODY'S INVESTORS SERVICE 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 OR IMPAIRMENT. SEE MOODY'S RATING SYMBOLS AND DEFINITIONS PUBLICATION FOR INFORMATION ON THE TYPES OF CONTRACTUAL FINANCIAL OBLIGATIONS ADDRESSED BY MOODY'S INVESTORS SERVICE CREDIT RATINGS. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS, NON-CREDIT ASSESSMENTS ("ASSESSMENTS"), AND OTHER 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. AND/OR ITS AFFILIATES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS DO NOT COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS, ASSESSMENTS AND OTHER OPINIONS AND PUBLISHES ITS 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, ASSESSMENTS, OTHER OPINIONS, AND 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, ASSESSMENTS, OTHER OPINIONS OR PUBLICATIONS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS ARE NOT INTENDED FOR USE BY ANY PERSON AS A BENCHMARK AS THAT TERM IS DEFINED FOR REGULATORY PURPOSES AND MUST NOT BE USED IN ANY WAY THAT COULD RESULT IN THEM BEING CONSIDERED A BENCHMARK.

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 its 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 CREDIT RATING, ASSESSMENT, 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 credit rating, agreed to pay to Moody's Investors Service, Inc. for credit ratings opinions and services rendered by it fees ranging from $1,000 to approximately $2,700,000. MCO and Moody's investors Service also maintain policies and procedures to address the independence of Moody's Investors Service credit ratings and credit rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold credit ratings from Moody's Investors Service and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at www.moodys.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 657AFSL 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.

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 credit rating, agreed to pay to MJKK or MSFJ (as applicable) for credit ratings opinions and services rendered by it fees ranging from JPY125,000 to approximately JPY250,000,000.

MJKK and MSFJ also maintain policies and procedures to address Japanese regulatory requirements.

S&P Global
Ratings

RatingsDirect®

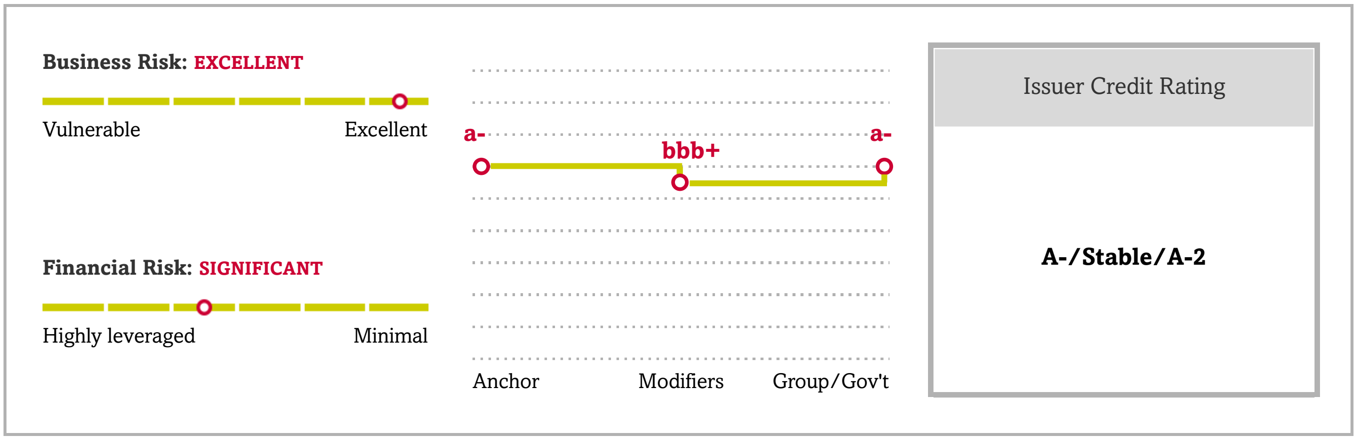
Orange and Rockland Utilities Inc.

Primary Credit Analyst:
Sloan Millman, CFA, New York + 1 (212) 438 2146; sloan.millman@spglobal.com

Secondary Contact:
Obioma Ugboaja, New York + 1 (212) 438 7406; obioma.ugboaja@spglobal.com

Table Of Contents

Orange and Rockland Utilities Inc.



Credit Highlights

Overview

Key strengths	Key risks
Lower-risk rate-regulated electric transmission and distribution and gas distribution utility operations.	The company's small size makes it susceptible to localized weather and adverse economic conditions.
The company effectively manages its regulatory risk under generally constructive regulatory frameworks.	Forecast negative discretionary cash flow indicates external funding needs.
Orange and Rockland Utilities Inc.'s (O&R) status as a core subsidiary of Consolidated Edison Inc. (Con Ed) provides a one-notch uplift to our ratings.	A concentration of operations in New York makes the company largely dependent on the New York State Public Service Commission (NYSPC) to sustain its credit quality.
	Minimal cushion in parent Con Ed's financial metrics for the current rating.

Our assessment of O&R as a core subsidiary of Con Ed underpins the rating. Because O&R is a core subsidiary of Con Ed, our issuer credit rating on O&R benefits from a one-notch uplift, bringing it in line with our group credit profile on Con Ed.

Although O&R has a smaller scale than its peers, the company effectively manages its regulatory risk. The company has effectively managed its regulatory risk and recently received multiyear rate plans for both its electric and gas operations in New York as well as a rate increase for its electric operations in New Jersey.

We expect O&R's financial measures to be at the lower end of the financial risk profile category. We forecast funds from operations (FFO) to debt to average 13%-15% throughout our forecast period, indicative of the significant financial risk profile category, albeit toward the lower end of the range.

We expect parent Con Ed's financial measures to have minimal cushion for the current rating level throughout our forecast. We expect Con Ed's FFO to debt to average between 16% and 17%.

Outlook: Stable

The stable outlook on O&R mirrors S&P Global Ratings' outlook on parent Con Ed. The stable outlook reflects our view that most of Con Ed's business mix will continue to reflect low-risk regulated utility operations. The stable outlook also reflects our expectation that the growth of Con Ed's renewables business will be measured and balanced with growth in its regulated operations and that its FFO to debt will remain consistently above 16%.

Downside scenario

We could lower our ratings on Con Ed and its subsidiaries if its business risk weakened. This could occur if Con Ed disproportionately expanded its nonregulated business operations or if it experienced adverse regulatory outcomes that impeded its overall management of regulatory risk. We could also lower the ratings if Con Ed's FFO to debt weakened to be consistently below 16%, either through general rate-case outcomes that were lower than expected or if it disproportionately financed a major acquisition with leverage. Furthermore, we would lower our ratings if Con Ed materially supported the debt related to its renewable energy projects, if these projects became distressed or experienced setbacks.

Upside scenario

Although unlikely given current financial measures, we could raise the ratings on Con Ed and its subsidiaries if it significantly improved its financial measures, including FFO to debt that consistently approached 23%.

Our Base-Case Scenario

Assumptions

- Rates in place through 2021 for O&R's New York operations and a rate increase starting in 2020 resulting from Rockland Electric Company's (RECO) New Jersey rate case,
- Dividends averaging $50 million to $60 million annually,
- Capital expenditures averaging about $200 million annually,
- Modest operations and maintenance expense growth, and
- Forecast negative discretionary cash flow throughout our forecast period.

Key Metrics

	2018a	2019e	2020f
Adj. FFO to debt (%)	16.7	13.0-15.0	13.0-15.0
Adj. debt to EBITDA (x)	4.6	5.0-6.0	5.0-6.0
Adj. FFO cash interest coverage (x)	5.2	4.0-5.0	4.0-5.0

a--Actual. e--Estimate. f--Forecast. FFO--Funds from operations.

Company Description

O&R and its utility subsidiary, RECO (together referred to herein as O&R), provide electric service to approximately 300,000 customers in southeastern New York and in adjacent areas of northern New Jersey. It also provides gas services to approximately 120,000 customers in New York. O&R contributes to about 5% of Con Ed's consolidated EBITDA.

Business Risk: Excellent

Our assessment of O&R's business risk profile largely reflects its lower-risk electric transmission and distribution and gas distribution operations under generally constructive regulatory frameworks.From a regulatory standpoint, New York has generally been stable and constructive for utility credit, as companies benefit from regulatory mechanisms such as revenue decoupling, multiyear rate plans, and the pass-through of fuel costs.

In 2019, O&R received approval from the NYSPSC for its multiyear rate plan settlements for its electric and gas rates. Highlights from these plans include rates in place through 2021, a return on equity of about 9%, and total rate increases over the plan of about $39 million. Although the company's return on equity under this plan is lower than what is typical for peer utilities, the plan's multiyear nature and the presence of other cost recovery mechanisms support our forecast for O&R's FFO to debt to average 13%-15%. Further supporting the company's cash flows throughout our forecast is its recent rate case order in New Jersey for a rate increase of about $12 million for RECO.

Somewhat limiting our view of the company's business risk is its small size. The company's below-average size customer base makes it susceptible to localized weather and adverse economic conditions. Should the company not receive support from Con Ed if issues arise, its credit quality could diminish. However, we do not foresee this circumstance because we assess O&R to be a core subsidiary to Con Ed.

Peer comparison

Table 1

Orange And Rockland Utilities Inc.--Peer Comparison

	Orange and Rockland Utilities Inc.	Central Hudson Gas & Electric Corp.	New York State Electric & Gas Corp.	Rochester Gas & Electric Corp.
Rating as of Feb. 27, 2020	A-/Stable/A-2	A-/Stable/--	A-/Stable/A-2	A-/Stable/--
(Mil. $)				
Revenue	891.0	724.6	1,694.3	923.8
EBITDA	210.6	157.2	381.9	297.4
FFO	162.3	130.5	319.6	212.1
Interest expense	40.2	32.5	71.2	92.3
Cash interest paid	38.2	26.7	40.6	56.6
Cash flow from operations	171.7	129.1	408.2	269.5
Capital expenditure	198.0	187.9	522.3	258.6
FOCF	(26.3)	(58.8)	(114.1)	10.9
Dividends paid	46.0	0.0	0.0	40.0
DCF	(72.3)	(58.8)	(114.1)	(29.1)

Table 1

Orange And Rockland Utilities Inc.--Peer Comparison (cont.)				
	Orange and Rockland Utilities Inc.	**Central Hudson Gas & Electric Corp.**	**New York State Electric & Gas Corp.**	**Rochester Gas & Electric Corp.**
Cash and short-term investments	50.0	39.3	4.9	0.2
Gross available cash	50.0	39.3	4.9	0.2
Debt	973.0	659.1	1,481.3	1,199.5
Equity	712.0	696.3	1,453.9	1,006.2
Adjusted ratios				
EBITDA margin (%)	23.6	21.7	22.5	32.2
Return on capital (%)	7.8	8.3	8.9	10.4
EBITDA interest coverage (x)	5.2	4.8	5.4	3.2
FFO cash interest coverage (x)	5.2	5.9	8.9	4.8
Debt/EBITDA (x)	4.6	4.2	3.9	4.0
FFO/debt (%)	16.7	19.8	21.6	17.7
Cash flow from operations/debt (%)	17.6	19.6	27.6	22.5
FOCF/debt (%)	(2.7)	(8.9)	(7.7)	0.9
DCF/debt (%)	(7.4)	(8.9)	(7.7)	(2.4)
Debt/debt and equity (%)	57.7	48.6	50.5	54.4

FFO--Funds from operations. FOCF--Free operating cash flow. DCF--Discretionary cash flow.

Financial Risk: Significant

We assess O&R's financial measures using our medial-volatility table, which largely reflects our view of the company's lower-risk regulated electric and gas utility operations and its effective management of regulatory risk. Under our base-case scenario, we expect FFO to debt to average about 13%-15%, which is indicative of a financial risk profile at the lower end of the category and is consistent with our use of a negative comparable ratings analysis modifier on the company. Our base case assumes rates in place through 2021 stemming from O&R's New York rate case, a rate increase at RECO starting this year, continued use of existing regulatory mechanisms, capital spending that averages about $200 million annually, dividends averaging $50 million to $60 million annually, equity infusions by Con Ed to maintain the company's regulatory capital structure as needed, and negative discretionary cash flow.

Financial summary

Table 2

Orange and Rockland Utilities Inc.--Financial Summary					
Industry sector: combo					
	--Fiscal year ended Dec. 31--				
	2018	**2017**	**2016**	**2015**	**2014**
(Mil. $)					
Revenue	891.0	874.0	821.0	845.0	892.0
EBITDA	210.6	228.2	203.8	212.7	223.9

Table 2

Orange and Rockland Utilities Inc.--Financial Summary (cont.)					
Industry sector: combo					
	--Fiscal year ended Dec. 31--				
	2018	**2017**	**2016**	**2015**	**2014**
FFO	162.3	180.9	146.5	146.4	184.5
Interest expense	40.2	37.3	37.3	36.3	36.3
Cash interest paid	38.2	37.3	38.3	29.3	30.3
Cash flow from operations	171.7	215.6	157.5	182.4	208.3
Capital expenditure	198.0	188.0	166.0	152.0	145.0
FOCF	(26.3)	27.6	(8.5)	30.4	63.3
Dividends paid	46.0	44.0	42.0	81.0	40.0
DCF	(72.3)	(16.4)	(50.5)	(50.6)	23.3
Cash and short-term investments	50.0	46.0	47.0	45.0	49.0
Gross available cash	50.0	46.0	47.0	45.0	49.0
Debt	973.0	946.4	882.7	904.2	888.8
Equity	712.0	666.0	645.0	605.0	625.0
Adjusted ratios					
EBITDA margin (%)	23.6	26.1	24.8	25.2	25.1
Return on capital (%)	7.8	9.7	8.7	9.1	11.1
EBITDA interest coverage (x)	5.2	6.1	5.5	5.9	6.2
FFO cash interest coverage (x)	5.2	5.9	4.8	6.0	7.1
Debt/EBITDA (x)	4.6	4.1	4.3	4.3	4.0
FFO/debt (%)	16.7	19.1	16.6	16.2	20.8
Cash flow from operations/debt (%)	17.6	22.8	17.8	20.2	23.4
FOCF/debt (%)	(2.7)	2.9	(1.0)	3.4	7.1
DCF/debt (%)	(7.4)	(1.7)	(5.7)	(5.6)	2.6
Debt/debt and equity (%)	57.7	58.7	57.8	59.9	58.7

FFO--Funds from operations. FOCF--Free operating cash flow. DCF--Discretionary cash flow.

Liquidity: Adequate

We base our 'A-2' short-term rating on O&R on our issuer credit rating on the company. O&R has adequate liquidity, in our view, and can more than cover its needs for the next 12 months, even if EBITDA declines by 10%. We expect the company's liquidity sources over the next 12 months will exceed its uses by more than 1.1x. We also expect that O&R will meet our other requirements that support its current liquidity designation. Under our stress scenario, we do not expect that O&R would require access to the capital markets during the next 12 months to meet its liquidity needs. O&R also benefits from sound relationships with its banks and a satisfactory standing in the credit markets.

Principal Liquidity Sources	Principal Liquidity Uses

- Cash of about $35 million,
- Cash FFO of about $150 million, and
- Credit facility availability of about $200 million.

- Minimal debt maturities,
- Maintenance capital spending of about $140 million, and
- Dividends of about $50 million.

Group Influence

Our ratings incorporate our view of O&R as a core subsidiary of Con Edison, largely reflecting that it is highly unlikely to be sold, operates in lines of business or functions integral to the overall group strategy, has a strong commitment of support from senior group management, is closely linked to the parent's name and reputation, and has operated more than five years. Therefore, we align our issuer credit rating on O&R with our 'a-' group credit profile on Con Edison.

Issue Ratings - Subordination Risk Analysis

Capital structure

O&R's capital structure consists of about $800 million of debt, all of which is unsecured.

Analytical conclusions

We rate O&R's unsecured debt 'A-', the same as our issuer credit rating on O&R, since we view this instrument as unsecured debt of a qualifying investment-grade utility, consistent with our criteria.

Reconciliation

Table 3

Reconciliation Of Orange and Rockland Utilities Inc. Reported Amounts With S&P Global Ratings' Adjusted Amounts (Mil. $)

	--Fiscal year ended Dec. 31, 2018--						
Orange and Rockland Utilities Inc. reported amounts							
	Debt	**EBITDA**	**Operating income**	**Interest expense**	**S&P Global Ratings' adjusted EBITDA**	**Cash flow from operations**	**Capital expenditure**
	810.0	209.0	132.0	39.0	210.6	172.0	199.0
S&P Global Ratings' adjustments							
Cash taxes paid	--	--	--	--	(10.0)	--	--
Cash taxes paid: other	--	--	--	--	--	--	--
Cash interest paid	--	--	--	--	(37.0)	--	--
Operating leases	3.0	1.0	0.2	0.2	(0.2)	0.7	--
Postretirement benefit obligations/deferred compensation	218.8	--	--	--	--	--	--

Table 3

Reconciliation Of Orange and Rockland Utilities Inc. Reported Amounts With S&P Global Ratings' Adjusted Amounts (Mil. $) (cont.)							
Accessible cash and liquid investments	(50.0)	--	--	--	--	--	--
Capitalized interest	--	--	--	1.0	(1.0)	(1.0)	(1.0)
Share-based compensation expense	--	0.6	--	--	--	--	--
Nonoperating income (expense)	--	--	(3.0)	--	--	--	--
Debt: workers compensation/self insurance	3.2	--	--	--	--	--	--
Debt: other	(12.0)	--	--	--	--	--	--
Total adjustments	163.0	1.6	(2.8)	1.2	(48.2)	(0.3)	(1.0)
S&P Global Ratings' adjusted amounts							
	Debt	**EBITDA**	**EBIT**	**Interest expense**	**Funds from operations**	**Cash flow from operations**	**Capital expenditure**
	973.0	210.6	129.2	40.2	162.3	171.7	198.0

Ratings Score Snapshot

Issuer Credit Rating

A-/Stable/A-2

Business risk: Excellent

- **Country risk:** Very low
- **Industry risk:** Very low
- **Competitive position:** Strong

Financial risk: Significant

- **Cash flow/leverage:** Significant

Anchor: a-

Modifiers

- **Diversification/portfolio effect:** Neutral (no impact)
- **Capital structure:** Neutral (no impact)
- **Financial policy:** Neutral (no impact)
- **Liquidity:** Adequate (no impact)
- **Management and governance:** Satisfactory (no impact)
- **Comparable rating analysis:** Negative (-1 notch)

Stand-alone credit profile : bbb+

- **Group credit profile:** a-
- **Entity status within group:** Core (no impact)

Related Criteria

- General Criteria: Group Rating Methodology, July 1, 2019
- Criteria - Corporate - General: Corporate Methodology: Ratios And Adjustments, April 1, 2019
- Criteria - Corporates - General: Reflecting Subordination Risk In Corporate Issue Ratings, March 28, 2018
- General Criteria: Methodology For Linking Long-Term And Short-Term Ratings, April 7, 2017
- Criteria - Corporates - General: Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers, Dec. 16, 2014
- Criteria - Corporates - Utilities: Key Credit Factors For The Regulated Utilities Industry, Nov. 19, 2013
- Criteria - Corporates - General: Corporate Methodology, Nov. 19, 2013
- General Criteria: Country Risk Assessment Methodology And Assumptions, Nov. 19, 2013
- General Criteria: Methodology: Industry Risk, Nov. 19, 2013
- General Criteria: Methodology: Management And Governance Credit Factors For Corporate Entities And Insurers, Nov. 13, 2012
- General Criteria: Use Of CreditWatch And Outlooks, Sept. 14, 2009

Related Research

Full analysis: Consolidated Edison Inc., Jan. 23, 2020

Business And Financial Risk Matrix

	Financial Risk Profile					
Business Risk Profile	Minimal	Modest	Intermediate	**Significant**	Aggressive	Highly leveraged
Excellent	aaa/aa+	aa	a+/a	**a-**	bbb	bbb-/bb+
Strong	aa/aa-	a+/a	a-/bbb+	bbb	bb+	bb
Satisfactory	a/a-	bbb+	bbb/bbb-	bbb-/bb+	bb	b+
Fair	bbb/bbb-	bbb-	bb+	bb	bb-	b
Weak	bb+	bb+	bb	bb-	b+	b/b-
Vulnerable	bb-	bb-	bb-/b+	b+	b	b-

Ratings Detail (As Of March 3, 2020)*	
Orange and Rockland Utilities Inc.	
Issuer Credit Rating	A-/Stable/A-2
Commercial Paper	
Local Currency	A-2

Ratings Detail (As Of March 3, 2020)*(cont.)	
Senior Unsecured	A-
Issuer Credit Ratings History	
26-Jan-2017	A-/Stable/A-2
23-Nov-2015	A-/Negative/A-2
25-Mar-2008	A-/Stable/A-2
Related Entities	
Consolidated Edison Co. of New York Inc.	
Issuer Credit Rating	A-/Stable/A-2
Commercial Paper	
Local Currency	A-2
Senior Unsecured	A-
Consolidated Edison Inc.	
Issuer Credit Rating	A-/Stable/A-2
Commercial Paper	
Local Currency	A-2
Senior Unsecured	BBB+
Rockland Electric Co.	
Issuer Credit Rating	A-/Stable/--

*Unless otherwise noted, all ratings in this report are global scale ratings. S&P Global Ratings' credit ratings on the global scale are comparable across countries. S&P Global Ratings' credit ratings on a national scale are relative to obligors or obligations within that specific country. Issue and debt ratings could include debt guaranteed by another entity, and rated debt that an entity guarantees.

FitchRatings

Corporates
Electric-Corporate
United States

Orange and Rockland Utilities, Inc.

Subsidiary of Consolidated Edison, Inc.

Orange & Rockland Utilities, Inc.'s (ORU) ratings reflect a conservative utility business model, solid financial performance and financial stability supported by a multiyear rate plan. ORU generates additional modest earnings from regulated subsidiary Rockland Electric Company (RECO). There are strong rating linkages between ORU, parent company Consolidated Edison, Inc. (ED) and sister utility subsidiary Consolidated Edison Co. of New York, Inc. (CECONY), given ORU's small size within the corporate structure.

Fitch Ratings revised the Rating Outlook for ED and subsidiaries to Negative from Stable in March 2020, reflecting the view that the coronavirus pandemic is likely to result in weaker credit metrics and could breach downgrade threshold metrics, especially at ED.

Key Rating Drivers

Coronavirus Sales Effects: The coronavirus pandemic has significantly affected ORU's electric sales. The company disclosed that from March 16 to July 31, 2020 weather-adjusted residential electric delivery volumes increased 10% while commercial volumes declined 12%. Over the same period, residential revenues increased 7% and commercial revenues declined 10%. ORU benefits from revenue decoupling and bad debt expense recovery in its New York jurisdiction.

Regulatory and Legislative Coronavirus Response: ORU voluntarily suspended disconnections, late charges and other fees in March of 2020. Subsequently, the state of New York enacted a law prohibiting residential disconnections during the current state of emergency and, potentially, up to 180 days thereafter. The law expires in March 2021.

Additionally, the New York Public Service Commission (NYPSC) opened a generic docket in June 2020 to investigate the effects of the coronavirus pandemic on utility service. The NYPSC has not given any indication of the investigation's timetable or potential regulatory actions such as deferred accounting for pandemic-related expenses.

Low-Risk Business Profile: ORU's ratings reflect the relatively predictable cash flows of its regulated electric transmission and distribution (T&D) and gas delivery businesses, which have full and timely recovery of fuel and commodity costs. The company benefits from regulatory mechanisms in its New York jurisdiction that support utility creditworthiness, including decoupling and forward-looking test years.

On a negative note, authorized ROEs in New York are the lowest in the nation. The ownership of RECO, a regulated transmission and distribution utility that operates in New Jersey, provides modest additional cash flows. RECO's ratings reflect ORU's credit quality.

NY Rate Plan Approval: On March 14, 2019, the NYPSC approved the joint proposal reached in November 2018 by ORU, PSC staff and other parties. The rate plan increases ORU's electric rates on a phased-in basis over 2019–2021 by $33 million and decreases gas rates over the period by $4 million.

The rate changes include the effects of the Tax Cuts and Jobs Act's reduction in the corporate income tax rate. The 2019 rate changes are retroactive to Jan. 1, 2019. The new rates are based on a 9.0% ROE and 48% equity capitalization, unchanged from the prior three-year plan, and include an earnings-sharing mechanism for earnings above a 9.6% ROE and the continuation of revenue decoupling. Fitch views the new rate plan as balanced and consistent with expectations.

Ratings

Rating Type	Rating	Outlook	Last Rating Action
Long-Term IDR	BBB+	Negative	Affirmed March 25, 2020
Short-Term IDR	F2		Affirmed March 25, 2020
Long-Term Senior Unsecured	A–		Affirmed March 25, 2020

Click here for full list of ratings

Applicable Criteria

Parent and Subsidiary Linkage Rating Criteria (August 2020)

Corporate Rating Criteria (May 2020)

Corporates Notching and Recovery Ratings Criteria (October 2019)

Related Research

Fitch Affirms ConEd & Subsidiaries at 'BBB+'; Outlook Revised to Negative (March 2020)

Fitch Affirms ConEd & Subsidiaries at 'BBB+'; Outlook Stable (December 2019)

Analysts

Barbara Chapman
+1 646 582-4886
barbara.chapman@fitchratings.com

Kevin Beicke
+1 212 908-0618
kevin.beicke@fitchratings.com

NJ Rate Proceeding: In January 2020, the New Jersey Board of Public Utilities approved an electric rate increase of $12 million, effective Feb. 1, 2020, for RECO, which serves 73,000 customers in parts of northern New Jersey. The company originally requested a $19.9 million rate increase based on a 10% ROE and 49.93% equity capitalization, but subsequently updated this to $20.3 million based on a 9.6% ROE and a 50.16% equity capitalization.

Reduced Capex: ORU plans to spend approximately $628 million over 2020–2022, compared with approximately $633 million over the prior three years. Capex is earmarked for investments in electric and gas infrastructure, implementation of an advanced metering infrastructure system and, to a lesser extent, projects addressing New York's Reforming the Energy Vision initiative.

Declining Credit Metrics: Fitch forecasts FFO-adjusted leverage to average 4.6x over 2020–2022, providing modest headroom at current rating levels. The projected credit metrics assume the recently approved three-year rate plan. Fitch expects ORU's internally generated cash flows to fund 75% of capex requirements on average, with the remainder funded through debt issuance and parent equity infusions.

Small Size in Corporate Structure: ORU's ratings are closely aligned to the ratings of its parent holding company, ED, given ORU's relatively small size and the benefit of ownership by a large parent that can provide financial support if needed. ORU represented 7% of ED's consolidated net revenue and 5% of consolidated EBITDA as of Dec. 31, 2020. Fitch assigns RECO the same Issuer Default Rating (IDR) as ORU, given its small size and dependence on ORU for all funding and management support.

Parent-Subsidiary Linkage: There is a strong rating linkage between ED and its two principal regulated utility subsidiaries, CECONY and ORU. A downgrade of CECONY, given strong operational and financial ties, with the utility generally contributing nearly 90% of ED's consolidated cash flows, would likely result in a downgrade of ED. A downgrade of ED would likely result in a downgrade of ORU, given the subsidiary's small size.

The linkage also reflects a shared bank credit facility and parental support in the form of equity infusions to maintain the utilities' statutory capital structures. Given the linkages, Fitch would allow a maximum of a one-notch differential between the Long-Term IDRs of ED and CECONY and ORU. As regulated utilities, both CECONY and ORU are considered stronger credits than ED. Fitch assigns RECO the same IDR as ORU, given its small size and dependence on ORU for all funding and management support.

Financial Summary

($ Mil., as of Dec. 31)	2016	2017	2018	2019
Gross Revenue	821	874	891	893
Operating EBITDAR	197	212	209	224
Cash Flow from Operations	158	216	172	190
Capital Intensity (Capex/Revenue) (%)	20.3	21.6	22.3	23.5
Total Adjusted Debt with Equity Credit	741	757	810	850
FFO Fixed-Charge Coverage (x)	5.2	6.6	6.0	4.9
FFO-Adjusted Leverage (x)	3.9	3.1	3.6	4.1
Total Adjusted Debt/Operating EBITDAR (x)	3.8	3.6	3.9	3.8

Source: Fitch Ratings, Fitch Solutions.

Rating Derivation Relative to Peers

ORU's business risk profile is similar to that of its peers Central Hudson Gas & Electric Co. (CHG&E; BBB+/Stable), New York State Electric & Gas Corporation (NYSEG; BBB+/Stable) and sister utility CECONY. ORU's operational and financial scale is comparable with CHG&E's and NYSEG's but materially smaller than CECONY's. ORU's financial profile is comparable with NYSEG's and CHG&E's and slightly stronger than CECONY's. Adjusted debt/EBITDAR and FFO-adjusted leverage at ORU were 3.9x and 3.6x, respectively, as of TTM 4Q19, compared with 3.4x and 2.8x at NYSEG, 4.4x and 3.6x at CHG&E, and 4.3x and 4.5x at CECONY.

Rating Sensitivities

Factors that Could, Individually or Collectively, Lead to Positive Rating Action/Upgrade

- Given the utility's small size within the corporate family and close linkage to ED, an upgrade at ED could lead to positive rating actions;
- Unexpected improvement in New York regulatory environment;
- FFO-adjusted leverage less than 4.0x on a sustained basis.

Factors that Could, Individually or Collectively, Lead to Negative Rating Action/Downgrade

- A downgrade at ED;
- FFO-adjusted leverage greater than 5.0x on a sustained basis;
- A significant deterioration in the New York or New Jersey regulatory compact.

Liquidity and Debt Structure

Adequate Liquidity: Group liquidity is supported by a $2.25 billion shared bank credit facility that expires in December 2022. In April 2019, the credit facility termination date was extended to December 2023 with respect to banks with aggregate commitments of $2.2 billion. The full amount of the facility is available to CECONY, while ED has access to a total of $1 billion and ORU a total of $200 million. As of June 30, 2020, approximately $1,581 million of consolidated liquidity was available, including $437 million of unused facilities and $1,144 million of cash and cash equivalents.

In July 2020, ED borrowed $820 million pursuant to a supplemental credit agreement. The bank credit facility has a covenant that requires total debt/total capital to be no greater than 65%. Consolidated long-term debt maturities are considered manageable, with $518 million due in 2020, $1,967 million due in 2021 and $437 million due in 2022.

ESG Considerations

Unless otherwise disclosed in this section, the highest level of Environmental, Social and Governance (ESG) credit relevance is a score of '3' - ESG issues are credit neutral or have only a minimal credit impact on the entity, either due to their nature or the way in which they are being managed by the entity.

For more information on Fitch's ESG Relevance Scores, visit www.fitchratings.com/esg.

FitchRatings

Liquidity and Debt Maturities

Liquidity Analysis

($ Mil.)	12/31/18	12/31/19
Total Cash and Cash Equivalents	52	32
Short-Term Investments	—	—
Less: Not Readily Available Cash and Cash Equivalents	2	0
Fitch-Defined Readily Available Cash and Cash Equivalents	**50**	**32**
Availability Under Committed Lines of Credit	146	183
Total Liquidity	**196**	**215**
LTM EBITDA After Associates and Minorities	209	223
LTM FCF	(73)	(67)

Source: Fitch Ratings, Fitch Solutions, Orange and Rockland Utilities, Inc.

Scheduled Long-Term Debt Maturities

($ Mil.)	6/30/20
2020	0
2021	0
2022	0
2023	0
2024	0
Thereafter	825
Total	**825**

Source: Fitch Ratings, Fitch Solutions, Orange and Rockland Utilities, Inc.

Key Assumptions

Fitch's Key Assumptions Within Our Rating Cases for the Issuer

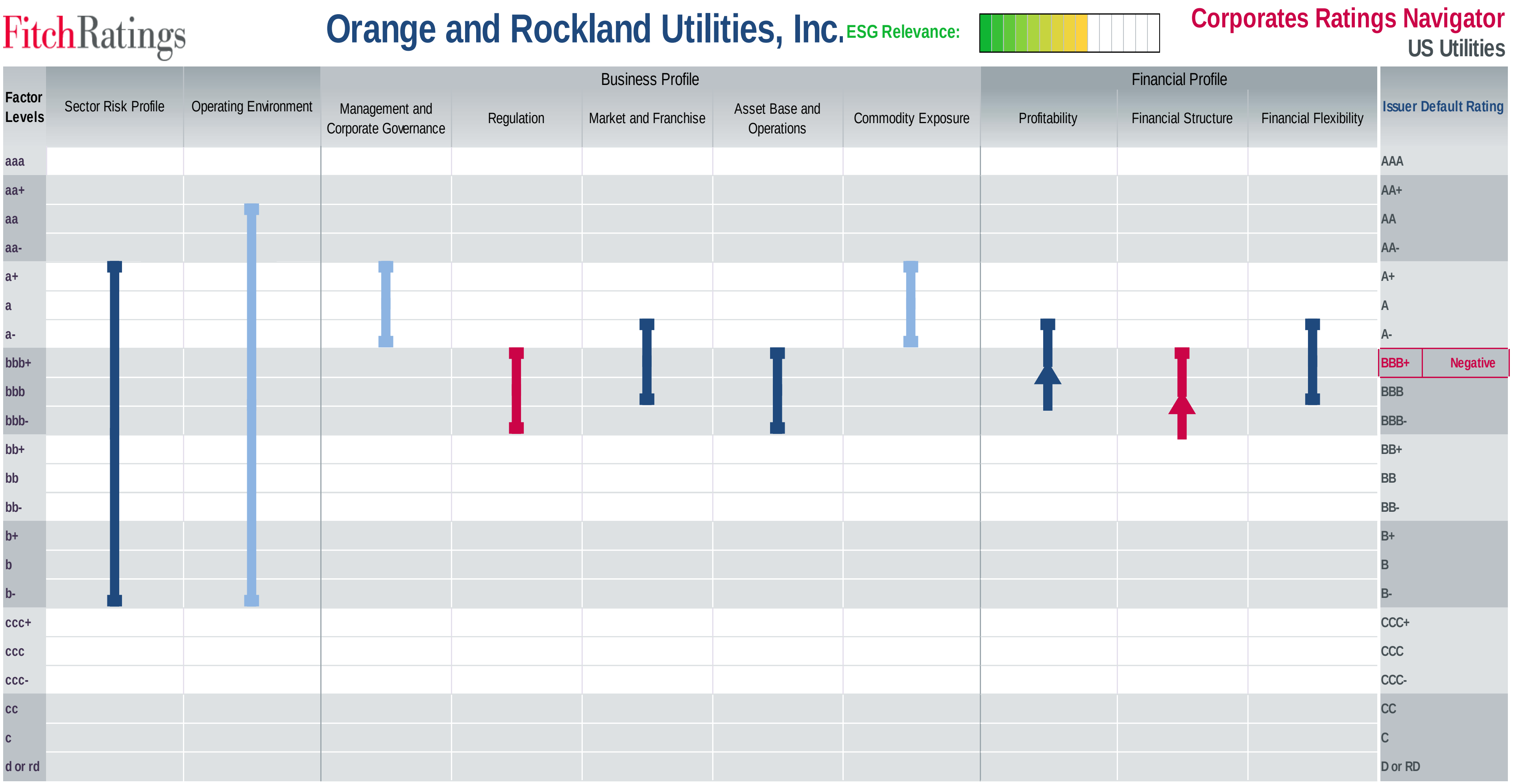
- Consolidated capex of $628 million over 2020–2022;
- Three-year rate plan at ORU effective Jan. 1, 2019;
- Parent level dividend payout ratio between 65%and 70%.

Financial Data

($ Mil., as of Dec. 31)	2016	2017	2018	2019
Summary Income Statement				
Gross Revenue	821	874	891	893
Revenue Growth (%)	(2.8)	6.5	1.9	0.2
Operating EBITDA (Before Income from Associates)	197	212	209	223
Operating EBITDA Margin (%)	24.0	24.3	23.5	25.0
Operating EBITDAR	197	212	209	224
Operating EBITDAR Margin (%)	24.0	24.3	23.5	25.1
Operating EBIT	130	141	132	139
Operating EBIT Margin (%)	15.8	16.1	14.8	15.6
Gross Interest Expense	(37)	(37)	(40)	(43)
Pretax Income (Including Associate Income/Loss)	95	106	74	87
Summary Balance Sheet				
Readily Available Cash and Equivalents	47	46	50	32
Total Debt with Equity Credit	741	757	810	842
Total Adjusted Debt with Equity Credit	741	757	810	850
Net Debt	694	711	760	810
Summary Cash Flow Statement				
Operating EBITDA	197	212	209	223
Cash Interest Paid	(37)	(37)	(38)	(41)
Cash Tax	(19)	(10)	(10)	(17)
Dividends Received Less Dividends Paid to Minorities (Inflow/(Out)flow)	0	0	0	0
Other Items Before FFO	14	41	28	(2)
FFO	155	206	189	163
FFO Margin (%)	18.9	23.6	21.2	18.3
Change in Working Capital	3	10	(17)	27
Cash Flow from Operations (Fitch Defined)	158	216	172	190
Total Non-Operating/Nonrecurring Cash Flow	0	0	0	0
Capex	(167)	(189)	(199)	(210)
Capital Intensity (Capex/Revenue) %	20.3	21.6	22.3	23.5
Common Dividends	(42)	(44)	(46)	(47)
FCF	(51)	(17)	(73)	(67)
Net Acquisitions and Divestitures	15	0	4	0
Other Investing and Financing Cash Flow Items	12	(6)	(5)	(9)
Net Debt Proceeds	6	22	53	26
Net Equity Proceeds	20	0	25	30
Total Change in Cash	2	(1)	4	(20)
Calculations for Forecast Publication				
Capex, Dividends, Acquisitions and Other Items Before FCF	(194)	(233)	(241)	(257)
FCF After Acquisitions and Divestitures	(36)	(17)	(69)	(67)
FCF Margin (After Net Acquisitions) (%)	(4.4)	(1.9)	(7.7)	(7.5)
Coverage Ratios (x)				
FFO Interest Coverage	5.2	6.6	6.0	5.0
FFO Fixed-Charge Coverage	5.2	6.6	6.0	4.9
Operating EBITDAR/Interest Paid + Rents	5.3	5.7	5.5	5.3
Operating EBITDA/Interest Paid	5.3	5.7	5.5	5.4
Leverage Ratios (x)				
Total Adjusted Debt/Operating EBITDAR	3.8	3.6	3.9	3.8
Total Adjusted Net Debt/Operating EBITDAR	3.5	3.4	3.6	3.7
Total Debt with Equity Credit/Operating EBITDA	3.8	3.6	3.9	3.8
FFO-Adjusted Leverage	3.9	3.1	3.6	4.1
FFO-Adjusted Net Leverage	3.6	2.9	3.3	4.0

Source: Fitch Ratings, Fitch Solutions.

Ratings Navigator



FitchRatings

FitchRatings

Orange and Rockland Utilities, Inc.

Corporates Ratings Navigator
US Utilities

Operating Environment

aa+	Economic Environment	aa	Very strong combination of countries where economic value is created and where assets are located.
aa	Financial Access	aa	Very strong combination of issuer specific funding characteristics and of the strength of the relevant local financial market.
	Systemic Governance	aa	Systemic governance (eg rule of law, corruption; government effectiveness) of the issuer's country of incorporation consistent with 'AA'.
b-			
ccc+			

Management and Corporate Governance

aa-	Management Strategy	a	Coherent strategy and good track record in implementation.
a+	Governance Structure	bbb	Good CG track record but effectiveness/independence of board less obvious. No evidence of abuse of power even with ownership concentration.
a	Group Structure	aa	Transparent group structure.
a-	Financial Transparency	a	High quality and timely financial reporting.
bbb+			

Regulation

a-	Degree of Transparency and Predictability	bbb	Generally transparent and predictable regulation with limited political interference.
bbb+	Timeliness of Cost Recovery	a	Minimal lag to recover capital and operating costs.
bbb	Trend in Authorized ROEs	bb	Significantly below-average authorized ROE.
bbb-	Mechanisms Available to Stabilize Cash Flows	a	Revenues fully insulated from variability in consumption.
bb+	Mechanisms Supportive of Creditworthiness	bbb	Effective regulatory ring-fencing or minimum creditworthiness requirements.

Market and Franchise

a	Market Structure	a	Well-established market structure with complete transparency in price-setting mechanisms.
a-	Consumption Growth Trend	bbb	Customer and usage growth in line with industry averages.
bbb+	Customer Mix	a	Favorable customer mix.
bbb	Geographic Location	bbb	Beneficial location or reasonable locational diversity.
bbb-	Supply Demand Dynamics	bbb	Moderately favorable outlook for prices/rates.

Asset Base and Operations

a-	Diversity of Assets	bbb	Good quality and/or reasonable scale diversified assets.
bbb+	Operations Reliability and Cost Competitiveness	bbb	Reliability and cost of operations at par with industry averages.
bbb	Exposure to Environmental Regulations	bbb	Limited or manageable exposure to environmental regulations.
bbb-	Capital and Technological Intensity of Capex	bbb	Moderate reinvestments requirements in established technologies.
bb+			

Commodity Exposure

aa-	Ability to Pass Through Changes in Fuel	a	Complete pass-through of commodity costs.
a+	Underlying Supply Mix	a	Extremely low cost and flexible supply.
a	Hedging Strategy	a	Highly captive supply and customer base.
a-			
bbb+			

Profitability

a	Free Cash Flow	bbb	Structurally neutral to negative FCF across the investment cycle.
a-	Volatility of Profitability	a	Higher stability and predictability of profits relative to utility peers.
bbb+			
bbb			
bbb-			

Financial Structure

a-	Lease Adjusted FFO Gross Leverage	bbb	5.0x
bbb+	Total Adjusted Debt/Operating EBITDAR	bbb	3.75x
bbb			
bbb-			
bb+			

Financial Flexibility

a	Financial Discipline	a	Clear commitment to maintain a conservative policy with only modest deviations allowed.
a-	Liquidity	bbb	One-year liquidity ratio above 1.25x. Well-spread maturity schedule of debt but funding may be less diversified.
bbb+	FFO Fixed Charge Cover	bbb	4.5x
bbb			
bbb-			

Credit-Relevant ESG Derivation

Orange and Rockland Utilities, Inc. has 9 ESG potential rating drivers

- Plants' and networks' exposure to extreme weather
- Product affordability and access
- Quality and safety of products and services; data security
- Impact of labor negotiations and employee (dis)satisfaction
- Social resistance to major projects that leads to delays and cost increases
- Governance is minimally relevant to the rating and is not currently a driver.

			Overall ESG
key driver	0	issues	5
driver	0	issues	4
potential driver	9	issues	3
not a rating driver	4	issues	2
	1	issues	1

For further details on Credit-Relevant ESG scoring, see page 3.

How to Read This Page: The left column shows the three-notch band assessment for the overall Factor, illustrated by a bar. The right column breaks down the Factor into Sub-Factors, with a description appropriate for each Sub-Factor and its corresponding category.

Navigator Version: RN 2.5.1.0

Orange and Rockland Utilities, Inc.

Corporates Ratings Navigator
US Utilities

Credit-Relevant ESG Derivation

Orange and Rockland Utilities, Inc. has 9 ESG potential rating drivers

- Orange and Rockland Utilities, Inc. has exposure to extreme weather events but this has very low impact on the rating.
- Orange and Rockland Utilities, Inc. has exposure to access/affordability risk but this has very low impact on the rating.
- Orange and Rockland Utilities, Inc. has exposure to customer accountability risk but this has very low impact on the rating.
- Orange and Rockland Utilities, Inc. has exposure to labor relations & practices risk but this has very low impact on the rating.
- Orange and Rockland Utilities, Inc. has exposure to social resistance but this has very low impact on the rating.
- Governance is minimally relevant to the rating and is not currently a driver.

			Overall ESG Scale
key driver	0	issues	5
driver	0	issues	4
potential driver	9	issues	3
not a rating driver	4	issues	2
	1	issues	1

Environmental (E)

General Issues	E Score	Sector-Specific Issues	Reference	E Scale
GHG Emissions & Air Quality	2	Emissions from operations	Asset Base and Operations; Commodity Exposure; Regulation; Profitability	5
Energy Management	2	Fuel use to generate energy and serve load	Asset Base and Operations; Commodity Exposure; Profitability	4
Water & Wastewater Management	1	Water used by hydro plants or by other generation plants, also effluent management	Asset Base and Operations; Regulation; Profitability	3
Waste & Hazardous Materials Management; Ecological Impacts	2	Impact of waste from operations	Asset Base and Operations; Regulation; Profitability	2
Exposure to Environmental Impacts	3	Plants' and networks' exposure to extreme weather	Asset Base and Operations; Regulation; Profitability	1

Social (S)

General Issues	S Score	Sector-Specific Issues	Reference	S Scale
Human Rights, Community Relations, Access & Affordability	3	Product affordability and access	Asset Base and Operations; Regulation; Profitability; Financial Structure	5
Customer Welfare - Fair Messaging, Privacy & Data Security	3	Quality and safety of products and services; data security	Regulation; Profitability	4
Labor Relations & Practices	3	Impact of labor negotiations and employee (dis)satisfaction	Asset Base and Operations; Profitability	3
Employee Wellbeing	2	Worker safety and accident prevention	Profitability; Asset Base and Operations	2
Exposure to Social Impacts	3	Social resistance to major projects that leads to delays and cost increases	Asset Base and Operations; Profitability	1

Governance (G)

General Issues	G Score	Sector-Specific Issues	Reference	G Scale
Management Strategy	3	Strategy development and implementation	Management and Corporate Governance	5
Governance Structure	3	Board independence and effectiveness; ownership concentration	Management and Corporate Governance	4
Group Structure	3	Complexity, transparency and related-party transactions	Management and Corporate Governance	3
Financial Transparency	3	Quality and timing of financial disclosure	Management and Corporate Governance	2
				1

How to Read This Page
ESG scores range from 1 to 5 based on a 15-level color gradation. Red (5) is most relevant and green (1) is least relevant.

The Environmental (E), Social (S) and Governance (G) tables break out the individual components of the scale. The right-hand box shows the aggregate E, S, or G score. General Issues are relevant across all markets with Sector-Specific Issues unique to a particular industry group. Scores are assigned to each sector-specific issue. These scores signify the credit-relevance of the sector-specific issues to the issuing entity's overall credit rating. The Reference box highlights the factor(s) within which the corresponding ESG issues are captured in Fitch's credit analysis.

The Credit-Relevant ESG Derivation table shows the overall ESG score. This score signifies the credit relevance of combined E, S and G issues to the entity's credit rating. The three columns to the left of the overall ESG score summarize the issuing entity's sub-component ESG scores. The box on the far left identifies the some of the main ESG issues that are drivers or potential drivers of the issuing entity's credit rating (corresponding with scores of 3, 4 or 5) and provides a brief explanation for the score.

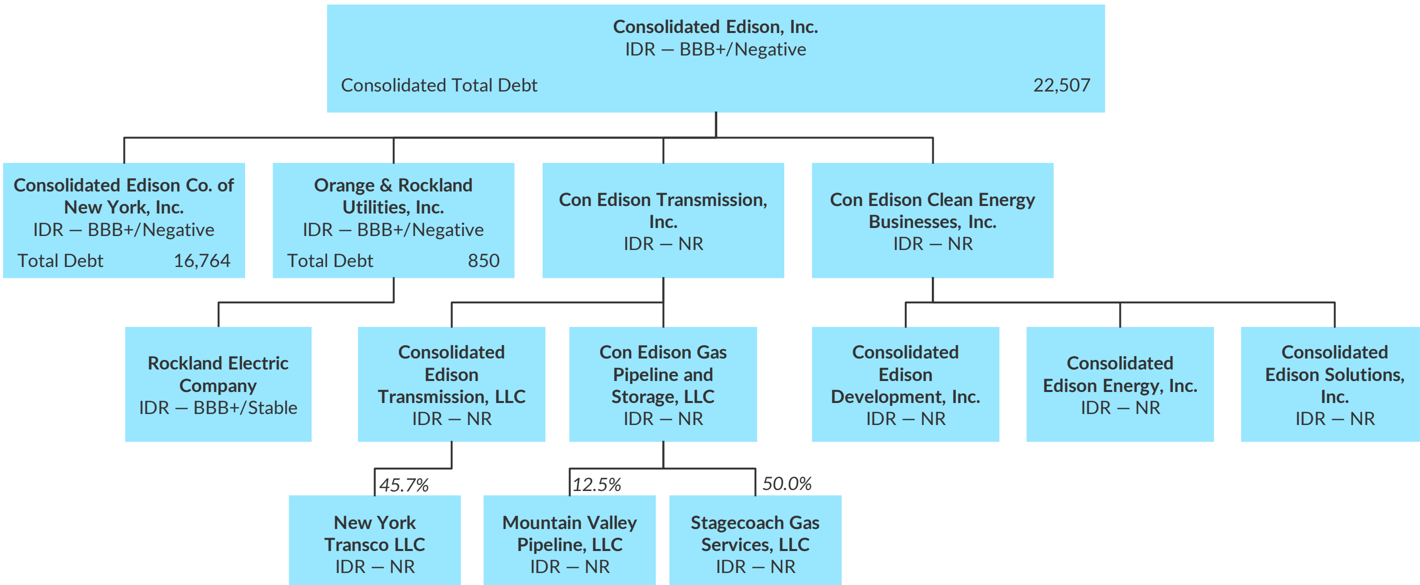
Classification of ESG issues has been developed from Fitch's sector ratings criteria. The General Issues and Sector-Specific Issues draw on the classification standards published by the United Nations Priniciples for Responsible Investing (PRI) and the Sustainability Accounting Standards Board(SASB).

CREDIT-RELEVANT ESG SCALE

How relevant are E, S and G issues to the overall credit rating?	
5	Highly relevant, a key rating driver that has a significant impact on the rating on an individual basis. Equivalent to "higher" relative importance within Navigator.
4	Relevant to rating, not a key rating driver but has an impact on the rating in combination with other factors. Equivalent to "moderate" relative importance within Navigator.
3	Minimally relevant to rating, either very low impact or actively managed in a way that results in no impact on the entity rating. Equivalent to "lower" relative importance within Navigator.
2	Irrelevant to the entity rating but relevant to the sector.
1	Irrelevant to the entity rating and irrelevant to the sector.

Simplified Group Structure Diagram

Organizational and Debt Structure — Consolidated Edison, Inc.
(USD Mil., as of Dec. 31, 2019)



IDR – Issuer Default Rating. NR – Not rated.
Source: Fitch Ratings, Fitch Solutions, Consolidated Edison, Inc.

FitchRatings

Peer Financial Summary

Company	Issuer Default Rating	Financial Statement Date	Gross Revenue ($ Mil.)	FFO ($ Mil.)	FFO Fixed-Charge Coverage (x)	FFO Adjusted Leverage (x)	Total Adjusted Debt/Operating EBITDAR (x)
Orange and Rockland Utilities, Inc.	BBB+						
	BBB+	2019	893	163	4.9	4.1	3.8
	BBB+	2018	891	189	6.0	3.6	3.9
	BBB+	2017	874	206	6.6	3.1	3.6
Central Hudson Gas & Electric Corp.	BBB+						
	BBB+	2019	692	161	6.2	4.0	4.6
	BBB+	2018	725	161	6.7	3.7	4.4
	BBB+	2017	671	154	5.7	3.3	3.6
New York State Electric & Gas Corporation	BBB+						
	BBB+	2018	1,694	384	6.5	2.8	3.4
	BBB+	2017	1,535	344	5.6	3.2	3.7
	BBB+	2016	1,539	345	6.5	3.2	3.4
Consolidated Edison Company of New York, Inc.	BBB+						
	BBB+	2019	10,821	2,353	4.1	5.5	4.4
	BBB+	2018	10,680	2,769	4.8	4.6	4.3
	BBB+	2017	10,468	2,691	4.9	4.2	3.8

Source: Fitch Ratings, Fitch Solutions.

Reconciliation of Key Financial Metrics

($ Mil., as Reported)	**12/31/19**
Income Statement Summary	
Operating EBITDA	223
+ Recurring Dividends Paid to Non-controlling Interest	0
+ Recurring Dividends Received from Associates	0
+ Additional Analyst Adjustment for Recurring I/S Minorities and Associates	0
= Operating EBITDA After Associates and Minorities (k)	**223**
+ Operating Lease Expense Treated as Capitalized (h)	**1**
= Operating EBITDAR after Associates and Minorities (j)	**224**
Debt & Cash Summary	
Total Debt with Equity Credit (l)	**842**
+ Lease-Equivalent Debt	8
+ Other Off-Balance-Sheet Debt (p)	0
= Total Adjusted Debt with Equity Credit (a)	**850**
Readily Available Cash [Fitch-Defined]	32
+ Readily Available Marketable Securities [Fitch-Defined]	0
= Readily Available Cash & Equivalents (o)	**32**
Total Adjusted Net Debt (b)	**818**
Cash-Flow Summary	
Preferred Dividends (Paid) (f)	**0**
Interest Received	0
+ Interest (Paid) (d)	**(41)**
= Net Finance Charge (e)	**(41)**
Funds From Operations [FFO] (c)	**163**
+ Change in Working Capital [Fitch-Defined]	27
= Cash Flow from Operations [CFO] (n)	**190**
Capital Expenditures (m)	**(210)**
Multiple applied to Capitalized Leases	**8.0**
Gross Leverage (x)	
Total Adjusted Debt/Op. EBITDAR[a] (a/j)	**3.8**
FFO Adjusted Gross Leverage (a/(c-e+h-f))	**4.1**
Total Adjusted Debt/(FFO - Net Finance Charge + Capitalized Leases - Pref. Div. Paid)	
FFO Leverage ((l+p)/(c-e+h-f))	**4.1**
(Total Debt + Other Debt)/(FFO - Net Finance Charge - Pref. Div. Paid)	
Total Debt With Equity Credit/Op. EBITDA[a] (l/k)	**3.8**
CFO-Capex/Total Debt with Equity Credit (%)	**(2.4)**
Net Leverage (x)	
Total Adjusted Net Debt/Op. EBITDAR[a] (b/j)	**3.7**
FFO Adjusted Net Leverage (b/(c-e+h-f))	**4.0**
Total Adjusted Net Debt/(FFO - Net Finance Charge + Capitalized Leases - Pref. Div. Paid)	
FFO Net Leverage ((l+p-o)/(c-e+h-f))	**4.0**
Total Adjusted Net Debt/(FFO - Net Finance Charge - Pref. Div. Paid)	
Total Net Debt/(CFO - Capex) ((l-o)/(n+m))	**(40.5)**
CFO-Capex/Total Net Debt with Equity Credit (%)	**(2.5)**
Coverage (x)	
Op. EBITDAR/(Interest Paid + Lease Expense)[a] (j/-d+h)	**5.3**
Op. EBITDA/Interest Paid[a] (k/(-d))	**5.4**
FFO Fixed Charge Cover ((c+e+h-f)/(-d+h-f))	**4.9**
(FFO + Net Finance Charge + Capit. Leases - Pref. Div Paid)/(Gross Int. Paid + Capit. Leases - Pref. Div. Paid)	
FFO Gross Interest Coverage ((c+e-f)/(-d-f))	**5.0**
(FFO + Net Finance Charge - Pref. Div Paid)/(Gross Int. Paid - Pref. Div. Paid)	

[a]EBITDA/R after dividends to associates and minorities.
Source: Fitch Ratings, Fitch Solutions, Orange and Rockland Utilities, Inc.

Fitch Adjustment Reconciliation

($ Mil.)	Reported Values 12/31/19	Sum of Fitch Adjustments	Fair Value and Other Debt Adjustments	Other Adjustment	Adjusted Values
Income Statement Summary					
Revenue	893	0			893
Operating EBITDAR	224	0			224
Operating EBITDAR after Associates and Minorities	224	0			224
Operating Lease Expense	1	0			1
Operating EBITDA	223	0			223
Operating EBITDA after Associates and Minorities	223	0			223
Operating EBIT	139	0			139
Debt & Cash Summary					
Total Debt With Equity Credit	835	7	7		842
Total Adjusted Debt With Equity Credit	843	7	7		850
Lease-Equivalent Debt	8	0			8
Other Off-Balance Sheet Debt	0	0			0
Readily Available Cash & Equivalents	32	0			32
Not Readily Available Cash & Equivalents	0	0			0
Cash-Flow Summary					
Preferred Dividends (Paid)	0	0			0
Interest Received	0	0			0
Interest (Paid)	(39)	(2)		(2)	(41)
Funds From Operations [FFO]	163	0			163
Change in Working Capital [Fitch-Defined]	27	0			27
Cash Flow from Operations [CFO]	190	0			190
Non-Operating/Non-Recurring Cash Flow	0	0			0
Capital (Expenditures)	(210)	0			(210)
Common Dividends (Paid)	(47)	0			(47)
Free Cash Flow [FCF]	(67)	0			(67)
Gross Leverage (x)					
Total Adjusted Debt/Op. EBITDAR[a]	3.8				3.8
FFO Adjusted Leverage	4.2				4.1
FFO Leverage	4.1				4.1
Total Debt With Equity Credit/Op. EBITDA[a]	3.7				3.8
CFO-Capex/Total Debt with Equity Credit (%)	(2.4)				(2.4)
Net Leverage (x)					
Total Adjusted Net Debt/Op. EBITDAR[a]	3.6				3.7
FFO Adjusted Net Leverage	4.0				4.0
FFO Net Leverage	4.0				4.0
Total Net Debt/(CFO - Capex)	(40.2)				(40.5)
CFO-Capex/Total Net Debt with Equity Credit (%)	(2.5)				(246.9)
Coverage (x)					
Op. EBITDAR/(Interest Paid + Lease Expense)[a]	5.6				5.3
Op. EBITDA/Interest Paid[a]	5.7				5.4
FFO Fixed Charge Coverage	5.1				4.9
FFO Interest Coverage	5.2				5.0

[a]EBITDA/R after dividends to associates and minorities.
Source: Fitch Ratings, Fitch Solutions, Orange and Rockland Utilities, Inc.

The ratings above were solicited and assigned or maintained at the request of the rated entity/issuer or a related third party. Any exceptions follow below.

MOODY'S
INVESTORS SERVICE

CREDIT OPINION
27 January 2021

Update

Rate this Research

RATINGS

Orange and Rockland Utilities, Inc.

Domicile	Pearl River, New York, United States
Long Term Rating	Baa2
Type	LT Issuer Rating
Outlook	Stable

Please see the ratings section at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.

Contacts

Ryan Wobbrock +1.212.553.7104
VP-Sr Credit Officer
ryan.wobbrock@moodys.com

Nikita Nanwani +1.212.553.0300
Associate Analyst
nikita.nanwani@moodys.com

Michael G. Haggarty +1.212.553.7172
Associate Managing Director
michael.haggarty@moodys.com

Jim Hempstead +1.212.553.4318
MD - Global Infrastructure & Cyber Risk
james.hempstead@moodys.com

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

Orange and Rockland Utilities, Inc.

Update following downgrade to Baa2

Summary

Orange and Rockland Utilities' (O&R, Baa2 stable) credit is supported by 1) a low-risk business profile as a regulated transmission and distribution (T&D) utility, 2) roughly 85% of its rate base operates under a suite of timely cost recovery mechanisms in New York, and 3) some regulatory diversity with services in New York and New Jersey.

The credit is constrained by 1) a weakened financial profile that is expected to continue, such as cash flow to debt ratios around 14% through LTM Q3 2020 (above 15% when normalized for COVID-19 impacts), steadily down from about 25% in 2017, 2) an increasingly politicized regulatory environment and 3) its small size, which makes it less resilient to potential operational or financial disruptions.

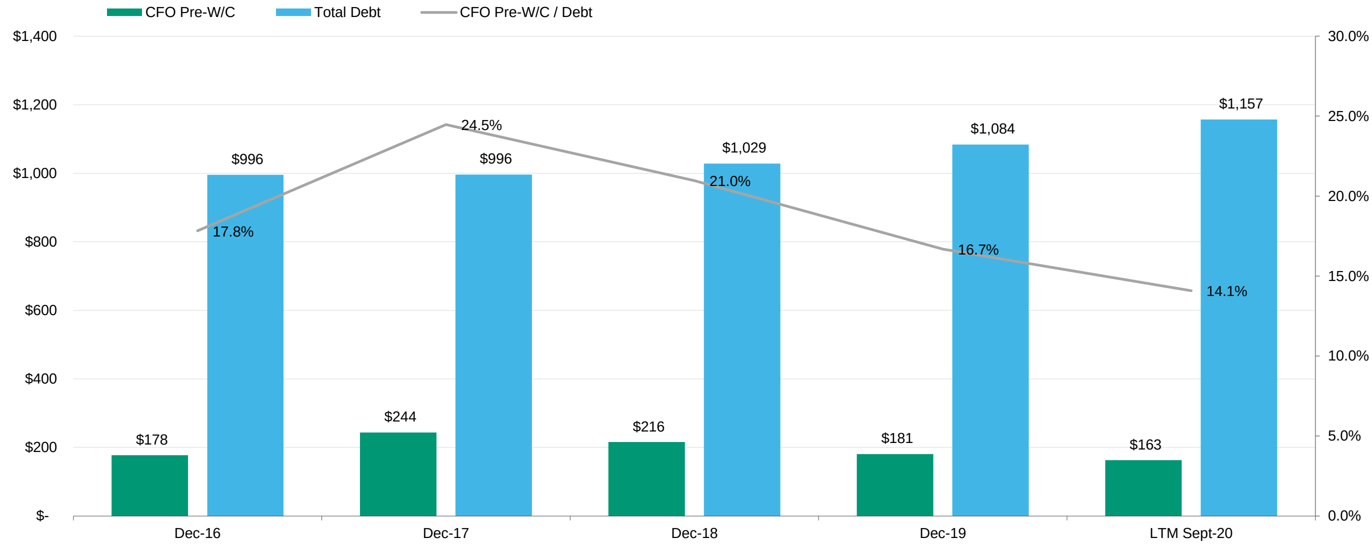
COVID-19 developments

The rapid spread of the coronavirus outbreak, severe global economic shock, low oil prices, and asset price volatility are creating a severe and extensive credit shock across many sectors, regions and markets. The combined credit effects of these developments are unprecedented. We regard the coronavirus outbreak as a social risk under our ESG framework given the substantial implications for public health and safety.

We expect O&R will be relatively resilient to recessionary pressures, compared to other corporate sectors, because it provides an essential public service to a monopoly service territory. Furthermore, O&R's cash flow has additional protection due to New York's provision of revenue decoupling, which helps to recover lost revenue, due to declines in electric and gas demand.

Despite these operational and regulatory benefits, economic hardships experienced by O&R's customers amid the pandemic could result in political and customer pressure to delay or mitigate general rate increases. This would be particularly negative for O&R since we expect the company to file for new rates in both jurisdictions in 2021.

Exhibit 1
Historical CFO Pre-WC, Total Debt and CFO Pre-WC to Debt ($ MM)



Source: Moody's Financial Metrics

Credit strengths

» Strong cost recovery mechanisms, including revenue decoupling in New York

» Some regulatory diversification between New York and New Jersey

» Generally predictable cash flow and financial metrics

Credit challenges

» Weakened financial profile, partly due to a large underfunded pension obligation

» Heightened political intervention into New York's utility regulation

» Small size makes it less resilient to potential operational or financial disruptions

Rating outlook

O&R's stable outlook reflects our expectation for cash flow to debt metrics to remain between 14-16%, even when normalizing for the negative COVID-19 impacts and when considering the potential for new rate filings to be made over the next 12 months. It also incorporates a view that political and regulatory pressures will continue in 2021, which could temper revenue increases if economic pressures persist.

Factors that could lead to an upgrade

» Stronger financial metrics, for example, CFO pre-WC to debt or CFO pre-WC less dividends to debt over 16% and 14%, respectively, on a sustained basis

» A more supportive political environment in New York

Factors that could lead to a downgrade

» Less regulatory support for cost recovery

» Further decline in the predictability and stability of the New York political environment

» CFO pre-WC to debt at or below 13% and CFO pre-WC less dividends to debt below 10% for a sustained period

Key indicators

Orange and Rockland Utilities, Inc.

	Dec-16	Dec-17	Dec-18	Dec-19	LTM Sept-20
CFO Pre-W/C + Interest / Interest	5.0x	6.6x	5.5x	4.8x	4.3x
CFO Pre-W/C / Debt	17.8%	24.5%	21.0%	16.7%	14.1%
CFO Pre-W/C – Dividends / Debt	13.6%	20.1%	16.5%	12.4%	9.9%
Debt / Capitalization	45.9%	51.2%	50.3%	50.3%	50.6%

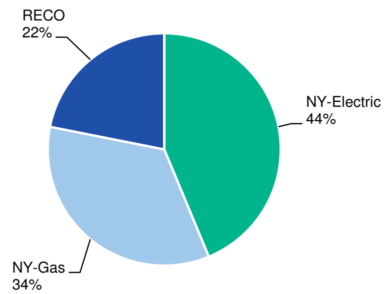
All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
Source: Moody's Financial Metrics

Profile

Orange and Rockland Utilities, Inc. (O&R Baa2 stable) is a regulated electric and gas transmission and distribution (T&D) utility owned by Consolidated Edison, Inc. (CEI Baa2 stable). CEI also owns Consolidated Edison Company of New York, Inc. (CECONY Baa1 stable), a neighboring T&D utility. O&R is a minor part of CEI, representing approximately 5% of CEI's consolidated operating income in any given year.

O&R serves approximately 300,000 electric and 130,000 gas customers located primarily in New York State's Orange and Rockland counties (roughly 85% of O&R's total rate base) adjacent to CECONY's main service territories of New York City and Westchester County. O&R also provides utility services to customers in northern New Jersey, through its subsidiary Rockland Electric Company (RECO, approximately 15% of O&R's total rate base). Exhibit 3, below, reflects our expectations for the relative contribution of O&R's businesses to consolidated EBITDA.

Exhibit 3
We expect O&R's EBITDA to have good diversity amongst its operating segments.
Sources of O&R's EBITDA include electric and gas services in NY and through its RECO subsidiary in NJ.



Source: Consolidated Edison, Inc. and Moody's Investors Service

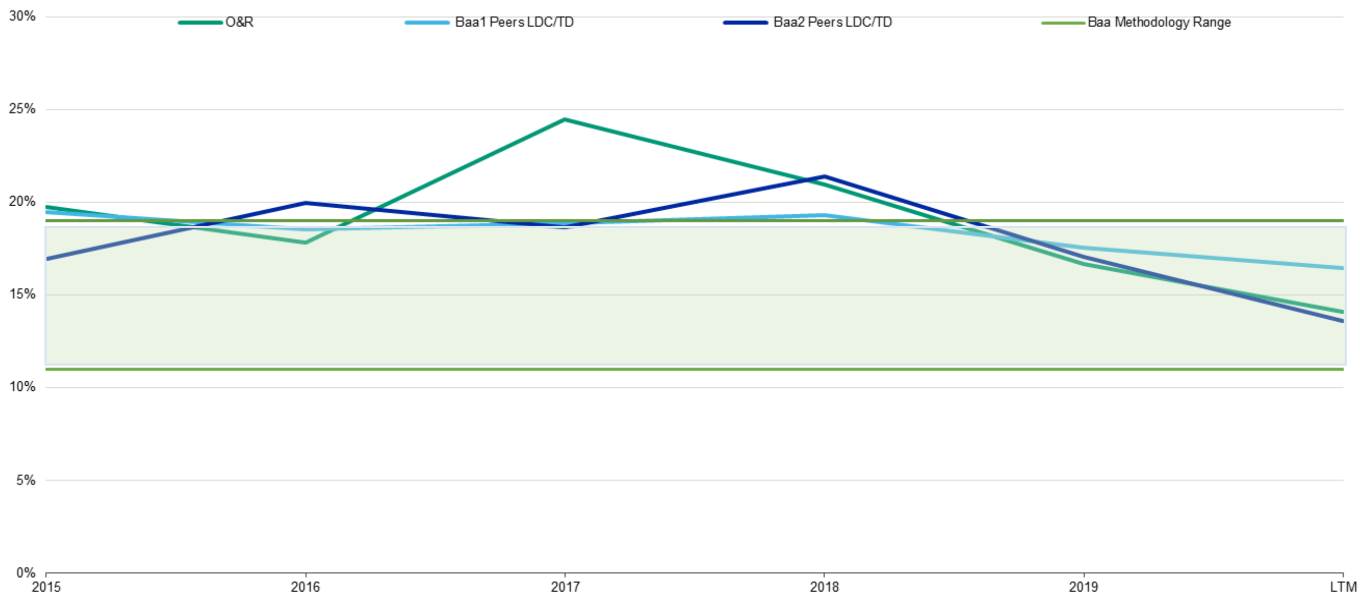
Detailed credit considerations

Financial metrics have declined steadily over the past three years

O&R's financial profile has declined steadily since 2017, due to lower revenue and customer rebates due to 2017 federal tax reform, storm events and related costs and sizeable free cash flow deficits due to capital spending in excess of $200 million annually and dividends approaching $50 million annually. These factors, in concert with a relatively high underfunded pension obligation (historically about 20% of total adjusted debt), are likely to keep O&R's ratios of CFO pre-WC to debt around 15% and CFO pre-WC less dividends to debt between 9-11% over the next two years. In the exhibit below, we compare O&R's metric trend versus peers with similar credit quality.

Exhibit 4

O&R CFO Pre-WC/Debt compared to Baa1/Baa2 rated LDC and T&D Peers



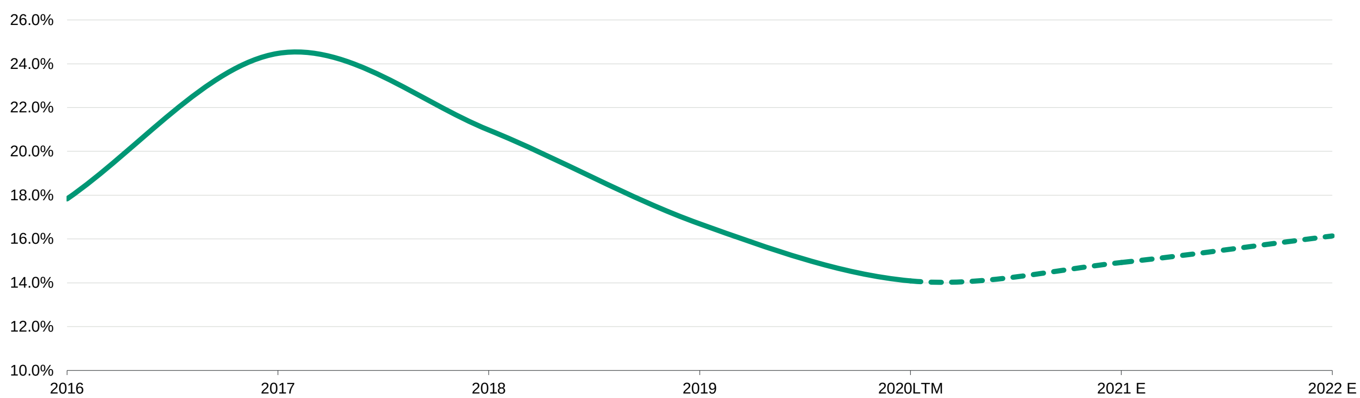
Source: Moody's Financial Metrics

The impacts of COVID-19 have exacerbated the downward trend in the company's LTM Q3 2020 cash flow-based metrics, since cash receipts from many customers have been delayed. For example, O&R's aged accounts receivables have increased by about $12 million from 28 February 2020 to 30 September 2020 and revenue decoupling receivables have increased over $6 million through the nine months ended 30 September. We estimate that the collective impact of these delayed recoveries have depressed O&R's cash flow to debt metrics by around 150 basis points; thus we estimate LTM Q3 2020 CFO pre-WC to debt would otherwise be above 15%.

Our projected financial performance, shown in the exhibit below, assumes normalized cash flow production based on regulatory allowed levels of rate base, 48% equity capitalization and ROEs of around 9.0%.

Exhibit 5

O&R's historical and forecasted CFO pre-WC to debt



Source: Moody's Investors Service

Political intervention in New York continues to add uncertainty for all state utilities

Despite the transparent and formulaic nature of New York's regulatory practices (see section below), we see greater uncertainty for utilities within the state due to increasing political intervention into utility operations. This has the effect of undermines the consistency and predictability of the state's regulatory framework.

Over the past year, several steps have been taken by New York's governor to penalize utilities for issues tied to customer service and storm preparation and recovery, which has included multiple instances verbal and even a written threat to revoke utility franchise licenses.

The latest instance of increasing political intervention occurred on On 5 November 2020, when New York Governor Andrew Cuomo posted Program Bill Number 13, “An Act to Reform the Enforcement, Oversight and Franchise Revocation Process for Public Utilities”, to his website, which was introduced the following day as New York State Assembly Bill A11120. The proposed legislation, if approved, would amend current laws to codify certain performance standards for the state's utilities, eliminate statutory penalty caps for violations and provide greater authority to the state's Department of Public Service (DPS) and the NYPSC, including giving the PSC the ability to prohibit any utility provider from operating in the state.

Because the proposal also seeks to enact these changes through state legislation, it could also hurt the legislative and judicial underpinnings of the New York utility regulatory environment.

Material base rate increases could be challenging to come by in 2021

Given the somewhat challenging political environment in New York and ongoing economic challenges in New York and New Jersey, there's chance that a prolonged economic recovery in either state cold cause delayed or mitigated rate increases.

Some examples of this have already surfaced in New York, including significant delays in obtaining regulatory orders for National Grid Plc's (Baa1 negative) downstate local gas distribution utilities and October 2020 approval of a rate settlement that utilizes rate mitigation measures (i.e., excess depreciation reserves), while backloading rate increases as part of a three year rate plan for Avangrid, Inc's (Baa1 negative) two state utilities.

Furthermore, we see potential for O&R's ROEs to come down for rate filings made in 2021, due to economic pressures of COVID-19 in New York and New Jersey, as well as historically high spreads between allowed equity returns versus the US risk-free rate. While volatility in the equity markets could keep formulaic cost of equity calculations higher (e.g., in the capital asset pricing model method), we acknowledge that state regulators may have difficulty rationalizing these returns amid political and economic pressures.

This is of particular importance since the company's New York rate plan expires in December 2021 and RECO's rate plan ends in February 2021. While the company could wait for more clarity around COVID-19 recovery or economic improvement, before filing for new rates, we expect that O&R will file general rate cases this year in order to have updated revenue requirements beginning in early 2022.

Cost recovery provisions provide a foundation of regulatory financial and credit support

New York

Given the size of O&R's New York operations, the company's credit is mostly driven by the stabilizing features of cost recovery mechanisms allowed by the NYPSC, along with O&R's low business risk as a T&D utility.

The current regulatory framework in New York, which is unaffected by political intervention to-date, has adopted a number of credit-positive features. For example, in rate case filings, utilities file for a future test year, which allows for recovery of costs commensurate to the time in which the company spends the cash. The NYPSC has also granted multi-year plans, which provide revenue clarity over its course.

Importantly, O&R has full revenue decoupling for both electric and gas services and weather normalization for gas, which protects its margins from variations in sales volumes.

While these recovery features are strong, we also note that the company's 48% equity layer for rate making purposes and allowed ROE levels around 9.0% is are lower than industry averages of about 50% and 9.4%, respectively. This has the effect of limiting the amount of net income and cash flow that the company can generate versus peers.

New Jersey

In O&R's last rate case (via RECO), the BPU authorized about $12 million in incremental revenue based upon a 9.5% allowed ROE and 48.32% equity layer. While incremental revenue is positive, we note that both the ROE and equity layer were reduced from the company's last rate decision in February 2017 (i.e., 9.6% ROE and 49.70% equity layer), a credit negative. These reduced earnings drivers are also notable since other recent rate case outcomes in the state boosted equity layers and mostly maintained historical ROE levels.

The exhibit below compares the ROE and equity layers of New Jersey rate case outcomes since November 2019 for RECO, Jersey Central Power & Light Company (JCPL, A3 stable), South Jersey Gas Company (SJG, A3 negative), New Jersey Natural Gas Company (NJNG, A1 senior secured, stable) and Elizabethtown Gas Company (EGC). Here, we compare each company's net income potential today versus what the company's current rate base could have earned under previous ROE and equity layers.

Exhibit 6

O&R's authorized ROE and equity layer have decreased since its previous rate case ($ millions)

Green (red) shading indicates an increase (decrease) from the previous rate case

Company	RECO		JCPL		SJG		NJNG		EGC	
Latest Authorized Rate Base	$230		$2,623		$2,134		$1,765		$988	
Order Date (Month-Year)	**Jan-20**	**Feb-17**	**Oct-20**	**Dec-16**	**Sep-20**	**Oct-17**	**Nov-19**	**Sep-16**	**Nov-19**	**Jun-17**
Authorized ROE	9.50%	9.60%	9.60%	9.60%	9.60%	9.60%	9.60%	9.75%	9.60%	9.60%
Authorized Equity Layer	48.32%	49.70%	51.44%	45.00%	54.00%	52.50%	54.00%	52.50%	51.50%	46.00%
Net Income	$ 10.6	$ 11.0	$129.5	$113.3	$110.6	$107.5	$ 91.5	$ 90.3	$ 48.9	$ 43.6
% change	-3.8%		14.3%		2.9%		1.3%		12.0%	

Net Income is defined as Rate Base x Authorized ROE x Authorized Equity layer; "% change" represents the difference in Net Income, when comparing the impact of new and old authorized ROE and equity levels on current Rate Base.

Source: SPGMI, Moody's Investors service

ESG considerations

Environmental

Environmental considerations incorporated into our credit analysis for O&R is primarily related to air pollution and regulations around carbon, methane and other greenhouse gas emissions. As a T&D and LDC company, O&R is less exposed to the direct production of greenhouse gases; however, these are emitted during the natural gas life cycle, including through the production of the energy that a utility delivers and via their own gas infrastructure.

Moreover, these issues are central to state legislative actions that seek to reduce greenhouse gas emissions, thereby affecting O&R's current and future operations. For example, New York has formed a Climate Action Council, a 22-member committee that will develop a plan to achieve the state's clean energy and climate agenda, including reduced reliance on natural gas.

While this adds some near-term uncertainty, until a final plan can be determined (a draft scoping plan is scheduled for year-end 2021), we view the effort to form a cohesive, economy-wide plan as being helpful to long-term utility planning and instructive for regulators to shape utility cost recovery to support credit during the transition.

Social

Social risks are primarily related to health and safety, demographic and societal trends, as well as customer relations in the company's attempts to provide reliable and affordable service to customers and safe working conditions to employees. Regarding affordability, we see rising social risks associated with the COVID-19 pandemic and its effect on the New York economy, given the 1 October 2020 downgrade of the State of New York's General Obligation bonds (to Aa2 from Aa1; stable outlook), due to the economic and fiscal consequences of the coronavirus crisis.

The economic impacts in New York and New Jersey could have mitigating effects on any rate increases that O&R seeks in 2021.

Governance

O&R's governance is guided by that of its parent, CEI.

CEI has generally strong financial policies which include relatively low holding company leverage (e.g., around 10% of consolidated debt is issued at the parent level) and annual issuance of common equity. For example, accroding to CEI's February 2020 earnings release, the company's financing plan includes approximately $1.1 billion in aggregate of common equity during 2021 and 2022.. This type of public equity commitment over a forecast period is rare in the utility sector.

In addition, CEI's governance shows strong practices in financial reporting and compensation disclosure, but with moderate practices regarding the design of compensation and board experience in a related sector.

Liquidity analysis

O&R's liquidity is adequate since it has access to ample external funding sources, including strong access to the capital markets as part of the utility sector.

The company will continue to have free cash flow deficits over the next 12 months, due to around $200 million of capital spending, dividend payments approaching $50 million and we estimate between $175 - $200 million of internally generated cash flow from operations. O&R also had about $14 million of cash on the balance sheet at 30 September 2020.

From an external liquidity perspective, CEI, CECONY, and O&R are co-borrowers under a credit facility with $2.25 billion committed through December 2022 and $2.20 billion through 2023. CECONY is entitled to access the full facility, while CEI and O&R are limited to $1.0 billion and $200 million, respectively. The credit facility provides a backstop to the commercial paper (CP) programs at each of CEI, CECONY, and O&R which are sized to their respective sub-limits under the revolver. As of 30 September 2020, O&R had $18 million of CP outstanding, no borrowings under its credit facility and an immaterial amount of letters of credit outstanding.

We generally view shared credit facilities as a weaker form of liquidity than a credit line for the exclusive use of a single borrower. Competition for liquidity resources, however, has not been an issue, since CEI, CECONY, and O&R are each mostly self-financing.

The credit agreement does not require the companies to represent and warrant as to material adverse change, litigation, or full disclosure that would restrict access to the facility. It contains a single financial covenant which limits each borrower's Debt/ Capitalization to 65%, which O&R was in compliance with at 30 September 2020.

O&R's next debt maturity is $80 million of senior unsecured notes that mature in 2027.

Rating methodology and scorecard

Exhibit 7

Rating Factors

Orange and Rockland Utilities, Inc.

[1]All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
[2]As of 9/30/2020(L);
3]This represents Moody's forward view; not the view of the issuer; and unless noted in the text, does not incorporate significant acquisitions and divestitures.
Source: Moody's Financial Metrics

Ratings

Exhibit 8

Category	Moody's Rating
ORANGE AND ROCKLAND UTILITIES, INC.	
Outlook	Stable
Issuer Rating	Baa2
Senior Unsecured	Baa2
Commercial Paper	P-2
PARENT: CONSOLIDATED EDISON, INC.	
Outlook	Stable
Issuer Rating	Baa2
Senior Unsecured	Baa2
Commercial Paper	P-2

Source: Moody's Investors Service

Appendix

Exhibit 9

Cash Flow and Credit Metrics

CF Metrics	Dec-16	Dec-17	Dec-18	Dec-19	LTM Sept-20
As Adjusted					
FFO	145	174	210	154	197
+/- Other	33	70	6	27	(34)
CFO Pre-WC	178	244	216	181	163
+/- ΔWC	3	(7)	(23)	26	(37)
CFO	181	237	193	207	126
- Div	42	44	46	47	48
- Capex	171	197	203	219	206
FCF	(32)	(4)	(56)	(59)	(128)
(CFO Pre-W/C) / Debt	17.8%	24.5%	21.0%	16.7%	14.1%
(CFO Pre-W/C - Dividends) / Debt	13.6%	20.1%	16.5%	12.4%	9.9%
FFO / Debt	14.5%	17.4%	20.4%	14.2%	17.0%
RCF / Debt	10.3%	13.0%	15.9%	9.9%	12.9%
Revenue	821	874	891	893	861
Cost of Good Sold	235	264	294	278	234
Interest Expense	44	44	48	48	50
Net Income	68	72	25	77	75
Total Assets	2,767	2,777	2,896	3,006	3,094
Total Liabilities	2,128	2,117	2,190	2,251	2,302
Total Equity	639	660	706	755	792

All figures and ratios are calculated using Moody's estimates and standard adjustments. Periods are Financial Year-End unless indicated. LTM=Last Twelve Months
Source: Moody's Financial Metrics

Exhibit 10

Peer Comparison Table

	Orange and Rockland Utilities, Inc. Baa1 Negative			Rochester Gas & Electric Corporation A3 Negative			United Illuminating Company Baa1 Stable			Atlantic City Electric Company Baa1 Stable		
(in US millions)	FYE Dec-18	FYE Dec-19	LTM Sept-20	FYE Dec-18	FYE Dec-19	LTM Sept-20	FYE Dec-18	FYE Dec-19	LTM Sept-20	FYE Dec-18	FYE Dec-19	LTM Sept-20
Revenue	891	893	861	924	893	878	970	989	1,029	1,236	1,240	1,226
CFO Pre-W/C	216	181	163	207	282	258	284	297	288	255	259	231
Total Debt	1,029	1,084	1,157	1,222	1,205	1,260	1,122	1,120	1,139	1,412	1,464	1,476
CFO Pre-W/C / Debt	21.0%	16.7%	14.1%	17.0%	23.4%	20.4%	25.3%	26.5%	25.3%	18.0%	17.7%	15.6%
CFO Pre-W/C – Dividends / Debt	16.5%	12.4%	9.9%	13.7%	23.4%	20.4%	25.3%	18.5%	21.7%	13.9%	9.2%	6.5%
Debt / Capitalization	50.3%	50.3%	50.6%	50.1%	46.0%	45.1%	44.3%	42.5%	41.6%	46.1%	44.2%	42.4%

All figures & ratios calculated using Moody's estimates & standard adjustments. FYE=Financial Year-End. LTM=Last Twelve Months.
Source: Moody's Financial Metrics

REPORT NUMBER 1258962

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

MOODY'S
INVESTORS SERVICE

MOODY'S
INVESTORS SERVICE

OUTLOOK
29 October 2020

Rate this Research

TABLE OF CONTENTS

Contacts

Nana Hamilton +1.212.553.9440
AVP-Analyst
nana.hamilton@moodys.com

Jayce Kim +1.212.553.6836
Associate Analyst
jayce.kim@moodys.com

Domenic Giovannone +1.212.553.1647
Associate Analyst
domenic.giovannone@moodys.com

Michael G. Haggarty +1.212.553.7172
Associate Managing Director
michael.haggarty@moodys.com

Jim Hempstead +1.212.553.4318
MD - Global Infrastructure & Cyber Risk
james.hempstead@moodys.com

Walter J. Winrow +1.212.553.7943
MD-Gbl Proj and Infra Fin
walter.winrow@moodys.com

» Contacts continued on last page

Regulated Electric and Gas Utilities – US

2021 outlook stable on strong regulatory support and robust residential demand

We are maintaining a stable outlook for the US regulated utilities industry, reflecting our expectation for continued strong regulatory support, robust residential demand and a recovering economy in 2021. As a critical infrastructure sector with a regulated business model that provides good cost recovery, regulated utilities have remained relatively resilient in the face of the uncertain economic environment caused by the coronavirus pandemic.

» **Following a decline in 2020 from last year's level, FFO-to-debt will increase slightly on improving economic conditions.** We project an aggregate industry funds from operations to debt ratio of around 15% over the next 12 to 18 months, a slight improvement from an expected decline to between 14% and 15% in 2020 from 15.8% in 2019. Our expectation considers Moody's global macro outlook forecast of a 4.5% growth in US GDP in 2021, although this will be closely tied to the containment of the coronavirus. We expect continued strength in residential demand, improving commercial and industrial load and disciplined O&M cost management to maintain financial stability. However, greater than usual use of debt financing will constrain FFO-to-debt.

» **Regulatory support to remain strong, although ROEs will be under pressure.** We expect continued supportive regulatory frameworks to underpin the sector's ability to recover costs in a timely manner and earn a fair return even as allowed returns on equity (ROEs) remain under pressure amid low interest rates. We expect most regulators to be supportive of the recovery of coronavirus-related costs and investments, as well as costs associated with the increasing frequency and severity of climate hazards.

» **Capital expenditures are high, supporting the growth of utility rate base and returns.** Utilities will continue to invest significant capital to grow rate base, maintaining a ratio of capital expenditures to depreciation and amortization (D&A) of about 2.5x. Spending will focus on transmission and distribution infrastructure and increasingly on new renewable generation investments. However, capital expenditures are an important lever that can be adjusted if the economy does not recover in 2021 as expected.

» **What could change our outlook.** We would consider shifting our outlook to positive if regulation turns more credit supportive or if the sector's consolidated FFO to debt ratio rises to around 18% on a sustainable basis. We could revise the outlook to negative if the economy does not recover in 2021 as expected, regulated utility liquidity or capital markets access becomes constrained or there are material load declines, high or unrecoverable bad debt expenses or further postponement of needed rate increases resulting in an aggregate sector FFO to debt ratio below 14%.

Industry outlooks reflect our view of fundamental business conditions for an industry over the next 12-18 months. Since outlooks represent our forward-looking view on business conditions that factor into our ratings, a negative (positive) outlook suggests that negative (positive) rating actions are more likely on average. However, the industry outlook does not represent a sum of upgrades, downgrades or ratings under review, or an average of the rating outlooks of issuers in the industry, but rather our assessment of the main direction of business fundamentals within the overall industry.

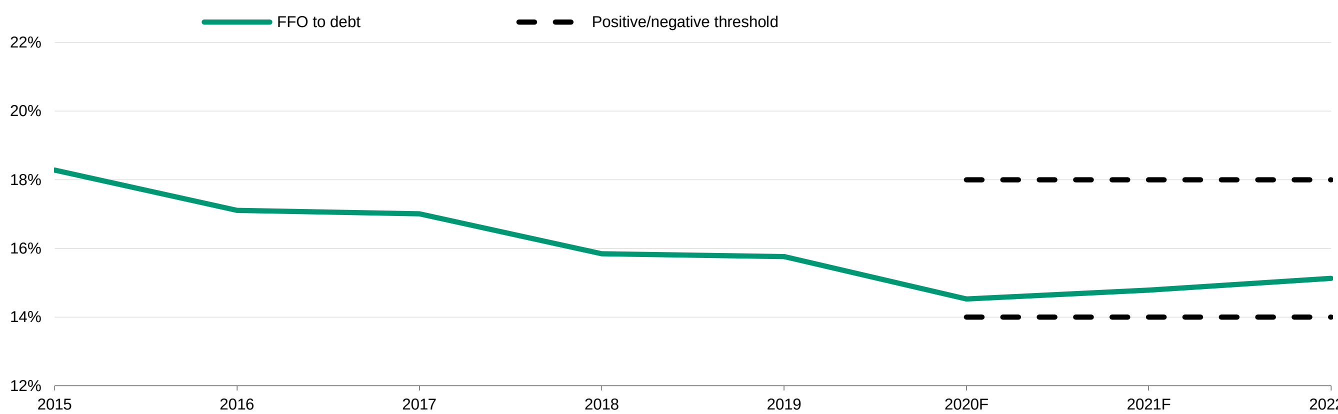
Following a decline in 2020 from last year's level, FFO-to-debt to increase slightly on improving economic conditions

We are maintaining a stable outlook for the US regulated utility industry based on our expectation for an aggregate industry FFO-to-debt ratio of around 15% over the next 12 to 18 months. This is a slight improvement over an expected decline to between 14% and 15% in 2020 from 15.8% in 2019, largely due to higher debt incurred and other financial impacts related to the coronavirus. Our FFO-to-debt forecast assumes improving economic conditions in 2021, consistent with our 2021 forecast of 4.5% growth in US GDP, although this will be closely tied to the containment of the coronavirus, following a projected 5.7% contraction in 2020 (see "Global Macro Outlook 2020-21 (August 2020 Update): Economic recovery remains tenuous as pandemic fears persist").

Exhibit 1

FFO-to-debt to be maintained at around 15% over the next 12-18 months

Consolidated ratio of funds from operations (FFO) to debt for rated US investor-owned utilities



Based on 66 US rated holding companies and operating companies whose parents are unrated
Source: Moody's Investors Service

The factors that have enabled the sector to exhibit operational and financial resilience in the face of the economic downturn caused by the coronavirus pandemic will remain key credit drivers over the next 12 to 18 months. Increased electricity sales to residential customers has helped to offset the negative financial impact of lower commercial and industrial (C&I) demand. The strength in residential sales is important because gross margins on residential sales are higher than those on C&I sales. The US Energy Information Administration (EIA) projects declines in commercial and industrial retail sales of 6.2% and 5.6%, respectively, and an increase in residential sales of 3.2% for a net annual decline in year-over-year electricity consumption of 2.2% in 2020. As economic activity picks up in 2021, utilities will benefit from recovering C&I sales together with higher than historical residential sales as some customers continue to work and study from home. We expect local gas distribution companies (LDCs) to be less affected by volume declines because they serve a primarily residential customer base, with the C&I customer class representing about 25% of total revenue.

In addition to the support provided by residential demand, existing regulatory mechanisms such as decoupling, formulaic rates and other accelerated cost recovery tools help to mitigate the impact of net negative revenue growth. The extent to which decoupling can smooth out revenues is limited by the fact that large C&I customers are sometimes excluded from the mechanism. Many industrial customers, however, pay higher fixed charge demand fees, typically based on the prior 12-month period's peak, which helps to limit revenue declines during months of low demand. Transmission assets regulated by the Federal Energy Regulatory Commission (FERC) are better positioned than most state regulated utilities because of a forward-looking formulaic rate setting mechanism. Most customer charges are not dependent on actual usage and rates are trued up automatically on an annual basis for all operating and capital costs.

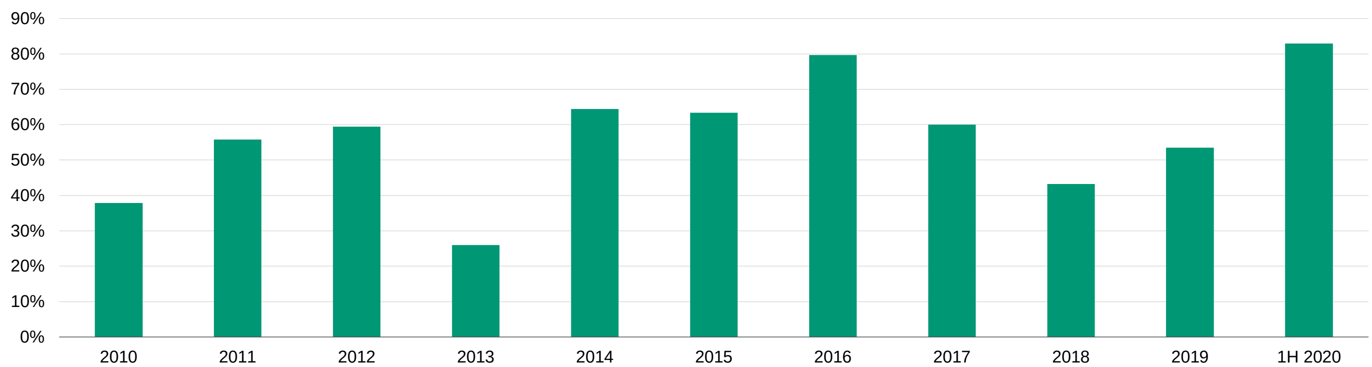
Utilities are being disciplined in their management of O&M expenses, which reduces the impact of declining revenue on cash flow. This is in addition to already broadly improving O&M cost savings because of the growing proportion of lower operating cost renewable sources in the industry's energy mix.

Given the capital intensive nature of the utilities industry, access to capital markets is crucial to the maintenance of adequate liquidity. We expect the sector to continue to have strong access to capital markets, as was exhibited during the turbulent capital market environment in March in the wake of the initial coronavirus outbreak in the US. Debt balances have been higher than normal in 2020, as some utilities hold more cash for liquidity and many have opportunistically refinanced upcoming maturities and issued incremental debt to take advantage of low interest rates. We expect debt usage to remain high but see more use of equity in 2021 than in 2020 as the pandemic subsides and the economy recovers.

Exhibit 2

Use of debt relative to equity increased sharply in the first half of 2020

Increase in debt relative to equity for rated US investor-owned utilities



Source: Moody's Investors Service

Potential increase in US corporate tax rate not incorporated into our outlook

The impact of a possible increase in the US corporate tax rate in 2021 is not incorporated into our outlook for the US regulated utility industry. The high degree of uncertainty around the likelihood and timing of any tax increase and the possibility of other revisions to the tax law (e.g., bonus depreciation) could have either positive or negative credit implications. We think it is unlikely that tax rates will change materially early in 2021, given current economic conditions (see "Credit Conditions – US: Next administration will confront five policy challenges with wide-ranging credit impact").

US regulated utilities are allowed to collect book tax expense from customers through their monthly rates. As a result, a change in the corporate tax rate directly affects collections from customers and cash flow, depending on the difference between the book taxes and cash taxes paid by the utility. If the corporate tax rate were to be raised in 2021, we think the potential increase in the regulated utility sector's operating cash flow would be modest because, among other reasons, (1) the new rate is likely to remain lower than the 35% level that was in effect before the passage of the 2017 Tax Cuts and Jobs Act; (2) more utilities will likely be paying cash taxes if there is no or very limited bonus depreciation accompanying the higher tax rate, resulting in lower deferred income taxes; and (3) regulators may opt to limit or delay rate increases to customers for the recovery of higher taxes in an uncertain economic environment.

Regulatory support to remain strong, although ROEs will be under pressure

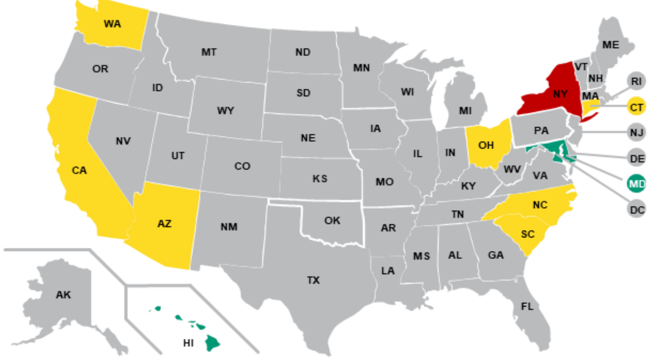
State regulation will continue to support the ability of utilities to recover costs and earn a fair return, even though low interest rates are pressuring allowed returns. We also expect regulators to support the recovery of coronavirus-related costs, although the timing of this recovery could be delayed if the economy does not recover as expected in 2021. Many utilities suspended service shutoffs and late fees beginning in March and some are experiencing a modest increase in bad debt expense. However, over 30 state commissions have issued an order or proposal to track and defer coronavirus costs for future recovery, an early indication that the prospects for ultimate recovery of most costs are good.

Exhibit 3

Most state utility regulatory and political environments are stable and supportive

Recent regulatory and political developments

Credit positive regulatory developments | Credit negative regulatory developments | Uncertain regulatory developments | No material regulatory developments



- » New York – Political risk, gas service uncertainties, review of gas planning
- » Arizona – Regulatory and political scrutiny over APS rate increase
- » California – Wildfire risk, controversy over energy policy/rolling blackouts
- » Connecticut – CL&P rate rollback, storm response driven regulatory changes
- » North Carolina – Uncertainty over return on future Duke coal ash spending
- » Ohio – Regulatory fallout from potential FE corporate governance issues
- » South Carolina – Duke challenges to utility rate case decisions in state
- » Washington – Unfavorable Puget rate outcome, questions over next rate case
- » Hawaii - Performance based regulation likely in 2020
- » Maryland – MPSC to establish a pilot program for alternative ratemaking

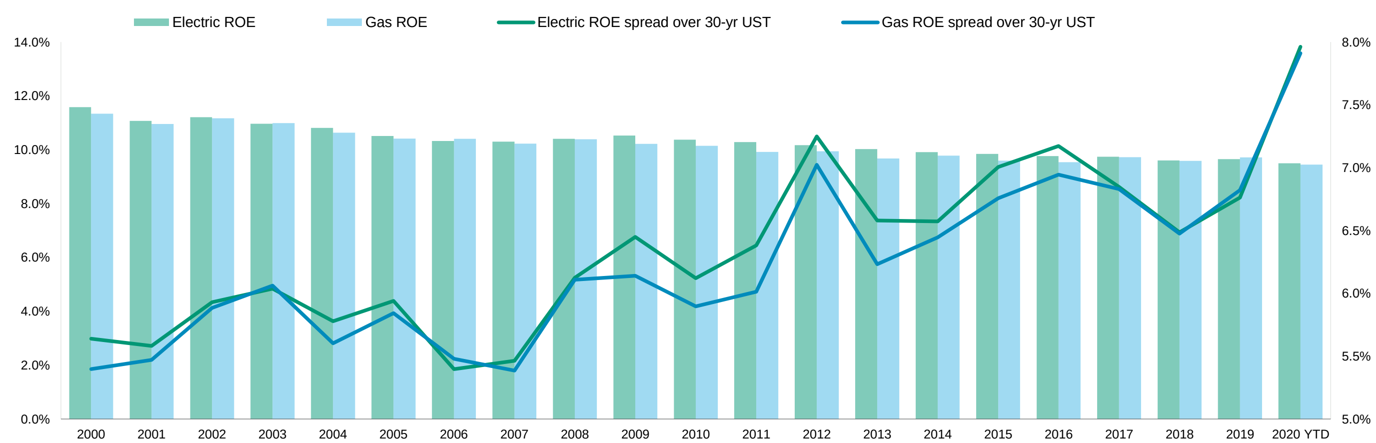
APS= Arizona Public Service Company (A2 negative); CL&P = Connecticut Light and Power Company (A3 stable); Duke = Duke Energy Corporation (Baa1 negative); FE= First Energy Corp (Baa3 negative); Puget = Puget Sound Energy (Baa1 stable); MPSC = Maryland Public Service Commission
Source: Moody's Investors Service

The timeline for cost recovery may extend beyond the next 18 months. However, the increase in bad debt expense above what is regularly budgeted for is not likely to have a significant impact on the cash flow of many utilities. Unlike other household expenses, utility bills in the US represent only about 3% of disposable income on average (see "Regulated Electric and Gas Utilities – US: Coronavirus-fueled rise in unemployment will limit consumer tolerance for rate hikes"). Utilities provide an essential service that many consumers value over other, more discretionary, services. This helps to curb bill payment delinquencies. In addition, federal stimulus spending in 2020 indirectly benefited the sector as more customers were able to pay some or all of their utility bills. Any future stimulus is also likely to help reduce delinquencies. However, while some utilities have resumed shutting off service to customers who fail to pay their bills, others are subject to regular winter moratoriums or specific, extended coronavirus-related moratoriums. In states such as California and Washington, for example, regulators have banned disconnections through April 2021. Bad debt costs may rise for utilities that are prohibited from cutting off service to delinquent ratepayers over the next six months, which would temporarily hurt cash flow.

To avoid the risk of receiving inadequate rate increases and in acknowledgment of the economic hardship faced by customers, some utilities have postponed rate increases that were planned for 2020. Delayed rate increases in a difficult economic environment can be beneficial to utilities from a social risk perspective because it helps to maintain their relationships with customers, political leaders and regulators. Most rate cases that did move forward in 2020 had generally favorable outcomes that will support cash flow growth. In a few instances, regulatory outcomes were adversely affected by the pandemic, such as in Washington state and Connecticut, where economic uncertainty led to unsupportive regulatory decisions that will hurt cash flow at Puget Sound Energy (Baa1 stable) and Connecticut Light & Power (CL&P, A3 stable), respectively. As the economy recovers over the next 18 months, we expect more rate case activity and improved prospects for rate increases and other cost recovery mechanisms.

Future rate case outcomes are increasingly likely to be based on lower ROEs. Allowed ROEs for the industry have declined over time as regulators seek to modulate the spread that low-risk utility businesses earn over the risk-free rate. Nevertheless, because Treasury yields have declined at a faster rate, the spread between utility ROEs and 30-year Treasury yields has widened in recent years (see "Regulated Electric and Gas Utilities – US: Continued decline in ROEs to heighten pressure on financial metrics"). This spread is currently higher than it has ever been, as shown in Exhibit 4, because of the more recent coronavirus related decline in treasury rates.

Exhibit 4
Spread between allowed utility ROEs and 30-year Treasury yield has widened
US regulated utilities' average authorized return on equity versus yield on 30-year US Treasury bonds



2020 YTD through October 2020
Sources: S&P Global Market Intelligence, U.S. Department of the Treasury, Moody's Investors Service

Utility allowed ROEs are likely to continue to decline as low interest rates persist given the industry's relatively low risk business risk profile, strong monopoly characteristics and the aim of regulators to keep rates affordable. As a result, we do not view declining allowed ROEs alone as indicative of weaker regulatory relationships. Many state regulators have increased allowed equity capital, for example, as ROEs have declined, helping to offset the negative impact of lower ROEs on earnings. Furthermore, mechanisms that reduce regulatory lag and enhance the ability of utilities to earn their authorized ROEs help to mitigate the impact of lower allowed ROEs. For example, in Texas, a new generation cost recovery rider allows non-ERCOT utilities to seek recovery of investments in power generation facilities before the facility is in service and start recovering investments beginning on the day the facility is placed in service.

Regulatory support to help utilities manage near-term climate hazards

Climate change is increasing the frequency and intensity of extreme weather events that affect utilities, such as hurricanes in the Southeast and wildfires in the West. In September, damage caused by hurricane Laura resulted in widespread power outages and significant costs to utility subsidiaries of Entergy Corporation (Baa2 stable) and Cleco Corporate Holdings LLC (Baa3 stable). Entergy disclosed between $1.5 and $1.7 billion (about 8% of 2019 consolidated reported debt) of expected costs in Louisiana and Texas. Both companies are working closely with regulators to ensure adequate cost recovery through a combination of storm reserves, customer rates and securitization, which is already legislated in Louisiana and Texas and has been used by both utilities in the past.

In the Northeast, where storms are typically less severe, some utilities came under criticism for their response to tropical storm Isaias in August. Investigations are underway into the storm response efforts of several utilities including Central Hudson Gas & Electric Corporation (A3 negative), Consolidated Edison Company of New York, Inc (Baa1 stable), Orange and Rockland Utilities, Inc. (Baa1 negative), Public Service Electric and Gas Company (A2 stable), Jersey Central Power & Light Company (A3 stable), CL&P and United Illuminating Company (Baa1 stable). Much of the criticism centered around inadequate storm preparation and failed communication technology. New York Governor Andrew Cuomo plans to propose legislation that clarifies the process for revoking a utility's franchise if it falls short of storm response expectations. The investigations and any related customer discontent increase social risk for the affected utilities and could result in more contentious regulatory relationships and inadequate storm cost recovery, which would hurt cash flow. In Connecticut, for example, utility response to tropical storm Isaias led to wider regulatory reform with the enactment of House Bill 7006 in October 2020. Among other things, HB 7006 requires the implementation of performance based ratemaking (PBR), a review of decoupling mechanisms and higher storm response thresholds and penalties.

The increasing scale and severity of wildfires in the Western US, such as those that struck California, Oregon and Washington in August and September, pose a growing challenge for utilities in the region. No formal determinations have yet been made linking utility equipment to the ignition of any of this year's wildfires, but investigations are still underway into the causes of the Bobcat fire in Southern California Edison Company's (Baa2 stable) service territory and the Zogg fire in Pacific Gas & Electric Company's (Baa3 senior secured, stable) service territory. More acres have burned in California in 2020 to date than in previous years, even though the annual wildfire season is still at its peak. Utilities are working to improve situational awareness, equipment preparedness and the duration and communication of necessary public safety shutoffs. The lower incidence of fires linked to utility equipment in California in 2019 and 2020 relative to 2017 and 2018, despite the increased scale of wildfires this year, suggests that utility mitigating measures may be proving to be effective. Progress in reducing the number of wildfires linked to utility equipment will not only limit utility liability but also improve customer relations and regulatory support for cost recovery.

According to data provided by Moody's affiliate Four Twenty Seven, the risk of extreme weather events is likely to worsen in the US over the next 10 to 20 years (see "Regulated electric utilities – US: Intensifying climate hazards to heighten focus on infrastructure investments"). Regulated utilities in regions vulnerable to climate risks should remain well-positioned to manage near-term climate hazards, mostly because of regulatory support in the form of recovery of infrastructure hardening investments, approval of storm cost reserve funds, legislation such as Assembly Bill 1054 in California to establish standards and financing mechanisms for wildfire mitigation measures and investments, and other cost recovery mechanisms such as securitization (see "Regulated electric and gas utilities – US: Grid hardening, regulatory support key to credit quality as climate hazards worsen").

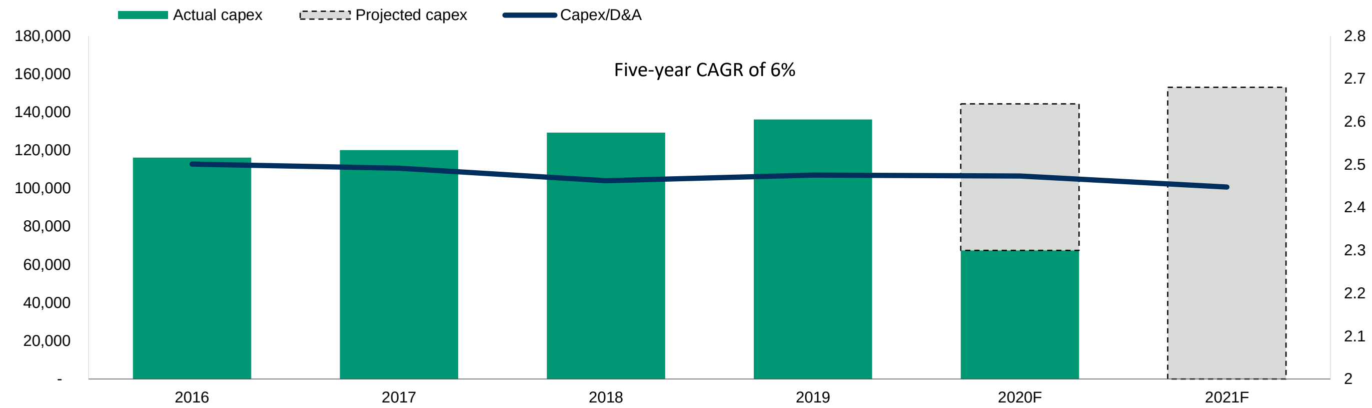
Capital expenditures are high, supporting the growth of utility rate base and returns

Utilities will continue to expend significant capital to grow rate base, maintaining a ratio of capital expenditures to total depreciation and amortization (D&A) of about 2.5x. While utility investments have remained robust in 2020, capital expenditures are an important lever for the utility sector that can be cut back or otherwise adjusted if the economy does not recover in 2021 as expected. As shown in Exhibit 5, we project that utility capital expenditures will increase at a five-year compound annual growth rate (CAGR) of about 6% through 2021.

Exhibit 5

Utilities to maintain a capital expenditure to D&A ratio of around 2.5x

Aggregate annual capital expenditures ($ millions) and ratio of capital expenditures to total depreciation and amortization expenses for rated US investor-owned utilities



Forecast for 2020 includes actual first-half capital expenditures.
Source: Moody's Investors Service

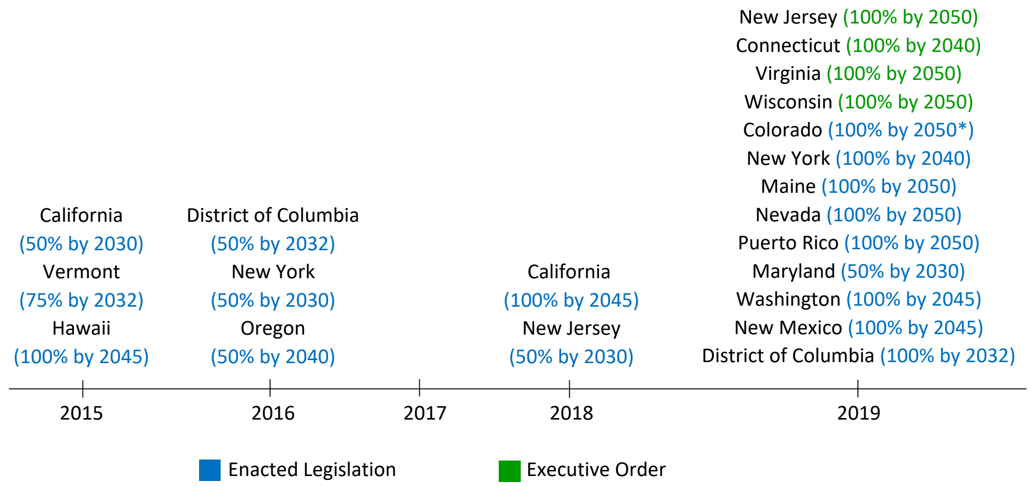
Capital spending on transmission and distribution (T&D) investments will continue to constitute the largest proportion of utility investment. These investments aim to harden infrastructure, improve reliability and better integrate new generation sources. The Edison Electric Institute estimates that T&D investments represented about 50% of total spending for US investor owned electric utilities in 2018 and 2019.

Both the improving economics of renewable generation and ESG considerations are driving renewable energy investments. In addition to several individual utility targets, many states have recently put forth ambitious clean energy targets as shown in Exhibit 6 (see "Power Generation - US: State policies drive long-term US renewable energy demand"). Utilities are increasingly investing in renewable infrastructure to help achieve these goals. For example, in November 2019, Wisconsin Power and Light Company (A3 stable) announced a plan to place up to 1,000 megawatts (MW) of solar power into service in Wisconsin between 2021-2023. Even utilities in states with high coal consumption are investing in renewable generation. Northern Indiana Public Service Company (NIPSCO, Baa1 stable) plans to replace about 1,400 MW of coal-fired generation to be retired by 2023 with lower-cost solar generation and storage and Empire District Electric Company (Baa1 Stable) in Missouri is investing in 600 MW of new wind generation.

Exhibit 6

States are making increasingly ambitious clean energy commitments

Annual state announcements of renewable energy targets (selected)



*Codifies commitment made by Xcel Energy

Excludes state commitments without a specified percentage of energy from renewable sources – for example Louisiana made a commitment in 2019 of net zero greenhouse gas emissions by 2050.

Source: World Resources Institute

States with new renewable energy commitments in 2020 include Rhode Island, which is the first to commit to 100% renewable energy generation by 2030, and Virginia, where the governor signed into law the Virginia Clean Energy Act in April, incorporating a 2019 executive order committing to 100% renewable energy by 2050. The law requires Virginia Electric and Power Company (A2 stable) and Appalachian Power Company (Baa1 stable) to be 100% carbon-free by 2045 and 2050, respectively, and includes targets for solar, onshore and offshore wind and energy storage capacity that will drive investments at both utilities.

The outcome of the US presidential election could affect capital spending on renewable energy. President Donald Trump's loosening of emission standards has been credit neutral for utilities that use carbon-intensive fuels to generate electricity, as well as for those companies that have made broad investments to transition toward renewable energy given existing market momentum in this regard. We expect this to continue in a second term.

Democratic challenger Joe Biden's environmental policy objectives, which are embedded in his Build Back Better economic recovery plan, would add to the current pressure on utilities to cut emissions, accelerating the transition to a carbon emission-free power sector by 2035. His plan would establish a technology-neutral Energy Efficiency and Clean Electricity Standard, accompanied by clean-energy tax credits to incentivize utilities and grid operators to improve energy efficiencies and generate electricity with clean energies. Biden's decarbonization policies would negatively affect coal-fired plants the most, and could accelerate the trend in plant closures driven by air pollution regulations and low-cost alternatives. These effects could also weigh on gas-fired plants, albeit over a longer time frame. However, renewables and other low-carbon-generation energy sources would stand to benefit.

Additional restrictions on emissions and air pollution would affect regulated utilities, but they generally have long experience in handling progressively more stringent environmental regulations. They also typically have the ability to recover related costs under a well-defined regulatory framework. However, increasing utility rates to mitigate environmental risks or meet air pollutant standards could be politically sensitive in some cases.

We also expect LDCs to continue to have sizable capital expenditure budgets aimed at system enhancements to improve safety and reduce fugitive emissions. Many LDCs already have approved mechanisms for the accelerated recovery of such investments. The gas LDC business model has come under scrutiny in recent years as carbon emission reduction goals intensify. LDCs in a few states, such as New York, are experiencing more imminent pressure as state legislation challenges sales growth. However, we view this as more of a longer-term risk for the LDC business model (see "Regulated Electric & Gas Utilities – North America: Shifting environmental agendas raise long-term credit risk for natural gas investments").

What could change our outlook

We would consider shifting our outlook to positive if regulation turns more credit supportive or if the sector's consolidated FFO-to-debt ratio rises to around 18% on a sustainable basis. We could revise the outlook to negative if the economy does not recover in 2021 as expected, regulated utility liquidity or capital markets access becomes constrained or there are material load declines, high or unrecoverable bad debt expenses or further postponement of needed rate increases resulting in an aggregate sector FFO-to-debt ratio below 14%.

Cyber risk for electric utilities

Electric utilities operate highly integrated and increasingly digitized critical infrastructure that underpins the broader economy and people's way of life. Furthermore, the monopolistic nature of providing electric services leaves customers with little alternative access to electricity in case of an attack on an electric utility's grid. The combination of these two factors makes electric utilities attractive targets for cyberthreat actors looking to disrupt not only a particular company's services but also economic processes and quality of life.

Although electric utilities rank among the most attractive cyberattack targets, the financial and credit impact of an attack would likely be moderate. Unlike companies operating in fully competitive markets, utilities are regulated by regional or national bodies. The regulatory framework governing their operations is typically designed such that efficient utilities can recover their costs, including capital costs, within the tariffs they charge. As a result, in the event of a cyberattack that caused financial or physical damage to the physical grid infrastructure, we would expect regulators to be sympathetic to the utility being able to recover these costs, albeit potentially with a time lag, and the utility would likely avoid penalties through the regulatory framework. (For more information on cyber risk, see "Cross-Sector - Global: Credit implications of cyber risk will hinge on business disruptions, reputational effects.")

Appendix

Exhibit 7

Utility holding companies

Data for the most recent 12-month period available ($ millions)

Issuer	Rating and Outlook	CFO Pre-WC	Total Debt	CFO Pre-WC/Debt	Capex	Dividend
Berkshire Hathaway Energy Company	A3 Stable	$7,010	$46,585	15.0%	$7,570	$0
Pinnacle West Capital Corporation	A3 Negative	$1,250	$7,046	17.7%	$1,340	$340
ALLETE, Inc.	Baa1 Stable	$331	$2,079	15.9%	$789	$125
Ameren Corporation	Baa1 Stable	$2,218	$11,172	19.9%	$2,576	$489
Eversource Energy	Baa1 Stable	$2,429	$16,995	14.3%	$2,947	$710
IDACORP, Inc.	Baa1 Stable	$341	$2,688	12.7%	$283	$134
NextEra Energy, Inc.	Baa1 Stable	$8,549	$46,264	18.5%	$12,802	$2,643
OGE Energy Corp.	Baa1 Stable	$777	$3,745	20.8%	$606	$307
Public Service Enterprise Group Incorporated	Baa1 Stable	$2,995	$17,988	16.6%	$2,967	$970
UNS Energy Corporation	Baa1 Stable	$538	$2,552	21.1%	$1,029	$110
WEC Energy Group, Inc.	Baa1 Stable	$2,287	$13,029	17.6%	$2,452	$782
WGL Holdings, Inc.	Baa1 Stable	$326	$2,021	16.2%	$412	$121
Xcel Energy Inc.	Baa1 Stable	$3,487	$23,983	14.5%	$5,116	$825
Avangrid, Inc.	Baa1 Negative	$1,459	$9,309	15.7%	$2,660	$602
CMS Energy Corporation	Baa1 Negative	$1,826	$13,338	13.7%	$2,092	$466
Duke Energy Corporation	Baa1 Negative	$8,881	$65,890	13.5%	$11,638	$2,696
National Grid USA	Baa1 Negative	$2,228	$22,238	10.0%	$4,219	$296
National Grid North America Inc.	Baa1 Negative	$2,525	$21,314	11.8%	$4,203	$0
Southwest Gas Holdings, Inc.	Baa1 Negative	$547	$3,390	16.1%	$900	$121
TECO Energy, Inc.	Baa2 Positive	$1,113	$4,226	26.3%	$1,528	$0
Alliant Energy Corporation	Baa2 Stable	$1,119	$7,382	15.2%	$1,516	$347
American Electric Power Company, Inc.	Baa2 Stable	$4,777	$32,736	14.6%	$6,650	$1,393
Black Hills Corporation	Baa2 Stable	$535	$3,628	14.7%	$850	$130
Consolidated Edison, Inc.	Baa2 Stable	$3,311	$25,204	13.1%	$3,906	$967
Dominion Energy, Inc.	Baa2 Stable	$6,484	$43,384	14.9%	$6,123	$3,089
DTE Energy Company	Baa2 Stable	$3,429	$19,753	17.4%	$3,659	$794
Entergy Corporation	Baa2 Stable	$3,356	$24,440	13.7%	$4,678	$738
Evergy, Inc.	Baa2 Stable	$1,832	$11,632	15.8%	$1,298	$465
Exelon Corporation	Baa2 Stable	$7,897	$45,179	17.5%	$7,715	$1,460
NiSource Inc.	Baa2 Stable	$1,375	$10,622	12.9%	$1,806	$338
Otter Tail Corporation	Baa2 Stable	$197	$889	22.2%	$276	$58
PPL Corporation	Baa2 Stable	$3,159	$24,572	12.9%	$3,216	$1,246
Sempra Energy	Baa2 Stable	$2,863	$27,605	10.4%	$4,256	$1,264
Southern Company (The)	Baa2 Stable	$7,697	$49,184	15.7%	$8,246	$2,623
Spire Inc.	Baa2 Stable	$453	$3,392	13.4%	$691	$133
CenterPoint Energy, Inc.	Baa2 Negative	$2,117	$14,235	14.9%	$2,639	$616
Cleco Corporate Holdings LLC	Baa3 Stable	$427	$3,572	11.9%	$311	$0
Duquesne Light Holdings, Inc.	Baa3 Stable	$349	$2,799	12.4%	$395	$33
Edison International	Baa3 Stable	-$635	$23,032	-2.8%	$5,123	$926
IPALCO Enterprises, Inc.	Baa3 Stable [1]	$371	$2,757	13.4%	$199	$131
PNM Resources, Inc.	Baa3 Stable	$544	$3,684	14.8%	$690	$96

Issuer	Rating and Outlook	CFO Pre-WC	Total Debt	CFO Pre-WC/Debt	Capex	Dividend
FirstEnergy Corp.	Baa3 Negative	$1,621	$25,240	6.4%	$2,996	$833
DPL Inc.	Ba1 Negative	$164	$1,863	8.8%	$189	$0
PG&E Corporation [2]	Ba2 Stable	$7,639	$42,178	18.1%	$7,871	-$12
Total		$ 9,424	$ 69,280	13.6%	$ 11,055	$ 821

[1] Senior Secured
[2] Data pre-exit from bankruptcy
List excludes intermediate holding companies unless the ultimate parent company is excluded from the holding company peer group (e.g. AES Corporation) or is domiciled outside of the US.
Source: Moody's Investors Service

Exhibit 8

Vertically integrated operating companies

Data for the most recent 12-month period available ($ millions)

Issuer	Rating and Outlook	CFO Pre-WC	Total Debt	CFO Pre-WC/Debt	Capex	Dividend
Consumers Energy Company	Aa3 Negative [1]	$1,731	$9,163	18.9%	$2,074	$597
Alabama Power Company	A1 Stable	$2,266	$8,827	25.7%	$1,917	$898
Florida Power & Light Company	A1 Stable	$5,392	$14,664	36.8%	$6,569	$800
Madison Gas and Electric Company	A1 Stable	$158	$590	26.8%	$171	$21
MidAmerican Energy Company	A1 Stable	$1,567	$7,516	20.8%	$2,590	$0
Duke Energy Carolinas, LLC	A1 Negative	$2,928	$12,851	22.8%	$2,881	$575
DTE Electric Company	A2 Stable	$1,962	$9,730	20.2%	$2,523	$516
Duke Energy Indiana, LLC.	A2 Stable	$972	$5,013	19.4%	$940	$300
Gulf Power Company	A2 Stable	$626	$1,963	31.9%	$1,046	$420
Northern States Power Company (Minnesota)	A2 Stable	$1,476	$6,478	22.8%	$1,428	$483
Northern States Power Company (Wisconsin)	A2 Stable	$239	$936	25.6%	$246	$74
Virginia Electric and Power Company	A2 Stable	$3,367	$14,044	24.0%	$3,267	$216
Wisconsin Electric Power Company	A2 Stable	$776	$5,742	13.5%	$728	$270
Wisconsin Public Service Corporation	A2 Stable	$459	$1,680	27.3%	$564	$200
Arizona Public Service Company	A2 Negative	$1,357	$6,475	21.0%	$1,340	$370
Duke Energy Progress, LLC	A2 Negative	$2,064	$9,748	21.2%	$2,208	$0
Tampa Electric Company	A3 Positive	$759	$3,440	22.1%	$1,358	$383
Black Hills Power, Inc.	A3 Stable	$88	$483	18.1%	$129	$20
Cleco Power LLC	A3 Stable	$289	$1,733	16.7%	$292	$20
Duke Energy Florida, LLC.	A3 Stable	$1,530	$8,714	17.6%	$2,083	$0
Idaho Power Company	A3 Stable	$316	$2,688	11.8%	$283	$134
Indiana Michigan Power Company	A3 Stable	$828	$3,421	24.2%	$737	$83
Kentucky Utilities Co.	A3 Stable	$639	$3,171	20.2%	$581	$227
Louisville Gas & Electric Company	A3 Stable	$550	$2,235	24.6%	$483	$187
Oklahoma Gas & Electric Company	A3 Stable	$695	$3,641	19.1%	$605	$0
Otter Tail Power Company	A3 Stable	$145	$721	20.1%	$257	$45
PacifiCorp	A3 Stable	$1,501	$8,864	16.9%	$2,297	$0
Portland General Electric Company	A3 Stable	$637	$3,388	18.8%	$717	$138
Public Service Company of Colorado	A3 Stable	$1,264	$7,101	17.8%	$1,981	$841
Southern Indiana Gas & Electric Company	A3 Stable	$232	$831	27.9%	$252	$0
Tucson Electric Power Company	A3 Stable	$465	$2,105	22.1%	$941	$75
Wisconsin Power and Light Company	A3 Stable	$456	$2,381	19.2%	$578	$156
San Diego Gas & Electric Company	Baa1 Positive	$1,455	$7,286	20.0%	$1,709	$200
ALLETE, Inc.	Baa1 Stable	$331	$2,079	15.9%	$789	$125
Appalachian Power Company	Baa1 Stable	$782	$5,090	15.4%	$890	$150
Duke Energy Kentucky, Inc.	Baa1 Stable	$129	$818	15.7%	$241	$0
Empire District Electric Company (The)	Baa1 Stable	$209	$898	23.3%	$257	$15
Entergy Arkansas, LLC	Baa1 Stable	$737	$4,183	17.6%	$846	$0
Entergy Louisiana, LLC	Baa1 Stable	$1,438	$8,431	17.1%	$1,455	$123
Entergy Mississippi, LLC	Baa1 Stable	$336	$1,956	17.2%	$821	$3
Evergy Metro, Inc.	Baa1 Stable	$665	$3,657	18.2%	$478	$190
Georgia Power Company	Baa1 Stable	$3,143	$14,971	21.0%	$3,852	$1,562
Indianapolis Power & Light Company	Baa1 Stable	$394	$1,877	21.0%	$199	$168
Interstate Power and Light Company	Baa1 Stable	$607	$3,600	16.9%	$866	$197
Mississippi Power Company	Baa1 Stable	$402	$1,433	28.1%	$243	$0

Issuer	Rating and Outlook	CFO Pre-WC	Total Debt	CFO Pre-WC/Debt	Capex	Dividend
Nevada Power Company	Baa1 Stable	$614	$2,971	20.7%	$491	$361
Newfoundland Power Inc.	Baa1 Stable	$90	$497	18.1%	$82	$21
Northern Indiana Public Service Company	Baa1 Stable	$776	$2,730	28.4%	$694	$180
Public Service Company of Oklahoma	Baa1 Stable	$276	$1,659	16.7%	$353	$0
Puget Sound Energy, Inc.	Baa1 Stable	$850	$4,789	17.8%	$898	$180
Sierra Pacific Power Company	Baa1 Stable	$214	$1,199	17.9%	$257	$20
Union Electric Company	Baa1 Stable	$1,092	$4,998	21.9%	$1,147	$333
Hawaiian Electric Company, Inc.	Baa2 Positive	$457	$2,287	20.0%	$408	$105
Avista Corp.	Baa2 Stable	$344	$2,511	13.7%	$437	$106
Dominion Energy South Carolina, Inc.	Baa2 Stable	$812	$4,382	18.5%	$611	$0
El Paso Electric Company	Baa2 Stable	$266	$1,778	15.0%	$258	$64
Evergy Missouri West, Inc.	Baa2 Stable	$317	$1,315	24.1%	$208	$145
Monongahela Power Company	Baa2 Stable	$294	$1,845	15.9%	$204	$44
NorthWestern Corporation	Baa2 Stable	$326	$2,424	13.4%	$345	$118
Public Service Company of New Mexico	Baa2 Stable	$377	$2,124	17.7%	$385	$41
Southwestern Electric Power Company	Baa2 Stable	$469	$3,098	15.1%	$473	$3
Southwestern Public Service Company	Baa2 Stable	$421	$2,901	14.5%	$990	$324
Entergy Texas, Inc.	Baa3 Positive	$338	$2,242	15.1%	$928	$0
Alaska Electric Light and Power Company	Baa3 Stable	$18	$134	13.1%	$7	$11
Kentucky Power Company	Baa3 Stable	$97	$1,088	8.9%	$178	$0
Pacific Gas & Electric Company	Baa3 Stable [1]	$7,706	$36,736	21.0%	$7,896	$5
Entergy New Orleans, LLC.	Ba1 Stable	$95	$770	12.3%	$229	$0
Total		$64,606	$311,091	20.8%	$74,194	$12,841

[1] Senior Secured; data pre-exit from bankruptcy
Source: Moody's Investors Service

Exhibit 9

Transmission and distribution operating companies

Data for the most recent 12-month period available ($ millions)

Issuer	Rating and Outlook	CFO Pre-WC	Total Debt	CFO Pre-WC/Debt	Capex	Dividend
NSTAR Electric Company	A1 Stable	$875	$4,004	21.8%	$883	$197
Oncor Electric Delivery Company LLC	A2 Stable [1]	$1,627	$10,500	15.5%	$2,371	$360
PECO Energy Company	A2 Stable	$834	$3,907	21.4%	$1,005	$352
Public Service Electric and Gas Company	A2 Stable	$1,834	$11,471	16.0%	$2,476	$425
Ameren Illinois Company	A3 Stable	$930	$3,815	24.4%	$1,305	$3
Baltimore Gas and Electric Company	A3 Stable	$874	$3,973	22.0%	$1,181	$235
Commonwealth Edison Company	A3 Stable	$1,706	$11,145	15.3%	$1,985	$506
Connecticut Light and Power Company (The)	A3 Stable	$810	$4,194	19.3%	$861	$139
Duquesne Light Company	A3 Stable	$351	$1,535	22.9%	$362	$60
FortisBC Energy Inc.	A3 Stable	$312	$2,250	13.9%	$392	$118
Hydro One Inc.	A3 Stable	$1,399	$10,290	13.6%	$1,264	$423
Jersey Central Power & Light Company	A3 Stable	$395	$2,071	19.1%	$468	$50
Metropolitan Edison Company	A3 Stable	$272	$1,133	24.0%	$183	$85
New England Power Company	A3 Stable	$243	$793	30.6%	$216	$165
Ohio Edison Company	A3 Stable	$356	$1,224	29.1%	$233	$515
Ohio Power Company	A3 Stable	$341	$3,068	11.1%	$842	$44
Pennsylvania Power Company	A3 Stable	$57	$257	22.3%	$52	$35
PPL Electric Utilities Corporation	A3 Stable	$935	$4,240	22.1%	$1,067	$517
Public Service Company of New Hampshire	A3 Stable	$319	$1,780	17.9%	$346	$60
West Penn Power Company	A3 Stable	$311	$1,064	29.3%	$241	$85
Central Hudson Gas & Electric Corporation	A3 Negative	$143	$793	18.0%	$254	$0
Massachusetts Electric Company	A3 Negative	$214	$1,598	13.4%	$352	$0
Narragansett Electric Company	A3 Negative	$233	$1,366	17.1%	$348	$0
New York State Electric and Gas Corporation	A3 Negative	$326	$1,792	18.2%	$674	$100
Niagara Mohawk Power Corporation	A3 Negative	$603	$3,434	17.6%	$861	$1
Rochester Gas & Electric Corporation	A3 Negative	$269	$1,184	22.7%	$376	$0
Texas-New Mexico Power Company	A3 Negative	$150	$817	18.4%	$278	$59
Atlantic City Electric Company	Baa1 Stable	$250	$1,484	16.8%	$332	$135
CenterPoint Energy Houston Electric, LLC	Baa1 Stable	$923	$5,231	17.6%	$1,059	$741
Consolidated Edison Company of New York, Inc.	Baa1 Stable	$2,575	$19,062	13.5%	$3,294	$947
Delmarva Power & Light Company	Baa1 Stable	$311	$1,771	17.5%	$383	$135
Fitchburg Gas & Electric Light Company	Baa1 Stable	$22	$147	15.1%	$28	$4
FortisAlberta Inc.	Baa1 Stable	$251	$1,757	14.3%	$283	$58
FortisBC Inc.	Baa1 Stable	$76	$890	8.5%	$85	$33
Pennsylvania Electric Company	Baa1 Stable	$285	$1,402	20.4%	$161	$145
Potomac Electric Power Company	Baa1 Stable	$537	$3,183	16.9%	$662	$242
Toledo Edison Company	Baa1 Stable	$102	$475	21.6%	$62	$85
United Illuminating Company	Baa1 Stable	$275	$1,154	23.8%	$187	$130
Unitil Energy Systems, Inc.	Baa1 Stable	$24	$136	17.8%	$35	$6
Orange and Rockland Utilities, Inc.	Baa1 Negative	$169	$1,107	15.3%	$198	$49
AEP Texas Inc.	Baa2 Stable	$776	$4,813	16.1%	$1,265	$0
Cleveland Electric Illuminating Company (The)	Baa2 Stable	$205	$1,598	12.8%	$153	$135
Electric Transmission Texas, LLC	Baa2 Stable	$192	$1,522	12.6%	$151	$50
Potomac Edison Company (The)	Baa2 Stable	$80	$776	10.3%	$129	$0
Southern California Edison Company	Baa2 Stable	-$492	$19,642	-2.5%	$5,121	$999
Dayton Power & Light Company	Baa2 Negative	$145	$652	22.3%	$182	$39
Total		$23,422	$160,501	14.6%	$34,644	$8,467

[1] Senior Secured

Source: Moody's Investors Service

Exhibit 10

Local distribution operating companies

Data for the most recent 12-month period available ($ millions)

Issuer	Rating and Outlook	CFO Pre-WC	Total Debt	CFO Pre-WC/Debt	Capex	Dividend
Atmos Energy Corporation	A1 Stable	$1,176	$4,850	24.3%	$1,934	$274
New Jersey Natural Gas Company	A1 Stable [1]	$189	$1,051	18.0%	$335	$0
Spire Missouri Inc.	A1 Stable	$278	$1,476	18.8%	$356	$54
North Shore Gas Company	A2 Stable	$33	$188	17.5%	$42	$16
Northern Illinois Gas Company	A2 Stable	$511	$1,632	31.3%	$827	$0
ONE Gas, Inc	A2 Stable	$336	$1,954	17.2%	$481	$110
Peoples Gas Light and Coke Company	A2 Stable	$333	$1,628	20.5%	$667	$100
Southern California Gas Company	A2 Stable	$1,286	$5,391	23.9%	$1,685	$151
Spire Alabama Inc.	A2 Stable	$163	$626	26.1%	$174	$20
UGI Utilities, Inc.	A2 Stable	$305	$1,345	22.7%	$346	$43
Connecticut Natural Gas Corporation	A3 Positive	$97	$263	36.7%	$52	$60
Berkshire Gas Company	A3 Stable	$23	$75	30.2%	$15	$0
CenterPoint Energy Resources Corp.	A3 Stable	$520	$2,468	21.1%	$833	$375
DTE Gas Company	A3 Stable	$373	$1,903	19.6%	$521	$129
Piedmont Natural Gas Company, Inc.	A3 Stable	$484	$3,019	16.0%	$989	$0
Questar Gas Company	A3 Stable	$196	$887	22.1%	$195	$0
Southern Connecticut Gas Company	A3 Stable	$133	$321	41.4%	$77	$30
UNS Gas, Inc.	A3 Stable	$28	$101	27.5%	$26	$5
Washington Gas Light Company	A3 Stable	$277	$1,662	16.7%	$392	$101
Wisconsin Gas LLC	A3 Stable	$135	$706	19.1%	$198	$30
Boston Gas Company	A3 Negative	$407	$2,105	19.3%	$591	$0
KeySpan Gas East Corporation	A3 Negative	$288	$1,456	19.8%	$435	$0
South Jersey Gas Company	A3 Negative	$152	$1,257	12.1%	$248	$0
Southwest Gas Corporation	A3 Negative	$346	$2,836	12.2%	$769	$101
Brooklyn Union Gas Company, The	A3 RUR-Down [2]	$323	$2,819	11.5%	$900	$0
Northern Utilities, Inc.	Baa1 Stable	$39	$234	16.5%	$58	$15
Northwest Natural Gas Company	Baa1 Stable	$175	$1,367	12.8%	$252	$55
PNG Companies LLC	Baa1 Stable [1]	$264	$1,517	17.4%	$280	$75
Public Service Co. of North Carolina, Inc.	Baa1 Stable	$111	$892	12.4%	$190	$0
SEMCO Energy, Inc.	Baa1 Stable	$122	$557	21.9%	$162	$59
Southern Company Gas Capital	Baa1 Stable	$1,275	$5,836	21.8%	$1,467	$502
Yankee Gas Services Company	Baa1 Stable	$104	$725	14.4%	$221	$38
Total		$10,483	$53,148	19.7%	$15,718	$2,342

[1] Senior Secured
[2] Rating(s) under Review for Downgrade
Source: Moody's Investors Service

Moody's related publications

Sector In-Depth

» Regulated Electric & Gas Utilities – North America: Shifting environmental agendas raise long-term credit risk for natural gas investments, 30 September 2020

» Regulated Electric & Gas Networks – Cross Region: Lower returns hit key ratios, but regulatory consistency still supports credit quality, 8 September 2020

» Electric Utilities and Power Companies – US: Nuclear operators face growing climate risk but resiliency investments mitigate impact, 18 August 2020

» Regulated Electric and Gas Utilities – US: Continued decline in ROEs to heighten pressure on financial metrics, 17 April 2020

» Regulated electric and gas utilities – US: Grid hardening, regulatory support key to credit quality as climate hazards worsen, 2 March 2020

» Regulated electric utilities – US: Intensifying climate hazards to heighten focus on infrastructure investments, 16 January 2020

Sector Comments

» Regulated Electric & Gas Utilities – US: Recent California wildfires do not imperil the credit quality of investor-owned utilities, 22 September 2020

» Regulated Electric and Gas Utilities – US: Coronavirus-fueled rise in unemployment will limit consumer tolerance for rate hikes, 17 April 2020

» Regulated Electric and Gas Utilities – US: Coronavirus recession will impact utility pension underfunding to varying degrees, 16 April 2020

» Infrastructure & Project Finance – Asia-Pacific: Heat map: Exposure to coronavirus disruption is low for 68% of issuers, 8 April 2020

» Regulated Electric, Gas and Water Utilities – US: Coronavirus outbreak delays rate cases, but regulatory support remains intact, 6 April 2020

» Regulated Electric and Gas Utilities – US: Dividends a major source of cash if coronavirus downturn is prolonged, 6 April 2020

» Regulated Electric and Gas Utilities – US: Utilities strengthen liquidity amid capital markets volatility, 6 April 2020

» Regulated Electric and Gas Utilities – US: FAQ on credit implications of the coronavirus outbreak, 26 March 2020

» Regulated Electric, Gas and Water Utilities - US: Utilities demonstrate credit resilience in the face of coronavirus disruptions, 18 March 2020

Outlooks

» Global Macro Outlook 2020-21 (August 2020 Update): Economic recovery remains tenuous as pandemic fears persist, 25 August 2020

» Regulated electric and gas utilities – US: 2020 outlook moves to stable on supportive regulation, weaker but steady credit metrics, 7 November 2019

» Regulated utilities - US: 2019 outlook negative amid growing debt and stagnant cash flow, 8 November 2018

REPORT NUMBER 1246659

Analyst Contacts

Laura Schumacher +1.212.553.3853
VP-Sr Credit Officer
laura.schumacher@moodys.com

Gavin MacFarlane +1.416.214.3864
VP-Sr Credit Officer
gavin.macfarlane@moodys.com

Ryan Wobbrock +1.212.553.7104
VP-Sr Credit Officer
ryan.wobbrock@moodys.com

Robert Petrosino CFA +1.212.553.1946
VP-Senior Analyst
robert.petrosino@moodys.com

Edna R Marinelarena +1.212.553.1383
Analyst
edna.marinelarena@moodys.com

Toby Shea +1.212.553.1779
VP-Sr Credit Officer
toby.shea@moodys.com

Jeffrey F. Cassella +1.212.553.1665
VP-Sr Credit Officer
jeffrey.cassella@moodys.com

Natividad Martel, CFA +1.212.553.4561
VP-Senior Analyst
natividad.martel@moodys.com

Jairo Chung +1.212.553.5123
VP-Senior Analyst
jairo.chung@moodys.com

MOODY'S
INVESTORS SERVICE

MOODY'S
INVESTORS SERVICE

SECTOR COMMENT
13 November 2020

Rate this Research

Analyst Contacts

Ryan Wobbrock +1.212.553.7104
VP-Sr Credit Officer
ryan.wobbrock@moodys.com

Nikita Nanwani
Associate Analyst
nikita.nanwani@moodys.com

Philip Cope +44.20.7772.5229
AVP-Analyst
philip.cope@moodys.com

Gavin MacFarlane +1.416.214.3864
VP-Sr Credit Officer
gavin.macfarlane@moodys.com

Michael G. Haggarty +1.212.553.7172
Associate Managing Director
michael.haggarty@moodys.com

Neil Griffiths-Lambeth +44.20.7772.5543
Associate Managing Director
neil.griffiths-lambeth@moodys.com

Regulated Electric and Gas Utilities - US

Latest political intervention into regulatory oversight is credit negative for New York utilities

On 5 November, New York Governor Andrew Cuomo posted Program Bill Number 13, "An Act to Reform the Enforcement, Oversight and Franchise Revocation Process for Public Utilities", to his website, which was introduced the following day as New York State Assembly Bill A11120. The proposed legislation, if approved, would amend current laws to codify certain performance standards for the state's utilities, eliminate statutory penalty caps for violations and provide greater authority to the state's Department of Public Service (DPS) and the Public Service Commission (PSC), including giving the PSC the ability to prohibit any utility provider from operating in the state. The proposal is credit negative for all New York utilities because it represents the latest in a series of actions by the governor's office to intervene in utility regulation, which undermines the consistency and predictability of the state's regulatory framework.

The bill expands on efforts already taken by the governor to challenge utility franchise certificates. This feature of the bill weighs most heavily on credit quality because it increases business risk for every utility and their respective holding companies. In November 2019, Cuomo sent a letter to National Grid plc (Baa1 negative) informing the company of his intent to direct the PSC to revoke the operating certificates of its two downstate gas utilities (see "Regulated electric and gas utilities – New York: Threat to revoke National Grid's operating license is credit negative for utilities"). This threat, which was issued in response to the company's service moratoriums on new gas connections for certain customers amid state restrictions on incremental supply opportunities, was limited in scope in that operating certificates would only be revoked if National Grid did not provide a solution deemed satisfactory within two weeks (it did).

By contrast, Assembly Bill A11120 is directed at all of the state's utilities, is more broadly applicable across other utility operations and could increase the risks for utility fines and penalties because it has been initiated by service quality concerns expressed by the governor. In particular, power outages in Consolidated Edison Inc.'s (Baa2 stable) service territory during the summer of 2020 and the length of time it took utilities around the state to restore power after Tropical Storm Isaias garnered the governor's attention.

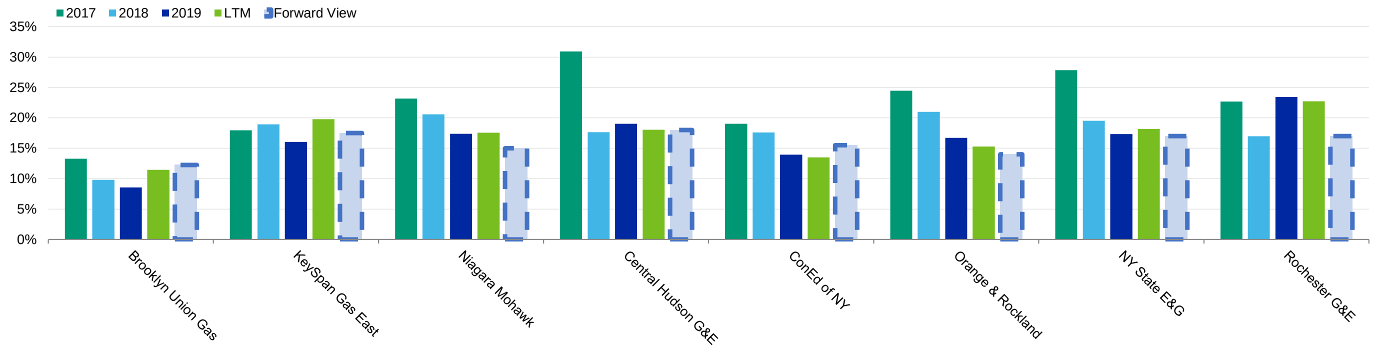
Because the proposal also seeks to enact these changes through state legislation, it could also hurt the legislative and judicial underpinnings of the New York utility regulatory environment.

The increased political intervention comes at a time when the financial metrics of most of the state's utilities have been under pressure following the US Tax Cuts and Jobs Act of 2017 (see Exhibit 1), despite a suite of credit friendly cost recovery provisions allowed by the PSC, such as multiyear rate plans, use of a fully forward-looking test year and revenue decoupling mechanisms.

Exhibit 1

Financial strength of most New York utilities has weakened during the past three years

Ratio of cash flow from operations excluding changes in working capital (CFO pre-WC) to debt for select New York utilities as of latest 12 months available (1)



(1) Brooklyn Union Gas (KEDNY), KeySpan Gas East (KEDLI) and Niagara Mohawk have a March rather than December year-end; series correspond to year ending March (i.e. 2017 corresponds to April 2016 - March 2017). (2) Forward view is the midpoint of the range given in the latest published credit opinion or as identified in the latest report. (3) ConEd of NY is Consolidated Edison Company of New York, Inc. or CECONY.

Source: Moody's Financial Metrics

Exhibit 2

Financial challenges and political developments have created negative credit implications over the past 12 months.

Month-Year	Events and Moody's Rating Actions
Nov-19	Letter from Governor Cuomo to National Grid Plc threatening to revoke KEDNY's and KEDLI's operating licenses
Nov-19	KEDNY and KEDLI - put on review for downgrade regarding risks for increased costs, possible regulatory penalties and gas supply uncertainties
Nov-19	Following National Grid's response to the Governor's letter on 12 November, the PSC published an order approving the settlement of these disputes
Dec-19	KEDNY and KEDLI - ratings confirmed with negative outlooks following settlement and prospect for weak financial metrics (a continuation for KEDNY)
Dec-19	ConEd, CECONY and O&R - negative outlooks following assessment of joint proposal and potential for weaker financial metrics
Mar-20	ConEd and CECONY downgraded (Baa2, Baa1 respectively) following approval of joint proposal and likelihood for persistently weaker financial metrics
Jun-20	Niagara Mohawk - negative outlook due to risk of weak financial metrics and more challenging operating environment
Aug-20	KEDNY - review for downgrade reflecting persistently weak financial metrics and the absence of a timely and favorable rate case resolution
Aug-20	Tropical Storm Isaias damages utility equipment across New York state
Sep-20	NYSEG and RG&E - negative outlooks due to joint proposal that backloads rate increases and results in sustainably weaker financial metrics
Oct-20	Central Hudson G&E - negative outlook due to weak finanical metrics that are likely to persist
Nov-20	Governor proposes legislation for more severe penalties for state utilities and process for revoking their licenses
Nov-20	KEDNY - downgraded to Baa1 on expectation that weak financial metrics will continue

Source: Moody's Investors Service, ny.gov

Moody's related publications

Sector Comment

» Regulated electric and gas utilities – New York: Threat to revoke National Grid's operating license is credit negative for utilities, 18 November 2019

Issuer Comments

» Avangrid, Inc. - Avangrid's New York utility rate settlement is credit negative despite strong customer relations, 6 July 2020

» National Grid plc - Coronavirus adds to headwinds for New York gas rate case, 21 April

Credit Opinions

» Niagara Mohawk Power Corporation - Update to credit analysis, 23 October 2020

» Central Hudson Gas & Electric Corporation: Update following negative outlook, 19 October 2020

» New York State Electric and Gas Corporation: Update following negative outlook, 19 October 2020

» Rochester Gas & Electric Corporation: Update following negative outlook, 19 October 2020

» KeySpan Gas East Corporation: Update following maintenance of negative outlook, 28 August 2020

» Brooklyn Union and Gas Company, The - Update following a rating review for downgrade, 24 August 2020

» Consolidated Edison Company of New York, Inc.: Update following downgrade to Baa1, 26 March 2020

» Orange and Rockland Utilities, Inc.: Update following negative outlook, 09 January 2020

REPORT NUMBER 1253088

MOODY'S
INVESTORS SERVICE

MOODY'S
INVESTORS SERVICE

Rating Action: Moody's downgrades KEDNY to Baa1; stable outlook

10 Nov 2020

London, 10 November 2020 -- Moody's Investors Service (Moody's) has today downgraded to Baa1 from A3 the long-term issuer and senior unsecured ratings of The Brooklyn Union Gas Company (KEDNY), a local gas distribution company operating in downstate New York and ultimately owned by National Grid plc (National Grid, Baa1 negative). The outlook on all ratings has been changed to stable from ratings under review. This rating action concludes the review process initiated on 14 August 2020.

The review was prompted by KEDNY's persistently weak credit metrics and the absence of a timely and favourable resolution to the company's ongoing rate case settlement in downstate New York.

RATINGS RATIONALE

The rating downgrade to Baa1 reflects Moody's expectation that whilst KEDNY's key credit metrics will strengthen over the primary term of its next rate plan, they will remain below the rating agency's amended minimum ratio guidance of 19% for the A3 rating level given the more challenging operating environment.

In recent years, KEDNY has exhibited the weakest key credit metrics of National Grid's US regulated subsidiaries. KEDNY's cash flow from operations pre-working capital (CFO pre-WC) to debt has averaged 10.0% over the last three financial years, well below Moody's guidance for the A3 rating level.

Like other New York utilities, KEDNY's cash flow metrics have been depressed by (1) the regulatory framework offering one of the lowest allowed return on equity (ROE) amongst the US states (both equity thickness and authorised ROE); and (2) the impact of US tax reform, which has resulted in lower revenues for KEDNY since January 2019. However, KEDNY's cash flow metrics have fallen short of peers due to its (1) weak operating performance resulting in achieved ROE being well below authorised levels (below 8% compared to authorized 9.0 % in current rate plan); (2) very large investment programme, with average rate base growth of almost 20% over the last three financial years; and (3) material and growing environmental remediation liabilities.

The operating environment for New York utilities, particularly for gas LDCs, has become more challenging, in Moody's view, since National Grid made its April 2019 rate case filing for KEDNY and KeySpan Gas East Corporation (KEDLI, A3 negative), its sister gas LDC company in downstate New York. The state regulator (the Public Service Commission, PSC) has continued to cut allowed returns in determinations made, to-date, in 2020 (to authorised ROE of 8.8 % whilst retaining a 48% equity layer); and appears to have placed greater emphasis on affordability, with extensive coronavirus-related provisions included in rulings made since the pandemic hit the state, including back-loading, levelisation, of rate increases.

At the same time, political rhetoric and actions taken towards various state utilities have increased. New York State Governor Andrew Cuomo has formally threatened to revoke several utility operating licenses, including KEDNY's (in November 2019 following utility-imposed service moratoriums on new gas connections for certain service territories amid state restrictions on incremental supply opportunities), and this month published a bill outlining formal process for doing so, with more severe penalties for underperformance.

Moody's believes that KEDNY has been most adversely impacted by these developments, both from a business risk and financial profile perspective. There remains no enduring solution to address security of supply in downstate New York, with the agreement reached last year running only until September 2021. The independent monitor, set-up as part of the settlement, has been critical of aspects of National Grid's proposed solutions and its work in this area. There is growing opposition to large scale investment in gas infrastructure (part of National Grid's originally proposed solution), against the backdrop of New York's ambitious decarbonisation agenda, and all of KEDNY's operations are gas, as compared to majority electricity for all other utilities except KEDLI.

In addition, KEDNY requires the largest rate increases for a sustained improved in its financial profile - in its original filing it requested a $237 million increase (resulting in a 12% average bill increase) in rate year one (commencing April 2020) with further increases in the additional data years provided. However, settlement discussions have been protracted. They were put on hold in late 2019, during the dispute with the Governor

Cuomo, and although they recommenced in June 2020, negotiations to develop a joint proposal with the PSC are still ongoing. In the meantime, the PSC recently ordered a deferral of rate increases to January 2021. While the make-whole provision in the PSC's May 2020 order of the deferral of rate increases is neutral for KEDNY (true-up from 1 April 2021, rate year 2), Moody's now expects rate increases to be less than half of what KEDNY originally requested.

KEDNY's Baa1 rating is underpinned by the low business risk of gas distribution activities governed by a transparent and established regulatory regime that provides a suite of cost recovery provisions and generally consistent cash flow generation. KEDNY's credit quality also benefits from a prudent financial policy, reflected in debt / regulatory capitalisation below regulatory assumptions in recent years -- in part due to its immediate holding company providing net equity injections totalling $850 millions over the last four financial years.

RATIONALE FOR STABLE OUTLOOK

The stable outlook reflects Moody's expectation that KEDNY will (1) conclude a multi-year rate case settlement with the PSC capable of supporting CFO pre-WC / debt of at least 15%, on average, over the primary term of its forthcoming rate plan; and (2) reach an enduring solution to resolve security of supply concerns in downstate New York.

FACTORS THAT COULD LEAD TO AN UPGRADE OR DOWNGRADE OF THE RATINGS

Upward rating pressure is not currently anticipated given KEDNY's very weak cash flow metrics and Moody's expectation that there will only be modest strengthening in the next rate plan. However, upward rating pressure could arise if (1) KEDNY was expected to exhibit CFO pre-WC to debt of at least 19%, on average, over the primary term of its next rate plan, without a material increase in gas depreciation rates; (2) there was an enduring solution to resolve security of supply constraints in downstate New York; and (3) political intervention moderated.

Downward rating pressure could arise if (1) following publication of the joint proposal, KEDNY's CFO pre-WC / debt was expected to fall persistently short of 15%; or (2) there was a deterioration in the stability and predictability of regulatory environment, including no multi-year rate case settlement; or (3) increased political interference resulted in a deterioration of the stability and predictability of the regulatory framework. The support to KEDNY's credit quality from its membership of the wider National Grid group, whose credit quality Moody's currently assesses as A3 negative, would also be taken account of.

The principal methodology used in these ratings was Regulated Electric and Gas Utilities published in June 2017 and available at https://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_1072530 . Alternatively, please see the Rating Methodologies page on www.moodys.com for a copy of this methodology.

KEDNY is a local distribution company engaged in the transportation and sale of natural gas to around 1.3 million customers in the boroughs of Brooklyn, Staten Island and Queens in New York City. KEDNY is regulated by the New York Public Services Commission and is ultimately owned by National Grid Plc (Baa1 negative). KEDNY's rate base of $4,555 million at 31 March 2020 represents around 18% of National Grid's rate base in the United States.

REGULATORY DISCLOSURES

For further specification of Moody's key rating assumptions and sensitivity analysis, see the sections Methodology Assumptions and Sensitivity to Assumptions in the disclosure form. Moody's Rating Symbols and Definitions can be found at: https://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_79004.

For ratings issued on a program, series, category/class of debt or security this announcement provides certain regulatory disclosures in relation to each rating of a subsequently issued bond or note of the same series, category/class of debt, security or pursuant to a program for which the ratings are derived exclusively from existing ratings in accordance with Moody's rating practices. For ratings issued on a support provider, this announcement provides certain regulatory disclosures in relation to the credit rating action on the support provider and in relation to each particular credit rating action for securities that derive their credit ratings from the support provider's credit rating. For provisional ratings, this announcement provides certain regulatory disclosures in relation to the provisional rating assigned, and in relation to a definitive rating that may be assigned subsequent to the final issuance of the debt, in each case where the transaction structure and terms have not changed prior to the assignment of the definitive rating in a manner that would have affected the rating. For further information please see the ratings tab on the issuer/entity page for the respective issuer on www.moodys.com.

For any affected securities or rated entities receiving direct credit support from the primary entity(ies) of this credit rating action, and whose ratings may change as a result of this credit rating action, the associated regulatory disclosures will be those of the guarantor entity. Exceptions to this approach exist for the following disclosures, if applicable to jurisdiction: Ancillary Services, Disclosure to rated entity, Disclosure from rated entity.

The ratings have been disclosed to the rated entity or its designated agent(s) and issued with no amendment resulting from that disclosure.

These ratings are solicited. Please refer to Moody's Policy for Designating and Assigning Unsolicited Credit Ratings available on its website www.moodys.com.

Regulatory disclosures contained in this press release apply to the credit rating and, if applicable, the related rating outlook or rating review.

Moody's general principles for assessing environmental, social and governance (ESG) risks in our credit analysis can be found at https://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_1133569 .

Please see www.moodys.com for any updates on changes to the lead rating analyst and to the Moody's legal entity that has issued the rating.

Please see the ratings tab on the issuer/entity page on www.moodys.com for additional regulatory disclosures for each credit rating.

Philip Cope
Asst Vice President - Analyst
Infrastructure Finance Group
Moody's Investors Service Ltd.
One Canada Square
Canary Wharf
London E14 5FA
United Kingdom
JOURNALISTS: 44 20 7772 5456
Client Service: 44 20 7772 5454

Neil Griffiths-Lambeth
Associate Managing Director
Infrastructure Finance Group
JOURNALISTS: 44 20 7772 5456
Client Service: 44 20 7772 5454

Releasing Office:
Moody's Investors Service Ltd.
One Canada Square
Canary Wharf
London E14 5FA
United Kingdom
JOURNALISTS: 44 20 7772 5456
Client Service: 44 20 7772 5454

CREDIT RATINGS ISSUED BY MOODY'S INVESTORS SERVICE, INC. AND/OR ITS CREDIT RATINGS AFFILIATES ARE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND MATERIALS, PRODUCTS, SERVICES AND INFORMATION PUBLISHED BY MOODY'S

(COLLECTIVELY, "PUBLICATIONS") MAY INCLUDE SUCH CURRENT OPINIONS. MOODY'S INVESTORS SERVICE 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 OR IMPAIRMENT. SEE MOODY'S RATING SYMBOLS AND DEFINITIONS PUBLICATION FOR INFORMATION ON THE TYPES OF CONTRACTUAL FINANCIAL OBLIGATIONS ADDRESSED BY MOODY'S INVESTORS SERVICE CREDIT RATINGS. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS, NON-CREDIT ASSESSMENTS ("ASSESSMENTS"), AND OTHER 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. AND/OR ITS AFFILIATES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS DO NOT COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS, ASSESSMENTS AND OTHER OPINIONS AND PUBLISHES ITS 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, ASSESSMENTS, OTHER OPINIONS, AND 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, ASSESSMENTS, OTHER OPINIONS OR 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.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS ARE NOT INTENDED FOR USE BY ANY PERSON AS A BENCHMARK AS THAT TERM IS DEFINED FOR REGULATORY PURPOSES AND MUST NOT BE USED IN ANY WAY THAT COULD RESULT IN THEM BEING CONSIDERED A BENCHMARK.

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 its 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 CREDIT RATING, ASSESSMENT, 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 credit rating, agreed to pay to Moody's Investors Service, Inc. for credit ratings opinions and services rendered by it fees ranging from $1,000 to approximately $2,700,000. MCO and Moody's investors Service also maintain policies and procedures to address the independence of Moody's Investors Service credit ratings and credit rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold credit ratings from Moody's Investors Service and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at www.moodys.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 657AFSL 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.

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 credit rating, agreed to pay to MJKK or MSFJ (as applicable) for credit ratings opinions and services rendered by it fees ranging from JPY125,000 to approximately JPY250,000,000.

MJKK and MSFJ also maintain policies and procedures to address Japanese regulatory requirements.

S&P Global
Ratings

RatingsDirect®

Research Update:

Consolidated Edison Inc. And Subs Outlooks Revised To Negative Amid Potential Political Headwinds; Ratings Affirmed

November 24, 2020

PRIMARY CREDIT ANALYST

Sloan Millman, CFA
New York
+ 1 (212) 438 2146
sloan.millman
@spglobal.com

SECONDARY CONTACT

Obioma Ugboaja
New York
+ 1 (212) 438 7406
obioma.ugboaja
@spglobal.com

Rating Action Overview

- S&P Global Ratings is revising its outlooks on Consolidated Edison Inc. (Con Ed) and its subsidiaries to negative from stable to reflect the increased possibility of political interference in New York State's regulatory construct. We are affirming all ratings, including the 'A-' issuer credit rating.
- The outlook changes stem from Nov. 19 announcements by the New York governor's office that Consolidated Edison Co. of New York Inc. (CECONY) faces potential penalties and possible certificate revocation because of its response to power outages in Manhattan and Brooklyn in July 2019 and that CECONY, Orange and Rockland Utilities Inc. (O&R), and Central Hudson Gas & Electric Corp. face potential penalties, and CECONY and O&R also potentially face certificate revocation, for their response and service-restoration efforts following Tropical Storm Isaias in August 2020.
- The extent to which a utility's regulatory construct is insulated from political intervention is an important credit consideration under our ratings methodology. Relative to other jurisdictions, we believe the New York Public Service Commission (NYPSC) may be more exposed to intervention-related risks.
- The negative outlook reflects the potential that should we determine that Con Ed continues to face overt political influence over its operations that in our view weakens New York's regulatory compact beyond our base case, we would likely reassess the company's business risk, which would probably lead to a lower rating. Currently, we expect funds from operations (FFO) to debt of about 16%, which is indicative of minimal financial cushion for the rating.

Rating Action Rationale

As per our criteria, regulatory independence is one of the key attributes that underpins the credit quality of the utility industry, despite the industry typically operating with negative discretionary cash flow and relatively weaker financial measures compared to other

industries. Under our methodology, we analyze the degree to which utilities operate under a regulatory system that is sufficiently insulated from political intervention to efficiently protect the utility's credit risk profile even during stressful events. Although longer terms of appointment can help offset political intervention risk – in New York state, NYPSC commissioners are appointed for six-year terms - recent events including the governor's office involvement in National Grid North America Inc.'s mishandling of its gas-supply issue on Long Island and in New York City in 2019, indicates a potentially higher degree of political intervention. If we reassess the regulatory framework in the state, it could potentially affect our analysis of the state's other regulated utilities that we rate.

We continue to assess the company's business risk profile as excellent. This assessment is largely based on the company's management of regulatory risk, large customer base, and its long-standing position as a monopolistic services provider with critical infrastructure in New York City. This being said, we will continue to monitor the company's management of regulatory risk, the regulatory construct in the state, as well as the state's political environment and the effects these developments may have on the company's business risk.

We assess Con Ed's financial measures using our medial-volatility table, which largely reflects our view of the company's lower-risk regulated electric and gas utility operations and its generally effective management of regulatory risk. Under our base case, we expect Con Ed's consolidated financial measures to be marginally above our downgrade threshold, indicative of minimal financial cushion for the current rating. For 2020 and 2021, we expect FFO to debt of about 16%. This accounts for Con Ed's recent rate plan that began in 2020, earnings reductions as a result of more bad debt expense and loss of late-fee collections in 2020 because of the COVID-19 pandemic, and higher-than-normal aged accounts receivables during 2020. We also assume deconsolidation of the company's nonrecourse debt, limited growth in Con Ed's nonutility operations, capital spending that averages about $4 billion annually, dividend growth that averages a little above 5% annually, issuances of equity throughout the forecast aimed at maintaining the company's capital structure, and negative discretionary cash flow.

Outlook

The negative outlooks reflect the increased possibility of political interference in New York State's regulatory construct. The extent to which a utility's regulatory construct is insulated from political intervention is an important credit consideration under our ratings methodology. Relative to other jurisdictions, we believe the NYPSC may be more exposed to intervention-related risks. Should we determine that Con Ed continues to face overt political influence over its operations that in our view weakens New York's regulatory compact beyond our base case, we would likely reassess the company's business risk, which would probably lead to a lower rating. Currently, we expect FFO to debt of about 16%, which is indicative of minimal financial cushion for the rating.

Downside scenario

We could lower our ratings on Con Ed and its subsidiaries over the next 24 months if the company continues to face overt political interference that indicates to us that the New York regulatory compact is not sufficiently insulated from political intervention. We could also downgrade the company if there is a weakening of its financial measures such that FFO to debt is consistently below 16% without any additional business risk.

Upside scenario

We could affirm the ratings and revise the outlook to stable over the next 24 months if FFO to debt remains consistently above 16%, while the company effectively manages regulatory risk and is not subject to additional overt political interference.

Ratings Score Snapshot

Issuer Credit Rating: A-/Negative/A-2

Business risk: Excellent

- Country risk: Very low
- Industry risk: Very low
- Competitive position: Strong

Financial risk: Significant

- Cash flow/leverage: Significant

Anchor: a-

Modifiers

- Diversification/portfolio effect: Neutral (no impact)
- Capital structure: Neutral (no impact)
- Financial policy: Neutral (no impact)
- Liquidity: Adequate (no impact)
- Management and governance: Satisfactory (no impact)
- Comparable rating analysis: Neutral (no impact)

Stand-alone credit profile: a-

- Group credit profile: a-

Related Criteria

- General Criteria: Group Rating Methodology, July 1, 2019
- Criteria | Corporates | General: Corporate Methodology: Ratios And Adjustments, April 1, 2019
- Criteria | Corporates | General: Reflecting Subordination Risk In Corporate Issue Ratings, March 28, 2018
- General Criteria: Methodology For Linking Long-Term And Short-Term Ratings, April 7, 2017
- Criteria | Corporates | General: Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers, Dec. 16, 2014
- Criteria | Corporates | General: Corporate Methodology, Nov. 19, 2013

- General Criteria: Country Risk Assessment Methodology And Assumptions, Nov. 19, 2013
- General Criteria: Methodology: Industry Risk, Nov. 19, 2013
- Criteria | Corporates | Utilities: Key Credit Factors For The Regulated Utilities Industry, Nov. 19, 2013
- General Criteria: Methodology: Management And Governance Credit Factors For Corporate Entities, Nov. 13, 2012
- General Criteria: Principles Of Credit Ratings, Feb. 16, 2011

Ratings List

Ratings Affirmed; Outlook Action

	To	From
Consolidated Edison Inc.		
Orange and Rockland Utilities Inc.		
Consolidated Edison Co. of New York Inc.		
Issuer Credit Rating	A-/Negative/A-2	A-/Stable/A-2
Rockland Electric Co.		
Issuer Credit Rating	A-/Negative/--	A-/Stable/--
Ratings Affirmed		
Consolidated Edison Inc.		
Senior Unsecured	BBB+	
Commercial Paper	A-2	
Consolidated Edison Co. of New York Inc.		
Orange and Rockland Utilities Inc.		
Senior Unsecured	A-	
Commercial Paper	A-2	

Certain terms used in this report, particularly certain adjectives used to express our view on rating relevant factors, have specific meanings ascribed to them in our criteria, and should therefore be read in conjunction with such criteria. Please see Ratings Criteria at www.standardandpoors.com for further information. Complete ratings information is available to subscribers of RatingsDirect at www.capitaliq.com. All ratings affected by this rating action can be found on S&P Global Ratings' public website at www.standardandpoors.com. Use the Ratings search box located in the left column.

UBS

North America Power & Utilities

Halftime: Regulated Utility Strategy for 2H 2020

Equities

North America
Utilities

Daniel Ford, CFA
Analyst
dan.ford@ubs.com
+1-212-713-2224

Ross Fowler, CFA
Analyst
ross.fowler@ubs.com
+1-212-713-1287

Gregg Orrill
Analyst
gregg.orrill@ubs.com
+1-212-713 1064

Paul Cole
Analyst
paul.cole@ubs.com
+1-212-713-8672

Valuations are Inexpensive; but weak sponsorship trends argue for patience
After 6 months of highs and lows for Regulated Utilities in 2020, we believe now is the time for investors to *begin* adding to sector weightings. Based on the analysis provided in this report, we conclude that the group is at a valuation entry level that only occurs in the wake of a recession. These opportunities do not always pay off for owners immediately, *but over a multi-year period*. The typical absolute total return of utilities in the following 1, 3 and 5 years is 15%, 26% and 58% percent, respectively. Importantly this return comes with higher current income and lower volatility than the overall marketplace. Unfortunately, since March, Equity Income Fund Flows which tend to foreshadow group performance have turned negative; suggesting the upside for utility investors may not be immediate.

Annual CapEx Survey Points to Solid Fundamentals
Growth fundamentals for RUs remain strong with the update to our 5 year capex survey + 7% from last year's review at $469Bln. Five year forecast ratebase growth is 6.2%, essentially flat with last year's survey, driving a UBSe 5 year EPS CAGR of 5.2% through 2024. Further upside will be driven by four multi-decade work streams that give us confidence in upward revision to the forecast in future years. These include: (1) Natural gas distribution pipeline replacement for safety; (2) High voltage transmission renewal and replacement for resilience; (3) generation fleet transformation to renewables for environmental improvement; and (4) grid automation and modernization for all of the above.

Our Focus List for the 2H 2020 is DUK, NEE, PCG, and PEG
We narrow our list of Buy rated names to Duke Energy (PT $102) as a total return story, NextEra Energy (PT $305) as a high growth utility, PG&E Corp (PT $15) as a special situation value, and Public Service Enterprise Group (PT $62) for an integrated utility. All four have catalysts in the 2H '20 and into 1H '21 and have at least 26% upside or more to our updated PTs on a roll-forward to the 2022 valuation year.

What is in this Report?

In this report we provide: 1) commentary on group performance in 1H 2020 and current valuation levels; 2) an analysis of risk and opportunities facing the group from the upcoming election and potential inflation; 3) an updated 5 year capex survey and investment drivers; 4) a refreshed North America electric utility regulatory ranking; and 5) a roll forward of individual company price targets using 2022 earnings per share estimates as the based valuation year.

Half Time Summary

After 6 months of highs and lows for Regulated Utilities in 2020, we believe now is time for investors to begin adding to sector weightings. Based on the analysis provided in this report, we conclude that the group is at a valuation entry level that only occurs in the wake of a recession. These opportunities do not always pay off for owners immediately, but over a multi-year period. The typical absolute total return of utilities in the following 1, 3 and 5 years is 15%, 26% and 58% percent, respectively. Importantly this return comes with high current income and a lower volatility than the overall marketplace. We also believe that the fundamental outlook for RU's is robust and underpinned by multi-decade investment themes. Our focus list for 2H 2020 (and into 2021) comprises DUK, NEE, PCG, PEG.

Figure 1: Active Recommendation Stock Summary Table

Rating	Ticker	Company	7/2/2020 Price	Price Target	Total Return inc. Div. Yld	UBS 2020A EPS	UBS 2021E EPS	UBS 2022E EPS	2022 P/E Ratio	2022 Prem/ Disc	Current Dividend Yield	5 Yr EPS Growth	5 Yr DPS Growth	Regulatory Quartile
Buy	DUK	Duke Energy	$81.84	$102	29%	$5.07	$5.27	$5.50	14.9x	(11%)	4.6%	3.7%	2.0%	1st
Buy	NEE	NextEra Energy	$246.40	$306	26%	$9.08	$9.84	$10.55	23.4x	39%	2.0%	7.9%	10.0%	1st
Buy (CBE)	PCG	PG&E Corp	$9.45	$15	58%	$1.41	$0.98	$1.11	8.5x	(49%)	0.0%	-19.2%	N/A	3rd
Buy	PEG	Public Service Ent Group	$50.11	$62	28%	$3.31	$3.41	$3.58	14.0x	(17%)	3.9%	5.0%	4.8%	2nd

Source: Factset, UBS Equity Research Estimates

Focus Recommendations

- **Total Return – DUK.** We are reiterating our Buy rating on Duke Energy, and updating our price target from $108 to 102 as we roll forward to the 2022 valuation year. With the decision made to abandon the Atlantic Coast Pipeline project, a final regulatory order issued in the Indiana general rate case proceeding and a resolution to the North Carolina regulatory proceedings by year end, we believe DUK will be well positioned to provide greater earnings clarity and transparency that when coupled with an above average yield presents investors with an attractive total return opportunity.

  Our EPS estimates for 2020-2022 are $5.07/$5.27/$5.50 are consistent with the company's commentary following the ACP decision. In arriving at our $102 price target we use a 10% premium to the group average multiple of 16.7x. This premium comprises a 10% premium to reflect the undervaluation of the regulated utility group vs. the broader market, a 5% premium to reflect the favorable nature of the company's regulatory jurisdictions and a 5% discount to reflect the company's earnings growth trajectory

  High Growth – NEE. We are reiterating our Buy rating and increasing our PT on NEE to $305 from $290 on our roll forward to the 2022 valuation year. We believe that NEE has both the premier RU operations in North America and the best in class renewable development and operations capability. 60% of NEE's earnings are generated from two fast growing utilities in Florida – Florida Power and Light and Gulf Power. Growth opportunities for these franchises are driven by efforts to improve resiliency through storm hardening and undergrounding and greening of the generation fleet with solar adoption. These opportunities are enhanced by a strong top line from population growth in the State. NEE has the highest regulated rate base growth in the US at over 10% per annum through 2024. Energy Resources is the largest renewable developer in the United States with 24GWs in operation (16GWs of wind, 3 GWs of Nuclear, 3GWs of solar and 2GW of Natural Gas) and 13GWs of renewables currently in the development pipeline. We see distinct comparative advantages from scale enabling NEE to maintain its cost and return advantages vs other North American developers. Our EPS estimates are 9.08, 9.84 and 10.55 in 2020-2022 respectively.

- **Special Situation Value – PCG**. PG&E Corp. is our favorite special situation with a price target of $15 that reflects a 16% discount to the average Regulated Utility P/E multiple of 14x $1.11 in 2022. Beyond 2021 EPS growth for PCG is top quartile with 12% in 2022 and 6-7% ongoing driven by the absence of utility headwinds and 7.5%+ rate base growth. Our EPS estimates are $1.41 for 2020, $0.98 for 2021, $1.11 for 2022 and $1.22 for 2023. PCG benefits from California regulation that is more constructive for investors. This includes creation of the wildfire fund which caps liability at $0.8B/year, 4 year rate plans up from 3 years, decoupling and the cost of capital mechanism which parties generally settle and provides a 10.25% ROE and 52% equity ratio for PCG. 90 day lock-ups on recently issued equity covering just over 1/3 of the shares will have a near-term impact, but the stock already trades at a low 9x '22. The 16% price target discount includes: +10% for Regulated Utility undervaluation (+5% for a year of earnings growth and +5% for undervaluation greater than 1 standard deviation), -2% for third quartile EPS growth, -5% for fourth quartile regulation, and -19% for California wildfire risk.

- **Integrated Utility – PEG.** We are reiterating our Buy rating and updating our price target to $62 from $64 on our roll forward to the 2022 valuation year. At current levels we do not believe investors are paying anything for the PEG Power business, and no premium for what we believe is a regulated utility business with 2nd quartile regulation and top quartile five year EPS growth. The market is valuing PEG at approximately 16.7x our UBSe 2022 EPS of $2.95 ($49.27/share) without any value assigned to PEG Power and no recognition of the EPS growth opportunities or higher regulatory quality in New Jersey. The $12.5 - $15Bln capital plan through 2024 requires no new equity and is projected to keep customer bills below the rate of inflation. We see distinct catalysts in the 2H '20/1H '21 with five year rate base growth projecting toward the high end of the company's 6.5%-8% projected range driven by the Energy Master Plan in New Jersey. This includes the identified infrastructure investment program (IIP), and clean energy future (CEF) spending on energy efficiency, energy cloud, electric vehicles, and energy storage, proposed at ~$3.5Bln over six years. The gas system modernization program will have $1.9Bln in new investments over five years, with $1.6Bln recovered through clauses, and Energy Strong II will have $842mln in in total spending through December 2023, of which $692mln is recovered through clauses. We anticipate a CEF decision on energy efficiency spending in September 2020 with further CEF decisions to follow through 1H 2021. We also see the potential to settle transmission ROEs at FERC in the 2H 2020, and to move along a path toward offshore wind investment in New Jersey, whether that takes the form of direct JV participation or whether that spurs needed T&D upgrades onshore.

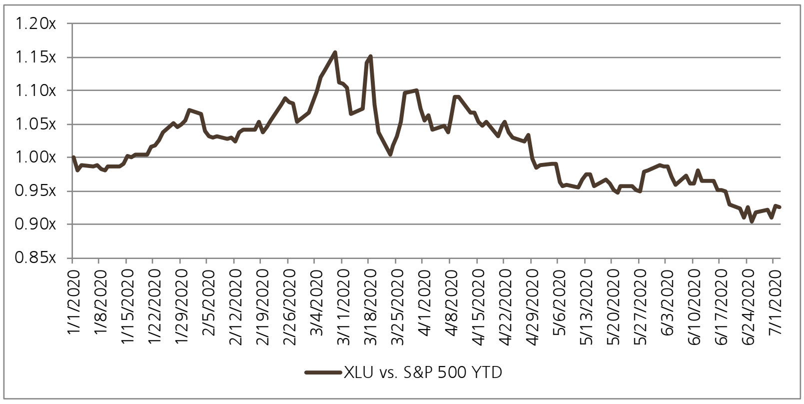
  At PEG Power, over 70% of gross margin in 2020 is secured via hedges, capacity revenues, ancillary service payments, and zero-emission credits (ZEC), which provides protection against COVID-19 volumetric downside. In 2020

100% of the nuclear fleets 22TWhs are hedged at $36/MWh with 90-95% of the CCGT fleet's 15-17TWhs also hedged at $36/MWh. Capacity revenues in PJM are relatively stable through 2021, we don't see ZEC expiration as an overhang as the nuclear plants in New Jersey are a carbon free resource that provide ~40% of needed generation. We see potential catalysts in 2H'20/1H'21 of New Jersey moving toward a fixed resource requirement through the BGS auction process in order to avoid double paying for offshore wind capacity. We don't believe legislation is necessary in New Jersey to move to an FRR.

Thinking About Defense at Halftime

After 6 months of highs and lows for Regulated Utilities in 2020 (see Figure 2 for the relative performance of the XLU compared to the SPX year to date), we believe now is time for investors to begin adding to sector weightings. Based on the analysis provided in this report, we conclude that the group is at a valuation entry level that only occurs in the wake of a recession. These opportunities do not always pay off for owners immediately, but do over a multi-year period. Importantly this return comes with high current income and a lower volatility than the overall marketplace. We also believe that the fundamental outlook for RU's is robust and underpinned by multi-decade investment themes.

Figure 2: Relative Performance of the XLU vs. SPX, YTD 2020



Source: Factset, UBS Equity Research Estimates

In this report we provide: 1) commentary on group performance in 1H 2020 and current valuation levels; 2) an analysis of risk and opportunities facing the group from the upcoming election and potential inflation; 3) an updated 5 year capex survey and investment drivers; 4) a refreshed North America electric utility regulatory ranking; and 5) a roll forward of individual company price targets using 2022 earnings per share estimates as the based valuation year.

Performance and valuation

Figure 1: S&P 500 Sub-Sector Investment Characteristics

	Yield	Benchmark Beta	Rates beta	Downside beta	Upside beta	F/X
Automobiles & Components	2.3	1.29	-0.154	1.32	1.26	0.17
Banks	4.1	1.10	0.882	1.35	1.24	-0.04
Capital Goods	2.1	1.10	0.077	1.13	1.31	-0.02
Commercial & Professional Services	1.7	0.97	-0.062	0.90	0.95	-0.10
Consumer Durables & Apparel	1.5	1.14	-0.089	1.18	1.40	0.03
Consumer Services	1.9	1.16	-0.447	1.16	0.93	0.03
Diversified Financials	1.6	1.07	0.088	1.11	1.18	0.04
Energy	5.7	1.52	-0.116	1.47	1.33	-0.02
Food & Staples Retailing	1.8	0.52	0.100	0.65	0.43	0.03
Food, Beverage & Tobacco	3.8	0.59	-0.366	0.71	0.82	-0.01
Health Care Equipment & Services	1.1	0.97	-0.144	0.96	1.18	0.02
Household & Personal Products	2.5	0.40	-0.295	0.53	0.70	0.00
Insurance	2.7	0.99	-0.026	1.11	1.13	-0.07
Materials	2.3	1.16	0.041	1.05	1.11	0.14
Media & Entertainment	0.4	1.10	0.004	0.96	0.76	-0.01
Pharmaceuticals, Biotechnology & Life Scienc	2.4	0.67	0.018	0.80	0.91	0.01
Real Estate	3.4	0.80	-0.642	0.72	1.04	0.09
Retailing	0.7	1.14	-0.036	1.01	0.88	0.02
Semiconductors & Semiconductor Equipment	2.0	1.41	-0.032	1.21	1.11	0.03
Software & Services	1.0	1.19	-0.077	1.04	1.04	-0.01
Technology Hardware & Equipment	1.5	0.96	-0.144	1.08	0.96	-0.03
Telecommunication Services	5.2	0.29	0.044	0.59	0.62	0.04
Transportation	2.2	1.06	0.173	1.08	1.11	-0.03
Utilities	3.6	0.44	-0.673	0.54	0.92	0.03

Source: UBS Quantitative Research, UBS PAS, Datastream

In 2020, RU's have underperformed the overall market (S&P 500) by 6%. This statement misses the path taken by the group, however. In the first month and a half of the year, RU's were the best performing sub-sector of the S&P 500. At the UTY's peak in 2020 on 2/18, one day before the S&P 500 peak on 2/19 the UTY was up 9.95%, vs. the S&P 500 up 3.87% over the same timeframe. The performance was fueled by their defensive characteristics (see Figure 3 – S&P 500 sub sector investment characteristics). Post the dramatic Covid-19 induced market correction and the unprecedented fiscal and monetary response of the US government, utilities quickly became sponsor-less as investors moved funds to a combination of reflation beneficiaries and stay at home business models. Based on a historic review of utility performance around recessions since 1980, which we examined in Now & Then: A Roadmap for Utility Investors, March 11 2020, this is not unusual at all. In fact in the 6 months prior to a market bottom marked by a trough in ISMs, RU's outperform the S&P500 by 7.7% on average and 13% on median. In the 6 months post a bottom, RU's underperform the S&P 500 by 7.4% on average and 16.8% on median. At this point, the correction post the market bottom on 3/23/2020, during which the UTY underperformed by (11.4%), makes the depth fourth of seven total observations; however the duration has only been three months not six.

Figure 2: Relative Performance of Regulated Utilities around ISM Bottoms

6 Months Before Trough

	Top	Bottom	Mean
1980	-13.1%	-7.1%	-9.1%
1981	20.6%	16.7%	19.2%
1984	0.8%	-5.9%	-0.4%
1990	14.1%	9.4%	13.0%
2001	16.0%	12.8%	13.8%
2009	17.4%	9.3%	9.8%
Average	**9.3%**	**5.8%**	**7.7%**
2020	-4.4%	-4.0%	-2.1%

6 Months After Trough

	Top	Bottom	Mean
1980	-16.5%	-22.3%	-19.4%
1981	7.9%	9.5%	9.3%
1984	2.7%	23.0%	4.4%
1990	-17.9%	-16.8%	-16.8%
2001	0.0%	13.5%	-1.1%
2009	-23.8%	-24.7%	-20.8%
Average	**-7.9%**	**-3.0%**	**-7.4%**

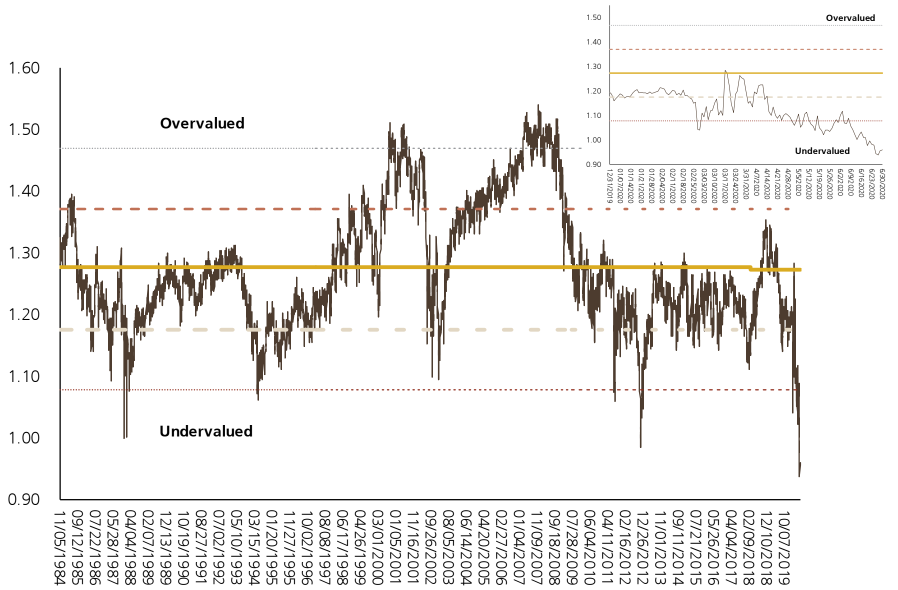
12 Months Around Trough

	Top	Bottom	Mean
1980	-29.5%	-29.4%	-28.5%
1981	28.6%	26.2%	28.5%
1984	3.5%	17.1%	4.0%
1990	-3.8%	-7.4%	-3.8%
2001	16.0%	26.3%	12.8%
2009	-6.4%	-15.4%	-11.0%
Average	**1.4%**	**2.9%**	**0.3%**

Source: Factset, UBS

The correction has left utilities over 2 standard deviations (SD) inexpensive to interest rates and 1.5 SD undervalued comparing relative values of utility FY2 price to earnings ratios to the market.

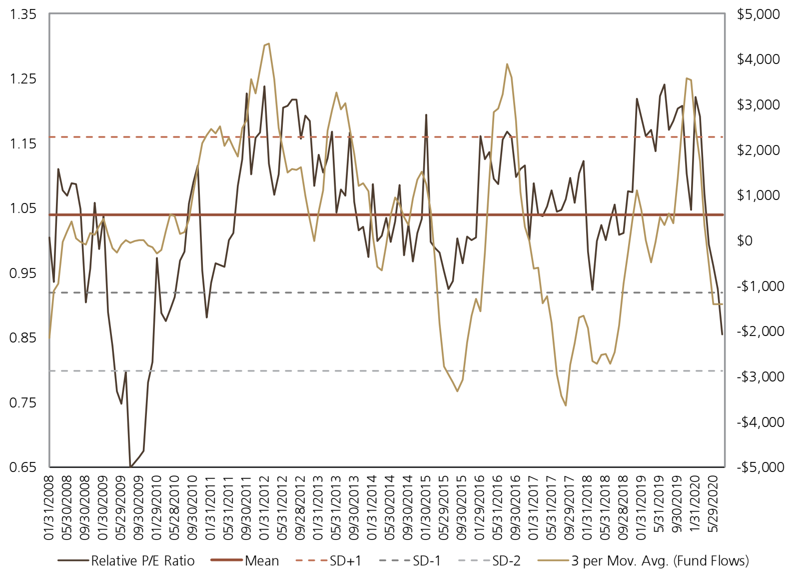
Figure 3: Relative Value of RU Dividend Yields to Baa Corporate Bond Yields 11/84-Present



Source: Factset, UBS

We believe the absolute value of utilities is best measured by comparing the dividend yields of the group to Baa corporate bond yields. The series has a 91% correlation since 1980. The mark of the series today is almost four (3.70) SD undervalued (0.96) or 31%. This is the most undervalued RU's have been in the last 40 years. Overall there have been only five observations of 2SD plus gaps including the current one (December 1987, May 1994, August 2011, November 2012, and April 2020). These rare entry points came in the wake of market corrections and recessions in 1987, 1992, 2009, and now. The typical absolute total return of utilities in the following 1, 3 and 5 years is 15%, 26% and 58% percent, respectively.

Figure 4: Relative Value of RU FY2 P/E Ratios vs. S&P500



Source: Factset, UBS

The combination of underperformance by RU's since 3/23/20 and the downward revision of S&P FY2 earnings estimates stemming from the Covid 19 recession leave RU's 1.5 SD or 17.7% undervalued to the market. This series is not as highly correlated over time as the relative yield one at 74% since 2008. Therefore we track a dataset of 3-month rolling average equity income fund flows in conjunction with the relative value plot. We believe equity income funds are the marginal investor in utilities and over time the momentum of the flows and the direction of travel in relative valuation performance of RUs/SP500 coincide. Unfortunately as of this writing, the fund flow series has accelerated to the negative. This may be an indication that more short term relative underperformance could be in store. Nonetheless, with the combined discounts that RU's trade at to rates and the market, we think investors should begin adding to utility positions now while traders may want to wait for a shift in money flow momentum for confirmation of the entry point. At present, RUs are the cheapest they have been on a relative value basis since the Great Recession.

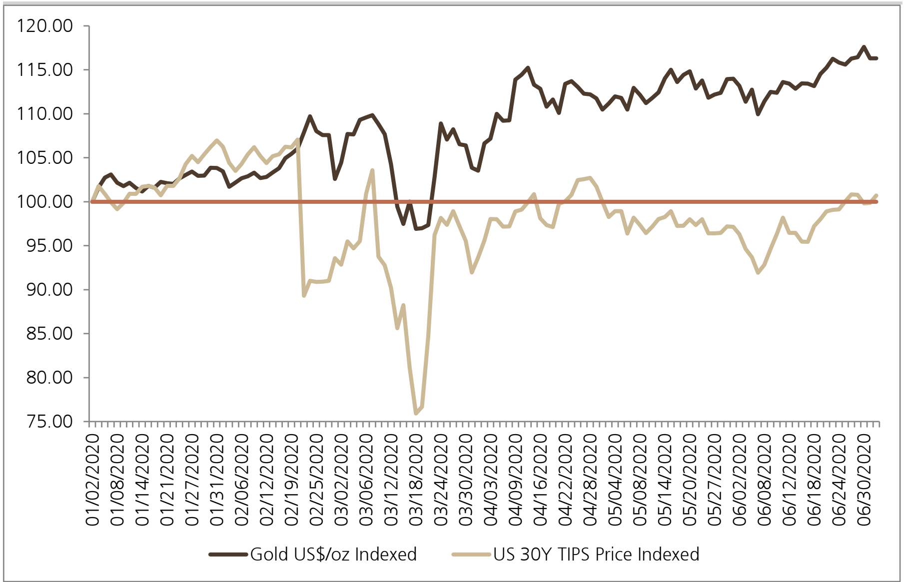
Inflation and 2020 Election

In discussion with investors, two concerns have surfaced that could challenge the strong valuation argument for RUs. These are the prospects for and potential impact of rising inflation on future performance, and potential policy outcomes for environment and corporate tax reform resulting from a change in the White House and/or the US Senate majority 2021. Of the two, inflation could have the more serious consequences on RU performance in our view.

Inflation

With unprecedented fiscal and monetary stimulus tools deployed in response to the Covid 19 pandemic, the market is giving mixed signals about the chances this could result in rising inflation. UBS Chief Economist Seth Carpenter wrote on this topic in US Inflation Monthly for June 2020: Declines Appear Contained, June 15 2020. Overall, UBS believes the threat is minor. The UBS current US Core PCE inflation forecast is below 2% through 2022. The forecast calls for a decline to 1.1% in 2020 before rising ever so slightly to 1.5% in 2021 and 1.7% in 2022. The market seems less certain sending gold prices higher by just over 16%, while Treasury Inflation Protected Security (TIPS) prices are relatively flat at +0.7% year to date.

Figure 5: GLD and TIP Spread % Change Since 1/2/2020



Source: Factset, UBS Equity Research Estimates

In any event, utilities are providing a very robust inflation cushion in their current valuations. The 10 year and 30 year treasury rates implied by the nearly four SD gap in value between RU dividends and Baa corporate bonds would be 150bps higher with no change in spreads or approximately 2.20% and 2.95%, respectively. If one assigned this entire gap to inflation, it would predict inflation rising to 3% in the next year vs. the UBS expectation of 1.5%. While this seems unlikely, we do perform a RU equity duration analysis as shown in figure 8. Should investors have fears of rising inflation, the simple calculation is to multiply the equity duration of the group by the basis point increase in inflation they expect and this would represent an offset to the relative yield upside the sector indicates.

Figure 6: Regulated Utility Equity Duration by SubSector

SubCategory	Duration (Years)	Δ in Value +10bps
Electric Utilities	16	-1.60%
Large Cap	16	-1.60%
Smid Cap	17	-1.70%
Multi-Utilities	18	-1.80%
Canadian Regulated Utility	15	-1.50%

Source: Factset, UBS

2020 Election

The Biden campaign has promised a more active federal role in environmental matters and a reform of the US tax code including the return of corporate taxes to 28% from 21% (rates would still be down from 35% prior to the 2017 reform). The extent to which Presidential campaign promises translate to policy depends on a majority in Congress as well. We will take Biden's platform proposals one at a time with the assumption that they would be implemented.

Climate Change

According to the Biden Campaign website (https://joebiden.com/climate/), his administration would take several steps to accelerate the US toward a carbon neutral emissions goal by 2050. There would be milestone targets beginning in 2025. This would be accomplished by promotion of electric vehicle adoption with tax incentives for light duty vehicles and deployment of a nationwide charging infrastructure. The ultimate goal would be for 100% of new sales of light and medium duty vehicles to be electrified. The plans would also include electrification of the US rail system, deployment of automatic metering infrastructure, and focus on reduced carbon in the manufacturing, trucking, shipping, and residential sectors through a combination of electrification and renewable fuels use. The plan would also employ methane pollution limits on new and existing oil & gas operations and ban new oil and gas permitting on public lands. The plan calls for the doubling of offshore wind resources by 2030. The administration would implement nationwide targets, but does not mention the extension of tax credits to subsidize renewables or passage of a carbon tax. A Biden administration would also increase funding for energy innovation and smart cities. The Biden team also promotes mandatory public company disclosure requirements regarding environmental matters.

Overall, the platform details would lean against new pipeline capacity and, in the long run pressure the direct use of fossil fuels, but does not go as far as some of the democratic candidates and call for measures such as fracking bans or fuel export bans. The documents also present a fairly neutral view on nuclear power. We don't see any feature of the platform that would be an outright negative for US regulated utilities, and, in fact, find it quite aligned with the current pace of the industry's transformation to a lower carbon generation fleet, a more resilient and smarter grid, and an increased share of electric end use BTU in the future. We examine some of this in our report The Future of the Btu: Updating the State of the Grid, March 26 2020.

Taxes

On taxes, the campaign outlines a desire to raise the marginal rates on business taxes to 28% from 21% today. There would also be a minimum tax on corporate book incomes of $100mln or higher, structured as an alternative minimum tax (corporations would pay the greater of their regular corporate income tax or 15% of book incomes) while still allowing for NOLs and foreign tax credits. The tax plan also calls for a 12.4% social security tax on income earned above $400k split between employers and employees. The Biden team also proposes resetting the realized capital gains and dividend income tax rate to 39.5% for taxpayers with income over $1M with the elimination of a step up in basis for capital gains taxation (https://taxfoundation.org/joe-biden-tax-plan-2020/).

Taxes are a pass through for regulated utilities. Timing differences in collection of Accumulated Deferred Income Taxes (ADIT) in addition to the marginal rate change do result in three RU wide impacts from a rise in marginal rates. 1) rates charged to customer have to go up to reflect the pass through expense; 2) ADIT amortization balance would accelerate leading to further pressure on rates and an improvement in FFO/debt credit metrics; 3) Ratebase growth would slow over time as a result of lower ADIT, which is treated as net investment until converted to cash. We do note that Biden's proposal does not include resuming Bonus Depreciation for RUs. In Figure 8 below we show the estimated rate base impact and net income impact of ADIT balance changes for the new tax rate and for higher taxation of unregulated earnings to EPS.

Figure 7: Rate Base and Net Income Impacts for 28% Tax Rate on ADIT Balances and Unregulated EPS

UBSe Total EPS Impact for 28% Tax Rate			
Ticker	Regulated	Unregulated	Total
AEE	-$0.01	$0.00	-$0.01
AEP	-$0.02	-$0.03	-$0.05
AES	$0.00	-$0.11	-$0.11
CMS	$0.00	-$0.03	-$0.03
D	$0.00	-$0.01	-$0.01
DTE	-$0.01	-$0.20	-$0.21
DUK	$0.00	-$0.03	-$0.04
ED	$0.00	-$0.03	-$0.04
EIX	-$0.01	$0.00	-$0.01
EMA	$0.00	-$0.01	-$0.01
ES	$0.00	$0.00	$0.00
ETR	-$0.03	$0.07	$0.05
EVRG	-$0.01	$0.00	-$0.01
EXC	$0.00	-$0.06	-$0.06
FE	$0.00	$0.00	$0.00
FTS	$0.00	$0.00	$0.00
HE	$0.00	-$0.06	-$0.06
LNT	-$0.01	$0.01	$0.00
NEE	-$0.01	-$0.38	-$0.39
OGE	$0.00	-$0.04	-$0.04
PCG	$0.00	$0.00	$0.00
PEG	$0.00	-$0.07	-$0.07
PNM	$0.00	$0.00	$0.00
PNW	-$0.01	$0.00	-$0.01
POR	$0.00	$0.00	$0.00
PPL	$0.00	-$0.10	-$0.10
SO	$0.00	-$0.02	-$0.02
SRE	-$0.01	-$0.11	-$0.12
WEC	$0.00	-$0.03	-$0.03
XEL	$0.00	$0.00	$0.00

NOTE: Allowed ROE and Equity Ratio are the weighted average for all regulated utility subsidiaries

Source: 10-K Filings by Company, UBS Equity Research Estimates

The capital gains tax proposal could have a modest benefit for Utilities as the tax gap between realized long term capital gains and dividends would be eliminated for wealthy investors. The largest impact would be from tax reform. Here, utilities would find themselves in a beneficial position compared to the average industrial company.

Overall, we think Biden's tax plan would present some regulatory approval and timing challenges for RU's. The protections of regulation, however, make utilities among the most immune publically traded companies in the marketplace. The largest negative implications from the Biden Tax Plan, in our view, would be for utilities that have unregulated business interests that are not protected.

5 Year Capex Survey Points to Strong Growth Outlook

We have updated our 5 year Regulated Utility capex survey. This year's results find that investor owned RUs in the US are expected to spend $496B 2019-2024. This is 7% above 2018-2023 expected spending from last year's review. Figure 9 outlines the categories of capital expenditures and reconciles the spending to growth in Ratebase. The 5 year growth in ratebase is 6.2% this compares to 6.3% in last year's survey. Due to the industry Cost-Plus Regulated model (see Utility 101: Back to Basics, December 3 2019), ratebase growth plus or minus regulatory changes in allowed return, regulatory lag, and shares required to fund capital outlays equal the earnings per share growth of the sector. Our expected group earnings per share growth is 5.2% or 100bp below ratebase.

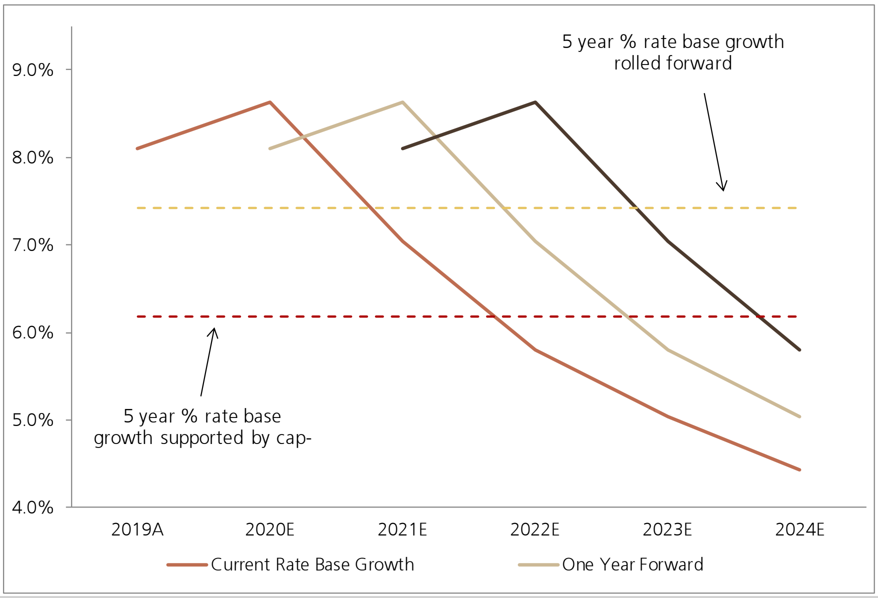
Figure 8: 2019 – 2024 Capex Survey and Rate Base Growth for RUs

	2019A	2020E	2021E	2022E	2023E	2024E
Maintenance cap-ex, distribution	$51,005	$55,054	$56,119	$54,365	$55,341	$56,070
Transmission	$19,349	$21,919	$21,924	$21,688	$21,235	$20,763
Generation	$17,477	$20,869	$15,985	$14,754	$14,114	$13,256
Environmental	$2,659	$2,330	$2,384	$2,218	$2,195	$2,015
Grid-Modernization	$2,634	$4,712	$4,773	$4,660	$3,596	$3,555
UBS Universe Cap-ex	$93,123	$104,885	$101,186	$97,684	$96,480	$95,658
Year over Year	0.6%	12.6%	-3.5%	-3.5%	-1.2%	-0.9%
Rolling 3 year	7.3%	8.0%	3.0%	1.6%	-2.7%	-1.8%
	2019A	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**
Starting Ratebase	$653,560	$706,482	$767,485	$821,513	$869,139	$912,887
Capital Expenditures	$93,123	$104,885	$101,186	$97,684	$96,480	$95,658
Depreciation	-$40,201	-$43,882	-$47,158	-$50,058	-$52,732	-$55,212
Ratebase Additions	$52,922	$61,003	$54,027	$47,626	$43,748	$40,446
Ending Ratebase	$706,482	$767,485	$821,513	$869,139	$912,887	$953,333
Year over Year	8.1%	8.6%	7.0%	5.8%	5.0%	4.4%
5 Year Forward Ratebase Growth	6.2%					

Source: Company reports, Factset, UBS estimates, S&P Global Market Intelligence

As has been the case for a number of years, the capex survey is backwardated. Simply put, the visibility of capex is greater in the front years than the back years. To the extent that utilities have ample capital projects to fund, this backwardation understates the 5 year growth rate and leaves the industry with an upward revision bias. To illustrate the magnitude of this tendency, figure 10 assumes that future capex surveys fill the backwardation. The resulting growth potential is 7.4% or 120bp above the actual forecast.

Figure 9: RU Growth Potential Illustration Flattening Backwardation in CapEx



Source: Company reports, Factset, UBS estimates, S&P Global Market Intelligence

The key to this potential becoming reality is the backlog of capital projects utilities can identify. Currently there are four multi-decade pools of work that make us confident of group growth. These are:

1) Natural gas distribution pipe replacement. This work need was highlighted by the 2010 pipeline explosion in San Bruno California. We estimate approximately a decade remaining in the renewal cycle.

2) High Voltage Transmission renewal and expansion. In 2003, the Northeastern US was blacked out as a result of an incident in Ohio. In 2005, the US enacted the 2005 Energy Policy Act, which, among other things, directed the Federal Energy Regulatory Commission to improve transmission resiliency by granting premium rates of return and streamlined permitting for transmission projects. This work stream is expanded by the need for new transmission to allow for the migration of generation from fossil to renewable.

3) The combined impact of improving renewable economics coupled with policy mandates aimed at lowering CO2 emissions requires decades of generation fleet transformation. We produced a detail analysis of our forecast for this trend in The Future of the Btu: Updating the State of the Grid, March 26 2020.

4) Finally, the most nascent spending opportunities are found in grid automation and modernization. This covers a wide range of applications to improve the resiliency and intelligence of the lower voltage transmission and distribution system. The drivers for the spend include system hardening to meet the challenges of severe weather as well as physical and cyber threats, adding intelligence to the wires to help bend the cost of service curve, to improve outage detection and response, and ensure suitability of utility service for emerging technologies like mass adoption of electric vehicles, distributed generation and batteries.

In order to maintain current credit coverage ratios, we do expect an ongoing equity need. In figure 11, we reconcile the capex and ratebase growth expectations to balance sheet maintenance. Overall, we see $55B of equity need in the group through 2024. At today's prices, this slows the EPS growth compared to ratebase growth by 24 bp or about 1/3 of the gap sited above.

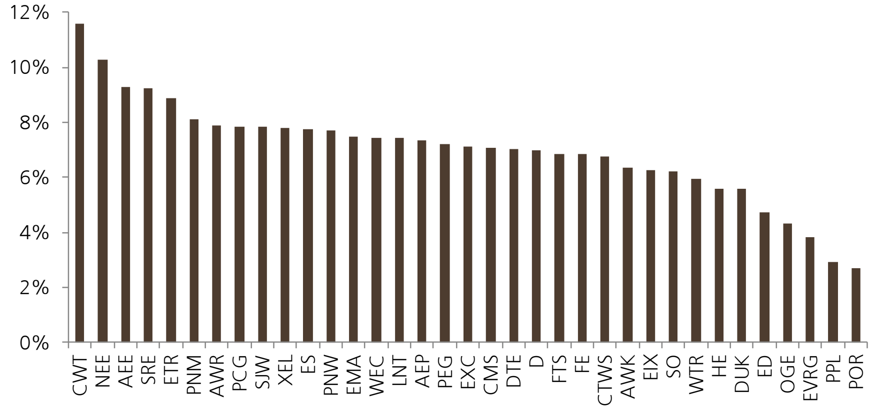
Figure 10: Reconciliation of CapEx Survey to Balance Sheet Needs

	2019A	2020E	2021E	2022E	2023E	2024E
Equity	$409,636	$436,339	$465,331	$495,559	$526,052	$552,031
Debt	$598,032	$649,885	$693,107	$728,826	$761,637	$789,950
Preferred	$8,170	$9,882	$10,205	$10,698	$11,191	$11,683
Total	$1,015,838	$1,096,105	$1,168,643	$1,235,083	$1,298,880	$1,353,665
Equity	40.3%	39.8%	39.8%	40.1%	40.5%	40.8%
Debt	58.9%	59.3%	59.3%	59.0%	58.6%	58.4%
Preferred	0.8%	0.9%	0.9%	0.9%	0.9%	0.9%
CFO/Debt	14.7%	13.6%	13.6%	13.6%	13.6%	13.6%
FFO/Debt	16.6%	16.3%	16.1%	16.0%	15.9%	15.8%
	2019A	2020E	2021E	2022E	2023E	2024E
Net Income	$43,964	$46,604	$48,901	$50,894	$52,697	$54,338
Depreciation	$55,498	$59,178	$62,455	$65,355	$68,029	$70,508
Working Capital	-$2,711	-$5,000	-$5,000	-$5,000	-$5,000	-$5,000
Other	-$8,558	-$12,194	-$12,194	-$12,194	-$12,194	-$12,194
Cash from Operation:	$88,193	$88,588	$94,162	$99,055	$103,531	$107,652
Capital Expenditures	-$93,123	-$104,885	-$101,186	-$97,684	-$96,480	-$95,658
Other	$0	$0	$0	$0	$0	$0
Cash from Investing	-$93,123	-$104,885	-$101,186	-$97,684	-$96,480	-$95,658
Change in Debt	-$14,302	$51,852	$43,222	$35,719	$32,811	$28,313
Change in Equity	$9,278	$9,150	$10,805	$11,906	$10,937	$12,134
Change in Preferred	$1,451	$1,712	$323	$493	$493	$493
Common Dividends	-$26,699	-$29,052	-$30,714	-$32,573	-$33,141	-$40,492
Other	$0	$0	$0	$0	$0	$0
Cash from Financing	-$30,273	$33,663	$23,637	$15,545	$11,100	$447
Change In Cash	-$35,203	$17,367	$16,613	$16,916	$18,151	$12,441
% Total Need						
Debt		80%	80%	75%	75%	70%
Equity		15%	20%	25%	25%	30%

Source: Company reports, Factset, UBS estimates, S&P Global Market Intelligence

On a company by company basis, figure 12 arrays our ratebase growth expectations for the regulated utilities under our coverage. Figure 13 shows our EPS and DPS growth rate estimates by company.

Figure 11: 5 Year RU Ratebase Growth by Company



Source: Company reports, Factset, UBS, S&P Global Market Intelligence

Figure 12: 2019-2024 Earnings per Share and Dividend Per Share Growth Rates

	5 Year DPS Growth		5 Year EPS Growth
NEE	10.0%	NEE	7.9%
SRE	8.1%	FTS	7.3%
ACO	7.1%	CMS	7.0%
CUP	7.1%	DTE	6.8%
CMS	7.0%	CUP	6.6%
WEC	6.7%	AEE	6.6%
LNT	6.2%	WEC	6.2%
DTE	6.0%	SRE	6.2%
FTS	6.0%	SO	6.0%
PNW	6.0%	ETR	6.0%
AEE	6.0%	ES	6.0%
POR	6.0%	PNM	5.9%
XEL	6.0%	XEL	5.8%
ES	5.9%	AEP	5.5%
AEP	5.7%	LNT	5.5%
PNM	5.5%	EMA	5.3%
EXC	5.3%	EVRG	5.1%
EVRG	5.3%	PEG	5.0%
OGE	5.0%	H	3.9%
CU	4.8%	FE	3.8%
PEG	4.8%	DUK	3.7%
H	4.7%	POR	3.7%
FE	4.5%	ACO	3.6%
EMA	4.5%	OGE	3.5%
DUK	4.0%	PNW	3.5%
EIX	4.0%	ED	3.2%
SO	3.9%	CU	3.2%
ED	3.5%	HE	3.1%
HE	3.2%	D	2.1%
ETR	2.3%	EIX	1.2%
PPL	0.0%	PPL	0.5%
D	-4.1%	EXC	0.2%
PCG	N/A	PCG	N/A

Source: Factset, UBS estimates

Updated North America Regulatory Rankings

We rank the shareholder friendliness of utility regulators in North America using a 6 factor analysis and a simple average: 1) Appointed or elected commissions; 2) Allowed return spread history, 3) Mechanisms that reduce regulatory lag; 4) Rates and customer levels compared to region; 5) Tendency to settle versus litigate rate cases; and 6) A subjective investor friendliness factor. In this update the jurisdictions that achieved meaningful moves up were FERC (Tier 3 to Tier 2) and

California (Tier 4 to Tier 3). The jurisdictions that moved down in our rankings were Oregon (Tier 2 to Tier 3) and New Hampshire (Tier 3 to Tier 4).

Figure 13: North America Regulatory Rankings

TIER 1	TIER 2	TIER 3	TIER 4	TIER 5
	FERC			
		Nova Scotia		
		North Dakota		
		South Carolina		
		Washington		
		Illinois		
		Virginia		
		Massachusetts		
		Tennessee		
		Texas		
		Oregon		
		New Jersey		
	Indiana	Wyoming	Prince Edward Island	
	Arkansas	California	Maryland	
Florida	Ohio	Delaware	Oklahoma	New Mexico
Georgia	Utah	Minnesota	Alaska	Alberta
Michigan	Louisiana	Newfoundland & Labrador	Connecticut	Arizona
Wisconsin	Kentucky	West Virginia	Hawaii	District of Columbia
Alabama	Iowa	Ontario	New York	South Dakota
North Carolina	British Columbia	Rhode Island	Kansas	Maine
Idaho	Colorado	Nebraska	Nevada	Montana
Pennsylvania	Missouri	Mississippi	New Hampshire	Vermont
JD Power Average Customer Service Scores				
739	722	716	712	700

Source: Company reports, S&P Global Market Intelligence, UBS estimates

When we break these rankings down by quartile to examine the impact of constructive regulation on customer satisfaction, group valuation, achieved return on common equity and expected ratebase growth, we get figure 15. While not perfectly correlated across all metrics, general speaking the trend in Earned ROE, Ratebase growth, P/BV, and customer service rank all decline from the 1st through the 4th quartile of our rankings. In particular there seems to be a definite bifurcation of the metrics between the top two quartiles and the bottom two quartiles.

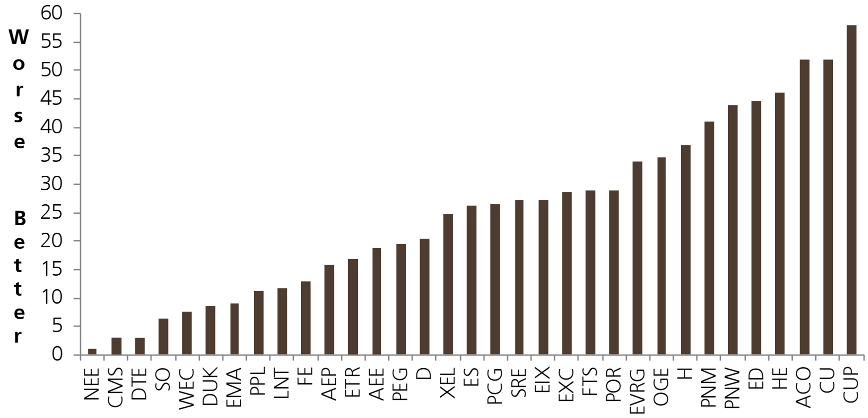
Figure 14: Return, Customer Service, and Valuation Alignment to Reg. Rankings

Metric	1st Quartile	2nd Quartile	3rd Quartile	4th Quartile
Ratebase Growth '19-'24E	6.8%	7.7%	6.0%	6.5%
Earned ROE	10.5%	10.2%	9.7%	9.0%
Price/Book	2.15x	2.22x	1.39x	1.60x
Customer Service Rank	7.6	17.0	17.1	25.3

Source: Company reports, S&P Global Market Intelligence, JD Power, UBS

On a jurisdiction earnings contribution weighted average basis, figure 16 shows our coverage group from best to worst regulated.

Figure 15: Company Jurisdiction Weighted Average Regulatory Rank Array



Source: Company reports, S&P Global Market Intelligence, UBS

Other Things to Watch in the 2020 Election

There are several commissioners up for election in November as well as Governors races that could impact the composition of appointed commissions. Elections of importance to RUs are shown in Figure 17. TBD indicates that primaries are yet to occur and candidates have yet to be determined.

Figure 16: State Elections of Importance in November 2020 for RUs

State	Election	Incumbent/Incumbent Party	Challenger
Alabama	Utility Commission	Twinkle Cavanaugh [R]	Laura Casey (D)
Arizona	Utility Commission	Robert L. Burns [R]	TBD
Arizona	Utility Commission	Boyd Dunn [R]	TBD
Arizona	Utility Commission	Lea Marquez Peterson [R]	TBD
Delaware	Governor	John Carney (D)	TBD
Georgia	Utility Commission	Lauren "Bubba" McDonald, Jr. [R]	Daniel Blackman
Georgia	Utility Commission	Jason Shaw [R]	Robert Bryant (D)
Indiana	Governor	Eric Holcomb [R]	Woody Myers (D)
Lousiana	Utility Commission	Foster L. Campbell, Jr. (D)	TBD
Lousiana	Utility Commission	Eric Skrmetta [R]	TBD
Missouri	Governor	Mike Parson [R]	Nicole Galloway (D)
Montana	Utility Commission	James Brown [R} (non-incumbent)	Tom Woods (D)
Montana	Utility Commission	Jennifer Fiedler [R] (non-incumbent)	Monica Tranel (D)
Montana	Utility Commission	Tony O'Donnell [R]	Valerie McMurty (D)
Nebraska	Utility Commission	Crystal Rhoades (D)	Tim Davis [R]
New Hampshire	Governor	Chris Sununu [R]	TBD
New Mexico	Utility Commission	Joseph Maestas (D) (non-incumbent)	Christopher Luchini [L]
New Mexico	Utility Commission	Cynthia Hall (D)	Janice Arnold-Jones [R]
North Carolina	Governor	Roy Cooper (D)	Dan Forest [R]
North Dakota	Utility Commission	Brian Kroshus [R]	Casey D. Buchmann (D)
Oklahoma	Utility Commission	Todd Hiett [R]	Todd Hagopian [L]
South Dakota	Utility Commission	Gary Hansen [R]	Remi Bald Eagle (D)
Utah*	Governor	Spencer Cox [R]/John Huntsman Jr. [R]	Chris Peterson (D)
Vermont	Governor	Phil Scott [R]	TBD
Washington	Governor	Jay Inslee (D)	TBD
West Virginia	Governor	Jim Justice [R]	Ben Salango (D)

*Utah's primary was scheduled for June 30, 2020, and is down to two Republican candidates with absentee ballots left to count.

Source: Ballotpedia.com, UBS Equity Research Estimates

Roll to 2022 Valuation

Our RU price targets and group valuation are based on 1 year absolute price targets adjusted for industry specific fundamental factors. We start with group valuation. For a 1 year target we adjust the actual 2022 group average price to earnings multiple for the benefit of 1 year of estimated utility growth or 5%. We then adjust this by a further positive or negative 5% in the event the absolute and relative value of RU's is more than 1 SD under or overvalued. At this report date the result is +5%.

With regard to EPS growth and quality of regulation we rank the companies in quartiles. Based on historical stock performance we assign +5% for top quartile, +2% for second quartile, -2% for third quartile and -5% for fourth quartile which are summarized below. For companies with significant unregulated businesses we value them on a sum of the parts basis. We also allow for special situation company specific adjustments, an adjustment for earnings achievement track record and for stand out ESG issuers. The company by company matrix for our valuation update is shown in figure 18.

Figure 17: Company Valuation Adjustments Matrix

Investment Opinion	Ticker	Overall Reg Group Premium Discount	Regulatory Quartile Premium Discount	Regulated EPS Growth Premium Discount	ESG Premium	EPS Guidance Reliablity Adjustments	Specific Adjustments	Net Prem/Disc Regulated Valuation	Business Value
Buy	ACO	10%	(5%)	(5%)			(10%)	(10%)	$6
Neutral	LNT	10%	2%	2%				14%	$0
Buy	AEE	10%	2%	2%				19%	$0
Buy	AEP	10%	2%	2%				14%	$0
Neutral	CU	10%	(5%)	(2%)			(10%)	(7%)	$0
Sell	CUP	10%	(5%)	5%			(10%)	0%	$0
Neutral	CMS	10%	5%	5%		5%		25%	$0
Neutral	ED	10%	(5%)	(5%)	0%			(5%)	$0
Buy	D	10%	2%	5%				17%	$28
Buy	DTE	10%	5%	2%		5%		22%	$22
Buy	DUK	10%	5%	(5%)				10%	$0
Buy	EIX	10%	(2%)	(5%)			(10%)	(7%)	$0
Buy	EMA	10%	5%	5%				20%	$1
Buy	ETR	10%	2%	2%				14%	$0
Neutral	ES	10%	2%	2%	10%			24%	$0
Neutral	EVRG	10%	(2%)	(2%)				6%	$0
Buy	EXC	10%	(2%)	5%				8%	$8
Buy	FE	10%	2%	(2%)				10%	$0
Buy	FTS	10%	(2%)	5%				18%	$0
Sell	HE	10%	(5%)	(2%)				3%	$7
Sell	H	10%	(5%)	(5%)			(15%)	(5%)	$0
Buy	NEE	10%	5%	5%				25%	$174
Buy	OGE	10%	(2%)	(2%)				6%	$2
Buy (CBE)	PCG	10%	(2%)	(5%)			(19%)	(16%)	$0
Neutral	PNW	10%	(5%)	(5%)				(8%)	$0
Buy	PNM	10%	(5%)	2%		5%		12%	$0
Neutral	POR	10%	(2%)	(5%)				3%	$0
Buy	PPL	10%	5%	(5%)				10%	$6
Buy	PEG	10%	2%	5%		5%		17%	$4
Buy	SRE	10%	(2%)	5%				13%	$61
Neutral	SO	10%	5%	2%			(25%)	(8%)	$0
Neutral	WEC	10%	5%	5%		5%		25%	$0
Neutral	XEL	10%	2%	2%		5%		19%	$0

Source: Factset, UBS estimates

We have used this opportunity to update some of our earnings models. The changes are presented in figure 19.

Figure 18: UBS Earnings Estimate Adjustments by Company

Updated	2020E EPS	2021E EPS	2022E EPS	2023E EPS	2024E EPS
AES Corp.	$1.38	$1.55	$1.67	$1.80	$1.90
Alliant Energy			$2.72		
Hydro One (C$)	$1.37	$1.42	$1.49	$1.58	$1.70
PG&E Corp.	$1.41	$0.98	$1.11	$1.22	$1.35
Pinnacle West Capital		$4.90	$5.14	$5.36	$5.67
Portland General	$2.44	$2.54	$2.64	$2.78	$2.87
Xcel Energy		$3.02	$3.20	$3.32	$3.49
Prior	**2020E EPS**	**2021E EPS**	**2022E EPS**	**2023E EPS**	**2024E EPS**
AES Corp.	$1.40	$1.58	$1.69	$1.83	$1.94
Alliant Energy			$2.76		
Hydro One (C$)	$1.32	$1.36	$1.41	$1.49	$1.61
PG&E Corp.	$1.43	$1.01	$1.15	$1.26	$1.40
Pinnacle West Capital		$5.15	$5.34	$5.52	$5.77
Portland General	$2.45	$2.70	$2.84	$3.03	$3.15
Xcel Energy		$2.95	$3.11	$3.27	$3.44

Source: UBS estimates

Our price targets are also adjusted from this exercise. The New and Old price targets for our covered Regulated utilities are presented in Figure 20.

Figure 19: New and Old Price Targets and Regulated Utility Multiples

Rating	Ticker	Company	7/2/2020 Price	Prior Price Target	Prior Reg. Utility Multiple 2021E	New Price Target	Current Reg. Utility Multiple 2022E
Buy	AES	AES Corp.	$14.48	$16	17.5x	$17	16.7x
Buy	ACO	ATCO Ltd. (C$)	$41.73	$46	18.1x	$47	16.7x
Neutral	LNT	Alliant Energy	$49.42	$56	18.7x	$52	16.7x
Buy	AEE	Ameren Corp	$73.23	$83	19.7x	$80	16.7x
Buy	AEP	American Electric Power	$82.52	$98	19.4x	$94	16.7x
Neutral	CU	Canadian Utilities Ltd (C$)	$34.57	$33	18.1x	$36	16.7x
Sell	CUP	Caribbean Utilities Corp Ltd	$15.99	$14	18.4x	$15	16.7x
Neutral	ED	Consolidated Edison	$73.81	$90	19.7x	$76	16.7x
Buy	DTE	DTE Energy	$109.97	$138	19.7x	$130	16.7x
Buy	DUK	Duke Energy	$81.84	$108	18.9x	$102	16.7x
Buy	EIX	Edison International	$55.54	$79	18.6x	$75	16.7x
Buy	EMA	Emera Inc (C$)	$54.23	$65	19.1x	$65	16.7x
Buy	ETR	Entergy Corp	$96.86	$125	19.5x	$121	16.7x
Neutral	ES	Eversource Energy	$84.67	$90	19.6x	$85	16.7x
Neutral	EVRG	Evergy	$61.46	$63	19.4x	$62	16.7x
Buy	EXC	Exelon	$37.48	$48	18.1x	$48	16.7x
Buy	FE	FirstEnergy Corp	$39.92	$52	19.4x	$50	16.7x
Buy	FTS	Fortis Inc (C$)	$52.40	$62	19.1x	$62	16.7x
Sell	HE	Hawaiian Electric Industries	$36.12	$32	19.4x	$32	16.7x
Sell	H	Hydro One Ltd (C$)	$25.95	$25	19.1x	$24	16.7x
Buy	NEE	NextEra Energy	$246.40	$290	19.1x	$305	16.7x
Neutral	PNW	Pinnacle West Capital Corp	$76.03	$85	18.2x	$79	16.7x
Buy	PNM	PNM Resources	$39.28	$49	21.4x	$47	16.7x
Neutral	POR	Portland General	$42.71	$52	18.9x	$44	16.7x
Buy	PPL	PPL Corporation	$26.18	$37	18.1x	$30	16.7x
Buy	PEG	Public Service Ent Group	$50.11	$64	19.1x	$62	16.7x
Buy	SRE	Sempra Energy	$120.94	$173	19.4x	$172	16.7x
Neutral	SO	Southern Company	$52.79	$59	19.1x	$55	16.7x
Neutral	WEC	WEC Energy Group	$90.17	$91	19.1x	$88	16.7x
Neutral	XEL	Xcel Energy	$64.10	$69	19.5x	$64	16.7x

Source: Factset, UBS estimates

Finally, figure 21 is our new RU comparable table sorted by annual total return expectation.

Figure 20: Regulated Utility Comp Table Sorted by Annual Total Return

Investment Opinion	Ticker	Overall Reg Group Premium Discount	Regulatory Quartile Premium Discount	Regulated EPS Growth Premium Discount	ESG Premium	EPS Guidance Reliablity Adjustments	Specific Adjustments	Net Prem/Disc Regulated Valuation	Business Value
Buy	ACO	10%	(5%)	(5%)			(10%)	(10%)	$6
Neutral	LNT	10%	2%	2%				14%	$0
Buy	AEE	10%	2%	2%				19%	$0
Buy	AEP	10%	2%	2%				14%	$0
Neutral	CU	10%	(5%)	(2%)			(10%)	(7%)	$0
Sell	CUP	10%	(5%)	5%			(10%)	0%	$0
Neutral	CMS	10%	5%	5%		5%		25%	$0
Neutral	ED	10%	(5%)	(5%)	0%			(5%)	$0
Buy	D	10%	2%	5%				17%	$28
Buy	DTE	10%	5%	2%		5%		22%	$22
Buy	DUK	10%	5%	(5%)				10%	$0
Buy	EIX	10%	(2%)	(5%)			(10%)	(7%)	$0
Buy	EMA	10%	5%	5%				20%	$1
Buy	ETR	10%	2%	2%				14%	$0
Neutral	ES	10%	2%	2%	10%			24%	$0
Neutral	EVRG	10%	(2%)	(2%)				6%	$0
Buy	EXC	10%	(2%)	5%				8%	$8
Buy	FE	10%	2%	(2%)				10%	$0
Buy	FTS	10%	(2%)	5%				18%	$0
Sell	HE	10%	(5%)	(2%)				3%	$7
Sell	H	10%	(5%)	(5%)			(15%)	(5%)	$0
Buy	NEE	10%	5%	5%				25%	$173
Buy	OGE	10%	(2%)	(2%)				6%	$2
Buy (CBE)	PCG	10%	(2%)	(5%)			(19%)	(16%)	$0
Neutral	PNW	10%	(5%)	(5%)				(8%)	$0
Buy	PNM	10%	(5%)	2%		5%		12%	$0
Neutral	POR	10%	(2%)	(5%)				3%	$0
Buy	PPL	10%	5%	(5%)				10%	$6
Buy	PEG	10%	2%	5%		5%		17%	$4
Buy	SRE	10%	(2%)	5%				13%	$61
Neutral	SO	10%	5%	2%			(25%)	(8%)	$0
Neutral	WEC	10%	5%	5%		5%		25%	$0
Neutral	XEL	10%	2%	2%		5%		19%	$0

Source: Factset, UBS estimates

Price Target Methodology Details by Company

AES Corp.

We are increasing AES price target to $17 from $16. The change in our price target rolls the valuation year to 2022 and reflects slightly lower EPS.

We are lowering our EPS estimates to $1.38 for 2020, $1.55 for 2021 and $1.67 for 2022 versus $1.40/$1.58/$1.69 primarily to reflect lower U.S. utility EPS due to aligning IP&L rate base to the $3.6B actual versus $3.9B modeled.

Our updated $17 sum of the parts target includes $5 for U.S. Utilities at a Regulated Utility average 16.7x '22 EPS; $3 for Mexico, Caribbean and Central America at 8x $0.36 in '22; $7 for renewable development at 20x '22 EPS of $0.33 with using CSIQ, ORA and NEE's NEER as comps and $2/share for AES's other businesses net of $3.4B in parent debt.

Figure 21: AES Price Target

Segment	2022E	2022 P/E	Value	Method
U.S. Utilities	$0.31	16.7x	$5.14	U.S. Regulated Utilities
El Salvador Utility	$0.06	8.0x	$0.49	Average of AES Gener and Ibovespa
U.S. Generation	$0.12	7.5x	$0.88	NRG and VST
Renewables (b)	$0.33	20.0x	$6.56	'22 Average of CSIQ, ORA, NEER
AES Gener	$0.33	4.0x	$1.31	Market Value
South America	$0.19	8.0x	$1.53	Average of AES Gener and Ibovespa
Mexico, Caribbean, Central America	$0.36	8.0x	$2.86	Average of AES Gener and Ibovespa
EurAsia Generation	$0.19	10.5x	$1.99	25% discount to ENEL '22
Fluence			$0.71	10% Capital Raise at $450M.
Corporate, Tiete & Other	-$0.21	22.3x	-$4.68	$3.4B of debt + Tiete market
Total	$1.67	10.1x	$16.80	

(b) NEER = NextEra Energy Resources

Source: Factset, UBS estimates

Our Prior $16 sum of the parts target included $5 for U.S. Utilities at a Regulated Utility average 17.5x '21 EPS; $5 for Mexico, Caribbean and Central America at 14x $0.36 in '21; $4 for renewable development at 16x '21 EPS of $0.27 with using CSIQ, FSLR and NEE's NEER as comps and $2/share for AES's other businesses net of $3.4B in parent debt.

Figure 22: AES Prior Price Target

Segment	2021E	FY2 P/E	Value	Method
U.S. Utilities	$0.30	17.5x	$5.21	U.S. Regulated Utilities
El Salvador Utility	$0.06	13.9x	$0.86	Mexbol Index
U.S. Generation	$0.13	7.5x	$0.95	NRG and VST
Renewables (b)	$0.27	15.7x	$4.29	'21 Average of CSIQ, FSLR, NEER
AES Gener	$0.35	3.6x	$1.29	Market Value
South America	$0.12	9.1x	$1.09	Ibovespa Index
Mexico, Caribbean, Central America	$0.36	13.9x	$5.00	Mexbol Index
EurAsia Generation	$0.11	9.1x	$1.03	21 P/E ENEL
Fluence			$0.71	10% Capital Raise at $450M.
Corporate, Tiete & Other	-$0.28	16.4x	-$4.65	$3.39B of debt + Tiete market
Total	$1.58	10.0x	$15.77	

(b) NEER = NextEra Energy Resources

Source: Factset, UBS estimates

ATCO Ltd

We are increasing our ATCO Ltd. price target to C$47 from C$46. We use a sum of the parts valuation methodology.

Our current price target of C$47 is premised upon our UBSe 2022 utility EPS of C$2.77/share at the 2022e multiple of 16.7x at a net 10% discount or C$42/share. We value the structures business at 7.7x 2022e EPS of C$0.49/share, or $3/share, and Neltume Ports at 7.1x 2022e EBITDA of C$63mln with C$170mln in allocated net debt, which is $2/share.

Our 10% net discount is premised upon 10% for group relative valuation vs. corporate bonds, -5% for 4th quartile regulation, -5% for 4th quartile 5 year EPS growth, -5% for emerging markets risk, and -5% for Alberta oil market risk.

Our prior price target of C$46/share was premised upon our UBSe 2021 utility EPS of C$2.66/share at the then 2021e multiple of 18.1x at a net 17% discount or C$40/share. We valued the structures business at the then multiple of 9.6x 2021e EPS of C$0.44/share, and Neltume Ports at 7.1x 2021e EBITDA of C$60mln and $170mln of allocated net debt.

Our prior 17% net discount was premised upon 5% for group relative valuation vs. corporate bonds, -5% for 4th quartile regulation, -2% for 3rd quartile EPS growth, -5% for emerging markets risk, and -10% for Alberta oil market risk.

The reallocation of the earnings stream from Alberta to Puerto Rico after the signing of the T&D operations contract reduced our Alberta discount to -5% in our new PT methodology from -10% in our prior PT methodology.

Alliant Energy

We are lowering our price target to $52 from $56. Our revised $52 target reflects an improvement in the company's weighted average regulatory ranking to first from second quartile and rolling to 2022 for valuation. We also lowered our 2022 EPS estimate to $2.72 from $2.76 to reflect growth more consistent with rate base at IP&L 7% vs. 10%.

Our $52 price target is a 17% premium to the Regulated Utility average 2022 P/E or 19.5x $2.72. The valuation reflects +10% for Regulated Utility undervaluation (+5% for a year of earnings growth and +5% for undervaluation greater than 1 standard deviation), +2% for second quartile 5.5% EPS growth, +5% for first quartile regulation.

Our $56 target was a 9% premium to the Regulated Utility average P/E multiple or 20.4x $2.60 EPS in 2021. The 9% premium included 2% for second quartile regulation, 5% for the group's undervaluation and 2% for second quartile EPS growth.

Ameren Corp.

We are lowering our price target on AEE to $80 from $83 due to rolling to 2022 for valuation, moving to second from first quartile EPS growth (-3%) and inclusion of a 5% premium for meeting or exceeding initial earnings guidance for a consecutive decade.

Our $80 price target is a 19% premium to the Regulated Utility average 2022 P/E or 19.9x $4.04. The valuation reflects +10% for Regulated Utility undervaluation (+5% for a year of earnings growth and +5% for undervaluation greater than 1 standard deviation), +2% for second quartile 6.6% EPS growth, +2% for above average regulation and +5% for earnings reliability.

Previously our $83 target was a 12% premium or 22.1x our 2021 EPS estimate of $3.76. The valuation reflects +5% for group's relative yield undervaluation to the Baa bond, +5% for top quartile 7% EPS growth, and +2% for above average regulation

American Electric Power

We are lowering our AEP price target to $94 from $98. The increase reflects rolling to 2022 for valuation.

Our $94 price target is a 14% premium to the Regulated Utility average or 19.0x our $4.93 2022 EPS estimate. The 14% premium reflects +10% for Regulated Utility undervaluation (+5% for a year of earnings growth and +5% for undervaluation greater than 1 standard deviation), 2% for second quartile regulation and 2% for second quartile EPS growth.

Our prior $98 price target was a 9% premium to the Regulated Utility average or 21.1x our $4.65 2021 EPS estimate. The 9% premium included 5% for group undervaluation, 2% for regulation and 2% for EPS growth.

Canadian Utilities Ltd

We are increasing our PT from C$33 to C$36.

Our current price target is premised upon our UBSe 2022 EPS of C$2.37 and the group multiple of 16.7x at a net 10% discount. Our net 7% discount is derived from a +10% for relative valuation vs corporate bonds, a 5% discount for 4th quartile regulation, a 5% discount for 4th quartile 5 year EPS growth and a 10% discount for Alberta oil market exposure.

Our prior price target was premised upon our UBSe 2021 EPS of C$2.25 and the group multiple of 18.1x at a net 17% discount. Our net 17% discount was derived from a +5% for relative valuation vs. corporate bonds, a 5% discount for 4th quartile regulation, a 2% discount for 3rd quartile 5 year EPS growth and a 15% discount for Alberta oil market exposure.

Caribbean Utilities Corp.

We are updating our Caribbean Utilities Corp.price target to $15 from $14.

Our current price target is premised upon the UBSe 2022 EPS of $0.89 and the group multiple of 16.7x. Our prior price target was premised upon the UBSe 2021 EPS of $0.79 and a net 7% discount to the then 18.4x group multiple.

Our flat multiple in the current price target methodology is based upon a 10% premium for group valuation vs. corporate bonds, a 5% discount for 4th quartile regulation, a 5% premium for 1st quartile five year EPS growth, a 5% liquidity discount, and a 5% finance and tourism economic exposure discount. Our 7% net discount in our prior price target methodology is based upon a +5% premium for group valuation vs. corporate bonds, a 2% discount for 3rd quartile regulation, a 5% premium for 1st quartile five year EPS growth, a 5% liquidity discount and a 10% finance and tourism economic exposure discount.

Consolidated Edison

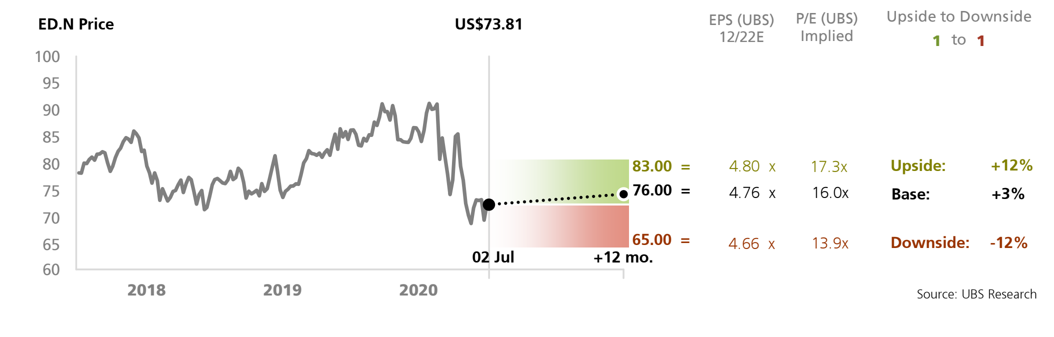
We are lowering our ED price target to $76 from $90. The reduction reflects moving to 2022 for valuation, the removal of the ESG and a 5% discount for the current uncertainty associated with New York regulation. We removed the ESG premium as a result of the company's position in midstream gas in the Northeast through acquisition of 50% of Stagecoach.

Our $76 target is a 5% discount to the average Regulated Utility P/E or 15.9x applied to our 2022 EPS estimate of $4.76. The valuation includes +10% for Regulated Utility undervaluation (+5% for a year of earnings growth and +5% for undervaluation greater than 1 standard deviation), -5% for New York COVID-19 uncertainty, -5% for fourth quartile EPS growth and -5% for fourth quartile regulation.

Our $90 target was an average Regulated Utility P/E of 19.7x applied to our 2021 EPS estimate of $4.58. The valuation included +5% group undervaluation, +5% for ESG, -5% for fourth quartile EPS growth and -5% for fourth quartile regulation.

UPSIDE/DOWNSIDE SPECTRUM

Figure 24: ED – Upside/Downside



Source: UBS

Value drivers	Regulatory Ranking	EPS Growth '19-'24	P/E Premium/ Multiple '22	EPS 2022E	Equity
$83 upside	-2%	5.0%	+6%	$4.80	-
$76 base	-5%	3.5%	-5%	$4.76	-
$65 downside	-5%	3.0%	13x	$4.66	$300M

Source: UBS

Upside (US$83): Our upside scenario reflects -2% third quartile 5% EPS growth. We assign ED a 6% premium which assumes third quartile regulation (-2%), third quartile EPS growth (-2%) and +10% for the Regulated Utility group's undervaluation. We apply the 6% group premium to $4.80 EPS in 2022.

Base (US$76): Our base line scenario of $72 reflects 3.5% EPS growth. The target is a 5% Regulated Utility discount applied to $4.76 EPS in 2022.

Downside (US$65): Our downside scenario reflects a $300M of incremental equity and is 14x our 2022 downside EPS of $4.66.

Dominion Energy

We are establishing a price target of $81 (vs. $92 previously) as we roll forward our valuation year from 2021 to 2022.

Our price target is based projected '20-'22 earnings of $3.50/$3.87/$4.12. We apply a 17% premium to the group average P/E multiple of 16.7x in arriving at our price target. This premium comprises a 10% premium to reflect the undervaluation of the group vs. the broader market, a 2% premium to reflect the favorable nature of the company's regulatory jurisdictions and a 5% premium to reflect the company's projected earnings growth trajectory.

Our prior valuation target of $92 was premised on projected consolidated 2021 earnings of $4.65/share. This target incorporated a regulated utility multiple of 19.1x and a midstream multiple of 9.4x. We valued the regulated utility operations at a 7% premium to peers, based on the valuation of the group vs. the S&P (+5%), the earnings trajectory (+5%), the nature of the company's regulatory jurisdictions (+2%) and the uncertainty around the ultimate completion of the Atlantic Coast Pipeline project (-5%).

DTE Energy

We are lowering our DTE price target to $130 from $138. The change reflects rolling our valuation year to 2022 and use of EV/EBITDA instead of P/E for the GS&P business.

Our $130 includes $109 for the utilities at a 22% premium to the group applied to $5.33 in 2022, $12 for Gas Storage & Pipelines at 8.2x $730M in '21 EBITDA less $3.7B in debt, $8 for Co-Gen and renewables using 20.0x $0.41 in 2022 EPS and $2 for tax credits, coke and trading NPV.

Our Regulated Utility 22% premium multiple includes +5% for beating guidance, +10% for the group's undervaluation, +2% for EPS growth in the second quartile and +5% for top quartile regulation.

Figure 25: DTE Price Target Methodology

Segment	Value $/Share	EPS 2022E	EBITDA 2021E	Premium/ Multiple	Comp
Utility, Parent and Other	$109	$5.33		20.4x	UBS Covered
Gas Storage & Pipeline	$12	$1.78	$730	8.2x	TRGA, OKE - EV/EBITDA
Co-Gen and Renewables	$8	$0.41		20.0x	CSIQ, ORA, NEER
Tax Credits, Coke, Trading NPV	$2	$0.06			NPV @ 4%
Total	$130	$7.58		19.5x	

Source: Factset, UBS estimates

Our prior price target of $138 included $114 for the utilities at a 17% premium to the group applied to $4.96 in 2021, $6 for Gathering & Storage at 6.1x $535M in 2021 EBITDA, $10 for Midstream using 18.1x $0.56 in '21, $6 for Co-Gen and renewables and $2 for tax credits, coke and trading NPV.

Our Regulated Utility 17% premium multiple includes +5% for beating guidance, +5% for the group discount, +2% for EPS growth in the second quartile and +5% for top quartile regulation.

Figure 26: DTE Prior Price Target Methodology

Segment	Value $/Share	EPS 2021E	EBITDA + Equity Inc 2021E	Premium/ Multiple	Method	Comp
Utility, Parent and Other	$114	$4.96		23.0x	21 P/E	UBS Covered - 17% premium
Gathering & Storage	$6	$1.00	$535	6.1x	21 EBITDA	ENBL, CEQP, WES, DCP
Midstream	$10	$0.56	$270	18.1x	21 P/E	SWX, ATO, NI, UGI, OGS, NWN
Co-Gen and Renewables	$6	$0.37		15.7x	21 P/E	CSIQ, FSLR, NEER
Tax Credits, Coke, Trading NPV	$2	$0.32				NPV @ 4%
Total	$138	$7.21		17.4x		

Source: Factset, UBS estimates

Duke Energy

We are reducing our price target to $102 from $108 as we roll forward our valuation year to 2022 from 2021.

Our $102 price target incorporates a 10% premium valuation vs. the utility peer group P/E multiple of 16.7x. This premium comprises a 10% premium to reflect the undervaluation of the group vs. the S&P, a 5% premium to reflect the nature of the regulatory jurisdictions in which the company operates, a 5% discount to reflect the company's earnings growth trajectory. With the recent abandonment of the Atlantic Coast Pipeline project we no long impute a 5% discount for the uncertainty associated with the completion of that project.

Our prior price target of $108 was premised on projected 2021 earnings of $5.27 and a group average P/E multiple of 18.9x. In arriving at our price target we applied a 5% premium valuation to reflect the undervaluation of the group vs. the S&P (+5%), the earnings growth trajectory of the company vs. peers (-2%), the nature of the company's regulatory jurisdictions (+5%).

Edison International

We are lowering our EIX price target to $75 from $79 due to rolling for valuation to 2022 somewhat offset by an improvement in California regulation to third quartile.

Our $75 target is a 7% discount to the average Regulated Utility average P/E multiple or 15,5x $4.80 in 2022. The valuation includes +10% for Regulated Utility undervaluation (+5% for a year of earnings growth and +5% for undervaluation greater than 1 standard deviation), -5% for fourth quartile EPS growth, -2% for third quartile regulation and -10% for California wildfire risk.

Our $79 target was a 10% discount to the average Regulated Utility average P/E multiple or 16.9x $4.67 in 2021. It included: +5% for the group's undervaluation, -5% for fourth quartile EPS growth, -5% for regulation and -5% for California wildfire risk.

Emera Inc.

Our Emera Inc. price target remains unchanged at C$65. We use a sum of the parts methodology.

Our current price target is premised upon our utility and parent only UBSe 2022 EPS of C$3.18 at a 20% premium to the group multiple of 16.7x which yields

C$64/share. To this we add 7.1x the energy business 2022e EBITDA of C$53mln which yields C$1/share.

Our prior price target was premised upon our utility and parent only UBSe 2021 EPS of C$2.95 at a 12% premium to the then 19.1x group multiple which yielded C$63/share. To that we added 7.1x the energy business 2021e EBITDA of C$85mln which yielded C$2/share.

Our current 20% net premium is derived by a 10% premium for group valuation vs corporate bonds, a 5% premium for 1st quartile regulation, and a 5% premium for 1st quartile five year forecast EPS growth. Our prior 12% net premium was 5% lower due to only a 5% premium for group valuation vs. corporate bonds.

Entergy Corp.

We are lowering our price target to $121 from $125 as we roll forward our valuation year to 2022 from 2021.

Our valuation methodology incorporates a 14% premium vs. a peer average P/E multiple of 16.7x. This premium comprises a 10% premium to reflect the relative undervaluation of the group vs. the S&P, a 2% premium to reflect the nature of the regulatory jurisdictions the company operates in, and a 2% premium to reflect the company's earnings growth trajectory. Our current 2022 EPS estimate for Entergy is $6.30/share, at the mid-point of current guidance of $6.15-$6.45/share.

Our prior price target of $125 was premised on our 2021 earnings estimate of $5.90, and a group average P/E multiple of 19.5x. We applied a 9% premium to this group average P/E to reflect the groups discount valuation vs. the S&P (+5%), the company's projected earnings growth trajectory (+2%) and the quality of the company's regulatory jurisdictions (+2%).

Eversource Energy

We are lowering our price target to $85 from $90 as we roll forward our valuation year to 2022 from 2021.

Our valuation target of $85 incorporates a 24% premium to the average regulated utility P/E multiple of 16.7x. This premium comprises a 10% premium to reflect the valuation of the utility group vs. the S&P, a 2% premium to reflect the nature of the regulatory jurisdictions the company operates in, a 2% premium to reflect the company's earnings growth trajectory, and a 10% premium for the companies ESG credentials (no fossil generation).

Our prior price target of $90 was premised on our 2021 earnings estimate of $3.87/share to which we applied a 19% premium to the group average P/E multiple of 19.6x. This 19% premium comprised a 5% premium to reflect the undervaluation of the group vs. the S&P, a 2% premium to reflect projected earnings growth vs. peers, a 2% premium to reflect the nature of the regulatory jurisdictions the company operates in and a 10% premium to reflect the company's ESG credentials.

Evergy Inc.

We are lowering our EVRG price target to $62 from $63 as a result of rolling our valuation to 2022.

Our $62 price target is a 6% premium to the Regulated Utility average or 17.7x applied to $3.46 plus $0.40/share for the NPV of corporate owned life insurance income. The valuation includes +10% for Regulated Utility undervaluation (+5% for a year of earnings growth and +5% for undervaluation greater than 1 standard deviation),-2% for third quartile EPS growth, and -2% for third quartile regulation and.

Our prior $63 price target was a 1% premium to the Regulated Utility average or 19.6x applied to $3.21 plus $0.40/share for the NPV of corporate owned life insurance income. The 1% premium included -2% for third quartile EPS growth, -2% for third quartile regulation and +5 for the group's undervaluation.

Exelon Corp.

Our Exelon Corp price target remains unchanged at $48. We use a sum of the parts methodology.

Our current price target is premised upon our UBSe 2022 utility and parent only EPS of $2.23 at an 8% net premium to the 16.7x group multiple which yields $40/share. To this we add 6.6x our 2022e EBITDA for the ExGen power business of $1.4Bln, an NPV of hedges of $0.9Bln and net debt of $2.3Bln on 969mln shares outstanding yielding $8/share.

Our prior price target was premised upon our UBSe 2021 utility and parent only EPS of $2.05 at a 3% net premium to the then 19.1x group multiple which yielded $40/share. To that we added 6.6x our 2021e EBITDA for the ExGen power business of $1.4Bln, NPV of hedges of $1.5Bln, and net debt of $3.3Bln on 969mln shares outstanding yielding $8/share.

Our current 8% net premium is derived from a 10% premium for overall group valuation vs. corporate bonds, a 2% discount for 3rd quartile regulation, a 5% premium for five year UPO earnings per share growth and 5% discount for pending Illinois legislation uncertainty. Our prior net premium of 3% was 5% lower due to a then 5% premium for overall group valuation vs. corporate bonds.

FirstEnergy Corp.

We are lowering our price target on FE to $50 from $52.

Our $50 price target is a 7% premium to the Regulated Utility average and is 18.4x $2.74 in 2022. The premium reflects a +10% for Regulated Utility undervaluation (+5% for a year of earnings growth and +5% for undervaluation greater than 1 standard deviation),-2% for third quartile EPS growth and +2% for second quartile regulation.

Our prior $52 price target was a 2% premium to the Regulated Utility average '21 P/E or 19.8 $2.62. The valuation reflected +5% for group valuation, -5% for fourth quartile EPS growth and +2% for second quartile regulation.

Fortis Inc.

Our Fortis Inc. price target remains unchanged at C$62.

Our current price target is premised upon our UBSe 2022 EPS of C$3.12 and the group multiple of 16.7x with a net 18% premium. Our prior price target was premised upon our UBSe 2021eps of C$2.93 and the then group multiple of 19.1x at 10% net premium.

Our current 18% net premium is based a 10% premium for the group valuation vs. corporate bonds, a 2% discount for 3rd quartile regulation, a 5% premium for 1st quartile EPS growth, and a 5% premium for ESG. Our prior 10% net premium was based upon a 5% premium for group valuation, a 2% discount for 3rd quartile regulation, a 2% premium for 2nd quartile EPS growth and a 5% ESG premium.

Hawaiian Electric Industries

We are maintaining our current price target of $32 for Hawaiian Electric as we roll our valuation year from 2021 to 2022.

Our valuation is based on a sum-of-the-parts calculation that separates the earnings of the regulated utility business from those of the bank. We apply a 3% premium to the group average P/E multiple of 16.7x to arrive at utility P/E multiple of 17.2x. This incorporates a 10% premium to reflect the undervaluation of the group to the broader market, a 5% discount to reflect the company's projected earnings growth rate, and a 2% discount to reflect the nature of the company's regulatory oversight. We apply a group average multiple of 13x to our forecasted earnings at the American Savings Bank.

Our prior price target of $32 was premised on a sum-of-the-parts valuation that incorporated our consolidated earnings expectations for 2021 of $1.82/share. In considering the valuation of the regulated utility business, we applied a 2% discount valuation to the group average P/E multiple of 19.4x. This discount comprised a 5% premium for the relative undervaluation of the group vs. the S&P, a 5% discount to reflect the lower than average earnings growth trajectory vs. peers, and a 2% discount to reflection the nature of the regulatory jurisdictions. With regard to the valuation of the bank, we applied a group average P/E multiple of 12x.

Hydro One

We are lowering our price target for Hydro One from C$25 to C$24.

Our current price target is premised upon our updated UBSe 2022 EPS of C$1.49 at a net 2% discount to the 16.7x group multiple. Our prior price target was premised upon our prior 2021e EPS of C$1.36 and a 5% net discount to the then group multiple of 19.1x.

Our current 2% net discount is based upon a 10% premium for overall group undervaluation, a 5% discount for 4th quartile regulation, a 2% discount for 3rd quartile EPS growth, a 10% ESG premium, a 10% discount for the 40% provincial ownership stake, and a 5% discount for Ontario election risk in June of 2022.

Our prior 5% net discount was based upon a 5% premium for overall group undervaluation, a 5% discount for 4th quartile regulation, a 5% discount for 4th quartile EPS growth, a 10% ESG premium, and a 10% discount for the provincial ownership stake.

NextEra Energy

We are increasing our NextEra price target from $290 to $305. We use a SOTP methodology.

Our current price target is premised upon our UBSe 2022 utility and parent only (UPO) EPS of $6.29 and a 25% premium to the group multiple of 16.7x yielding $132/share. For Energy Resources we use an Orsted comparable 2022e P/E of

38.1x our 2022e EPS of $4.26 yield $162/share. We mark the NEP stake to market at $11/share.

Our prior price target was premised upon our UBSe 2021 UPO EPS of $5.88 and a 20% premium to the then group multiple of 19.1x yielding $135/share. For Energy Resources we used the then Orsted comparable 2021e P/E of 36.3x our 2021e EPS of $3.97, yielding $144/share. We marked the NEP stake to market at $11/share.

Our UPO premium increased 5% based upon the increase for the premium due to undervaluation of the group t 10% from 5%. The remainder of the net premium was composed of 5% for 1st quartile EPS growth, 5% for 1st quartile regulation, and 5% for ESG.

Pinnacle West Capital

We are lowering our price target on PNW to $79 from $85. The price target reduction reflects moving to 2022 for valuation and lower EPS estimates (-4) somewhat offset by a reduction in the risk of Arizona moving to retail competition which could accelerate stranded cost exposure. We are lowering our EPS estimates for a lower allowed equity ratio (54% versus 55.8% or -$0.10/share) and lower earned ROEs (9.2% versus 9.3-9.5%). Our new EPS estimates include $4.90 for 2021, $5.14 for 2022 and $5.36 for 2023 versus $5.15/$5.34/$5.52.

Our $79 price target is a 5% discount to the Regulated Utility average P/E or 15.9x $5.14 in 2022 less a -$2/share NPV to reflect a 50% risk of deregulation. Regarding deregulation we assume a -$0.30/share impact for securitization of Four Corners and Palo Verde with offsetting share buybacks and debt reduction (50/50) applied to a 16x P/E. The 5% discount to the Regulated Utility P/E reflects a +10% for Regulated Utility undervaluation (+5% for a year of earnings growth and +5% for undervaluation greater than 1 standard deviation), is -5% for third quartile EPS growth, -5% for fourth quartile regulation, and -5% for rate case uncertainty.

Our prior $85 price target was a 7% discount to the Regulated Utility average P/E or 17.0x $5.15 in 2021 less a -$3/share NPV to reflect a 50% risk of deregulation. Regarding deregulation we assumed a -$0.30/share impact for securitization of Four Corners and Palo Verde with offsetting share buybacks and debt reduction (50/50) applied to a 18x P/E. The 7% discount to the Regulated Utility P/E was -2% for third quartile EPS growth, -5% for fourth quartile regulation, -5% for rate case uncertainty and +5% for group undervaluation.

PNM Resources

We are lowering our price target to $47 from $49 as we roll our valuation year to 2022 from 2021. Our '20 through '22 earnings expectations are unchanged at $2.16/$2.38/$2.50 per share.

Our valuation methodology applies a 12% premium valuation vs. a regulated utility P/E multiple of 16.7x. This incorporates a 10% premium to reflect the undervaluation of the group vs. the S&P, a 2% premium to reflect the company's earnings growth trajectory, a 5% discount to reflect the nature of the regulatory jurisdictions the company operates in and 5% premium to reflect the consistency with which the company achieves its earnings projections.

Our prior price target of $49 was premised on a 2021 earnings estimate of $2.16/share to which we applied a 7% premium to the group average P/E multiple of 21.4x. The premium comprised a 5% premium to adjust for the undervaluation of the group vs. the S&P, a 2% premium to reflect the company's earnings growth trajectory, a 5% discount to reflect the nature of the company regulatory jurisdictions and a 5% premium to reflect the consistency with which the company achieves its earnings projections.

Portland General Electric

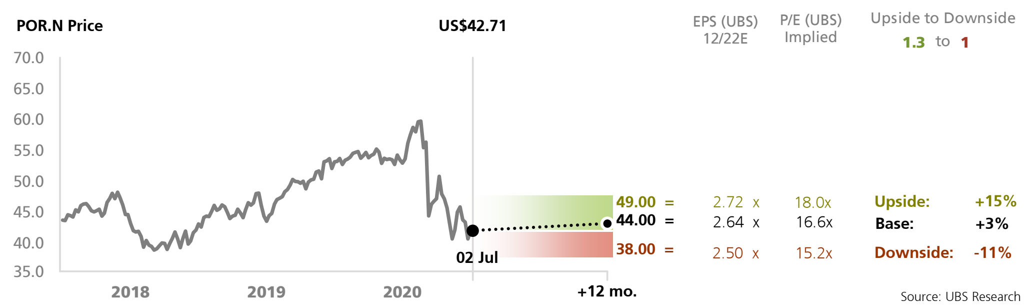
We are lowering our POR price target to $44 from $52. The reduction reflects rolling to 2022 for valuation and lower EPS (6-7%). Our revised EPS estimates include $2.60 for 2021, $2.64 for 2022 and $2.79 for 2023 versus $2.70/$2.84/$3.03 respectively. The reduction reflects an offset to 2020 cost cuts (-$0.15/share) and slower industrial sales growth of a few cents.

Our $44 price target is a 3% premium to the Regulated Utility 2022 group average or 17x $2.64. The 3% premium reflects a +10% for Regulated Utility undervaluation (+5% for a year of earnings growth and +5% for undervaluation greater than 1 standard deviation), -2% for third quartile Oregon regulation, and -5% for fourth quartile EPS growth.

Our prior $52 target was a 1% premium multiple or 19.1x $2.70 in 2021. The 1% premium is +5% for group undervaluation relative to Baa bonds; -2% for third quartile EPS growth and -2% for third quartile regulation.

UPSIDE/DOWNSIDE SPECTRUM

Figure 27: POR – Upside/Downside



Value drivers	Regulatory Ranking	EPS Growth '19-'24	P/E Premium/ Multiple '22	EPS 2022E	Equity
$49 upside	+2%	5%	+7%	$2.72	-
$44 base	-2%	4%	+3%	$2.64	-
$35 downside	-2%	3%	15x	$2.50	$200M

Source: UBS

Upside (US $49): Our upside case assumes more investment adds an incremental $0.10/share to EPS. Our upside scenario is a 7% premium of $2.72 in 2022. The 7% premium is +10% for the group's undervaluation, +2% for second quartile EPS growth and -2% for third quartile regulation.

Base (US $44): Our base line assumes that POR grows EPS at 4% and does not require any equity. We value POR at a 3% premium applied to $2.64 in 2022.

Downside (US $35): Our downside scenario assumes that POR requires an incremental $200M of equity to maintain its credit rating. Our downside scenario is 15x $2.50 in 2022.

PPL Corp.

We are lowering our price target on PPL to $30 from $37. Our revised sum of the parts price target reflects a price to regulated asset value for the company's U.K. utility. Price/RAV is a valuation metric used by Sam Arie to value National Grid and SSE Plc in a sum-of-the parts framework which trade at 1.2-1.25x.

Our $30 sum of the parts includes $24 for the U.S. utility at a 10% premium of the average 2022 Regulated Utility P/E multiple or 18.4x $1.30 plus $6 for the U.K. using 1.25x 2021 rate base of $11.5B less $9.4B of debt and 771M shares.

For the U.S. the 10% premium reflects a +10% for Regulated Utility undervaluation (+5% for a year of earnings growth and +5% for undervaluation greater than 1 standard deviation), +5% for first quartile regulation, and -5% for fourth quartile EPS growth.

Figure 28: PPL Price Target Methodology

PPL	EPS 2022E	Premium/ Multiple	Value
U.S. Utilities	$1.30	10.0%	$24
	Ratebase 21E $B		
U.K. Utility	$11.5	1.25x	$6
Total			$30

Source: Factset, UBS

Our prior $37 price target reflected a sum of the parts including $24 for the U.S. utility using a 12% premium to the Regulated Utility average P/E applied to $1.18 in 2021, $17 for the U.K. utility using comparable National Grid's 14x 2021 P/E applied to $1.22 less $4 for the NPV -$0.30 of EPS related to the 2023 rate case and declining pension recovery. For the U.S. the premium reflected 2% for second quartile EPS growth; +5% for regulation and +5% for the Regulated Utility group's discount valuation to the Baa corporate bond.

Figure 29: PPL Prior Price Target Methodology

PPL	EPS 2021E	Premium/ Multiple	Value
U.S. Utilities	$1.18	12.0%	$24
WPD	$1.22	13.9x	$17
RIIO2 pension and return exposure		NPV	($4)
Total			$37

Source: Factset, UBS

UPSIDE/DOWNSIDE SPECTRUM

Figure 30: PPL – Upside/Downside

Value drivers	U.K. Valuation	U.K. Value	U.S. Premium/ Multiple '22	U.S. EPS 2022E	U.S. Value
$34 upside	9x '22 P/E	$9	13%	$1.40	$25
$30 base	1.25x Price/RAV	$6	10%	$1.30	$23
$23 downside	1.0x Price/RAV	$3	16.0x	$1.25	$20

Source: UBS

Upside (US $34): Our upside case reflects a P/E multiple on the U.K. due to a reduction in regulatory uncertainty and we use $9 or 9x $1.00. We value the U.S. business at a 13% premium which reflects 10% for the group undervaluation, -2% for third quartile EPS growth and +5% for top quartile regulation. We value the U.S. at 18.0x $1.40 or $25.

Base (US $30): Our base line assumes $6 for the U.K. at 1.25x price to regulated asset value in 2021 and $24 for the U.S. using a 10% premium P/E to the Regulated Utility average applied to $1.30.

Downside (US $23): Our downside scenario assumes that the U.K. business trades at 1.0x RAV or $3. However, PPL's dividend supports the value of the U.S. business. Our downside sum of the parts of $23 is $3 for the U.K. and $19 for the U.S. at 15.5x $1.25 in '22 which reflects 3.0% long-term EPS growth.

Public Service Enterprise Group

We are lowering our price target to $62 from $64. We use a sum of the parts methodology.

Our current price target of $62 is premised upon our UBSe 2022 EPS for utility and parent only (UPO) of $2.95 and a 17% net premium to the current group multiple of 16.7x, yielding $58/share. For PEG Power we us a 7.1x EV/EBITDA multiple on 2022e EBITDA of $860mln, net debt of $4.0Bln and 507mln shares outstanding, yielding $4/share.

Our prior price target of $64 was premised upon our UBSe 2021 EPS for UPO of $2.72 and a 12% net premium to the then utility multiple of 19.1x, yielding $58/share. For PEG Power we used 7.1x our 2021e EBITDA of $858mln, net debt of $3.1Bln, and 507mln shares outstanding yielding $6/share.

Our current net premium increased by 5% due to the group undervaluation premium increasing to 10% from 5%. The remainder of the net premium is driven by a 2% premium for 2nd quartile regulation, and a 5% premium for UPO EPS growth.

Sempra Energy

We are lowering our price target for Sempra Energy from $173 to $172. We use a sum of the parts methodology.

Our current SOTP Methodology is: $112 for U.S. Utilities/Corp, $5 for SA sale debt pay down accretion, $10 for MTM of IEnova at a 16.7x '21 utility multiple, $20 for LNG Midstream using the Midstream multiple, and $25 for SRE's LNG development opportunities assuming 20mtpa of development at Cameron pricing with a 10% discount for ECA Phase 1, a 25% discount for Cameron Phase 2 and a 50% discount for Port Arthur.

Our prior SOTP Methodology was: $113 for U.S. Utilities/Corp, $5 for SA sale debt pay down accretion, $10 for MTM of IEnova at a 19.4x '21 utility multiple, $23 for LNG Midstream using the Midstream multiple, and $22 for SRE's LNG development opportunities assuming 20mtpa of development at Cameron pricing with a 10% discount for ECA Phase 1, a 25% discount for Cameron Phase 2 and a 50% discount for Port Arthur.

Southern Company

We are lowering our price target to $55 from $59.

Our current price target is premised upon our UBSe 2022 EPS of $3.56 and a net 8% discount to the current group multiple of 16.7x. Our prior price target was premised upon our UBSe 2021 EPS of $3.31 and a net 7% discount to the then multiple of 19.1x.

Our current net discount of 8% is premised upon a 10% premium for overall group undervaluation a 5% premium for 1st quartile regulation, a 2% premium for 2nd quartile EPS growth, a 15% discount for Vogtle new nuclear construction, and an additional 10% discount for uncertainty of schedule and cost rebasing post the VCM staff testimony in June 2020.

Our prior net discount of 7% was premised upon a 5% premium for overall group undervaluation, a 5% premium for 1st quartile regulation, a 2% discount for 3rd quartile EPS growth, and a 15% discount for Vogtle new nuclear construction.

WEC Energy Group

We are lowering our price target to $88 from $91.

Our current price target is premised upon our UBSe 2022 EPS of $4.22 at a net 25% premium to the group multiple of 16.7x. Our prior price target was premised upon our UBSe 2021 EPS of $3.97 at a 20% premium to the then group multiple of 19.1x.

Our current net premium of 25% is premised upon a 10% premium for overall group undervaluation, a 5% premium for 1st quartile EPS growth, a 5% premium for 1st quartile regulation, and a 5% premium for earnings quality/stability. Our prior net premium of 20% was premised upon a 5% premium for overall group undervaluation, a 5% premium for 1st quartile EPS growth, a 5% premium for 1st quartile regulation, and a 5% premium for earnings quality/stability.

Xcel Energy

We are lowering our price target to $64 from $69 as we roll forward our valuation year to 2022 from 2021.

Our valuation target of $64 implies a 19% premium valuation vs. regulated utility peers on projected earnings of $3.20/share. This premium comprises a 10% premium to reflect the undervaluation of the group vs. the S&P, a 2% premium for projected earnings growth, a 2% premium to reflect regulatory jurisdictions and a 5% premium for earnings guidance reliability.

Our prior valuation target of $69 was premised on a 2021 EPS estimate of $2.95 and a 19% premium to the group average P/E multiple of 19.5x. The 19% premium valuation was premised on a 5% premium for overall group undervaluation vs. the S&P, a 2% premium for earnings growth, a 2% premium for regulatory jurisdiction and a 10% premium for consistency in meeting earnings guidance.

Valuation Method and Risk Statement

Our valuation methodology for North American utilities is price to earnings based. The adjustments applied fall into 6 categories. These are as follows: 1) Group Valuation Bias: Flowing from our valuation work +10% for Regulated Utility undervaluation (+5% for a year of earnings growth and +5% for undervaluation greater than 1 standard deviation); 2) Growth Adjustment: We adjust our valuations based on the growth quartile each utility occupies. First quartile receives a 5% premium, second quartile a 2% premium, third quartile a 2% discount and fourth quartile a 5% discount; 3) Regulatory Adjustment: Our valuation adjustments for regulation are based on our proprietary Regulatory Rankings. First quartile jurisdictions receive 5%, second quartile 2%, third quartile -2% and fourth quartile -5%; 4) Earnings Consistency Adjustment: For companies that fall in the top quartile of % Time Beat/Meet, we include +5%; 5) Multi Utility Diversified Valuation: For multi utilities (those with more than 15% diversified or foreign earnings), we perform a sum-of-parts analysis applying business/region appropriate valuations to those diversified businesses; 6) One-off Adjustments: In special situations, we value risk on an issue specific basis. Common areas where we apply such an adjustment include: ESG advantage, large project construction risk, legal risk, and announced M&A completion risk. We identify the following risk factors for the sector overall: rising interest rates; regulatory and policy risks; operational risks; construction risks; cybersecurity risk to the transmission grid and/or customer data, and extreme weather events.

Required Disclosures

This report has been prepared by UBS Securities LLC, an affiliate of UBS AG. UBS AG, its subsidiaries, branches and affiliates are referred to herein as UBS.

For information on the ways in which UBS manages conflicts and maintains independence of its research product; historical performance information; certain additional disclosures concerning UBS research recommendations; and terms and conditions for certain third party data used in research report, please visit www.ubs.com/disclosures. The figures contained in performance charts refer to the past; past performance is not a reliable indicator of future results. Additional information will be made available upon request. UBS Securities Co. Limited is licensed to conduct securities investment consultancy businesses by the China Securities Regulatory Commission. UBS acts or may act as principal in the debt securities (or in related derivatives) that may be the subject of this report. This recommendation was finalized on: 07 July 2020 07:23 AM GMT. UBS has designated certain Research department members as Derivatives Research Analysts where those department members publish research principally on the analysis of the price or market for a derivative, and provide information reasonably sufficient upon which to base a decision to enter into a derivatives transaction. Where Derivatives Research Analysts co-author research reports with Equity Research Analysts or Economists, the Derivatives Research Analyst is responsible for the derivatives investment views, forecasts, and/or recommendations.

Analyst Certification: Each research analyst primarily responsible for the content of this research report, in whole or in part, certifies that with respect to each security or issuer that the analyst covered in this report: (1) all of the views expressed accurately reflect his or her personal views about those securities or issuers and were prepared in an independent manner, including with respect to UBS, and (2) no part of his or her compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed by that research analyst in the research report.

UBS Investment Research: Global Equity Rating Definitions

12-Month Rating	Definition	Coverage[1]	IB Services[2]
Buy	FSR is > 6% above the MRA.	49%	32%
Neutral	FSR is between -6% and 6% of the MRA.	39%	30%
Sell	FSR is > 6% below the MRA.	13%	20%
Short-Term Rating	**Definition**	**Coverage[3]**	**IB Services[4]**
Buy	Stock price expected to rise within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%
Sell	Stock price expected to fall within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%

Source: UBS. Rating allocations are as of 30 June 2020.
1:Percentage of companies under coverage globally within the 12-month rating category.
2:Percentage of companies within the 12-month rating category for which investment banking (IB) services were provided within the past 12 months.
3:Percentage of companies under coverage globally within the Short-Term rating category.
4:Percentage of companies within the Short-Term rating category for which investment banking (IB) services were provided within the past 12 months.

KEY DEFINITIONS:Forecast Stock Return (FSR) is defined as expected percentage price appreciation plus gross dividend yield over the next 12 months. In some cases, this yield may be based on accrued dividends. **Market Return Assumption (MRA)** is defined as the one-year local market interest rate plus 5% (a proxy for, and not a forecast of, the equity risk premium). **Under Review (UR)** Stocks may be flagged as UR by the analyst, indicating that the stock's price target and/or rating are subject to possible change in the near term, usually in response to an event that may affect the investment case or valuation. **Short-Term Ratings** reflect the expected near-term (up to three months) performance of the stock and do not reflect any change in the fundamental view or investment case. **Equity Price Targets** have an investment horizon of 12 months.

EXCEPTIONS AND SPECIAL CASES:UK and European Investment Fund ratings and definitions are: Buy: Positive on factors such as structure, management, performance record, discount; **Neutral:** Neutral on factors such as structure, management, performance record, discount; **Sell:** Negative on factors such as structure, management, performance record, discount. **Core Banding Exceptions (CBE):** Exceptions to the standard +/-6% bands may be granted by the Investment Review Committee (IRC). Factors considered by the IRC include the stock's volatility and the credit spread of the respective company's debt. As a result, stocks deemed to be very high or low risk may be subject to higher or lower bands as they relate to the rating. When such exceptions apply, they will be identified in the Company Disclosures table in the relevant research piece.

Research analysts contributing to this report who are employed by any non-US affiliate of UBS Securities LLC are not registered/qualified as research analysts with FINRA. Such analysts may not be associated persons of UBS Securities LLC and therefore are not subject to the FINRA restrictions on communications with a subject company, public appearances, and trading securities held by a research analyst account. The name of each affiliate and analyst employed by that affiliate contributing to this report, if any, follows.

UBS Securities LLC: Daniel Ford, CFA; Ross Fowler, CFA; Gregg Orrill; Paul Cole.

Company Disclosures

Company Name	Reuters	12-month rating	Short-term rating	Price	Price date
AES Corp[16]	AES.N	Buy	N/A	US$14.47	06 Jul 2020
Alliant Energy Corp[16]	LNT.O	Neutral	N/A	US$49.00	06 Jul 2020
Ameren Corp[16]	AEE.N	Buy	N/A	US$73.34	06 Jul 2020
American Electric Power Inc[7, 16]	AEP.N	Buy	N/A	US$82.12	06 Jul 2020
ATCO Ltd	ACOx.TO	Buy	N/A	C$41.33	06 Jul 2020
Canadian Utilities Ltd	CU.TO	Neutral	N/A	C$34.45	06 Jul 2020
Caribbean Utilities Corp	CUPu.TO	Sell	N/A	US$15.98	06 Jul 2020
Consolidated Edison Inc[16]	ED.N	Neutral	N/A	US$73.10	06 Jul 2020
Dominion Energy Inc[7, 16]	D.N	Buy	N/A	US$73.59	06 Jul 2020
DTE Energy Co[16]	DTE.N	Buy	N/A	US$108.43	06 Jul 2020
Duke Energy Corp[7, 16]	DUK.N	Buy	N/A	US$79.81	06 Jul 2020
Edison International[7, 16]	EIX.N	Buy	N/A	US$56.05	06 Jul 2020
Emera Inc	EMA.TO	Buy	N/A	C$54.40	06 Jul 2020
Entergy Corp[7, 16]	ETR.N	Buy	N/A	US$96.40	06 Jul 2020
Evergy, Inc[16]	EVRG.N	Neutral	N/A	US$61.46	06 Jul 2020
Eversource Energy[7, 16]	ES.N	Neutral	N/A	US$83.86	06 Jul 2020
Exelon Corp[7, 16]	EXC.O	Buy	N/A	US$37.40	06 Jul 2020
FirstEnergy Corp[16]	FE.N	Buy	N/A	US$40.18	06 Jul 2020
Fortis Inc[16]	FTS.TO	Buy	N/A	C$52.68	06 Jul 2020
Hawaiian Electric Industries Inc[16]	HE.N	Sell	N/A	US$35.72	06 Jul 2020
Hydro One	H.TO	Sell	N/A	C$26.03	06 Jul 2020
NextEra Energy Inc[4, 6a, 7, 16]	NEE.N	Buy	N/A	US$246.96	06 Jul 2020
PG&E Corp[7, 13, 16, 20]	PCG.N	Buy (CBE)	N/A	US$9.15	06 Jul 2020
Pinnacle West Capital Corp[7, 16]	PNW.N	Neutral	N/A	US$76.80	06 Jul 2020
PNM Resources Inc[7, 16]	PNM.N	Buy	N/A	US$39.28	06 Jul 2020
Portland General Electric Co[16]	POR.N	Neutral	N/A	US$41.94	06 Jul 2020
PPL Corp[16]	PPL.N	Buy	N/A	US$25.88	06 Jul 2020
Public Service Enterprise Group[7, 16]	PEG.N	Buy	N/A	US$50.62	06 Jul 2020
Sempra Energy[7, 16]	SRE.N	Buy	N/A	US$120.45	06 Jul 2020
Southern Co[6b, 7, 13, 16]	SO.N	Neutral	N/A	US$52.61	06 Jul 2020
WEC Energy Group Inc[16]	WEC.N	Neutral	N/A	US$89.94	06 Jul 2020
Xcel Energy Inc[16]	XEL.O	Neutral	N/A	US$63.58	06 Jul 2020

Source: UBS. All prices as of local market close.
Ratings in this table are the most current published ratings prior to this report. They may be more recent than the stock pricing date

4. Within the past 12 months, UBS AG, its affiliates or subsidiaries has received compensation for investment banking services from this company/entity or one of its affiliates.

6a. This company/entity is, or within the past 12 months has been, a client of UBS Securities LLC, and investment banking services are being, or have been, provided.

6b. This company/entity is, or within the past 12 months has been, a client of UBS Securities LLC, and non-investment banking securities-related services are being, or have been, provided.

7. Within the past 12 months, UBS Securities LLC and/or its affiliates have received compensation for products and services other than investment banking services from this company/entity.

13. UBS AG, its affiliates or subsidiaries beneficially owned 1% or more of a class of this company`s common equity securities as of last month`s end (or the prior month`s end if this report is dated less than 10 days after the most recent month`s end).
16. UBS Securities LLC makes a market in the securities and/or ADRs of this company.
20. Because this security exhibits higher-than-average volatility, the FSR has been set at 25% above the MRA for a Buy rating, and at -25% below the MRA for a Sell rating (compared with 6/-6% under the normal rating system).

Unless otherwise indicated, please refer to the Valuation and Risk sections within the body of this report. For a complete set of disclosure statements associated with the companies discussed in this report, including information on valuation and risk, please contact UBS Securities LLC, 1285 Avenue of Americas, New York, NY 10019, USA, Attention: Investment Research.

The Disclaimer relevant to Global Wealth Management clients follows the Global Disclaimer.

Global Disclaimer

This document has been prepared by UBS Securities LLC, an affiliate of UBS AG. UBS AG, its subsidiaries, branches and affiliates are referred to herein as UBS.

This Document is provided solely to recipients who are expressly authorized by UBS to receive it. If you are not so authorized you must immediately destroy the Document.

Global Research is provided to our clients through UBS Neo, and in certain instances, UBS.com and any other system or distribution method specifically identified in one or more communications distributed through UBS Neo or UBS.com (each a system) as an approved means for distributing Global Research. It may also be made available through third party vendors and distributed by UBS and/or third parties via e-mail or alternative electronic means. The level and types of services provided by Global Research to a client may vary depending upon various factors such as a client's individual preferences as to the frequency and manner of receiving communications, a client's risk profile and investment focus and perspective (e.g., market wide, sector specific, long-term, short-term, etc.), the size and scope of the overall client relationship with UBS and legal and regulatory constraints.

All Global Research is available on UBS Neo. Please contact your UBS sales representative if you wish to discuss your access to UBS Neo.

When you receive Global Research through a system, your access and/or use of such Global Research is subject to this Global Research Disclaimer and to the UBS Neo Platform Use Agreement (the "Neo Terms") together with any other relevant terms of use governing the applicable System.

When you receive Global Research via a third party vendor, e-mail or other electronic means, you agree that use shall be subject to this Global Research Disclaimer, the Neo Terms and where applicable the UBS Investment Bank terms of business (https://www.ubs.com/global/en/investment-bank/regulatory.html) and to UBS's Terms of Use/Disclaimer (http://www.ubs.com/global/en/legalinfo2/disclaimer.html). In addition, you consent to UBS processing your personal data and using cookies in accordance with our Privacy Statement (http://www.ubs.com/global/en/legalinfo2/privacy.html) and cookie notice (http://www.ubs.com/global/en/homepage/cookies/cookie-management.html).

If you receive Global Research, whether through a System or by any other means, you agree that you shall not copy, revise, amend, create a derivative work, provide to any third party, or in any way commercially exploit any UBS research provided via Global Research or otherwise, and that you shall not extract data from any research or estimates provided to you via Global Research or otherwise, without the prior written consent of UBS.

This document is for distribution only as may be permitted by law. It is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or located in any locality, state, country or other jurisdiction where such distribution, publication, availability or use would be contrary to law or regulation or would subject UBS to any registration or licensing requirement within such jurisdiction.

This document is a general communication and is educational in nature; it is not an advertisement nor is it a solicitation or an offer to buy or sell any financial instruments or to participate in any particular trading strategy. Nothing in this document constitutes a representation that any investment strategy or recommendation is suitable or appropriate to an investor's individual circumstances or otherwise constitutes a personal recommendation. By providing this document, none of UBS or its representatives has any responsibility or authority to provide or have provided investment advice in a fiduciary capacity or otherwise. Investments involve risks, and investors should exercise prudence and their own judgment in making their investment decisions. None of UBS or its representatives is suggesting that the recipient or any other person take a specific course of action or any action at all. By receiving this document, the recipient acknowledges and agrees with the intended purpose described above and further disclaims any expectation or belief that the information constitutes investment advice to the recipient or otherwise purports to meet the investment objectives of the recipient. The financial instruments described in the document may not be eligible for sale in all jurisdictions or to certain categories of investors.

Options, structured derivative products and futures (including OTC derivatives) are not suitable for all investors. Trading in these instruments is considered risky and may be appropriate only for sophisticated investors. Prior to buying or selling an option, and for the complete risks relating to options, you must receive a copy of "The Characteristics and Risks of Standardized Options." You may read the document at http://www.theocc.com/publications/risks/riskchap1.jsp or ask your salesperson for a copy. Various theoretical explanations of the risks associated with these instruments have been published. Supporting documentation for any claims, comparisons, recommendations, statistics or other technical data will be supplied upon request. Past performance is not necessarily indicative of future results. Transaction costs may be significant in option strategies calling for multiple purchases and sales of options, such as spreads and straddles. Because of the importance of tax considerations to many options transactions, the investor considering options should consult with his/her tax advisor as to how taxes affect the outcome of contemplated options transactions.

Mortgage and asset-backed securities may involve a high degree of risk and may be highly volatile in response to fluctuations in interest rates or other market conditions. Foreign currency rates of exchange may adversely affect the value, price or income of any security or related instrument referred to in the document. For investment advice, trade execution or other enquiries, clients should contact their local sales representative.

The value of any investment or income may go down as well as up, and investors may not get back the full (or any) amount invested. Past performance is not necessarily a guide to future performance. Neither UBS nor any of its directors, employees or agents accepts any liability for any loss (including investment loss) or damage arising out of the use of all or any of the Information.

Prior to making any investment or financial decisions, any recipient of this document or the information should take steps to understand the risk and return of the investment and seek individualized advice from his or her personal financial, legal, tax and other professional advisors that takes into account all the particular facts and circumstances of his or her investment objectives.

Any prices stated in this document are for information purposes only and do not represent valuations for individual securities or other financial instruments. There is no representation that any transaction can or could have been effected at those prices, and any prices do not necessarily reflect UBS's internal books and records or theoretical model-based valuations and may be based on certain assumptions. Different assumptions by UBS or any other source may yield substantially different results.

No representation or warranty, either expressed or implied, is provided in relation to the accuracy, completeness or reliability of the information contained in any materials to which this document relates (the "Information"), except with respect to Information concerning UBS. The Information is not intended to be a complete statement or summary of the securities, markets or developments referred to in the document. UBS does not undertake to update or keep current the Information. Any opinions expressed in this document may change without notice and may differ or be contrary to opinions expressed by other business areas or groups, personnel or other representative of UBS. Any statements contained in this report attributed to a third party represent UBS's interpretation of the data, information and/or opinions provided by that third party either publicly or through a subscription service, and such use and interpretation have not been reviewed by the third party. In no circumstances may this document or any of the Information (including any forecast, value, index or other calculated amount ("Values")) be used for any of the following purposes:

(i) valuation or accounting purposes;

(ii) to determine the amounts due or payable, the price or the value of any financial instrument or financial contract; or

(iii) to measure the performance of any financial instrument including, without limitation, for the purpose of tracking the return or performance of any Value or of defining the asset allocation of portfolio or of computing performance fees.

By receiving this document and the Information you will be deemed to represent and warrant to UBS that you will not use this document or any of the Information for any of the above purposes or otherwise rely upon this document or any of the Information.

UBS has policies and procedures, which include, without limitation, independence policies and permanent information barriers, that are intended, and upon which UBS relies, to manage potential conflicts of interest and control the flow of information within divisions of UBS and among its subsidiaries, branches and affiliates. For further information on the ways in which UBS manages conflicts and maintains independence of its research products, historical performance information and certain additional disclosures concerning UBS research recommendations, please visit www.ubs.com/disclosures.

Research will initiate, update and cease coverage solely at the discretion of UBS Research Management, which will also have sole discretion on the timing and frequency of any published research product. The analysis contained in this document is based on numerous assumptions. All material information in relation to published research reports, such as valuation methodology, risk statements, underlying assumptions (including sensitivity analysis of those assumptions), ratings history etc. as required by the Market Abuse Regulation, can be found on UBS Neo. Different assumptions could result in materially different results.

The analyst(s) responsible for the preparation of this document may interact with trading desk personnel, sales personnel and other parties for the purpose of gathering, applying and interpreting market information. UBS relies on information barriers to control the flow of information contained in one or more areas within UBS into other areas, units, groups or affiliates of UBS. The compensation of the analyst who prepared this document is determined exclusively by research management and senior management (not including investment banking). Analyst compensation is not based on investment banking revenues; however, compensation may relate to the revenues of UBS and/or its divisions as a whole, of which investment banking, sales and trading are a part, and UBS's subsidiaries, branches and affiliates as a whole.

For financial instruments admitted to trading on an EU regulated market: UBS AG, its affiliates or subsidiaries (excluding UBS Securities LLC) acts as a market maker or liquidity provider (in accordance with the interpretation of these terms under English law or, if not carried out by UBS in the UK the law of the relevant jurisdiction in which UBS determines it carries out the activity) in the financial instruments of the issuer save that where the activity of liquidity provider is carried out in accordance with the definition given to it by the laws and regulations of any other EU jurisdictions, such information is separately disclosed in this document. For financial instruments admitted to trading on a non-EU regulated market: UBS may act as a market maker save that where this activity is carried out in the US in accordance with the definition given to it by the relevant laws and regulations, such activity will be specifically disclosed in this document. UBS may have issued a warrant the value of which is based on one or more of the financial instruments referred to in the document. UBS and its affiliates and employees may have long or short positions, trade as principal and buy and sell in instruments or derivatives identified herein; such transactions or positions may be inconsistent with the opinions expressed in this document.

Within the past 12 months UBS AG, its affiliates or subsidiaries may have received or provided investment services and activities or ancillary services as per MiFID II which may have given rise to a payment or promise of a payment in relation to these services from or to this company.

Where Global Research refers to "UBS Evidence Lab Inside" or has made use of data provided by UBS Evidence Lab you understand that UBS Evidence Lab is a separate department to Global Research and that UBS Evidence Lab does not provide research, investment recommendations or advice.

United Kingdom: This material is distributed by UBS AG, London Branch to persons who are eligible counterparties or professional clients. UBS AG, London Branch is authorised by the Prudential Regulation Authority and subject to regulation by the Financial Conduct Authority and limited regulation by the Prudential Regulation Authority. **Europe:** Except as otherwise specified herein, these materials are distributed by UBS Europe SE, a subsidiary of UBS AG, to persons who are eligible counterparties or professional clients (as detailed in the Bundesanstalt fur Finanzdienstleistungsaufsicht (BaFin) Rules and according to MIFID) and are only available to such persons. The information does not apply to, and should not be relied upon by, retail clients. UBS Europe SE is authorised by the [European Central Bank (ECB)] and regulated by the BaFin and the ECB. **France:** Prepared by UBS Europe SE and distributed by UBS Europe SE and UBS Securities France S.A. UBS Securities France S.A. is regulated by the ACPR (Autorité de Contrôle Prudentiel et de Résolution) and the Autorité des Marchés Financiers (AMF). Where an analyst of UBS Securities France S.A. has contributed to this document, the document is also deemed to have been prepared by UBS Securities France S.A. **Germany:** Where an analyst of UBS Europe SE has contributed to this document, the document is also deemed to have been prepared by UBS Europe SE. In all cases it is distributed by UBS Europe SE and UBS AG, London Branch. **Luxembourg, the Netherlands, Belgium and Ireland:** Where an analyst of UBS Europe SE has contributed to this document, the document is also deemed to have been prepared by UBS Europe SE. In all cases it is distributed by UBS Europe SE and UBS AG, London Branch. **Spain:** Prepared by UBS Europe SE and distributed by UBS Europe SE and UBS Securities España SV, SA. UBS Securities España SV, SA is regulated by the Comisión Nacional del Mercado de Valores (CNMV). **Turkey:** Distributed by UBS AG, London Branch. No information in this document is provided for the purpose of offering, marketing and sale by any means of any capital market instruments and services in the Republic of Turkey. Therefore, this document may not be considered as an offer made or to be made to residents of the Republic of Turkey. UBS AG, London Branch is not licensed by the Turkish Capital Market Board under the provisions of the Capital Market Law (Law No. 6362). Accordingly, neither this document nor any other offering material related to the instruments/services may be utilized in connection with providing any capital market services to persons within the Republic of Turkey without the prior approval of the Capital Market Board. However, according to article 15 (d) (ii) of the Decree No. 32, there is no restriction on the purchase or sale of the securities abroad by residents of the Republic of Turkey. **Poland:** Distributed by UBS Europe SE (spolka z ograniczona odpowiedzialnoscia) Oddzial w Polsce regulated by the Polish Financial Supervision Authority. Where an analyst of UBS Europe SE (spolka z ograniczona odpowiedzialnoscia) Oddzial w Polsce has contributed to this document, the document is also deemed to have been prepared by UBS Europe SE (spolka z ograniczona odpowiedzialnoscia) Oddzial w Polsce. **Russia:** Prepared and distributed by UBS Bank (OOO). Should not be construed as an individual Investment Recommendation for the purpose of the Russian Law – Federal Loaw #39-FZ ON THE SECURITIES MARKET Articles 6.1-6.2. **Switzerland:** Distributed by UBS AG to persons who are institutional investors only. UBS AG is regulated by the Swiss Financial Market Supervisory Authority (FINMA). **Italy:** Prepared by UBS Europe SE and distributed by UBS Europe SE and UBS Europe SE, Italy Branch. Where an analyst of UBS Europe SE, Italy Branch has contributed to this document, the document is also deemed to have been prepared by UBS Europe SE, Italy Branch.**South Africa:** Distributed by UBS South Africa (Pty) Limited (Registration No. 1995/011140/07), an authorised user of the JSE and an authorised Financial Services Provider (FSP 7328). **Saudi Arabia:** This document has been issued by UBS AG (and/or any of its subsidiaries, branches or affiliates), a public company limited by shares, incorporated in Switzerland with its registered offices at Aeschenvorstadt 1, CH-4051 Basel and Bahnhofstrasse 45, CH-8001 Zurich. This publication has been approved by UBS Saudi Arabia (a subsidiary of UBS AG), a Saudi closed joint stock company incorporated in the Kingdom of Saudi Arabia under commercial register number 1010257812 having its registered office at Tatweer Towers, P.O. Box 75724, Riyadh 11588, Kingdom of Saudi Arabia. UBS Saudi Arabia is authorized and regulated by the Capital Market Authority to conduct securities business under license number 08113-37. **UAE / Dubai:** The information distributed by UBS AG Dubai Branch is only intended for Professional Clients and/or Market Counterparties, as classified under the DFSA rulebook. No other person should act upon this material/communication. The information is not for further distribution within the United Arab Emirates. UBS AG Dubai Branch is regulated by the DFSA in the DIFC. UBS is not licensed to provide banking services in the UAE by the Central Bank of the UAE, nor is it licensed by the UAE Securities and Commodities Authority. **United States:** Distributed to US persons by either UBS Securities LLC or by UBS Financial Services Inc., subsidiaries of UBS AG; or by a group, subsidiary or affiliate of UBS AG that is not registered as a US broker-dealer (a **'non-US affiliate'**) to major US institutional investors only. UBS Securities LLC or UBS Financial Services Inc. accepts responsibility for the content of a report prepared by another non-US affiliate when distributed to US persons by UBS Securities LLC or UBS Financial Services Inc. All transactions by a US person in the securities mentioned in this report must be effected through UBS Securities LLC or UBS Financial Services Inc., and not through a non-US affiliate. UBS Securities LLC is not acting as a municipal advisor to any municipal entity or obligated person within the meaning of Section 15B of the Securities Exchange Act (the "Municipal Advisor Rule"), and the opinions or views contained herein are not intended to be, and do not constitute, advice within the meaning of the Municipal Advisor Rule. **Canada:** Distributed by UBS Securities Canada Inc., a registered investment dealer in Canada and a Member-Canadian Investor Protection Fund, or by another affiliate of UBS AG that is registered to conduct business in Canada or is otherwise exempt from registration. **Brazil:** Except as otherwise specified herein, this material is prepared by UBS Brasil CCTVM S.A. to persons who are eligible investors residing in Brazil, which are considered to be Investidores Profissionais, as designated by the applicable regulation, mainly the CVM Instruction No. 539 from the 13th of November 2013 (determines the duty to verify the suitability of products, services and transactions with regards to the client´s profile). **Hong Kong:** Distributed by UBS Securities Asia Limited and/or UBS AG, Hong Kong Branch, which is incorporated in Switzerland with limited liability. Please contact local licensed/registered representatives of UBS Securities Asia Limited and/or UBS AG, Hong Kong Branch in respect of any matters arising from, or in connection with, the analysis or document. **Singapore:** Distributed by UBS Securities Pte. Ltd. [MCI (P) 079/08/2019 and Co. Reg. No.: 198500648C] or UBS AG, Singapore Branch. Please contact UBS Securities Pte. Ltd., an exempt financial adviser under the Singapore Financial Advisers Act (Cap. 110); or UBS AG, Singapore Branch, an exempt financial adviser under the Singapore Financial Advisers Act (Cap. 110) and a wholesale bank licensed under the Singapore Banking Act (Cap. 19) regulated by the Monetary Authority of Singapore, in respect of any matters arising from, or in connection with, the analysis or document. The recipients of this document represent and warrant that they are accredited and institutional investors as defined in the Securities and Futures Act (Cap. 289). **Japan:** Distributed by UBS Securities Japan Co., Ltd. to professional investors (except as otherwise permitted). Where this report has been prepared by UBS Securities Japan Co., Ltd., UBS Securities Japan Co., Ltd. is the author, publisher and distributor of the report. Distributed by UBS AG, Tokyo Branch to Professional Investors (except as otherwise permitted) in relation to foreign exchange and other banking businesses when relevant. **Australia:** Clients of UBS AG: Distributed by UBS AG (ABN 47 088 129 613 and holder of Australian Financial Services License No. 231087). Clients of UBS Securities Australia Ltd: Distributed by UBS Securities Australia Ltd (ABN 62 008 586 481 and holder of Australian Financial Services License No. 231098). This Document contains general information and/or general advice only and does not constitute personal financial product advice. As such, the Information in this document has been prepared without taking into account any investor's objectives, financial situation or needs, and investors should, before acting on the Information, consider the appropriateness of the Information, having regard to their objectives, financial situation and needs. If the Information contained in this document relates to the acquisition, or potential acquisition of a particular financial product by a 'Retail' client as defined by section 761G of the Corporations Act 2001 where a Product Disclosure Statement would be required, the retail client should obtain and consider the Product Disclosure Statement relating to the product before making any decision about whether to acquire the product. The UBS Securities Australia Limited Financial Services Guide is available at: www.ubs.com/ecs-research-fsg. **New Zealand:** Distributed by UBS New Zealand Ltd. UBS New Zealand Ltd is not a registered bank in New Zealand. You are being provided with this UBS publication or material because you have indicated to UBS that you are a "wholesale client" within the meaning of section 5C of the Financial Advisers Act 2008 of New Zealand (Permitted Client). This publication or material is not intended for clients who are not Permitted Clients (non-permitted Clients). If you are a non-permitted Client you must not rely on this publication or material. If despite this warning you nevertheless rely on this publication or material, you hereby (i) acknowledge that you may not rely on the content of this publication or material and that any recommendations or opinions in such this publication or material are not made or provided to you, and (ii) to the maximum extent permitted by law (a) indemnify UBS and its associates or related entities (and their respective Directors, officers, agents and Advisors) (each a 'Relevant Person') for any loss, damage, liability or claim any of them may incur or suffer as a result of, or in connection with, your unauthorised reliance on this publication or material and (b) waive any rights or remedies you may have against any Relevant Person for (or in respect of) any loss, damage, liability or claim you may incur or suffer as a result of, or in connection with, your unauthorised reliance on this publication or material. **Korea:** Distributed in Korea by UBS Securities Pte. Ltd., Seoul Branch. This report may have been edited or contributed to from time to time by affiliates of UBS Securities Pte. Ltd., Seoul Branch. This material is intended for professional/institutional clients only and not for distribution to any retail clients. **Malaysia:** This material is authorized to be distributed in Malaysia by UBS Securities Malaysia Sdn. Bhd (Capital Markets Services License No.: CMSL/A0063/2007). This material is intended for professional/institutional clients only and not for distribution to any retail clients. **India:** Distributed by UBS Securities India Private Ltd. (Corporate Identity Number U67120MH1996PTC097299) 2/F, 2 North Avenue, Maker Maxity, Bandra Kurla Complex, Bandra (East), Mumbai (India) 400051. Phone: +912261556000. It provides brokerage services bearing SEBI Registration Number: INZ000259830; merchant banking services bearing SEBI Registration Number: INM000010809 and Research Analyst services bearing SEBI Registration Number: INH000001204. UBS AG, its affiliates or subsidiaries may have debt holdings or positions in the subject Indian company/companies. Within the past 12 months, UBS AG, its affiliates or subsidiaries may have received compensation for non-investment banking securities-related services and/or non-securities services from the subject Indian company/companies. The subject company/companies may have been a client/clients of UBS AG, its affiliates or subsidiaries during the 12 months preceding the date of distribution of the research report with respect to investment banking and/or non-investment banking securities-related services and/or non-securities services. With regard to information on associates, please refer to the Annual Report at: http://www.ubs.com/global/en/about_ubs/investor_relations/annualreporting.html**Taiwan:** Except as otherwise specified herein, this material may not be distributed in Taiwan. Information and material on securities/instruments that are traded in a Taiwan organized exchange is deemed to be issued and distributed by UBS Securities Pte. LTD., Taipei Branch, which is licensed and regulated by Taiwan Financial Supervisory Commission. Save for securities/instruments that are traded in a Taiwan organized exchange, this material should not constitute "recommendation" to clients or recipients in Taiwan for the covered companies or any companies mentioned in this document. No portion of the document may be reproduced or quoted by the press or any other person without authorisation from UBS. **Indonesia:** This report is being distributed by PT UBS Sekuritas Indonesia and is delivered by its licensed employee(s), including marketing/sales person, to its client. PT UBS Sekuritas Indonesia, having its registered office at Wisma GKBI, 22nd floor, JL. Jend. Sudirman, kav.28, Jakarta 10210, Indonesia, is a subsidiary company of UBS AG and licensed under Capital Market Law no. 8 year 1995, a holder of broker-dealer and underwriter licenses issued by the Capital Market and Financial Institution Supervisory Agency (now Otoritas Jasa Keuangan/OJK). PT UBS Sekuritas Indonesia is also a member of Indonesia Stock Exchange and supervised by Otoritas Jasa Keuangan (OJK). Neither this report nor any copy hereof may be distributed in Indonesia or to any Indonesian citizens except in compliance with applicable Indonesian capital market laws and regulations. This report is not an offer of securities in Indonesia and may not be distributed within the territory of the Republic of Indonesia or to Indonesian citizens in circumstance which constitutes an offering within the meaning of Indonesian capital market laws and regulations.

The disclosures contained in research documents produced by UBS AG, London Branch or UBS Europe SE shall be governed by and construed in accordance with English law.

Global Wealth Management Disclaimer

You receive this document in your capacity as a client of UBS Global Wealth Management. This publication has been distributed to you by UBS Switzerland AG (regulated by FINMA in Switzerland) or its affiliates ("UBS") with whom you have a banking relationship with. The full name of the distributing affiliate and its competent authority can be found in the country-specific disclaimer at the end of this document.

The date and time of the first dissemination of this publication is the same as the date and time of its publication.

Risk information:

You agree that you shall not copy, revise, amend, create a derivative work, provide to any third party, or in any way commercially exploit any UBS research, and that you shall not extract data from any research or estimates, without the prior written consent of UBS.

This document is for distribution only as may be permitted by law. It is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or located in any locality, state, country or other jurisdiction where such distribution, publication, availability or use would be contrary to law or regulation or would subject UBS to any registration or licensing requirement within such jurisdiction.

This document is a general communication and is educational in nature; it is not an advertisement nor is it a solicitation or an offer to buy or sell any financial instruments or to participate in any particular trading strategy. Nothing in this document constitutes a representation that any investment strategy or recommendation is suitable or appropriate to an investor's individual circumstances or otherwise constitutes a personal recommendation. By providing this document, none of UBS or its representatives has any responsibility or authority to provide or have provided investment advice in a fiduciary capacity or otherwise. Investments involve risks, and investors should exercise prudence and their own judgment in making their investment decisions. None of UBS or its representatives is suggesting that the recipient or any other person take a specific course of action or any action at all. By receiving this document, the recipient acknowledges and agrees with the intended purpose described above and further disclaims any expectation or belief that the information constitutes investment advice to the recipient or otherwise purports to meet the investment objectives of the recipient. The financial instruments described in the document may not be eligible for sale in all jurisdictions or to certain categories of investors.

Options, derivative products and futures are not suitable for all investors, and trading in these instruments is considered risky. Mortgage and asset-backed securities may involve a high degree of risk and may be highly volatile in response to fluctuations in interest rates or other market conditions. Foreign currency rates of exchange may adversely affect the value, price or income of any security or related instrument referred to in the document. For investment advice, trade execution or other enquiries, clients should contact their local sales representative.

The value of any investment or income may go down as well as up, and investors may not get back the full (or any) amount invested. Past performance is not necessarily a guide to future performance. Neither UBS nor any of its directors, employees or agents accepts any liability for any loss (including investment loss) or damage arising out of the use of all or any of the information (as defined below).

Prior to making any investment or financial decisions, any recipient of this document or the information should take steps to understand the risk and return of the investment and seek individualized advice from his or her personal financial, legal, tax and other professional advisors that takes into account all the particular facts and circumstances of his or her investment objectives.

Any prices stated in this document are for information purposes only and do not represent valuations for individual securities or other financial instruments. There is no representation that any transaction can or could have been effected at those prices, and any prices do not necessarily reflect UBS's internal books and records or theoretical model-based valuations and may be based on certain assumptions. Different assumptions by UBS or any other source may yield substantially different results.

No representation or warranty, either expressed or implied, is provided in relation to the accuracy, completeness or reliability of the information contained in any materials to which this document relates (the "Information"), except with respect to Information concerning UBS. The Information is not intended to be a complete statement or summary of the securities, markets or developments referred to in the document. UBS does not undertake to update or keep current the Information. Any opinions expressed in this document may change without notice and may differ or be contrary to opinions expressed by other business areas or groups, personnel or other representative of UBS. Any statements contained in this report attributed to a third party represent UBS's interpretation of the data, information and/or opinions provided by that third party either publicly or through a subscription service, and such use and interpretation have not been reviewed by the third party. In no circumstances may this document or any of the Information (including any forecast, value, index or other calculated amount ("Values")) be used for any of the following purposes:

(i) valuation or accounting purposes;

(ii) to determine the amounts due or payable, the price or the value of any financial instrument or financial contract; or

(iii) to measure the performance of any financial instrument including, without limitation, for the purpose of tracking the return or performance of any Value or of defining the asset allocation of portfolio or of computing performance fees.

By receiving this document and the Information you will be deemed to represent and warrant to UBS that you will not use this document or any of the Information for any of the above purposes or otherwise rely upon this document or any of the Information.

UBS has policies and procedures, which include, without limitation, independence policies and permanent information barriers, that are intended, and upon which UBS relies, to manage potential conflicts of interest and control the flow of information within divisions of UBS (including between Global Wealth Management and Research) and among its subsidiaries, branches and affiliates. For further information on the ways in which UBS manages conflicts and maintains independence of its research products, historical performance information and certain additional disclosures concerning UBS research recommendations, please visit www.ubs.com/disclosures.

Research will initiate, update and cease coverage solely at the discretion of research management, which will also have sole discretion on the timing and frequency of any published research product. The analysis contained in this document is based on numerous assumptions. Different assumptions could result in materially different results.

The analyst(s) responsible for the preparation of this document may interact with trading desk personnel, sales personnel and other parties for the purpose of gathering, applying and interpreting market information. UBS relies on information barriers to control the flow of information contained in one or more areas within UBS into other areas, units, groups or affiliates of UBS. The compensation of the analyst who prepared this document is determined exclusively by research management and senior management (not including investment banking). Analyst compensation is not based on investment banking revenues; however, compensation may relate to the revenues of UBS and/or its divisions as a whole, of which investment banking, sales and trading are a part, and UBS's subsidiaries, branches and affiliates as a whole.

For financial instruments admitted to trading on an EU regulated market: UBS AG, its affiliates or subsidiaries (excluding UBS Securities LLC) acts as a market maker or liquidity provider (in accordance with the interpretation of these terms in the UK) in the financial instruments of the issuer save that where the activity of liquidity provider is carried out in accordance with the definition given to it by the laws and regulations of any other EU jurisdictions, such information is separately disclosed in this document. For financial instruments admitted to trading on a non-EU regulated market: UBS may act as a market maker save that where this activity is carried out in the US in accordance with the definition given to it by the relevant laws and regulations, such activity will be specifically disclosed in this document. UBS may have issued a warrant the value of which is based on one or more of the financial instruments referred to in the document. UBS and its affiliates and employees may have long or short positions, trade as principal and buy and sell in instruments or derivatives identified herein; such transactions or positions may be inconsistent with the opinions expressed in this document.

Options and futures are not suitable for all investors, and trading in these instruments is considered risky and may be appropriate only for sophisticated investors. Prior to buying or selling an option, and for the complete risks relating to options, you must receive a copy of "Characteristics and Risks of Standardized Options". You may read the document at https://www.theocc.com/about/publications/character-risks.jsp or ask your financial advisor for a copy.

Investing in structured investments involves significant risks. For a detailed discussion of the risks involved in investing in any particular structured investment, you must read the relevant offering materials for that investment. Structured investments are unsecured obligations of a particular issuer with returns linked to the performance of an underlying asset. Depending on the terms of the investment, investors could lose all or a substantial portion of their investment based on the performance of the underlying asset. Investors could also lose their entire investment if the issuer becomes insolvent. UBS Financial Services Inc. does not guarantee in any way the obligations or the financial condition of any issuer or the accuracy of any financial information provided by any issuer. Structured investments are not traditional investments and investing in a structured investment is not equivalent to investing directly in the underlying asset. Structured investments may have limited or no liquidity, and investors should be prepared to hold their investment to maturity. The return of structured investments may be limited by a maximum gain, participation rate or other feature. Structured investments may include call features and, if a structured investment is called early, investors would not earn any further return and may not be able to reinvest in similar investments with similar terms. Structured investments include costs and fees which are generally embedded in the price of the investment. The tax treatment of a structured investment may be complex and may differ from a direct investment in the underlying asset. UBS Financial Services Inc. and its employees do not provide tax advice. Investors should consult their own tax advisor about their own tax situation before investing in any securities.

Within the past 12 months UBS Switzerland AG, its affiliates or subsidiaries may have received or provided investment services and activities or ancillary services as per MiFID II which may have given rise to a payment or promise of a payment in relation to these services from or to this company.

If you require detailed information on disclosures of interest or conflict of interest as required by Market Abuse Regulation please contact the mailbox MAR_disclosures_twopager@ubs.com. Please note that e-mail communication is unsecured.

External Asset Managers / External Financial Consultants: In case this research or publication is provided to an External Asset Manager or an External Financial Consultant, UBS expressly prohibits that it is redistributed by the External Asset Manager or the External Financial Consultant and is made available to their clients and/or third parties.

Distributed to US persons by UBS Financial Services Inc. or UBS Securities LLC, subsidiaries of UBS AG. UBS Switzerland AG, UBS Europe SE, UBS Bank, S.A., UBS Brasil Administradora de Valores Mobiliarios Ltda, UBS Asesores Mexico, S.A. de C.V., UBS Securities Japan Co., Ltd, UBS Wealth Management Israel Ltd and UBS Menkul Degerler AS are affiliates of UBS AG. UBS Financial Services Incorporated of Puerto Rico is a subsidiary of UBS Financial Services Inc. **UBS Financial Services Inc. accepts responsibility for the content of a report prepared by a non-US affiliate when it distributes reports to US persons. All transactions by a US person in the securities mentioned in this report should be effected through a US-registered broker dealer affiliated with UBS, and not through a non-US affiliate. The contents of this report have not been and will not be approved by any securities or investment authority in the United States or elsewhere. UBS Financial Services Inc. is not acting as a municipal advisor to any municipal entity or obligated person within the meaning of Section 15B of the Securities Exchange Act (the "Municipal Advisor Rule") and the opinions or views contained herein are not intended to be, and do not constitute, advice within the meaning of the Municipal Advisor Rule.**

Austria: This publication is not intended to constitute a public offer under Austrian law. It is distributed only for information purposes to clients of UBS Europe SE, Niederlassung Österreich, with place of business at Wächtergasse 1, A-1010 Wien. UBS Europe SE, Niederlassung Österreich is subject to the joint supervision of the European Central Bank ("ECB"), the German Central Bank (Deutsche Bundesbank), the German Federal Financial Services Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht), as well as of the Austrian Financial Market Authority (Finanzmarktaufsicht, FMA), to which this publication has not been submitted for approval. UBS Europe SE is a credit institution constituted under German law in the form of a Societas Europaea, duly authorized by the ECB. **Bahrain**: UBS is a Swiss bank not licensed, supervised or regulated in Bahrain by the Central Bank of Bahrain and does not undertake banking or investment business activities in Bahrain. Therefore, clients have no protection under local banking and investment services laws and regulations. **Canada**: The information contained herein is not, and under no circumstances is to be construed as, a prospectus, an advertisement, a public offering, an offer to sell securities described herein, solicitation of an offer to buy securities described herein, in Canada or any province or territory thereof. Any offer or sale of the securities described herein in Canada will be made only under an exemption from the requirements to file a prospectus with the relevant Canadian securities regulators and only by a dealer properly registered under applicable securities laws or, alternatively, pursuant to an exemption from the dealer registration requirement in the relevant province or territory of Canada in which such offer or sale is made. Under no circumstances is the information contained herein to be construed as investment advice in any province or territory of Canada and is not tailored to the needs of the recipient. To the extent that the information contained herein references securities of an issuer incorporated, formed or created under the laws of Canada or a province or territory of Canada, any trades in such securities must be conducted through a dealer registered in Canada or, alternatively, pursuant to a dealer registration exemption. No securities commission or similar regulatory authority in Canada has reviewed or in any way passed upon these materials, the information contained herein or the merits of the securities described herein and any representation to the contrary is an offence. In Canada, this publication is distributed by UBS Investment Management Canada Inc. **China**: This research report is neither intended to be distributed to PRC investors nor to provide securities investment consultancy services within the territory of PRC. **Czech Republic**: UBS is not a licensed bank in the Czech Republic and thus is not allowed to provide regulated banking or investment services in the Czech Republic. Please notify UBS if you do not wish to receive any further correspondence. **Denmark**: This publication is not intended to constitute a public offer under Danish law. It is distributed only for information purposes to clients of UBS Europe SE, Denmark Branch, filial af UBS Europe SE, with place of business at Sankt Annae Plads 13, 1250 Copenhagen, Denmark, registered with the Danish Commerce and Companies Agency, under No. 38 17 24 33. UBS Europe SE, Denmark Branch, filial af UBS Europe SE is subject to the joint supervision of the European Central Bank ("ECB"), the German Central Bank (Deutsche Bundesbank), the German Federal Financial Services Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht), as well as of the Danish Financial Supervisory Authority (Finanstilsynet), to which this publication has not been submitted for approval. UBS Europe SE is a credit institution constituted under German law in the form of a Societas Europaea, duly authorized by the ECB. **Egypt**: Securities or other investment products are not being offered or sold by UBS to the public in Egypt and they have not been and will not be registered with the Egyptian Financial Supervisory Authority. **France**: This publication is distributed by UBS (France) S.A., French "société anonyme" with share capital of € 132.975.556, 69, boulevard Haussmann F-75008 Paris, R.C.S. Paris B 421 255 670, to its clients and prospects. UBS (France) S.A. is a provider of investment services duly authorized according to the terms of the "Code Monétaire et Financier", regulated by French banking and financial authorities as the "Autorité de Contrôle Prudentiel et de Résolution." **Germany**: This publication is not intended to constitute a public offer under German law. It is distributed only for information purposes to clients of UBS Europe SE, Germany, with place of business at Bockenheimer Landstrasse 2-4, 60306 Frankfurt am Main. UBS Europe SE is a credit institution constituted under German law in the form of a Societas Europaea, duly authorized by the European Central Bank ("ECB"), and supervised by the ECB, the German Central Bank (Deutsche Bundesbank) and the German Federal Financial Services Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht), to which this publication has not been submitted for approval. **Greece**: UBS Switzerland AG and its affiliates (UBS) are not licensed as a bank or financial institution under Greek legislation and do not provide banking and financial services in Greece. Consequently, UBS provides such services from branches outside of Greece, only. This document may not be considered as a public offering made or to be made to residents of Greece. **Hong Kong**: This publication is distributed to clients of UBS AG Hong Kong Branch by UBS AG Hong Kong Branch, a licensed bank under the Hong Kong Banking Ordinance and a registered institution under the Securities and Futures Ordinance. UBS AG Hong Kong Branch is incorporated in Switzerland with limited liability. **Indonesia, Malaysia, Phillipines, Thailand**: This material was provided to you as a result of a request received by UBS from you and/or persons entitled to make the request on your behalf. Should you have received the material erroneously, UBS asks that you kindly destroy/delete it and inform UBS immediately. Any and all advice provided and/or trades executed by UBS pursuant to the material will only have been provided upon your specific request or executed upon your specific instructions, as the case may be, and may be deemed as such by UBS and you. The material may not have been reviewed, approved, disapproved or endorsed by any financial or regulatory authority in your jurisdiction. The relevant investments will be subject to restrictions and obligations on transfer as set forth in the material, and by receiving the material you undertake to comply fully with such restrictions and obligations. You should carefully study and ensure that you understand and exercise due care and discretion in considering your investment objective, risk appetite and personal circumstances against the risk of the investment. You are advised to seek independent professional advice in case of doubt. **India**: UBS Securities India Private Ltd. (Corporate Identity Number U67120MH1996PTC097299) 2/F, 2 North Avenue, Maker Maxity, Bandra Kurla Complex, Bandra (East), Mumbai (India) 400051. Phone: +912261556000. It provides brokerage services bearing SEBI Registration Number INZ000259830; merchant banking services bearing SEBI Registration Number: INM000010809 and Research Analyst services bearing SEBI Registration Number: INH000001204. UBS AG, its affiliates or subsidiaries may have debt holdings or positions in the subject Indian company/companies. Within the past 12 months, UBS AG, its affiliates or subsidiaries may have received compensation for non-investment banking securities-related services and/or non-securities services from the subject Indian company/companies. The subject company/companies may have been a client/clients of UBS AG, its affiliates or subsidiaries during the 12 months preceding the date of distribution of the research report with respect to investment banking and/or non-investment banking securities-related services and/or non-securities services. With regard to information on associates, please refer to the Annual Report at: http://www.ubs.com/global/en/about_ubs/investor_relations/annualreporting.html. **Israel**: UBS is a premier global financial firm offering wealth management, asset management and investment banking services from its headquarters in Switzerland and its operations in over 50 countries worldwide to individual, corporate and institutional investors. In Israel, UBS Switzerland AG is registered as Foreign Dealer in cooperation with UBS Wealth Management Israel Ltd., a wholly owned UBS subsidiary. UBS Wealth Management Israel Ltd. is a Portfolio Manager licensee which engages also in Investment Marketing and is regulated by the Israel Securities Authority. This publication is intended for information only and is not intended as an offer to buy or solicitation of an offer. Furthermore, this publication is not intended as an investment advice and/or investment marketing and is not replacing any investment advice and/or investment marketing provided by the relevant licensee which is adjusted to each person needs. No action has been, or will be, taken in Israel that would permit an offering of the product(s) mentioned in this document or a distribution of this document to the public in Israel. In particular, this document has not been reviewed or approved by the Israeli Securities Authority. The product(s) mentioned in this document is/are being offered to a limited number of sophisticated investors who qualify as one of the investors listed in the first supplement to the Israeli Securities Law, 5728-1968. This document may not be reproduced or used for any other purpose, nor be furnished to any other person other than those to whom copies have been sent. Anyone who purchases the product(s) mentioned herein shall do so for its own benefit and for its own account and not with the aim or intention of distributing or offering the product(s) to other parties. Anyone who purchases the product(s) shall do so in accordance with its own understanding and discretion and after it has received any relevant financial, legal, business, tax or other advice or opinion required by it in connection with such purchase(s). The word "advice" and/or any of its derivatives shall be read and construed in conjunction with the definition of the term "investment marketing" as defined under the Israeli Regulation of Investment Advice, Investment Marketing and Portfolio Management Law, 1995.**Italy**: This publication is not intended to constitute a public offer under Italian law. It is distributed only for information purposes to clients of UBS Europe SE, Succursale Italia, with place of business at Via del Vecchio Politecnico, 3-20121 Milano. UBS Europe SE, Succursale Italia is subject to the joint supervision of the European Central Bank ("ECB"), the German Central Bank (Deutsche Bundesbank), the German Federal Financial Services Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht), as well as of the Bank of Italy (Banca d'Italia) and the Italian Financial Markets Supervisory Authority (CONSOB - Commissione Nazionale per le Società e la Borsa), to which this publication has not been submitted for approval. UBS Europe SE is a credit institution constituted under German law in the form of a Societas Europaea, duly authorized by the ECB. **Jersey**: UBS AG, Jersey Branch, is regulated and authorized by the Jersey Financial Services Commission for the conduct of banking, funds and investment business. Where services are provided from outside Jersey, they will not be covered by the Jersey regulatory regime. UBS AG, Jersey Branch is a branch of UBS AG a public company limited by shares, incorporated in Switzerland whose registered offices are at Aeschenvorstadt 1, CH-4051 Basel and Bahnhofstrasse 45, CH 8001 Zurich. UBS AG, Jersey Branch's principal place business is 1, IFC Jersey, St Helier, Jersey, JE2 3BX. **Luxembourg**: This publication is not intended to constitute a public offer under Luxembourg law. It is distributed only for information purposes to clients of UBS Europe SE, Luxembourg Branch, with place of business at 33A, Avenue J. F. Kennedy, L-1855 Luxembourg. UBS Europe SE, Luxembourg Branch is subject to the joint supervision of the European Central Bank ("ECB"), the German Central bank (Deutsche Bundesbank), the German Federal Financial Services Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht), as well as of the Luxembourg supervisory authority (Commission de Surveillance du Secteur Financier), to which this publication has not been submitted for approval. UBS Europe SE is a credit institution constituted under German law in the form of a Societas Europaea, duly authorized by the ECB. **Mexico**: This information is distributed by UBS Asesores México, S.A. de C.V. ("UBS Asesores"), an affiliate of UBS Switzerland AG, incorporated as a non-independent investment advisor under the Securities Market Law due to the relation with a Foreign Bank. UBS Asesores is a regulated entity and it is subject to the supervision of the Mexican Banking and Securities Commission ("CNBV"), which exclusively regulates UBS Asesores regarding the rendering of portfolio management, as well as on securities investment advisory services, analysis and issuance of individual investment recommendations, so that the CNBV has no surveillance faculties nor may have over any other service provided by UBS Asesores. UBS Asesores is registered before CNBV under Registry number 30060. You are being provided with this UBS publication or material because you have indicated to UBS Asesores that you are a Sophisticated Qualified Investor located in Mexico. The compensation of the analyst(s) who prepared this report is determined exclusively by research management and senior management of any entity of UBS Group to which such analyst(s) render services. **Nigeria**: UBS Switzerland AG and its affiliates (UBS) are not licensed, supervised or regulated in Nigeria by the Central Bank of Nigeria or the Nigerian Securities and Exchange Commission (SEC) and do not undertake banking or investment business activities in Nigeria. The investment products mentioned in this material are not being offered or sold by UBS to the public in Nigeria and they have not been submitted for approval nor registered with the Nigerian SEC. If you are interested in products of this nature, please let us know and we will direct you to someone who can advise you. The investment products mentioned in this material are not being directed to, and are not being made available for subscription by any persons within Nigeria other than the selected investors to whom the offer materials have been addressed as a private sale or domestic concern within the exemption and meaning of Section 69(2) of the Investments and Securities Act, 2007 (ISA). **Poland**: UBS is a premier global financial services firm offering wealth management services to individual, corporate and institutional investors. UBS is established in Switzerland and operates under Swiss law and in over 50 countries and from all major financial centres. UBS Switzerland AG is not licensed as a bank or as an investment firm under Polish legislation and is not permitted to provide banking and financial services in Poland. **Portugal**: UBS Switzerland AG is not licensed to conduct banking and financial activities in Portugal nor is UBS Switzerland AG supervised by the Portuguese regulators (Bank of Portugal "Banco de Portugal" and Portuguese Securities Exchange Commission "Comissão do Mercado de Valores Mobiliários"). **Russia**: This document or information contained therein is for information purposes only and constitute neither a public nor a private offering, is not an invitation to make offers, to sell, exchange or otherwise transfer any financial instruments in the Russian Federation to or for the benefit of any Russian person or entity and does not constitute an advertisement or offering of securities in the Russian Federation within the meaning of Russian securities laws. **Singapore**: This material was provided to you as a result of a request received by UBS from you and/or persons entitled to make the request on your behalf. Should you have received the material erroneously, UBS asks that you kindly destroy/delete it and inform UBS immediately. Clients of UBS AG Singapore branch are asked to please contact UBS AG Singapore branch, an exempt financial adviser under the Singapore Financial Advisers Act (Cap. 110) and a wholesale bank licensed under the Singapore Banking Act (Cap. 19) regulated by the Monetary Authority of Singapore, in respect of any matters arising from, or in connection with, the analysis or report. **Spain**: This publication is is not intended to constitute a public offer under Spanish law. It is distributed only for information purposes to clients of UBS Europe SE, Sucursal en España, with place of business at Calle María de Molina 4, C.P. 28006, Madrid. UBS Europe SE, Sucursal en España is subject to the joint supervision of the European Central Bank ("ECB"), the German Central bank (Deutsche Bundesbank), the German Federal Financial Services Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht), as well as of the Spanish supervisory authority (Banco de España), to which this publication has not been submitted for approval. Additionally it is authorized to provide investment services on securities and financial instruments, regarding which it is supervised by the Comisión Nacional del Mercado de Valores as well. UBS Europe SE, Sucursal en España is a branch of UBS Europe SE, a credit institution constituted under German law in the form of a Societas Europaea, duly authorized by the ECB. **Sweden**: This publication is not intended to constitute a public offer under Swedish law. It is distributed only for information purposes to clients of UBS Europe SE, Sweden Bankfilial, with place of business at Regeringsgatan 38, 11153 Stockholm, Sweden, registered with the Swedish Companies Registration Office under Reg. No 516406-1011. UBS Europe SE, Sweden Bankfilial is subject to the joint supervision of the European Central Bank ("ECB"), the German Central bank (Deutsche Bundesbank), the German Federal Financial Services Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht), as well as of the Swedish supervisory authority (Finansinspektionen), to which this publication has not been submitted for approval. UBS Europe SE is a credit institution constituted under German law in the form of a Societas Europaea, duly authorized by the ECB. **Taiwan**: This material is provided by UBS AG, Taipei Branch in accordance with laws of Taiwan, in agreement with or at the request of clients/prospects. **Turkey**: No information in this document is provided for the purpose of offering, marketing and sale by any means of any capital market instruments and services in the Republic of Turkey. Therefore, this document may not be considered as an offer made or to be made to residents of the Republic of Turkey in the Republic of Turkey. UBS Switzerland AG is not licensed by the Turkish Capital Market Board (the CMB) under the provisions of the Capital Market Law (Law No. 6362). Accordingly neither this document nor any other offering material related to the instruments/services may be utilized in connection with providing any capital market services to persons within the Republic of Turkey without the prior approval of the CMB. However, according to article 15 (d) (ii) of the Decree No. 32 there is no restriction on the purchase or sale of the instruments by residents of the Republic of Turkey. **UAE**: UBS is not licensed in the UAE by the Central Bank of UAE or by the Securities & Commodities Authority. The UBS AG Dubai Branch is licensed in the DIFC by the Dubai Financial Services Authority as an authorised firm. **United Kingdom**: This document is issued by UBS Wealth Management, a division of UBS AG which is authorised and regulated by the Financial Market Supervisory Authority in Switzerland. In the United Kingdom, UBS AG is authorised by the Prudential Regulation Authority and is subject to regulation by the Financial Conduct Authority and limited regulation by the Prudential Regulation Authority. Details about the extent of regulation by the Prudential Regulation Authority are available from us on request. A member of the London Stock Exchange. This publication is distributed to retail clients of UBS Wealth Management. **Ukraine**: UBS is not registered and licensed as a bank/financial institution under Ukrainian legislation and does not provide banking and other financial services in Ukraine. UBS has not made and will not make any offer of the mentioned products to the public in Ukraine. No action has been taken to authorize an offer of the mentioned products to the public in Ukraine and the distribution of this document shall not constitute financial services for the purposes of the Law of Ukraine "On Financial Services and State Regulation of Financial Services Markets" dated 12 July 2001. Accordingly, nothing in this document or any other document, information or communication related to the mentioned products shall be interpreted as containing an offer or invitation to offer, or solicitation of securities in the territory of Ukraine. Electronic communication must not be considered as an offer to enter into an electronic agreement or electronic instrument within the meaning of the Law of Ukraine "On Electronic Commerce" dated 3 September 2015.

This document is strictly for private use by its holder and may not be passed on to third parties or otherwise publicly distributed.

ECONOMIC COMMENTARY

Number 2015-05
May 7, 2015

Interest Rate Forecasts in Conventional and Unconventional Monetary Policy Periods

Nelson Oliver and Mehmet Pasaogullari

Monetary policy has been conducted with a different set of tools since the financial crisis, and we investigate whether the change has affected the accuracy of professionals' interest-rate forecasts. We analyze the accuracy of federal funds rate and nominal Treasury yield forecasts in the periods before and after the introduction of new policy tools and find that, in general, forecast accuracy improved in the latter policy period.

We analyze the accuracy of professional forecasts of the federal funds rate and nominal Treasury yields across different periods. Since interest rates are inherently forward-looking and based on future expectations, they are an important source of information for policymakers. Forecasts add an additional source of information. Furthermore, the effectiveness of monetary policy depends on managing the expectations of market participants and effectively communicating future objectives.

The way monetary policy is conducted changed markedly with the financial crisis. Before the crisis, the Federal Open Market Committee (FOMC) used the federal funds rate as its main policy tool. Since the crisis, the FOMC has used a number of other tools such as forward guidance and long-term asset purchases. Has this change affected the accuracy of professionals' interest-rate forecasts? To answer this question, we compare forecast performance across these two periods, the first of which we call the conventional monetary policy period and the second of which we call the unconventional.

We find that forecast accuracy in the near term (a one-quarter forecast horizon) is better across the whole spectrum of the term structure in the unconventional policy period (figure 1). In the medium term (a four-quarter forecast horizon), forecasts were also better in the unconventional period for the short-end of the term structure, but the improvement narrowed at longer horizons. Forecast accuracy of the medium-term yields (5-year) was similar in both policy periods, while accuracy of the long-term yield (10-year) was slightly worse in the unconventional policy period.

Data and Methods

Our source for forecasts is Blue Chip Financial Forecasts, a monthly survey of business economists conducted since 1976. We focus on forecasts of the quarterly average level of 7 different interest rates: the federal funds rate and the nominal yields of Treasury securities at 6 different maturities between 3 months and 10 years.[1] We look at the professional forecasters' forecasts for each of these rates at two horizons: one and four quarters ahead. We consider the quarterly performance of the mean (labeled consensus in the Blue Chip survey) interest rate forecasts. Our whole sample period covers 1990:Q1 to 2014:Q4, with the conventional monetary policy period spanning 1990:Q1 to 2008:Q4, and the unconventional monetary policy period spanning 2009:Q1 to 2014:Q4.[2]

Realized values for interest rates are obtained from the H.15 release produced by the Board of Governors of the Federal Reserve System.[3] The H.15 data are daily, from which we compute a quarterly average. For assessing forecast accuracy, we use a standard measure, the root mean squared-error (RMSE). The RMSE is the average squared forecast error (the difference between the actual and the forecast value) over the forecast sample. A lower RMSE reflects a better forecast performance. We also use a rolling RMSE, which shows the evolution of forecast performance over time.

Within any given quarter, forecasters submit three estimates, one each month, for each horizon and all of the interest rates. We use forecasts from only the first month of the quarter in our analysis since these do not use any data from the current period.[4]

Forecast Performance

Our results show that forecasts in the unconventional monetary policy period have lower RMSEs on average than do the forecasts in the conventional monetary policy period (figure 1). Only the four-quarter forecast for the 10-year yield performed worse in the later period than in the earlier period.

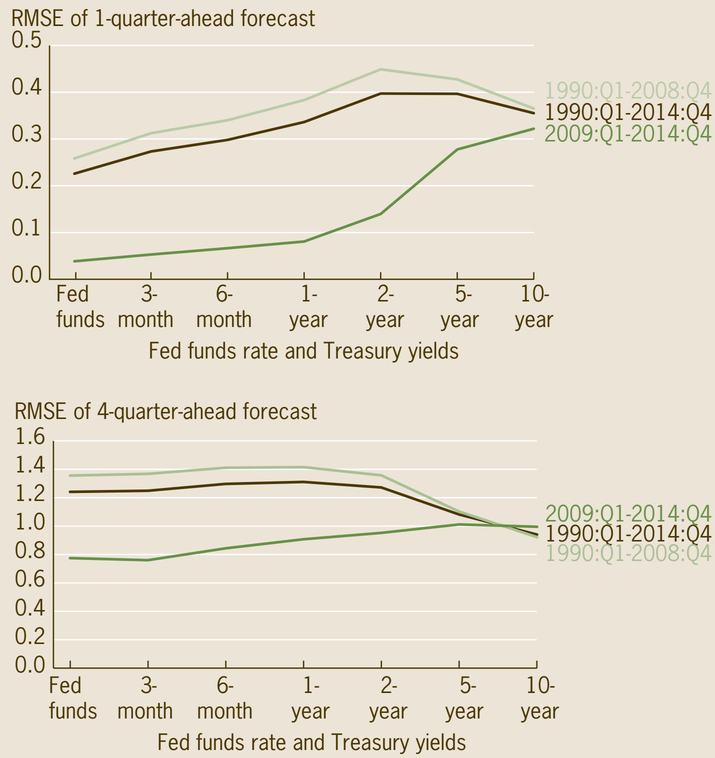
To a large extent, these lower forecast errors in the unconventional policy period, especially for the short end of the term structure, result from the FOMC's commitment to hold the federal funds rate low for an extended period. Since the longer-term yields include a term for the average of future short-term rates, this commitment may also have led long-term yields to remain low as well, causing a decline in the forecast error for them. However, this relationship ignores term premiums and the policies directly aimed at lowering long-term yields in the unconventional policy period.[5] The variability of the term premiums for long-term bonds, which may also be affected by such programs, probably has played a bigger role in the long end of the term structure during the unconventional policy period.

We see that the improvement in forecast performance in the unconventional period relative to the earlier period declines as the maturity increases, for both forecast horizons. In addition, the performance also worsens the longer the forecast horizon in the unconventional policy period. This result seems likely since the commitment to the low fed funds rate creates a credible anchor for the near term, but forecastability becomes relatively harder as the forecast horizon or the maturity increases.

Another interesting fact is that the four-quarter RMSEs for the whole sample and the conventional policy period are lower for the long-term yields than for the short-term yields. One explanation for this difference is that the short rate can be what is called "mean-reverting," i.e., high short rates today tend to be followed by lower rates in the near future, and low short rates tend to be followed by higher rates. Since long-term interest rates are a function of short-term interest rates, one would expect the shocks affecting short rates to be reflected in long-term yields, though with a smaller magnitude. That effect would imply that the uncertainty concerning short rates over a long period (such as a four-quarter forecast horizon) will be higher than that of long-term yields.

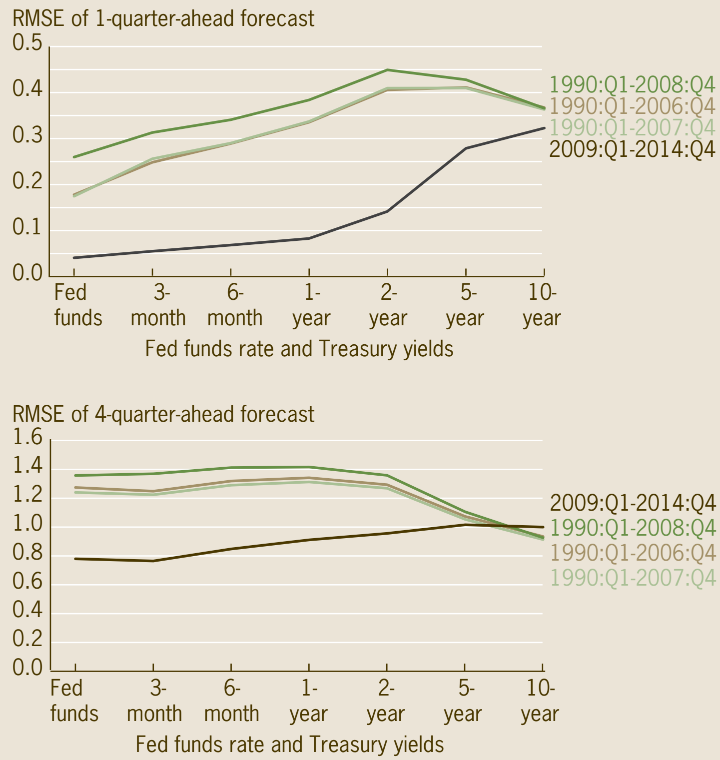
However, we do not see such a decline in the RMSEs of the longer-term yields for the four-quarter forecasts in the unconventional policy period. This probably reflects the difficulties forecasters had in predicting how the FOMC would react to the shocks hitting the economy in the unconventional period, as well as uncertainty about the timing of the exit from such policies. A case in point is June 2013, when news of the possibility of tapering the Fed's security purchases within the third round of the Large-Scale Asset Purchase Program (also known as QE3) led to sharp changes in long-term yields. Between June 18, 2013 (the day before the FOMC statement and related press conference), and June 25, 2013, the 5- and 10-year yields rose by about 0.4 percentage points.

Figure 1. The Term Structure of Forecast Performance



Sources: Blue Chip Financial Forecasts; Board of Governors H.15; authors' calculations.

Figure 2. The Term Structure of Forecast Performance, Alternate Period Breaks



Sources: Blue Chip Financial Forecasts; Board of Governors H.15; authors' calculations.

Still, we believe the FOMC's commitment to hold the fed funds rate low as well as forward guidance helped improve forecastability. Even though the unconventional period was one of great financial distress and associated uncertainties, the near-term forecastability of all yields improved, as did the medium-term forecastability of short- and medium-term yields. Only the forecastabilty of longer yields suffered to some extent.

The conventional policy period we have analyzed thus far includes data from 2007 and 2008. However, including data from the financial crisis of 2007–08 may not be fair since this was a period of high financial-market distress. To that end, we compute the RMSEs for periods excluding these years: The first is 1990:Q1 through 2007:Q4 and the second is 1990:Q1 through 2006:Q4. The results are shown in figure 2, which demonstrates that excluding 2007 alone or 2007 and 2006 together from the conventional policy period does not change the results qualitatively and has a limited quantitative effect.

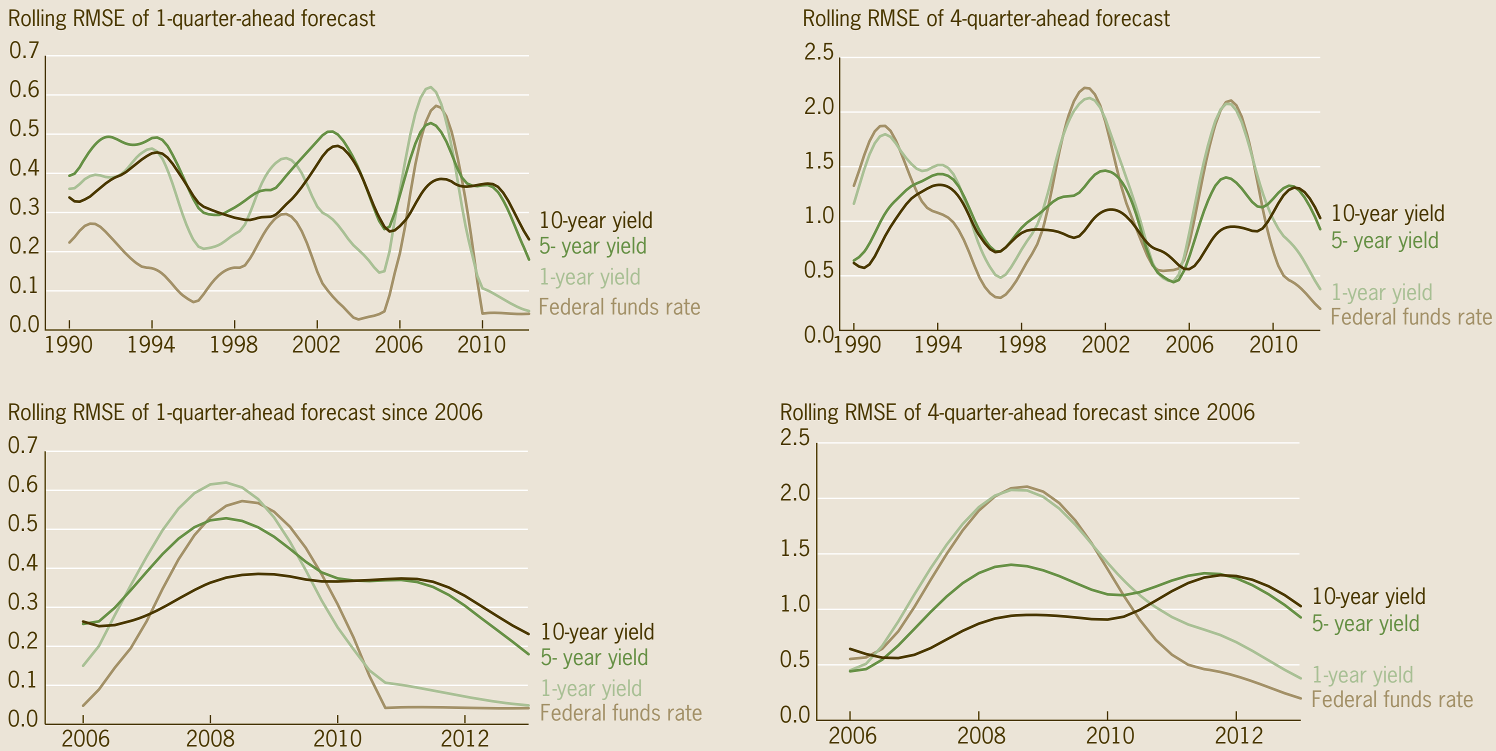
Up till now we have compared forecast accuracy across different nonoverlapping periods. Next we look at the entire sample without chopping it up into arbitrary blocks, using a rolling RMSE. This method smoothes out forecast errors by setting a window around the current observation and applying symmetric weights to past and future observations and a higher weight to the current observation. Our rolling RMSE estimates are calculated with seven quarters of observations before and after the current quarter.

Figure 3 shows the rolling RMSE of one- and four-quarter forecast horizons over the entire sample period and provides a closer look since 2006:Q1. We can see that coming into the crisis, the sharp interest rate declines were highly unexpected, and many forecasters erred markedly.[6] After the initial wave of surprise, forecast performance improved. As of 2013:Q1, our last point for the rolling RMSE (because we use seven forward observations), this improvement is the case for all the interest rates at the one-quarter forecast horizon, which has the lowest level of forecast errors in the whole sample. For the four-quarter horizon, the short-term rates still enjoy better forecastability, whereas the longer-term rates (the 5- and 10-year yields) are at elevated levels. As mentioned earlier, this may be related to the uncertainty of the shocks over the medium term in the unconventional policy period as well as the difficulty of forecasting the FOMC's response to these shocks.

Conclusion

Our analysis compares the accuracy of Blue Chip Financial Forecasts in the conventional and unconventional monetary policy periods. Overall, the yields were better forecast in the unconventional monetary policy period than in the conventional monetary policy period. After the initial shock of the financial crisis, the forecast performance of interest rates, especially in the near term, has improved greatly. With forward guidance and the short-term interest rate near zero, forecast accuracy has improved in the near term. Meanwhile, the medium-term forecastability of longer yields during the unconventional policy period has suffered to some extent, most probably because of difficulties in predicting how monetary policy would react to the shocks hitting the economy.

Figure 3. Rolling RMSEs of Forecasts



Sources: Blue Chip Financial Forecasts; Board of Governors H.15; authors' calculations.

Federal Reserve Bank of Cleveland
Research Department
P.O. Box 6387
Cleveland, OH 44101

PRSRT STD
U.S. Postage Paid
Cleveland, OH
Permit No. 385

Return Service Requested:
Please send corrected mailing label to the above address.

Footnotes

1. We exclude other surveyed rates such as the prime rate, 1-month commercial paper rate, AAA-corporate bond yield, and home-mortgage rate because we want to focus on the Treasury term structure. We have to limit the long end of the term structure to 10 years because the 30-year yield, which is surveyed currently, was replaced between March 2002 and April 2006 by the 20-year yield and a long-term average yield. In addition, we do not use the 3-year and 7-year yields, as these series are discontinued.

2. The FOMC cut the federal funds rate target to a range between 0 and 0.25 percent on December 16, 2008. Since the forecasts are for the quarterly averages and not the end-of-period values, we decided to use 2009:Q1 as the start date for the unconventional monetary policy period.

3. Blue Chip Financial Forecasts uses the H.15 data as the historical data in its releases, so it is logical to assume this is the benchmark used by participants. H.15 data can be found at http://www.federalreserve.gov/releases/h15/data.htm.

4. Our findings, though not reported here, show that the forecast accuracy increases from the first to the second and from the second to the third months of the quarter for every forecast horizon and every financial variable. In addition, as expected, forecast accuracy diminishes the farther into the future one predicts.

5. These policies include the Large-Scale Asset Purchase (LSAP) programs commonly referred to as "quantitative easing" programs, or QE, as well as the Maturity Extension Program, commonly referred to as "Operation Twist."

6. The FOMC cut the target range of the federal funds rate to 0 to 0.25 percent on December 16, 2008. In October 2008, the fourth-quarter funds rate forecast was 2 percent. Even the fourth-quarter forecasts made in December were relatively high at 0.9 percent, considering the daily average for the quarter was 0.53 percent.

Mehmet Pasaogullari is a research economist at the Federal Reserve Bank of Cleveland. Nelson Oliver is a research analyst at the Bank.
The views they express here are theirs and not necessarily those of the Federal Reserve Bank of Cleveland, the Board of Governors of the Federal Reserve System, or Board staff.

Economic Commentary is published by the Research Department of the Federal Reserve Bank of Cleveland. To receive copies or be placed on the mailing list, e-mail your request to 4d.subscriptions@clev.frb.org or fax it to 216.579.3050. *Economic Commentary* is also available on the Cleveland Fed's Web site at www.clevelandfed.org/research.

Rank	Percentile	Company	2019 Net Fixed Assets / Revenues
1	100%	REALTY INCOME CORP	11.1x
2	100%	ALEXANDRIA REAL ESTATE EQUITIES I	10.1x
3	99%	PROLOGIS INC	9.1x
4	99%	REGENCY CENTERS CORP	8.5x
5	99%	KIMCO REALTY CORP	8.4x
6	99%	AVALONBAY COMMUNITIES INC	7.8x
7	99%	EQUITY RESIDENTIAL	7.7x
8	98%	DUKE REALTY CORP	7.6x
9	98%	UDR INC	7.5x
10	98%	ESSEX PROPERTY TRUST INC	7.5x
11	98%	MID-AMERICA APARTMENT COMMUNIT	6.7x
12	97%	FEDERAL REALTY INVESTMENT TRUST	6.6x
13	97%	APARTMENT INVESTMENT AND MANAG	6.6x
14	97%	EXTRA SPACE STORAGE INC	6.1x
15	97%	BOSTON PROPERTIES INC	6.0x
16	97%	VENTAS INC	5.6x
17	96%	HEALTHPEAK PROPERTIES INC	5.6x
18	96%	WELLTOWER INC	5.5x
19	96%	SL GREEN REALTY CORP	5.4x
20	96%	DIAMONDBACK ENERGY INC	5.4x
21	96%	AMERICAN WATER WORKS CO INC	5.1x
22	95%	VORNADO REALTY TRUST	4.9x
23	95%	ATMOS ENERGY CORP	4.8x
24	95%	CONCHO RESOURCES INC	4.7x
25	95%	PPL CORP	4.7x
26	95%	DIGITAL REALTY TRUST INC	4.6x
27	94%	NEXTERA ENERGY INC	4.3x
28	94%	SIMON PROPERTY GROUP INC	4.2x
29	94%	DOMINION ENERGY INC	4.2x
30	94%	DUKE ENERGY CORP	4.1x
31	93%	AMEREN CORP	4.1x
32	93%	PINNACLE WEST CAPITAL CORP	4.1x
33	93%	OCCIDENTAL PETROLEUM CORP	4.1x
34	93%	SOUTHERN CO/THE	4.0x
35	93%	AMERICAN ELECTRIC POWER CO INC	3.9x
36	92%	EVERGY INC	3.8x
37	92%	ALLIANT ENERGY CORP	3.7x
38	92%	EDISON INTERNATIONAL	3.6x
39	92%	CROWN CASTLE INTERNATIONAL COR	3.6x
40	92%	WILLIAMS COS INC/THE	3.6x

Rank	Percentile	Company	2019 Net Fixed Assets / Revenues
41	91%	PUBLIC SERVICE ENTERPRISE GROUP	3.6x
42	91%	XCEL ENERGY INC	3.6x
43	**91%**	**CONSOLIDATED EDISON INC**	**3.6x**
44	91%	PUBLIC STORAGE	3.4x
45	91%	SEMPRA ENERGY	3.4x
46	90%	MARATHON OIL CORP	3.4x
47	90%	ENTERGY CORP	3.3x
48	90%	NISOURCE INC	3.3x
49	90%	EVERSOURCE ENERGY	3.2x
50	89%	WEC ENERGY GROUP INC	3.1x
51	89%	KANSAS CITY SOUTHERN	3.1x
52	89%	FIRSTENERGY CORP	2.9x
53	89%	NORFOLK SOUTHERN CORP	2.8x
54	89%	KINDER MORGAN INC	2.8x
55	88%	CMS ENERGY CORP	2.8x
56	88%	CSX CORP	2.7x
57	88%	HESS CORP	2.7x
58	88%	SBA COMMUNICATIONS CORP	2.7x
59	88%	NEWMONT CORP	2.6x
60	87%	UNION PACIFIC CORP	2.6x
61	87%	AMERICAN TOWER CORP	2.6x
62	87%	EQUINIX INC	2.5x
63	87%	ROYAL CARIBBEAN CRUISES LTD	2.4x
64	87%	EXELON CORP	2.4x
65	86%	AES CORP	2.2x
66	86%	APACHE CORP	2.2x
67	86%	WEYERHAEUSER CO	2.2x
68	86%	NORWEGIAN CRUISE LINE HOLDINGS L	2.1x
69	85%	FREEPORT-MCMORAN INC	2.1x
70	85%	DTE ENERGY CO	2.0x
71	85%	HOST HOTELS & RESORTS INC	1.9x
72	85%	CF INDUSTRIES HOLDINGS INC	1.8x
73	85%	CABOT OIL & GAS CORP	1.8x
74	84%	ONEOK INC	1.8x
75	84%	MCDONALD'S CORP	1.8x
76	84%	MGM RESORTS INTERNATIONAL	1.8x
77	84%	EOG RESOURCES INC	1.8x
78	84%	CENTERPOINT ENERGY INC	1.7x
79	83%	WYNN RESORTS LTD	1.5x
80	83%	IRON MOUNTAIN INC	1.5x

Rank	Percentile	Company	2019 Net Fixed Assets / Revenues
81	83%	PIONEER NATURAL RESOURCES CO	1.5x
82	83%	MICRON TECHNOLOGY INC	1.5x
83	83%	DEVON ENERGY CORP	1.4x
84	82%	AIR PRODUCTS AND CHEMICALS INC	1.4x
85	82%	ALBEMARLE CORP	1.4x
86	82%	MOSAIC CO/THE	1.3x
87	82%	CORNING INC	1.3x
88	81%	CONOCOPHILLIPS	1.3x
89	81%	CENTURYLINK INC	1.2x
90	81%	MARTIN MARIETTA MATERIALS INC	1.2x
91	81%	CHEVRON CORP	1.1x
92	81%	LAS VEGAS SANDS CORP	1.1x
93	80%	LOEWS CORP	1.1x
94	80%	LINDE PLC	1.0x
95	80%	EXXON MOBIL CORP	1.0x
96	80%	ALASKA AIR GROUP INC	1.0x
97	80%	VULCAN MATERIALS CO	1.0x
98	79%	AMERICAN AIRLINES GROUP INC	1.0x
99	79%	COPART INC	0.9x
100	79%	VERIZON COMMUNICATIONS INC	0.9x
101	79%	WASTE MANAGEMENT INC	0.9x
102	79%	DARDEN RESTAURANTS INC	0.9x
103	78%	AT&T INC	0.9x
104	78%	REPUBLIC SERVICES INC	0.8x
105	78%	SOUTHWEST AIRLINES CO	0.8x
106	78%	UNITED AIRLINES HOLDINGS INC	0.8x
107	77%	T-MOBILE US INC	0.8x
108	77%	DELTA AIR LINES INC	0.8x
109	77%	CHARTER COMMUNICATIONS INC	0.8x
110	77%	OLD DOMINION FREIGHT LINE INC	0.7x
111	77%	CHIPOTLE MEXICAN GRILL INC	0.7x
112	76%	CONSTELLATION BRANDS INC	0.7x
113	76%	FEDEX CORP	0.7x
114	76%	AKAMAI TECHNOLOGIES INC	0.7x
115	76%	CATALENT INC	0.6x
116	76%	COOPER COS INC/THE	0.6x
117	75%	FACEBOOK INC	0.6x
118	75%	EASTMAN CHEMICAL CO	0.6x
119	75%	CELANESE CORP	0.6x
120	75%	INTERNATIONAL PAPER CO	0.6x

Rank	Percentile	Company	2019 Net Fixed Assets / Revenues
121	75%	WESTROCK CO	0.6x
122	74%	STARBUCKS CORP	0.6x
123	74%	O'REILLY AUTOMOTIVE INC	0.6x
124	74%	AUTOZONE INC	0.6x
125	74%	DAVITA INC	0.6x
126	73%	BERKSHIRE HATHAWAY INC	0.6x
127	73%	DOW INC	0.5x
128	73%	ALPHABET INC	0.5x
129	73%	ALPHABET INC	0.5x
130	73%	GAP INC/THE	0.5x
131	72%	TAPESTRY INC	0.5x
132	72%	MOHAWK INDUSTRIES INC	0.5x
133	72%	TWITTER INC	0.5x
134	72%	TIFFANY & CO	0.5x
135	72%	DUPONT DE NEMOURS INC	0.5x
136	71%	WEST PHARMACEUTICAL SERVICES IN	0.5x
137	71%	WALT DISNEY CO/THE	0.5x
138	71%	PACKAGING CORP OF AMERICA	0.5x
139	71%	GENERAL ELECTRIC CO	0.5x
140	71%	COMCAST CORP	0.5x
141	70%	HCA HEALTHCARE INC	0.5x
142	70%	IPG PHOTONICS CORP	0.5x
143	70%	UNIVERSAL HEALTH SERVICES INC	0.5x
144	70%	BAXTER INTERNATIONAL INC	0.5x
145	69%	UNITED PARCEL SERVICE INC	0.4x
146	69%	PNC FINANCIAL SERVICES GROUP INC/	0.4x
147	69%	GOLDMAN SACHS GROUP INC/THE	0.4x
148	69%	LYONDELLBASELL INDUSTRIES NV	0.4x
149	69%	LAMB WESTON HOLDINGS INC	0.4x
150	68%	MOLSON COORS BEVERAGE CO	0.4x
151	68%	DOLLAR GENERAL CORP	0.4x
152	68%	L BRANDS INC	0.4x
153	68%	DOLLAR TREE INC	0.4x
154	68%	KIMBERLY-CLARK CORP	0.4x
155	67%	SKYWORKS SOLUTIONS INC	0.4x
156	67%	ZIONS BANCORP NA	0.4x
157	67%	BALL CORP	0.4x
158	67%	STERIS PLC	0.4x
159	67%	QORVO INC	0.4x
160	66%	RALPH LAUREN CORP	0.4x

Rank	Percentile	Company	2019 Net Fixed Assets / Revenues
161	66%	HOWMET AEROSPACE INC	0.4x
162	66%	JB HUNT TRANSPORT SERVICES INC	0.4x
163	66%	MARATHON PETROLEUM CORP	0.4x
164	65%	TRUIST FINANCIAL CORP	0.4x
165	65%	ELI LILLY AND CO	0.4x
166	65%	ULTA BEAUTY INC	0.4x
167	65%	BECTON DICKINSON AND CO	0.4x
168	65%	GLOBAL PAYMENTS INC	0.4x
169	64%	MICROSOFT CORP	0.4x
170	64%	DEERE & CO	0.4x
171	64%	NEWS CORP	0.4x
172	64%	NEWS CORP	0.4x
173	64%	HALLIBURTON CO	0.4x
174	63%	REGENERON PHARMACEUTICALS INC	0.4x
175	63%	TARGET CORP	0.4x
176	63%	PAYCOM SOFTWARE INC	0.4x
177	63%	MONDELEZ INTERNATIONAL INC	0.4x
178	63%	NATIONAL OILWELL VARCO INC	0.4x
179	62%	ROSS STORES INC	0.4x
180	62%	REGIONS FINANCIAL CORP	0.4x
181	62%	AMAZON.COM INC	0.3x
182	62%	TJX COS INC/THE	0.3x
183	61%	MERCK & CO INC	0.3x
184	61%	HUNTINGTON INGALLS INDUSTRIES IN	0.3x
185	61%	ZOETIS INC	0.3x
186	61%	FIFTH THIRD BANCORP	0.3x
187	61%	AMCOR PLC	0.3x
188	60%	CORTEVA INC	0.3x
189	60%	COCA-COLA CO/THE	0.3x
190	60%	INTERNATIONAL FLAVORS & FRAGRAN	0.3x
191	60%	YUM! BRANDS INC	0.3x
192	60%	SCHLUMBERGER NV	0.3x
193	59%	3M CO	0.3x
194	59%	SALESFORCE.COM INC	0.3x
195	59%	LOWE'S COS INC	0.3x
196	59%	NRG ENERGY INC	0.3x
197	59%	ECOLAB INC	0.3x
198	58%	PROCTER & GAMBLE CO/THE	0.3x
199	58%	ESTEE LAUDER COS INC/THE	0.3x
200	58%	BIO-RAD LABORATORIES INC	0.3x

Rank	Percentile	Company	2019 Net Fixed Assets / Revenues
201	58%	HOLLYFRONTIER CORP	0.3x
202	57%	TECHNIPFMC PLC	0.3x
203	57%	CAMPBELL SOUP CO	0.3x
204	57%	INTUITIVE SURGICAL INC	0.3x
205	57%	TE CONNECTIVITY LTD	0.3x
206	57%	MARKETAXESS HOLDINGS INC	0.3x
207	56%	VALERO ENERGY CORP	0.3x
208	56%	HERSHEY CO/THE	0.3x
209	56%	BORGWARNER INC	0.3x
210	56%	INTERCONTINENTAL EXCHANGE INC	0.3x
211	56%	PFIZER INC	0.3x
212	55%	VERISK ANALYTICS INC	0.3x
213	55%	ZIMMER BIOMET HOLDINGS INC	0.3x
214	55%	NASDAQ INC	0.3x
215	55%	ALIGN TECHNOLOGY INC	0.3x
216	55%	FIRST REPUBLIC BANK/CA	0.3x
217	54%	GENERAL MOTORS CO	0.3x
218	54%	ABBOTT LABORATORIES	0.3x
219	54%	METTLER-TOLEDO INTERNATIONAL IN(	0.3x
220	54%	MAXIM INTEGRATED PRODUCTS INC	0.3x
221	53%	ALEXION PHARMACEUTICALS INC	0.3x
222	53%	NUCOR CORP	0.3x
223	53%	PVH CORP	0.3x
224	53%	J M SMUCKER CO/THE	0.3x
225	53%	COLGATE-PALMOLIVE CO	0.3x
226	52%	EQUIFAX INC	0.3x
227	52%	BROWN-FORMAN CORP	0.3x
228	52%	DEXCOM INC	0.3x
229	52%	BRISTOL-MYERS SQUIBB CO	0.3x
230	52%	UNDER ARMOUR INC	0.3x
231	51%	UNDER ARMOUR INC	0.3x
232	51%	EDWARDS LIFESCIENCES CORP	0.3x
233	51%	BAKER HUGHES CO	0.3x
234	51%	APTIV PLC	0.3x
235	51%	SYNOPSYS INC	0.3x
236	50%	HOME DEPOT INC/THE	0.3x
237	50%	SEALED AIR CORP	0.3x
238	50%	BIOGEN INC	0.3x
239	50%	IDEXX LABORATORIES INC	0.3x
240	49%	PACCAR INC	0.3x

Rank	Percentile	Company	2019 Net Fixed Assets / Revenues
241	49%	QUEST DIAGNOSTICS INC	0.3x
242	49%	DXC TECHNOLOGY CO	0.3x
243	49%	TEXAS INSTRUMENTS INC	0.3x
244	49%	PEOPLE'S UNITED FINANCIAL INC	0.3x
245	48%	SERVICENOW INC	0.3x
246	48%	CATERPILLAR INC	0.3x
247	48%	WALGREENS BOOTS ALLIANCE INC	0.3x
248	48%	EMERSON ELECTRIC CO	0.2x
249	48%	NORTHROP GRUMMAN CORP	0.2x
250	47%	PPG INDUSTRIES INC	0.2x
251	47%	PHILIP MORRIS INTERNATIONAL INC	0.2x
252	47%	GARTNER INC	0.2x
253	47%	HEWLETT PACKARD ENTERPRISE CO	0.2x
254	47%	WALMART INC	0.2x
255	46%	FRANKLIN RESOURCES INC	0.2x
256	46%	JPMORGAN CHASE & CO	0.2x
257	46%	DENTSPLY SIRONA INC	0.2x
258	46%	FASTENAL CO	0.2x
259	45%	CONAGRA BRANDS INC	0.2x
260	45%	KROGER CO/THE	0.2x
261	45%	FORD MOTOR CO	0.2x
262	45%	PHILLIPS 66	0.2x
263	45%	EXPEDIA GROUP INC	0.2x
264	44%	ORACLE CORP	0.2x
265	44%	AMGEN INC	0.2x
266	44%	GILEAD SCIENCES INC	0.2x
267	44%	INTERPUBLIC GROUP OF COS INC/THE	0.2x
268	44%	L3HARRIS TECHNOLOGIES INC	0.2x
269	43%	CHARLES SCHWAB CORP/THE	0.2x
270	43%	LABORATORY CORP OF AMERICA HOLI	0.2x
271	43%	M&T BANK CORP	0.2x
272	43%	F5 NETWORKS INC	0.2x
273	43%	JUNIPER NETWORKS INC	0.2x
274	42%	BOSTON SCIENTIFIC CORP	0.2x
275	42%	FISERV INC	0.2x
276	42%	GENERAL MILLS INC	0.2x
277	42%	WILLIS TOWERS WATSON PLC	0.2x
278	41%	DISH NETWORK CORP	0.2x
279	41%	CINTAS CORP	0.2x
280	41%	LIVE NATION ENTERTAINMENT INC	0.2x

Rank	Percentile	Company	2019 Net Fixed Assets / Revenues
281	41%	PERRIGO CO PLC	0.2x
282	41%	THERMO FISHER SCIENTIFIC INC	0.2x
283	40%	NIKE INC	0.2x
284	40%	VF CORP	0.2x
285	40%	SEAGATE TECHNOLOGY PLC	0.2x
286	40%	WATERS CORP	0.2x
287	40%	VERISIGN INC	0.2x
288	39%	ABIOMED INC	0.2x
289	39%	NVIDIA CORP	0.2x
290	39%	TELEFLEX INC	0.2x
291	39%	LEGGETT & PLATT INC	0.2x
292	39%	CLOROX CO/THE	0.2x
293	38%	ETSY INC	0.2x
294	38%	WHIRLPOOL CORP	0.2x
295	38%	COMERICA INC	0.2x
296	38%	TEXTRON INC	0.2x
297	37%	LKQ CORP	0.2x
298	37%	WESTINGHOUSE AIR BRAKE TECHNOL	0.2x
299	37%	CUMMINS INC	0.2x
300	37%	FMC CORP	0.2x
301	37%	ANALOG DEVICES INC	0.2x
302	36%	RAYTHEON TECHNOLOGIES CORP	0.2x
303	36%	MEDTRONIC PLC	0.2x
304	36%	JACK HENRY & ASSOCIATES INC	0.2x
305	36%	STRYKER CORP	0.2x
306	36%	EBAY INC	0.2x
307	35%	A O SMITH CORP	0.2x
308	35%	HORMEL FOODS CORP	0.2x
309	35%	SHERWIN-WILLIAMS CO/THE	0.2x
310	35%	ROLLINS INC	0.2x
311	35%	MOTOROLA SOLUTIONS INC	0.2x
312	34%	INTERNATIONAL BUSINESS MACHINES	0.2x
313	34%	FLOWSERVE CORP	0.2x
314	34%	AGILENT TECHNOLOGIES INC	0.2x
315	34%	KEYCORP	0.2x
316	33%	JOHNSON CONTROLS INTERNATIONAL	0.2x
317	33%	MICROCHIP TECHNOLOGY INC	0.2x
318	33%	INCYTE CORP	0.2x
319	33%	WESTERN DIGITAL CORP	0.2x
320	33%	KEYSIGHT TECHNOLOGIES INC	0.2x

Rank	Percentile	Company	2019 Net Fixed Assets / Revenues
321	32%	EATON CORP PLC	0.2x
322	32%	AUTODESK INC	0.2x
323	32%	NEWELL BRANDS INC	0.2x
324	32%	RESMED INC	0.2x
325	32%	CITIZENS FINANCIAL GROUP INC	0.2x
326	31%	FORTINET INC	0.2x
327	31%	VERTEX PHARMACEUTICALS INC	0.2x
328	31%	BOEING CO/THE	0.2x
329	31%	PARKER-HANNIFIN CORP	0.2x
330	31%	QUALCOMM INC	0.2x
331	30%	TYSON FOODS INC	0.2x
332	30%	TYLER TECHNOLOGIES INC	0.2x
333	30%	BANK OF NEW YORK MELLON CORP/TH	0.2x
334	30%	STATE STREET CORP	0.2x
335	29%	CARMAX INC	0.2x
336	29%	CAPITAL ONE FINANCIAL CORP	0.2x
337	29%	FORTUNE BRANDS HOME & SECURITY	0.2x
338	29%	ARCHER-DANIELS-MIDLAND CO	0.2x
339	29%	XYLEM INC/NY	0.2x
340	28%	TRANSDIGM GROUP INC	0.2x
341	28%	MARSH & MCLENNAN COS INC	0.2x
342	28%	CHURCH & DWIGHT CO INC	0.2x
343	28%	FOX CORP	0.2x
344	28%	FOX CORP	0.2x
345	27%	APPLE INC	0.2x
346	27%	MSCI INC	0.2x
347	27%	TERADYNE INC	0.2x
348	27%	HONEYWELL INTERNATIONAL INC	0.2x
349	27%	MASCO CORP	0.2x
350	26%	ADOBE INC	0.2x
351	26%	INGERSOLL RAND INC	0.2x
352	26%	MOODY'S CORP	0.2x
353	26%	FLIR SYSTEMS INC	0.2x
354	25%	HOLOGIC INC	0.2x
355	25%	GENERAL DYNAMICS CORP	0.2x
356	25%	S&P GLOBAL INC	0.1x
357	25%	INVESCO LTD	0.1x
358	25%	COSTCO WHOLESALE CORP	0.1x
359	24%	VARIAN MEDICAL SYSTEMS INC	0.1x
360	24%	CITRIX SYSTEMS INC	0.1x

Rank	Percentile	Company	2019 Net Fixed Assets / Revenues
361	24%	IDEX CORP	0.1x
362	24%	AMPHENOL CORP	0.1x
363	24%	ROCKWELL AUTOMATION INC	0.1x
364	23%	VIACOMCBS INC	0.1x
365	23%	TRANE TECHNOLOGIES PLC	0.1x
366	23%	FIDELITY NATIONAL INFORMATION SEF	0.1x
367	23%	NORTHERN TRUST CORP	0.1x
368	23%	WW GRAINGER INC	0.1x
369	22%	AMETEK INC	0.1x
370	22%	AON PLC	0.1x
371	22%	DISCOVERY INC	0.1x
372	22%	DISCOVERY INC	0.1x
373	21%	T ROWE PRICE GROUP INC	0.1x
374	21%	DOVER CORP	0.1x
375	21%	QUANTA SERVICES INC	0.1x
376	21%	OMNICOM GROUP INC	0.1x
377	21%	ILLINOIS TOOL WORKS INC	0.1x
378	20%	UNITED RENTALS INC	0.1x
379	20%	XILINX INC	0.1x
380	20%	US BANCORP	0.1x
381	20%	WELLS FARGO & CO	0.1x
382	20%	HUNTINGTON BANCSHARES INC/OH	0.1x
383	19%	NETAPP INC	0.1x
384	19%	CARRIER GLOBAL CORP	0.1x
385	19%	COGNIZANT TECHNOLOGY SOLUTIONS	0.1x
386	19%	MARRIOTT INTERNATIONAL INC/MD	0.1x
387	19%	NIELSEN HOLDINGS PLC	0.1x
388	18%	HILTON WORLDWIDE HOLDINGS INC	0.1x
389	18%	NORTONLIFELOCK INC	0.1x
390	18%	ALLEGION PLC	0.1x
391	18%	BROADCOM INC	0.1x
392	17%	PAYCHEX INC	0.1x
393	17%	DANAHER CORP	0.1x
394	17%	CVS HEALTH CORP	0.1x
395	17%	LOCKHEED MARTIN CORP	0.1x
396	17%	VISA INC	0.1x
397	16%	INTUIT INC	0.1x
398	16%	ANSYS INC	0.1x
399	16%	LAM RESEARCH CORP	0.1x
400	16%	PAYPAL HOLDINGS INC	0.1x

Rank	Percentile	Company	2019 Net Fixed Assets / Revenues
401	16%	PENTAIR PLC	0.1x
402	15%	ARTHUR J GALLAGHER & CO	0.1x
403	15%	GENUINE PARTS CO	0.1x
404	15%	ELECTRONIC ARTS INC	0.1x
405	15%	BEST BUY CO INC	0.1x
406	15%	CME GROUP INC	0.1x
407	14%	EXPEDITORS INTERNATIONAL OF WAS	0.1x
408	14%	MASTERCARD INC	0.1x
409	14%	APPLIED MATERIALS INC	0.1x
410	14%	FLEETCOR TECHNOLOGIES INC	0.1x
411	13%	KLA CORP	0.1x
412	13%	ACCENTURE PLC	0.1x
413	13%	NETFLIX INC	0.1x
414	13%	AMERICAN EXPRESS CO	0.1x
415	13%	SVB FINANCIAL GROUP	0.1x
416	12%	ALTRIA GROUP INC	0.1x
417	12%	BROADRIDGE FINANCIAL SOLUTIONS I	0.1x
418	12%	ABBVIE INC	0.1x
419	12%	FORTIVE CORP	0.1x
420	12%	OTIS WORLDWIDE CORP	0.1x
421	11%	SYSCO CORP	0.1x
422	11%	BLACKROCK INC	0.1x
423	11%	BANK OF AMERICA CORP	0.1x
424	11%	TAKE-TWO INTERACTIVE SOFTWARE I	0.1x
425	11%	POOL CORP	0.1x
426	10%	BOOKING HOLDINGS INC	0.1x
427	10%	CBOE GLOBAL MARKETS INC	0.1x
428	10%	XEROX HOLDINGS CORP	0.1x
429	10%	IQVIA HOLDINGS INC	0.1x
430	9%	AUTOMATIC DATA PROCESSING INC	0.1x
431	9%	ZEBRA TECHNOLOGIES CORP	0.1x
432	9%	MONSTER BEVERAGE CORP	0.1x
433	9%	CBRE GROUP INC	0.1x
434	9%	ROPER TECHNOLOGIES INC	0.1x
435	8%	DISCOVER FINANCIAL SERVICES	0.1x
436	8%	MORGAN STANLEY	0.1x
437	8%	WESTERN UNION CO/THE	0.1x
438	8%	PRINCIPAL FINANCIAL GROUP INC	0.1x
439	8%	CISCO SYSTEMS INC	0.1x
440	7%	JACOBS ENGINEERING GROUP INC	0.1x

Rank	Percentile	Company	2019 Net Fixed Assets / Revenues
441	7%	RAYMOND JAMES FINANCIAL INC	0.1x
442	7%	LEIDOS HOLDINGS INC	0.1x
443	7%	ROBERT HALF INTERNATIONAL INC	0.1x
444	7%	HARTFORD FINANCIAL SERVICES GRO	0.1x
445	6%	UNUM GROUP	0.1x
446	6%	W R BERKLEY CORP	0.1x
447	6%	ARISTA NETWORKS INC	0.1x
448	6%	HP INC	0.0x
449	5%	ASSURANT INC	0.0x
450	5%	ACTIVISION BLIZZARD INC	0.0x
451	5%	CENTENE CORP	0.0x
452	5%	HUMANA INC	0.0x
453	5%	ALLSTATE CORP/THE	0.0x
454	4%	UNITEDHEALTH GROUP INC	0.0x
455	4%	ANTHEM INC	0.0x
456	4%	DR HORTON INC	0.0x
457	4%	CH ROBINSON WORLDWIDE INC	0.0x
458	4%	CIGNA CORP	0.0x
459	3%	PROGRESSIVE CORP/THE	0.0x
460	3%	CITIGROUP INC	0.0x
461	3%	CDW CORP/DE	0.0x
462	3%	CINCINNATI FINANCIAL CORP	0.0x
463	3%	AFLAC INC	0.0x
464	2%	METLIFE INC	0.0x
465	2%	EVEREST RE GROUP LTD	0.0x
466	2%	MCKESSON CORP	0.0x
467	2%	NVR INC	0.0x
468	1%	CARDINAL HEALTH INC	0.0x
469	1%	PULTEGROUP INC	0.0x
470	1%	AMERIPRISE FINANCIAL INC	0.0x
471	1%	CHUBB LTD	0.0x
472	1%	LINCOLN NATIONAL CORP	0.0x
473	0%	AMERICAN INTERNATIONAL GROUP IN	0.0x
474	0%	AMERISOURCEBERGEN CORP	0.0x
475	N/A	TRAVELERS COS INC/THE	0.0x
476	N/A	ADVANCE AUTO PARTS INC	N/A
477	N/A	ADVANCED MICRO DEVICES INC	N/A
478	N/A	AVERY DENNISON CORP	N/A
479	N/A	CARNIVAL CORP	N/A
480	N/A	CADENCE DESIGN SYSTEMS INC	N/A

Rank	Percentile	Company	2019 Net Fixed Assets / Revenues
481	N/A	CERNER CORP	N/A
482	N/A	DOMINO'S PIZZA INC	N/A
483	N/A	GLOBE LIFE INC	N/A
484	N/A	GARMIN LTD	N/A
485	N/A	HASBRO INC	N/A
486	N/A	HANESBRANDS INC	N/A
487	N/A	HENRY SCHEIN INC	N/A
488	N/A	ILLUMINA INC	N/A
489	N/A	IHS MARKIT LTD	N/A
490	N/A	INTEL CORP	N/A
491	N/A	JOHNSON & JOHNSON	N/A
492	N/A	KELLOGG CO	N/A
493	N/A	KRAFT HEINZ CO/THE	N/A
494	N/A	LENNAR CORP	N/A
495	N/A	MCCORMICK & CO INC/MD	N/A
496	N/A	MYLAN NV	N/A
497	N/A	PEPSICO INC	N/A
498	N/A	PERKINELMER INC	N/A
499	N/A	PRUDENTIAL FINANCIAL INC	N/A
500	N/A	SNAP-ON INC	N/A
501	N/A	STANLEY BLACK & DECKER INC	N/A
502	N/A	SYNCHRONY FINANCIAL	N/A
503	N/A	TELEDYNE TECHNOLOGIES INC	N/A
504	N/A	TRACTOR SUPPLY CO	N/A
505	N/A	VONTIER CORP	N/A

Average	**0.9x**
Median	**0.3x**
Orange and Rockland Utilities, Inc.	**2.6x**

Rank	Percentile	Company	2019 Depreciation/ Capex
1	100%	HARTFORD FINANCIAL SERVICES GROUP INC/	1,974.3%
2	100%	MICROCHIP TECHNOLOGY INC	1,798.2%
3	99%	GLOBE LIFE INC	1,307.3%
4	99%	FIDELITY NATIONAL INFORMATION SERVICES	1,222.0%
5	99%	XEROX HOLDINGS CORP	661.5%
6	99%	ROPER TECHNOLOGIES INC	661.4%
7	99%	NIELSEN HOLDINGS PLC	651.7%
8	98%	DXC TECHNOLOGY CO	560.0%
9	98%	CBOE GLOBAL MARKETS INC	503.1%
10	98%	CITIZENS FINANCIAL GROUP INC	502.4%
11	98%	ANALOG DEVICES INC	489.4%
12	97%	BROADRIDGE FINANCIAL SOLUTIONS INC	477.4%
13	97%	ACTIVISION BLIZZARD INC	476.7%
14	97%	DISCOVERY INC	466.1%
15	97%	DISCOVERY INC	466.1%
16	97%	SBA COMMUNICATIONS CORP	452.0%
17	96%	PRINCIPAL FINANCIAL GROUP INC	451.8%
18	96%	TAKE-TWO INTERACTIVE SOFTWARE INC	443.1%
19	96%	HILTON WORLDWIDE HOLDINGS INC	427.2%
20	96%	INGERSOLL RAND INC	412.3%
21	96%	NORTONLIFELOCK INC	405.6%
22	95%	FORTIVE CORP	378.8%
23	95%	CAPITAL ONE FINANCIAL CORP	376.4%
24	95%	ABBVIE INC	365.4%
25	95%	FLEETCOR TECHNOLOGIES INC	364.8%
26	94%	HUNTINGTON BANCSHARES INC/OH	360.7%
27	94%	AMGEN INC	357.0%
28	94%	CIGNA CORP	347.7%
29	94%	ARTHUR J GALLAGHER & CO	341.8%
30	94%	SALESFORCE.COM INC	332.0%
31	93%	JACK HENRY & ASSOCIATES INC	320.9%
32	93%	WESTERN UNION CO/THE	317.8%
33	93%	ETSY INC	314.4%
34	93%	CITRIX SYSTEMS INC	306.3%
35	93%	CINCINNATI FINANCIAL CORP	300.0%
36	92%	WILLIS TOWERS WATSON PLC	296.3%
37	92%	ACCENTURE PLC	295.9%
38	92%	ROLLINS INC	293.0%
39	92%	MOODY'S CORP	289.9%
40	91%	ZEBRA TECHNOLOGIES CORP	286.9%

Rank	Percentile	Company	2019 Depreciation/ Capex
41	91%	QORVO INC	285.8%
42	91%	GLOBAL PAYMENTS INC	285.3%
43	91%	KEYCORP	283.5%
44	91%	KEYSIGHT TECHNOLOGIES INC	278.6%
45	90%	AUTOMATIC DATA PROCESSING INC	277.9%
46	90%	CH ROBINSON WORLDWIDE INC	276.8%
47	90%	PFIZER INC	276.2%
48	90%	MSCI INC	272.7%
49	90%	TRANSDIGM GROUP INC	269.5%
50	89%	BECTON DICKINSON AND CO	265.9%
51	89%	INTERNATIONAL BUSINESS MACHINES CORP	265.0%
52	89%	DENTSPLY SIRONA INC	262.7%
53	89%	AGILENT TECHNOLOGIES INC	258.8%
54	88%	MCKESSON CORP	254.7%
55	88%	AON PLC	250.7%
56	88%	THERMO FISHER SCIENTIFIC INC	245.9%
57	88%	ALEXION PHARMACEUTICALS INC	243.6%
58	88%	CARDINAL HEALTH INC	243.5%
59	87%	WESTERN DIGITAL CORP	242.0%
60	87%	HOLOGIC INC	240.4%
61	87%	CHURCH & DWIGHT CO INC	239.3%
62	87%	REGIONS FINANCIAL CORP	239.3%
63	87%	AUTODESK INC	239.3%
64	86%	CISCO SYSTEMS INC	234.8%
65	86%	PARKER-HANNIFIN CORP	231.1%
66	86%	FLIR SYSTEMS INC	230.2%
67	86%	VF CORP	229.1%
68	85%	FISERV INC	229.0%
69	85%	NATIONAL OILWELL VARCO INC	228.8%
70	85%	AMETEK INC	228.7%
71	85%	KLA CORP	228.0%
72	85%	OMNICOM GROUP INC	226.5%
73	84%	MEDTRONIC PLC	219.5%
74	84%	BOSTON SCIENTIFIC CORP	219.3%
75	84%	INTERCONTINENTAL EXCHANGE INC	217.0%
76	84%	WESTINGHOUSE AIR BRAKE TECHNOLOGIES	216.6%
77	84%	CF INDUSTRIES HOLDINGS INC	216.6%
78	83%	L3HARRIS TECHNOLOGIES INC	213.9%
79	83%	BRISTOL-MYERS SQUIBB CO	208.9%
80	83%	ARISTA NETWORKS INC	208.6%

Rank	Percentile	Company	2019 Depreciation/ Capex
81	83%	TELEFLEX INC	208.4%
82	82%	SCHLUMBERGER NV	208.2%
83	82%	CHEVRON CORP	207.0%
84	82%	IQVIA HOLDINGS INC	206.5%
85	82%	NRG ENERGY INC	203.1%
86	82%	FRANKLIN RESOURCES INC	201.4%
87	81%	FIFTH THIRD BANCORP	194.2%
88	81%	LEIDOS HOLDINGS INC	193.4%
89	81%	CME GROUP INC	192.7%
90	81%	ZIMMER BIOMET HOLDINGS INC	192.4%
91	81%	JUNIPER NETWORKS INC	191.9%
92	80%	ORACLE CORP	189.8%
93	80%	W R BERKLEY CORP	187.5%
94	80%	DANAHER CORP	187.2%
95	80%	GENERAL MOTORS CO	186.0%
96	79%	JOHNSON CONTROLS INTERNATIONAL PLC	185.6%
97	79%	ABBOTT LABORATORIES	184.0%
98	79%	TYLER TECHNOLOGIES INC	182.4%
99	79%	ADOBE INC	180.7%
100	79%	AMERICAN TOWER CORP	179.4%
101	78%	CVS HEALTH CORP	177.9%
102	78%	S&P GLOBAL INC	177.4%
103	78%	MGM RESORTS INTERNATIONAL	176.5%
104	78%	SYNOPSYS INC	175.3%
105	78%	SHERWIN-WILLIAMS CO/THE	174.8%
106	77%	HOLLYFRONTIER CORP	173.6%
107	77%	GILEAD SCIENCES INC	170.2%
108	77%	NEWELL BRANDS INC	168.4%
109	77%	RAYTHEON TECHNOLOGIES CORP	167.7%
110	76%	J M SMUCKER CO/THE	165.8%
111	76%	CINTAS CORP	164.6%
112	76%	AMCOR PLC	163.1%
113	76%	RESMED INC	162.4%
114	76%	MAXIM INTEGRATED PRODUCTS INC	161.9%
115	75%	ZIONS BANCORP NA	160.7%
116	75%	F5 NETWORKS INC	159.9%
117	75%	FMC CORP	159.9%
118	75%	BLACKROCK INC	159.4%
119	75%	INTUIT INC	159.1%
120	74%	MOTOROLA SOLUTIONS INC	158.9%

Rank	Percentile	Company	2019 Depreciation/ Capex
121	74%	EMERSON ELECTRIC CO	158.7%
122	74%	FLOWSERVE CORP	157.9%
123	74%	SIMON PROPERTY GROUP INC	156.9%
124	73%	TRANE TECHNOLOGIES PLC	156.4%
125	73%	NETAPP INC	155.6%
126	73%	COLGATE-PALMOLIVE CO	154.9%
127	73%	MARSH & MCLENNAN COS INC	153.7%
128	73%	JACOBS ENGINEERING GROUP INC	153.6%
129	72%	DISCOVER FINANCIAL SERVICES	153.5%
130	72%	WESTROCK CO	152.0%
131	72%	ROCKWELL AUTOMATION INC	151.6%
132	72%	APPLE INC	151.3%
133	72%	IDEX CORP	151.0%
134	71%	EATON CORP PLC	150.6%
135	71%	CBRE GROUP INC	149.6%
136	71%	NASDAQ INC	149.6%
137	71%	ALLSTATE CORP/THE	149.4%
138	70%	VERISK ANALYTICS INC	149.3%
139	70%	NEWS CORP	147.0%
140	70%	NEWS CORP	147.0%
141	70%	DOVER CORP	145.8%
142	70%	MORGAN STANLEY	144.7%
143	69%	MOLSON COORS BEVERAGE CO	144.7%
144	69%	LABORATORY CORP OF AMERICA HOLDINGS	144.2%
145	69%	EASTMAN CHEMICAL CO	143.8%
146	69%	AT&T INC	143.7%
147	69%	DOW INC	143.6%
148	68%	INVESCO LTD	142.9%
149	68%	GARTNER INC	142.1%
150	68%	VERTEX PHARMACEUTICALS INC	141.7%
151	68%	INTERPUBLIC GROUP OF COS INC/THE	140.3%
152	67%	WALGREENS BOOTS ALLIANCE INC	140.2%
153	67%	PERRIGO CO PLC	138.2%
154	67%	PAYCHEX INC	138.0%
155	67%	CHARTER COMMUNICATIONS INC	138.0%
156	67%	CARRIER GLOBAL CORP	137.9%
157	66%	CORTEVA INC	137.5%
158	66%	LIVE NATION ENTERTAINMENT INC	137.2%
159	66%	INTERNATIONAL FLAVORS & FRAGRANCES IN	137.0%
160	66%	PENTAIR PLC	136.8%

Rank	Percentile	Company	2019 Depreciation/ Capex
161	66%	BIO-RAD LABORATORIES INC	136.2%
162	65%	HP INC	136.0%
163	65%	ANSYS INC	134.7%
164	65%	COGNIZANT TECHNOLOGY SOLUTIONS CORP	134.2%
165	65%	LEGGETT & PLATT INC	134.1%
166	64%	NEWMONT CORP	134.0%
167	64%	CENTURYLINK INC	133.1%
168	64%	WALT DISNEY CO/THE	132.9%
169	64%	WEYERHAEUSER CO	132.8%
170	64%	COMERICA INC	132.6%
171	63%	BIOGEN INC	132.3%
172	63%	LAM RESEARCH CORP	132.1%
173	63%	UNITEDHEALTH GROUP INC	131.3%
174	63%	ILLINOIS TOOL WORKS INC	130.7%
175	63%	COMCAST CORP	130.1%
176	62%	HONEYWELL INTERNATIONAL INC	129.7%
177	62%	PAYPAL HOLDINGS INC	129.5%
178	62%	DUPONT DE NEMOURS INC	129.2%
179	62%	AMAZON.COM INC	129.2%
180	61%	GENERAL MILLS INC	129.1%
181	61%	M&T BANK CORP	128.9%
182	61%	L BRANDS INC	128.4%
183	61%	AMERIPRISE FINANCIAL INC	128.0%
184	61%	UNDER ARMOUR INC	127.9%
185	60%	UNDER ARMOUR INC	127.9%
186	60%	BOOKING HOLDINGS INC	127.4%
187	60%	LINDE PLC	127.0%
188	60%	TE CONNECTIVITY LTD	127.0%
189	60%	ALLEGION PLC	126.5%
190	59%	SVB FINANCIAL GROUP	126.3%
191	59%	VIACOMCBS INC	125.5%
192	59%	OTIS WORLDWIDE CORP	124.1%
193	59%	TEXAS INSTRUMENTS INC	124.0%
194	58%	BOEING CO/THE	123.8%
195	58%	PPG INDUSTRIES INC	123.7%
196	58%	MASTERCARD INC	123.7%
197	58%	EBAY INC	122.9%
198	58%	TEXTRON INC	122.7%
199	57%	MID-AMERICA APARTMENT COMMUNITIES INC	121.9%
200	57%	XILINX INC	121.8%

Rank	Percentile	Company	2019 Depreciation/ Capex
201	57%	A O SMITH CORP	121.6%
202	57%	ECOLAB INC	121.6%
203	57%	TAPESTRY INC	120.9%
204	56%	ARCHER-DANIELS-MIDLAND CO	119.9%
205	56%	STRYKER CORP	119.9%
206	56%	ELI LILLY AND CO	119.2%
207	56%	SOUTHWEST AIRLINES CO	118.7%
208	55%	LKQ CORP	118.3%
209	55%	VARIAN MEDICAL SYSTEMS INC	117.3%
210	55%	FORTUNE BRANDS HOME & SECURITY INC	115.9%
211	55%	VERISIGN INC	114.9%
212	55%	BAKER HUGHES CO	114.4%
213	54%	XYLEM INC/NY	113.7%
214	54%	BALL CORP	113.4%
215	54%	BAXTER INTERNATIONAL INC	113.4%
216	54%	MONDELEZ INTERNATIONAL INC	113.2%
217	54%	PHILIP MORRIS INTERNATIONAL INC	113.1%
218	53%	VALERO ENERGY CORP	113.1%
219	53%	CDW CORP/DE	113.0%
220	53%	TECHNIPFMC PLC	112.1%
221	53%	SYSCO CORP	111.8%
222	52%	FORD MOTOR CO	111.2%
223	52%	AMERISOURCEBERGEN CORP	110.4%
224	52%	ROBERT HALF INTERNATIONAL INC	110.4%
225	52%	WHIRLPOOL CORP	110.3%
226	52%	HEWLETT PACKARD ENTERPRISE CO	110.2%
227	51%	LAMB WESTON HOLDINGS INC	109.7%
228	51%	CAMPBELL SOUP CO	109.7%
229	51%	PEOPLE'S UNITED FINANCIAL INC	109.6%
230	51%	BEST BUY CO INC	109.3%
231	51%	BANK OF NEW YORK MELLON CORP/THE	108.7%
232	50%	DISH NETWORK CORP	108.5%
233	50%	EXPEDITORS INTERNATIONAL OF WASHINGT(	108.4%
234	50%	ELECTRONIC ARTS INC	107.1%
235	50%	QUANTA SERVICES INC	107.0%
236	49%	HALLIBURTON CO	106.2%
237	49%	AMPHENOL CORP	105.8%
238	49%	CONAGRA BRANDS INC	105.3%
239	49%	ANTHEM INC	105.2%
240	49%	MERCK & CO INC	105.2%

Rank	Percentile	Company	2019 Depreciation/ Capex
241	48%	ESSEX PROPERTY TRUST INC	104.2%
242	48%	VISA INC	104.2%
243	48%	WW GRAINGER INC	103.6%
244	48%	T-MOBILE US INC	103.5%
245	48%	WALMART INC	102.6%
246	47%	INTERNATIONAL PAPER CO	102.4%
247	47%	STARBUCKS CORP	101.3%
248	47%	ASSURANT INC	101.1%
249	47%	RALPH LAUREN CORP	99.7%
250	46%	KINDER MORGAN INC	99.4%
251	46%	TYSON FOODS INC	99.4%
252	46%	ULTA BEAUTY INC	99.0%
253	46%	QUALCOMM INC	99.0%
254	46%	MASCO CORP	98.1%
255	45%	ESTEE LAUDER COS INC/THE	98.1%
256	45%	PROCTER & GAMBLE CO/THE	98.0%
257	45%	VULCAN MATERIALS CO	97.5%
258	45%	IRON MOUNTAIN INC	97.4%
259	45%	PACKAGING CORP OF AMERICA	97.0%
260	44%	CATERPILLAR INC	96.6%
261	44%	GENERAL ELECTRIC CO	96.2%
262	44%	CELANESE CORP	96.2%
263	44%	CUMMINS INC	96.0%
264	43%	RAYMOND JAMES FINANCIAL INC	96.0%
265	43%	LAS VEGAS SANDS CORP	95.8%
266	43%	SERVICENOW INC	95.2%
267	43%	LOWE'S COS INC	95.0%
268	43%	MARTIN MARIETTA MATERIALS INC	94.4%
269	42%	OCCIDENTAL PETROLEUM CORP	94.1%
270	42%	MARATHON OIL CORP	94.0%
271	42%	PVH CORP	93.8%
272	42%	3M CO	93.8%
273	42%	SKYWORKS SOLUTIONS INC	93.6%
274	41%	T ROWE PRICE GROUP INC	93.3%
275	41%	VERIZON COMMUNICATIONS INC	93.0%
276	41%	REPUBLIC SERVICES INC	93.0%
277	41%	PULTEGROUP INC	92.9%
278	40%	COOPER COS INC/THE	92.5%
279	40%	STERIS PLC	91.9%
280	40%	ALTRIA GROUP INC	91.9%

Rank	Percentile	Company	2019 Depreciation/ Capex
281	40%	APTIV PLC	91.8%
282	40%	CONOCOPHILLIPS	91.8%
283	39%	NVR INC	91.7%
284	39%	HERSHEY CO/THE	91.6%
285	39%	HOWMET AEROSPACE INC	91.5%
286	39%	BORGWARNER INC	91.3%
287	39%	METTLER-TOLEDO INTERNATIONAL INC	91.1%
288	38%	GENUINE PARTS CO	90.7%
289	38%	LOEWS CORP	90.6%
290	38%	APACHE CORP	90.5%
291	38%	TERADYNE INC	89.6%
292	37%	ZOETIS INC	89.6%
293	37%	APPLIED MATERIALS INC	89.1%
294	37%	REGENCY CENTERS CORP	88.6%
295	37%	CENTENE CORP	88.1%
296	37%	POOL CORP	87.7%
297	36%	AUTOZONE INC	86.8%
298	36%	UNITED RENTALS INC	86.7%
299	36%	WASTE MANAGEMENT INC	86.6%
300	36%	TWITTER INC	86.1%
301	36%	TARGET CORP	86.0%
302	35%	HOME DEPOT INC/THE	85.7%
303	35%	MOHAWK INDUSTRIES INC	85.5%
304	35%	KROGER CO/THE	84.7%
305	35%	EQUIFAX INC	84.4%
306	34%	PROGRESSIVE CORP/THE	84.2%
307	34%	GENERAL DYNAMICS CORP	84.0%
308	34%	MICROSOFT CORP	82.9%
309	34%	QUEST DIAGNOSTICS INC	82.3%
310	34%	HOST HOTELS & RESORTS INC	82.0%
311	33%	FIRST REPUBLIC BANK/CA	82.0%
312	33%	WEST PHARMACEUTICAL SERVICES INC	81.8%
313	33%	CSX CORP	81.4%
314	33%	TIFFANY & CO	81.0%
315	33%	NORTHROP GRUMMAN CORP	80.5%
316	32%	DAVITA INC	80.2%
317	32%	LOCKHEED MARTIN CORP	80.1%
318	32%	WILLIAMS COS INC/THE	79.8%
319	32%	DEERE & CO	79.7%
320	31%	SEALED AIR CORP	79.5%

Rank	Percentile	Company	2019 Depreciation/ Capex
321	31%	EXELON CORP	79.4%
322	31%	EXPEDIA GROUP INC	78.4%
323	31%	AKAMAI TECHNOLOGIES INC	78.4%
324	31%	HUMANA INC	78.1%
325	30%	EXXON MOBIL CORP	78.0%
326	30%	NVIDIA CORP	77.9%
327	30%	DARDEN RESTAURANTS INC	77.4%
328	30%	UNIVERSAL HEALTH SERVICES INC	77.3%
329	30%	DEVON ENERGY CORP	77.1%
330	29%	EVERGY INC	77.1%
331	29%	NORTHERN TRUST CORP	76.5%
332	29%	CROWN CASTLE INTERNATIONAL CORP	76.4%
333	29%	CORNING INC	76.0%
334	28%	KIMBERLY-CLARK CORP	75.8%
335	28%	HESS CORP	75.0%
336	28%	CITIGROUP INC	73.2%
337	28%	AMERICAN EXPRESS CO	72.2%
338	28%	IPG PHOTONICS CORP	72.1%
339	27%	FOX CORP	71.9%
340	27%	FOX CORP	71.9%
341	27%	APARTMENT INVESTMENT AND MANAGEMENT	71.5%
342	27%	TJX COS INC/THE	70.9%
343	27%	CLOROX CO/THE	70.9%
344	26%	INCYTE CORP	69.9%
345	26%	MOSAIC CO/THE	69.4%
346	26%	VENTAS INC	68.8%
347	26%	MICRON TECHNOLOGY INC	68.7%
348	25%	MARATHON PETROLEUM CORP	67.7%
349	25%	MCDONALD'S CORP	67.6%
350	25%	FORTINET INC	66.8%
351	25%	COCA-COLA CO/THE	66.5%
352	25%	NIKE INC	66.4%
353	24%	BROWN-FORMAN CORP	65.5%
354	24%	CARMAX INC	65.0%
355	24%	SEAGATE TECHNOLOGY PLC	64.8%
356	24%	DOLLAR GENERAL CORP	64.3%
357	24%	WATERS CORP	64.3%
358	23%	UNION PACIFIC CORP	64.2%
359	23%	MONSTER BEVERAGE CORP	63.8%
360	23%	CHIPOTLE MEXICAN GRILL INC	63.7%

Rank	Percentile	Company	2019 Depreciation/ Capex
361	23%	ROSS STORES INC	63.2%
362	22%	BERKSHIRE HATHAWAY INC	63.0%
363	22%	HCA HEALTHCARE INC	62.4%
364	22%	DOLLAR TREE INC	62.4%
365	22%	MARRIOTT INTERNATIONAL INC/MD	61.7%
366	22%	FEDEX CORP	61.6%
367	21%	ALASKA AIR GROUP INC	60.8%
368	21%	CONCHO RESOURCES INC	60.6%
369	21%	KIMCO REALTY CORP	60.6%
370	21%	FASTENAL CO	60.3%
371	21%	BOSTON PROPERTIES INC	59.8%
372	20%	WYNN RESORTS LTD	58.8%
373	20%	COSTCO WHOLESALE CORP	58.5%
374	20%	JB HUNT TRANSPORT SERVICES INC	58.4%
375	20%	EOG RESOURCES INC	58.4%
376	19%	YUM! BRANDS INC	57.1%
377	19%	EQUINIX INC	57.1%
378	19%	IDEXX LABORATORIES INC	56.8%
379	19%	NORFOLK SOUTHERN CORP	56.4%
380	19%	PUBLIC STORAGE	56.4%
381	18%	KANSAS CITY SOUTHERN	56.0%
382	18%	HORMEL FOODS CORP	56.0%
383	18%	DOMINION ENERGY INC	55.9%
384	18%	PINNACLE WEST CAPITAL CORP	55.6%
385	18%	SL GREEN REALTY CORP	55.1%
386	17%	PACCAR INC	54.7%
387	17%	CATALENT INC	54.5%
388	17%	AMERICAN AIRLINES GROUP INC	54.3%
389	17%	PROLOGIS INC	53.8%
390	16%	EXTRA SPACE STORAGE INC	53.5%
391	16%	GAP INC/THE	53.3%
392	16%	FREEPORT-MCMORAN INC	53.2%
393	16%	PIONEER NATURAL RESOURCES CO	53.1%
394	16%	OLD DOMINION FREIGHT LINE INC	52.9%
395	15%	ALIGN TECHNOLOGY INC	52.8%
396	15%	CENTERPOINT ENERGY INC	52.3%
397	15%	DELTA AIR LINES INC	52.3%
398	15%	CABOT OIL & GAS CORP	51.5%
399	15%	DIGITAL REALTY TRUST INC	51.3%
400	14%	UNITED AIRLINES HOLDINGS INC	50.5%

Rank	Percentile	Company	2019 Depreciation/ Capex
401	14%	ALPHABET INC	50.0%
402	14%	ALPHABET INC	50.0%
403	14%	NUCOR CORP	49.7%
404	13%	ENTERGY CORP	49.4%
405	13%	CHARLES SCHWAB CORP/THE	49.3%
406	13%	REGENERON PHARMACEUTICALS INC	49.0%
407	13%	LYONDELLBASELL INDUSTRIES NV	48.7%
408	13%	INTUITIVE SURGICAL INC	47.7%
409	12%	CONSTELLATION BRANDS INC	47.2%
410	12%	AIR PRODUCTS AND CHEMICALS INC	47.2%
411	12%	CMS ENERGY CORP	47.1%
412	12%	DUKE ENERGY CORP	46.5%
413	12%	ABIOMED INC	46.4%
414	11%	FIRSTENERGY CORP	45.7%
415	11%	PAYCOM SOFTWARE INC	45.4%
416	11%	PUBLIC SERVICE ENTERPRISE GROUP INC	45.0%
417	11%	XCEL ENERGY INC	44.9%
418	**10%**	**CONSOLIDATED EDISON INC**	**44.4%**
419	10%	AMEREN CORP	44.3%
420	10%	DTE ENERGY CO	44.1%
421	10%	VORNADO REALTY TRUST	44.0%
422	10%	EQUITY RESIDENTIAL	43.8%
423	9%	AES CORP	43.5%
424	9%	O'REILLY AUTOMOTIVE INC	43.1%
425	9%	HUNTINGTON INGALLS INDUSTRIES INC	42.8%
426	9%	AVALONBAY COMMUNITIES INC	42.6%
427	9%	AMERICAN ELECTRIC POWER CO INC	42.4%
428	8%	SEMPRA ENERGY	42.3%
429	8%	SOUTHERN CO/THE	41.9%
430	8%	PPL CORP	41.5%
431	8%	ROYAL CARIBBEAN CRUISES LTD	41.2%
432	7%	WEC ENERGY GROUP INC	41.0%
433	7%	NETFLIX INC	40.9%
434	7%	NISOURCE INC	39.8%
435	7%	NORWEGIAN CRUISE LINE HOLDINGS LTD	39.5%
436	7%	DIAMONDBACK ENERGY INC	39.1%
437	6%	FEDERAL REALTY INVESTMENT TRUST	39.0%
438	6%	FACEBOOK INC	38.0%
439	6%	EDISON INTERNATIONAL	37.8%
440	6%	EVERSOURCE ENERGY	37.1%

Rank	Percentile	Company	2019 Depreciation/ Capex
441	6%	UNITED PARCEL SERVICE INC	37.0%
442	5%	NEXTERA ENERGY INC	36.0%
443	5%	EDWARDS LIFESCIENCES CORP	35.1%
444	5%	PHILLIPS 66	34.6%
445	5%	ALLIANT ENERGY CORP	34.6%
446	4%	AMERICAN WATER WORKS CO INC	33.1%
447	4%	STATE STREET CORP	32.3%
448	4%	UDR INC	32.1%
449	4%	HEALTHPEAK PROPERTIES INC	29.0%
450	4%	DR HORTON INC	28.0%
451	3%	DEXCOM INC	27.1%
452	3%	ALBEMARLE CORP	25.1%
453	3%	DUKE REALTY CORP	24.9%
454	3%	MARKETAXESS HOLDINGS INC	24.5%
455	3%	WELLTOWER INC	22.3%
456	2%	ATMOS ENERGY CORP	22.2%
457	2%	GOLDMAN SACHS GROUP INC/THE	20.2%
458	2%	COPART INC	17.6%
459	2%	REALTY INCOME CORP	16.5%
460	1%	ALEXANDRIA REAL ESTATE EQUITIES INC	15.6%
461	1%	ONEOK INC	12.4%
462	1%	ADVANCE AUTO PARTS INC	N/A
463	1%	AFLAC INC	N/A
464	1%	AMERICAN INTERNATIONAL GROUP INC	N/A
465	0%	ADVANCED MICRO DEVICES INC	N/A
466	0%	BROADCOM INC	N/A
467	N/A	AVERY DENNISON CORP	N/A
468	N/A	BANK OF AMERICA CORP	N/A
469	N/A	CHUBB LTD	N/A
470	N/A	CARNIVAL CORP	N/A
471	N/A	CADENCE DESIGN SYSTEMS INC	N/A
472	N/A	CERNER CORP	N/A
473	N/A	DOMINO'S PIZZA INC	N/A
474	N/A	GARMIN LTD	N/A
475	N/A	HASBRO INC	N/A
476	N/A	HANESBRANDS INC	N/A
477	N/A	HENRY SCHEIN INC	N/A
478	N/A	ILLUMINA INC	N/A
479	N/A	IHS MARKIT LTD	N/A
480	N/A	INTEL CORP	N/A

Rank	Percentile	Company	2019 Depreciation/ Capex
481	N/A	JOHNSON & JOHNSON	N/A
482	N/A	JPMORGAN CHASE & CO	N/A
483	N/A	KELLOGG CO	N/A
484	N/A	KRAFT HEINZ CO/THE	N/A
485	N/A	LENNAR CORP	N/A
486	N/A	LINCOLN NATIONAL CORP	N/A
487	N/A	METLIFE INC	N/A
488	N/A	MCCORMICK & CO INC/MD	N/A
489	N/A	MYLAN NV	N/A
490	N/A	PEPSICO INC	N/A
491	N/A	PERKINELMER INC	N/A
492	N/A	PNC FINANCIAL SERVICES GROUP INC/THE	N/A
493	N/A	PRUDENTIAL FINANCIAL INC	N/A
494	N/A	EVEREST RE GROUP LTD	N/A
495	N/A	SNAP-ON INC	N/A
496	N/A	STANLEY BLACK & DECKER INC	N/A
497	N/A	SYNCHRONY FINANCIAL	N/A
498	N/A	TELEDYNE TECHNOLOGIES INC	N/A
499	N/A	TRUIST FINANCIAL CORP	N/A
500	N/A	TRAVELERS COS INC/THE	N/A
501	N/A	TRACTOR SUPPLY CO	N/A
502	N/A	UNUM GROUP	N/A
503	N/A	US BANCORP	N/A
504	N/A	VONTIER CORP	N/A
505	N/A	WELLS FARGO & CO	N/A

Average	**148.2%**
Median	**108.7%**
Orange and Rockland Utilities, Inc.	**38.5%**

EXHIBIT__(YS-16)

Rank	Percentile	Company	2019 Depreciation/ Capex
1	100%	NRG ENERGY INC	203.1%
2	96%	EXELON CORP	79.4%
3	92%	DOMINION ENERGY INC	55.9%
4	88%	PINNACLE WEST CAPITAL CORP	55.6%
5	85%	CENTERPOINT ENERGY INC	52.3%
6	81%	ENTERGY CORP	49.4%
7	77%	CMS ENERGY CORP	47.1%
8	73%	DUKE ENERGY CORP	46.5%
9	69%	FIRSTENERGY CORP	45.7%
10	65%	PUBLIC SERVICE ENTERPRISE GROUP INC	45.0%
11	62%	XCEL ENERGY INC	44.9%
12	**58%**	**CONSOLIDATED EDISON INC**	**44.4%**
13	54%	AMEREN CORP	44.3%
14	50%	DTE ENERGY CO	44.1%
15	46%	AES CORP	43.5%
16	42%	AMERICAN ELECTRIC POWER CO INC	42.4%
17	38%	SEMPRA ENERGY	42.3%
18	35%	SOUTHERN CO/THE	41.9%
19	31%	PPL CORP	41.5%
20	27%	WEC ENERGY GROUP INC	41.0%
21	23%	NISOURCE INC	39.8%
22	19%	EDISON INTERNATIONAL	37.8%
23	15%	EVERSOURCE ENERGY	37.1%
24	12%	NEXTERA ENERGY INC	36.0%
25	8%	ALLIANT ENERGY CORP	34.6%
26	4%	AMERICAN WATER WORKS CO INC	33.1%

Average	**55.5%**
Orange and Rockland Utilities, Inc.	**38.5%**

	Adjusted Cash Flows from Operations / Total Debt									
Company Name	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
AEP Texas Inc.	N/A	N/A	N/A	N/A	N/A	13.1%	18.1%	18.4%	16.5%	17.8%
Alabama Power Co.	29.3%	31.2%	26.5%	28.0%	26.7%	29.1%	26.1%	28.1%	24.3%	20.2%
Ameren Illinois	38.8%	26.4%	28.6%	29.0%	20.5%	27.8%	31.8%	27.7%	20.4%	26.4%
Appalachian Power Co.	14.9%	11.3%	17.5%	17.4%	16.8%	20.2%	21.4%	20.9%	18.3%	15.6%
Arizona Public Service Co.	22.2%	31.7%	39.3%	41.2%	30.1%	32.4%	28.4%	27.4%	26.5%	22.3%
Black Hills Power Inc.	26.6%	18.9%	26.3%	26.3%	19.5%	22.4%	26.1%	24.5%	24.9%	20.3%
Cleveland Elec Illuminating Co	15.7%	10.3%	12.5%	8.8%	9.6%	10.7%	11.6%	15.9%	20.1%	16.1%
Connecticut Light & Power Co.	29.7%	18.0%	14.4%	21.2%	24.6%	11.5%	24.5%	25.6%	21.1%	19.6%
Consumers Energy Co.	18.6%	27.2%	27.6%	23.0%	24.6%	29.2%	24.2%	27.8%	20.4%	21.9%
Dominion Energy South Carolina	23.5%	17.7%	14.7%	19.8%	17.5%	16.0%	19.6%	22.6%	10.5%	18.6%
Duke Energy Carolinas LLC	25.9%	22.0%	26.0%	30.1%	32.8%	31.0%	28.4%	26.3%	23.7%	24.0%
Duke Energy Florida LLC	26.3%	19.8%	14.8%	22.9%	28.6%	24.0%	17.5%	18.2%	13.8%	15.6%
Duke Energy Indiana, LLC	22.7%	18.1%	22.0%	24.6%	28.5%	25.5%	26.9%	22.7%	25.9%	24.5%
Duke Energy Ohio Inc.	30.8%	29.5%	20.9%	22.9%	21.4%	34.0%	23.5%	24.1%	22.5%	17.6%
Duke Energy Progress LLC	38.7%	27.4%	21.3%	25.3%	27.5%	21.1%	21.0%	23.2%	18.8%	18.8%
Entergy Arkansas LLC	25.2%	23.6%	17.3%	20.6%	15.7%	21.5%	19.6%	16.7%	10.8%	19.4%
Entergy Louisiana LLC	47.8%	18.7%	20.0%	27.5%	28.1%	21.9%	24.5%	19.4%	19.3%	18.2%
Entergy Mississippi LLC	24.2%	14.1%	18.3%	22.1%	26.6%	25.3%	27.2%	19.5%	26.2%	16.9%
Entergy New Orleans LLC	29.3%	19.9%	31.2%	37.3%	30.9%	27.7%	42.4%	38.6%	24.9%	22.0%
Entergy Texas Inc.	14.9%	14.8%	21.3%	21.9%	17.4%	16.1%	19.6%	17.3%	22.8%	15.3%
Florida Power & Light Co.	28.0%	36.0%	34.1%	35.7%	35.0%	34.5%	42.4%	25.7%	37.8%	33.6%
Georgia Power Co.	19.8%	27.6%	26.8%	27.0%	25.0%	24.4%	20.4%	22.5%	24.6%	18.9%
Hawaiian Electric Co.	32.1%	22.4%	20.8%	21.4%	26.7%	27.9%	28.8%	23.7%	28.7%	26.0%
Idaho Power Co.	20.0%	21.1%	18.4%	21.1%	23.1%	20.9%	19.7%	23.2%	23.6%	21.4%
Indiana Michigan Power Co.	19.7%	26.1%	24.9%	26.7%	26.6%	26.7%	18.3%	22.4%	23.6%	18.3%
Interstate Power & Light Co.	29.3%	20.7%	22.1%	25.9%	20.9%	23.8%	20.1%	18.9%	20.8%	22.0%
Jersey Cntrl Power & Light Co.	29.3%	15.7%	17.2%	14.6%	13.6%	13.8%	19.4%	26.3%	12.6%	24.6%
Kentucky Power Co.	16.3%	18.6%	17.2%	19.4%	20.2%	14.3%	12.5%	17.0%	10.6%	9.5%
Kentucky Utilities Co.	19.4%	24.2%	25.7%	22.4%	28.9%	23.5%	25.9%	27.3%	19.8%	21.6%
Louisville Gas & Electric Co.	21.6%	25.7%	28.4%	27.7%	28.0%	24.8%	26.2%	28.0%	19.8%	22.6%
Madison Gas and Electric Co.	37.2%	34.1%	41.1%	34.6%	41.4%	33.4%	34.2%	32.6%	25.1%	26.5%
Metropolitan Edison Co.	28.1%	12.3%	21.1%	21.4%	18.4%	21.2%	26.6%	30.5%	26.3%	24.6%
Mississippi Power Co.	19.0%	18.5%	17.0%	25.4%	27.9%	14.6%	12.7%	1.5%	57.3%	20.1%
Monongahela Power Co.	25.9%	16.2%	19.6%	14.1%	14.6%	17.3%	19.1%	23.5%	13.6%	16.9%
North Shore Gas Co.	34.4%	32.0%	24.2%	23.1%	5.1%	23.7%	30.2%	20.3%	24.8%	17.6%
Northern States Power Co - WI	32.2%	36.8%	28.0%	29.2%	25.3%	28.7%	25.7%	25.2%	25.8%	27.3%
Northern States Power Co. - MN	30.3%	30.4%	25.6%	25.3%	28.2%	26.4%	28.3%	27.7%	29.9%	19.7%
NSTAR Electric Co.	32.5%	36.4%	31.6%	32.0%	25.7%	25.7%	28.6%	20.7%	23.4%	20.7%
Ohio Edison Co.	23.9%	25.1%	28.1%	22.5%	34.1%	34.7%	27.7%	39.6%	47.9%	36.8%
Ohio Power Co.	26.4%	25.3%	25.5%	31.6%	26.5%	31.1%	39.8%	38.8%	50.8%	17.1%
Oklahoma Gas and Electric Co.	28.1%	25.9%	29.6%	27.5%	27.9%	26.3%	26.3%	21.7%	21.8%	20.1%
Oncor Electric Delivery Co.	21.1%	22.3%	20.0%	22.6%	22.9%	21.3%	20.9%	22.2%	19.4%	16.7%
Pennsylvania Electric Co.	11.5%	17.5%	11.6%	15.4%	15.9%	17.0%	23.4%	21.2%	21.2%	21.5%
Pennsylvania Power Co.	42.4%	32.3%	28.4%	28.2%	27.8%	36.0%	37.5%	39.3%	30.6%	23.9%
Piedmont Natural Gas Co.	24.1%	30.3%	20.6%	20.3%	22.2%	17.9%	6.1%	19.7%	12.5%	17.2%
Potomac Edison Co.	9.4%	24.5%	19.0%	28.8%	19.3%	17.9%	28.8%	24.9%	24.5%	12.6%
PPL Electric Utilities Corp.	28.7%	17.5%	17.7%	20.1%	21.4%	24.4%	27.5%	28.9%	24.9%	23.7%
Progress Energy Inc.	18.7%	13.6%	11.2%	15.4%	20.6%	16.1%	13.1%	15.8%	12.0%	13.5%
Public Service Co. of CO	23.7%	27.1%	19.3%	31.8%	27.3%	29.2%	25.6%	24.9%	20.3%	21.9%
Public Service Co. of NH	20.7%	20.7%	20.0%	17.6%	25.4%	25.7%	27.3%	21.4%	19.3%	15.0%
Public Service Co. of NM	17.4%	21.2%	18.2%	15.9%	22.8%	17.6%	18.2%	21.3%	20.1%	17.7%
Public Service Co. of OK	15.1%	33.9%	28.3%	18.7%	18.1%	26.0%	15.3%	16.9%	20.8%	22.6%
San Diego Gas & Electric Co.	22.6%	27.6%	35.9%	24.4%	30.0%	26.7%	29.3%	23.7%	21.4%	20.1%
SCANA Corp.	20.0%	16.3%	14.5%	18.0%	16.2%	11.2%	19.0%	19.6%	10.8%	N/A
Southern California Edison Co.	46.7%	38.9%	41.6%	31.7%	33.8%	44.3%	30.2%	32.7%	26.3%	-1.7%
Southern California Gas Co.	44.5%	57.2%	55.6%	55.3%	40.4%	23.1%	22.5%	37.2%	22.8%	25.8%
Southern Company Gas	17.7%	9.3%	18.1%	16.6%	20.3%	23.1%	10.2%	12.0%	8.8%	17.4%
Southwestern Electric Power Co	18.8%	19.3%	31.4%	19.1%	24.6%	18.4%	17.3%	16.9%	15.1%	15.1%
Southwestern Public Service Co	20.0%	25.6%	25.9%	17.0%	29.0%	24.1%	22.6%	26.4%	22.1%	18.0%
Texas-New Mexico Power Co.	20.3%	27.5%	25.2%	28.9%	27.7%	25.1%	24.7%	22.5%	18.0%	20.2%
Toledo Edison Co.	8.1%	4.3%	8.6%	-7.2%	13.8%	12.6%	11.6%	26.5%	31.4%	25.1%
Union Electric Co.	27.9%	25.8%	28.2%	27.8%	28.3%	30.0%	30.0%	26.0%	32.3%	22.9%
Virginia Electric & Power Co.	20.3%	28.0%	26.9%	26.3%	25.4%	22.5%	27.1%	24.7%	26.3%	21.3%
West Penn Power Co.	34.4%	26.1%	24.9%	34.6%	29.5%	23.0%	33.5%	34.2%	23.6%	28.3%
Wisconsin Electric Power Co.	11.4%	11.0%	11.1%	17.6%	15.2%	12.6%	13.4%	11.9%	16.9%	13.6%
Wisconsin Gas LLC	N/A	N/A	N/A	N/A	21.4%	23.8%	23.9%	20.0%	18.2%	15.1%
Wisconsin Power and Light Co	27.0%	32.5%	27.4%	28.3%	25.8%	27.5%	34.4%	23.3%	22.6%	20.9%
Wisconsin Public Service Corp.	36.4%	27.9%	16.2%	21.6%	20.9%	17.7%	28.4%	32.5%	22.3%	24.9%
Median	21.5%	22.4%	22.5%	25.5%	21.0%	20.7%	21.3%	21.0%	21.9%	18.0%
Average	24.7%	23.9%	23.3%	24.3%	24.9%	23.8%	23.1%	22.8%	21.4%	18.7%
Orange & Rockland Utlts Inc.	**21.7%**	**24.6%**	**22.6%**	**24.8%**	**26.6%**	**22.9%**	**18.1%**	**27.2%**	**23.3%**	**19.5%**

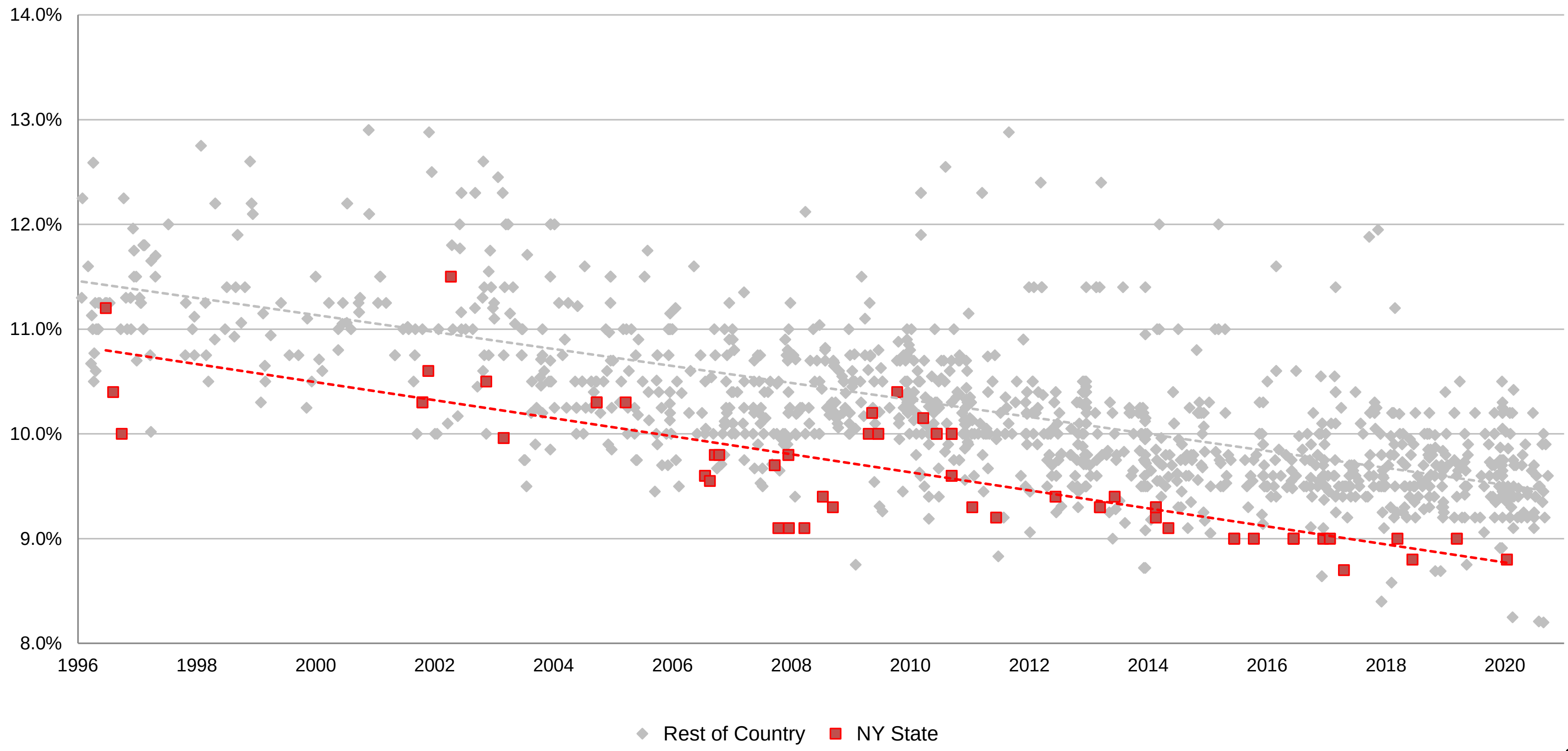
	Adjusted Cash Flows from Operations Interest Coverage									
Company Name	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
AEP Texas Inc.	N/A	N/A	N/A	N/A	N/A	4.1x	5.3x	5.7x	5.6x	7.0x
Alabama Power Co.	7.0x	7.4x	6.7x	7.7x	7.9x	8.3x	7.1x	8.0x	7.1x	6.2x
Ameren Illinois	5.9x	4.2x	4.8x	4.8x	5.1x	6.2x	7.0x	6.6x	5.6x	7.5x
Appalachian Power Co.	3.7x	3.2x	4.4x	4.8x	4.2x	5.4x	5.7x	5.6x	5.0x	4.6x
Arizona Public Service Co.	4.7x	6.0x	7.6x	8.6x	6.7x	7.8x	7.4x	7.5x	7.0x	6.8x
Black Hills Power Inc.	5.4x	4.2x	5.1x	4.6x	4.3x	4.5x	5.1x	5.1x	5.3x	4.9x
Cleveland Elec Illuminating Co	3.3x	2.5x	2.8x	2.3x	2.4x	2.7x	2.6x	3.4x	4.5x	4.4x
Connecticut Light & Power Co.	6.6x	4.6x	4.2x	5.8x	6.0x	3.4x	5.8x	6.6x	5.5x	5.7x
Consumers Energy Co.	4.2x	5.6x	6.2x	5.7x	6.4x	7.7x	6.6x	7.2x	5.9x	6.5x
Dominion Energy South Carolina	5.4x	4.3x	3.9x	5.0x	4.9x	4.4x	5.3x	5.3x	2.9x	3.8x
Duke Energy Carolinas LLC	6.5x	6.7x	6.9x	8.1x	7.7x	7.3x	7.4x	7.4x	7.1x	7.3x
Duke Energy Florida LLC	5.8x	5.1x	4.1x	7.4x	8.0x	7.2x	6.3x	5.6x	4.6x	5.0x
Duke Energy Indiana, LLC	6.8x	6.0x	7.0x	6.5x	7.4x	6.5x	6.6x	6.0x	7.1x	7.5x
Duke Energy Ohio Inc.	8.2x	8.3x	6.3x	7.9x	6.6x	8.3x	6.2x	6.5x	7.0x	5.8x
Duke Energy Progress LLC	8.7x	7.6x	6.3x	8.2x	8.2x	7.1x	6.7x	7.0x	6.0x	6.9x
Entergy Arkansas LLC	6.4x	6.6x	5.6x	6.6x	5.7x	6.8x	6.2x	5.4x	4.0x	6.2x
Entergy Louisiana LLC	9.6x	5.3x	5.9x	7.3x	7.1x	5.3x	6.5x	5.8x	6.3x	5.9x
Entergy Mississippi LLC	4.9x	3.7x	4.9x	5.1x	6.0x	5.7x	6.6x	6.2x	7.7x	5.7x
Entergy New Orleans LLC	4.8x	4.1x	6.6x	7.4x	6.9x	6.7x	10.2x	9.3x	7.2x	7.2x
Entergy Texas Inc.	3.7x	3.7x	4.7x	4.8x	4.0x	3.8x	4.6x	4.3x	5.2x	5.1x
Florida Power & Light Co.	6.3x	8.3x	8.3x	8.8x	9.4x	8.9x	10.7x	8.2x	10.1x	9.9x
Georgia Power Co.	5.7x	8.2x	8.1x	8.3x	8.1x	8.0x	6.8x	7.5x	7.4x	7.3x
Hawaiian Electric Co.	6.8x	5.1x	5.1x	5.6x	6.2x	6.6x	7.0x	6.0x	7.1x	7.9x
Idaho Power Co.	5.4x	5.4x	4.9x	5.2x	5.6x	5.4x	5.3x	5.8x	6.0x	5.5x
Indiana Michigan Power Co.	4.9x	6.6x	6.0x	6.9x	7.4x	8.0x	6.0x	7.1x	6.8x	6.4x
Interstate Power & Light Co.	5.8x	4.6x	5.1x	6.4x	5.5x	6.1x	6.0x	5.4x	6.1x	7.2x
Jersey Cntrl Power & Light Co.	5.4x	3.6x	4.2x	3.9x	3.3x	3.3x	4.2x	5.2x	3.1x	6.2x
Kentucky Power Co.	3.5x	3.8x	3.8x	4.3x	5.6x	3.9x	3.4x	4.3x	3.5x	3.4x
Kentucky Utilities Co.	5.6x	7.4x	8.1x	8.2x	9.7x	7.8x	7.3x	7.8x	6.1x	6.6x
Louisville Gas & Electric Co.	7.0x	7.5x	8.9x	12.2x	10.2x	8.8x	7.6x	8.5x	6.4x	6.9x
Madison Gas and Electric Co.	8.8x	7.1x	8.6x	8.3x	9.5x	7.4x	7.6x	7.9x	7.1x	7.1x
Metropolitan Edison Co.	5.6x	3.3x	4.9x	4.5x	4.3x	4.8x	5.8x	6.3x	6.0x	6.5x
Mississippi Power Co.	7.1x	12.5x	8.7x	16.2x	15.8x	66.0x	6.3x	1.7x	12.9x	5.6x
Monongahela Power Co.	4.9x	4.8x	7.0x	6.8x	4.0x	4.9x	5.1x	5.8x	4.1x	5.0x
North Shore Gas Co.	8.0x	7.2x	6.9x	8.3x	2.8x	8.5x	10.9x	8.3x	9.3x	6.3x
Northern States Power Co - WI	6.6x	7.7x	7.2x	7.1x	7.3x	7.6x	6.7x	7.0x	7.3x	7.3x
Northern States Power Co. - MN	6.6x	6.6x	6.3x	6.9x	7.4x	7.4x	7.5x	7.5x	8.1x	6.5x
NSTAR Electric Co.	10.2x	10.8x	9.7x	9.7x	7.9x	8.1x	8.4x	7.2x	8.2x	7.2x
Ohio Edison Co.	4.5x	4.4x	4.8x	3.7x	4.9x	4.9x	4.4x	6.7x	7.8x	6.5x
Ohio Power Co.	5.6x	5.7x	5.7x	5.8x	5.8x	6.3x	7.3x	7.9x	10.3x	4.7x
Oklahoma Gas and Electric Co.	5.9x	5.7x	5.9x	6.1x	6.2x	5.7x	5.9x	5.7x	5.5x	5.6x
Oncor Electric Delivery Co.	4.5x	4.8x	4.4x	4.8x	5.1x	5.2x	5.1x	5.6x	5.0x	4.9x
Pennsylvania Electric Co.	3.0x	4.0x	2.9x	3.6x	3.7x	4.1x	5.3x	5.0x	5.2x	5.7x
Pennsylvania Power Co.	7.1x	5.2x	4.8x	5.3x	5.6x	7.0x	7.3x	7.6x	6.9x	5.3x
Piedmont Natural Gas Co.	6.4x	7.9x	14.7x	14.6x	8.2x	6.0x	2.7x	7.0x	4.6x	6.7x
Potomac Edison Co.	2.6x	6.9x	6.2x	9.0x	5.8x	5.6x	7.6x	6.5x	6.3x	3.9x
PPL Electric Utilities Corp.	5.3x	4.1x	4.5x	5.4x	5.5x	6.3x	7.7x	7.7x	6.8x	6.5x
Progress Energy Inc.	4.2x	3.6x	3.3x	4.5x	5.7x	4.8x	4.5x	4.6x	3.9x	4.5x
Public Service Co. of CO	6.0x	6.2x	5.1x	8.6x	8.5x	8.0x	7.4x	7.4x	6.8x	7.0x
Public Service Co. of NH	5.6x	6.1x	5.3x	5.3x	7.5x	8.3x	7.7x	6.3x	5.8x	4.9x
Public Service Co. of NM	4.0x	4.6x	4.0x	3.8x	5.3x	4.5x	4.5x	5.4x	5.5x	5.7x
Public Service Co. of OK	3.6x	7.0x	5.9x	4.7x	5.0x	6.8x	5.0x	5.6x	5.6x	5.9x
San Diego Gas & Electric Co.	6.8x	8.9x	9.9x	6.7x	8.3x	7.1x	8.3x	7.8x	7.3x	4.2x
SCANA Corp.	4.7x	4.0x	3.8x	4.5x	4.4x	3.3x	5.1x	4.8x	2.9x	N/A
Southern California Edison Co.	9.6x	8.6x	8.7x	7.4x	7.8x	9.9x	7.2x	7.7x	6.4x	0.6x
Southern California Gas Co.	11.7x	11.9x	12.6x	12.7x	12.4x	7.8x	8.1x	12.3x	8.3x	9.3x
Southern Company Gas	5.4x	4.4x	5.9x	5.9x	6.6x	7.5x	4.8x	5.5x	3.5x	5.9x
Southwestern Electric Power Co	5.1x	5.7x	8.8x	4.2x	5.4x	4.7x	5.0x	4.6x	4.3x	4.6x
Southwestern Public Service Co	4.1x	5.2x	5.5x	4.1x	6.5x	5.7x	5.6x	7.0x	7.4x	7.1x
Texas-New Mexico Power Co.	3.0x	3.9x	4.0x	4.9x	4.9x	4.9x	4.6x	4.6x	4.3x	5.9x
Toledo Edison Co.	2.2x	1.6x	2.3x	0.1x	2.8x	2.3x	2.3x	3.9x	4.3x	4.0x
Union Electric Co.	6.2x	5.9x	6.1x	6.0x	6.5x	6.6x	6.7x	6.0x	7.6x	6.7x
Virginia Electric & Power Co.	5.3x	7.7x	6.7x	7.4x	7.6x	6.8x	7.4x	7.0x	7.3x	6.2x
West Penn Power Co.	6.1x	7.9x	8.0x	11.4x	9.2x	7.9x	10.5x	9.6x	7.2x	8.6x
Wisconsin Electric Power Co.	5.8x	7.3x	6.3x	8.9x	8.3x	7.0x	7.4x	6.8x	9.0x	2.6x
Wisconsin Gas LLC	N/A	N/A	N/A	N/A	9.9x	12.5x	10.4x	7.3x	6.6x	5.8x
Wisconsin Power and Light Co	5.5x	6.1x	6.5x	6.6x	6.1x	6.0x	7.5x	6.2x	6.3x	6.1x
Wisconsin Public Service Corp.	7.0x	6.1x	4.7x	7.0x	5.8x	5.9x	9.7x	9.7x	7.6x	7.8x
Median	5.3x	5.6x	5.7x	6.5x	6.5x	6.0x	6.0x	6.0x	6.2x	5.7x
Average	5.7x	5.9x	5.9x	6.4x	6.7x	6.4x	6.4x	6.4x	6.1x	5.6x
Orange & Rockland Utlts Inc.	**4.8x**	**5.4x**	**5.6x**	**5.5x**	**6.1x**	**5.8x**	**4.7x**	**6.7x**	**5.8x**	**5.0x**

	EBITDA / Total Debt									
Company Name	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
AEP Texas Inc.	N/A	N/A	N/A	N/A	N/A	4.4x	4.2x	4.2x	4.7x	5.3x
Alabama Power Co.	2.8x	2.7x	2.7x	2.7x	2.9x	2.9x	2.8x	2.9x	3.3x	3.3x
Ameren Illinois	2.6x	2.5x	3.0x	2.8x	3.1x	3.2x	3.0x	3.1x	3.6x	3.6x
Appalachian Power Co.	5.2x	5.4x	4.0x	4.9x	4.1x	3.7x	3.6x	3.8x	4.6x	5.2x
Arizona Public Service Co.	2.9x	2.7x	2.4x	2.4x	2.5x	2.5x	2.8x	2.9x	2.9x	3.6x
Black Hills Power Inc.	3.4x	3.3x	3.1x	3.0x	3.4x	2.8x	2.8x	2.9x	3.2x	3.6x
Cleveland Elec Illuminating Co	6.1x	6.0x	6.6x	5.3x	6.4x	5.7x	5.8x	3.9x	3.1x	4.3x
Connecticut Light & Power Co.	3.8x	4.3x	4.9x	4.1x	3.9x	3.6x	3.1x	3.3x	3.5x	3.6x
Consumers Energy Co.	3.1x	2.9x	2.9x	2.8x	3.0x	3.1x	3.1x	2.9x	3.4x	3.4x
Dominion Energy South Carolina	3.8x	3.9x	4.0x	3.7x	4.0x	4.0x	4.3x	17.5x	-17.6x	-8.4x
Duke Energy Carolinas LLC	2.9x	3.5x	3.1x	2.7x	2.5x	2.4x	2.7x	2.8x	3.4x	3.1x
Duke Energy Florida LLC	3.3x	5.4x	6.2x	4.8x	3.0x	3.1x	4.0x	4.4x	4.3x	4.1x
Duke Energy Indiana, LLC	3.6x	4.9x	9.3x	3.5x	3.4x	3.4x	2.9x	3.0x	3.3x	3.3x
Duke Energy Ohio Inc.	12.6x	3.5x	3.2x	4.1x	4.9x	3.2x	3.2x	3.4x	4.2x	4.5x
Duke Energy Progress LLC	2.1x	2.7x	4.1x	3.4x	3.5x	3.5x	3.4x	3.4x	3.6x	3.7x
Entergy Arkansas LLC	2.7x	2.7x	3.2x	3.4x	3.9x	4.3x	3.6x	3.9x	6.3x	4.4x
Entergy Louisiana LLC	2.7x	4.7x	5.1x	4.0x	3.5x	3.3x	3.7x	3.7x	4.4x	4.2x
Entergy Mississippi LLC	3.0x	3.3x	4.6x	3.6x	3.5x	3.1x	3.1x	3.4x	6.5x	4.3x
Entergy New Orleans LLC	1.7x	1.7x	2.7x	3.5x	2.9x	2.6x	3.0x	2.9x	3.8x	4.4x
Entergy Texas Inc.	6.0x	5.6x	6.3x	5.7x	4.7x	5.0x	4.2x	4.9x	4.4x	5.9x
Florida Power & Light Co.	2.3x	2.6x	2.8x	2.3x	2.3x	2.1x	2.0x	3.0x	2.2x	2.6x
Georgia Power Co.	3.5x	3.0x	3.1x	3.0x	3.0x	3.1x	3.1x	3.2x	4.0x	3.6x
Hawaiian Electric Co.	3.1x	2.8x	3.1x	3.0x	2.6x	2.7x	2.7x	2.9x	3.0x	3.5x
Idaho Power Co.	4.6x	4.7x	3.8x	3.5x	3.8x	3.7x	3.9x	3.4x	3.7x	3.6x
Indiana Michigan Power Co.	3.7x	3.7x	3.8x	3.3x	3.4x	3.2x	3.7x	4.2x	3.7x	4.3x
Interstate Power & Light Co.	3.0x	3.4x	3.5x	3.7x	4.2x	4.0x	4.2x	4.3x	3.9x	4.2x
Jersey Cntrl Power & Light Co.	3.2x	4.2x	4.8x	4.6x	6.3x	7.0x	5.6x	4.1x	4.1x	3.9x
Kentucky Power Co.	3.9x	3.5x	3.8x	5.0x	4.5x	5.2x	4.3x	4.7x	4.4x	5.2x
Kentucky Utilities Co.	3.7x	3.3x	3.9x	3.6x	3.6x	3.4x	3.0x	3.1x	3.4x	3.5x
Louisville Gas & Electric Co.	3.4x	2.8x	2.9x	3.1x	3.3x	3.4x	3.1x	3.1x	3.6x	3.6x
Madison Gas and Electric Co.	2.3x	2.3x	2.2x	2.2x	2.1x	2.2x	2.1x	2.3x	2.8x	2.9x
Metropolitan Edison Co.	4.0x	4.8x	5.2x	14.0x	5.1x	4.2x	3.6x	2.7x	3.0x	3.5x
Mississippi Power Co.	3.1x	5.5x	7.4x	-3.1x	-5.2x	56.6x	38.9x	-0.7x	4.1x	3.7x
Monongahela Power Co.	4.6x	8.4x	4.5x	317.4x	4.6x	4.7x	4.5x	5.0x	3.8x	5.1x
North Shore Gas Co.	3.2x	2.8x	3.5x	3.5x	3.9x	3.0x	3.1x	3.5x	3.9x	4.2x
Northern States Power Co - WI	2.6x	2.4x	2.9x	2.7x	2.9x	2.8x	3.0x	2.9x	2.9x	3.2x
Northern States Power Co. - MN	2.9x	2.8x	3.1x	3.2x	3.2x	3.6x	3.0x	2.9x	3.2x	3.6x
NSTAR Electric Co.	3.2x	2.9x	3.5x	2.8x	2.7x	2.5x	3.0x	3.2x	3.5x	3.5x
Ohio Edison Co.	3.2x	3.0x	3.2x	2.1x	2.6x	2.2x	2.3x	1.7x	1.5x	1.8x
Ohio Power Co.	2.6x	2.8x	3.2x	2.3x	3.3x	3.1x	2.3x	2.2x	2.6x	3.4x
Oklahoma Gas and Electric Co.	2.8x	2.9x	2.7x	3.0x	3.3x	3.2x	3.0x	3.5x	3.7x	3.7x
Oncor Electric Delivery Co.	3.6x	3.6x	3.6x	3.4x	3.3x	3.5x	3.7x	3.9x	4.3x	4.7x
Pennsylvania Electric Co.	5.0x	5.5x	5.6x	5.6x	6.5x	4.9x	4.3x	3.3x	3.1x	4.0x
Pennsylvania Power Co.	2.3x	2.3x	2.4x	2.1x	3.4x	2.7x	2.9x	1.9x	2.6x	2.9x
Piedmont Natural Gas Co.	2.6x	3.0x	4.1x	4.6x	4.2x	4.4x	3.7x	5.6x	5.7x	5.7x
Potomac Edison Co.	4.1x	4.3x	3.6x	2.9x	3.7x	3.4x	3.3x	3.6x	3.7x	3.7x
PPL Electric Utilities Corp.	3.4x	3.4x	4.1x	3.8x	3.4x	3.6x	3.2x	3.1x	3.4x	3.4x
Progress Energy Inc.	4.0x	5.6x	6.9x	5.6x	4.5x	4.4x	5.0x	4.8x	4.9x	4.8x
Public Service Co. of CO	3.2x	3.1x	3.1x	3.1x	3.4x	3.1x	3.2x	3.3x	3.7x	4.1x
Public Service Co. of NH	4.1x	4.0x	3.7x	3.5x	3.5x	3.8x	3.2x	3.1x	4.7x	4.7x
Public Service Co. of NM	4.2x	4.2x	3.4x	3.7x	3.9x	7.3x	4.4x	3.9x	5.3x	6.6x
Public Service Co. of OK	3.7x	2.8x	2.9x	3.4x	4.1x	4.1x	4.0x	4.7x	4.4x	3.8x
San Diego Gas & Electric Co.	3.3x	3.2x	3.1x	3.5x	3.2x	2.8x	2.9x	4.0x	3.7x	3.1x
SCANA Corp.	4.2x	4.3x	4.4x	4.0x	4.3x	3.5x	4.5x	12.0x	-92.4x	N/A
Southern California Edison Co.	2.4x	2.5x	2.3x	3.0x	2.5x	2.6x	2.5x	3.2x	8.0x	4.3x
Southern California Gas Co.	1.9x	1.6x	1.8x	1.6x	2.0x	2.3x	2.9x	2.6x	3.2x	3.0x
Southern Company Gas	4.1x	7.7x	4.9x	4.7x	3.3x	4.2x	6.3x	5.8x	4.2x	4.6x
Southwestern Electric Power Co	4.5x	4.6x	4.6x	4.1x	4.3x	4.1x	5.1x	5.0x	5.1x	5.4x
Southwestern Public Service Co	3.2x	3.2x	3.2x	3.8x	3.3x	3.6x	3.5x	3.6x	4.0x	4.8x
Texas-New Mexico Power Co.	3.0x	2.7x	2.7x	2.8x	2.8x	2.8x	2.7x	3.0x	3.5x	4.0x
Toledo Edison Co.	4.8x	4.9x	5.8x	3.8x	5.1x	3.6x	3.5x	2.3x	1.8x	2.5x
Union Electric Co.	3.3x	3.6x	2.9x	2.8x	3.0x	3.0x	2.9x	2.9x	2.8x	3.4x
Virginia Electric & Power Co.	2.9x	3.1x	2.7x	2.8x	3.7x	3.4x	3.0x	2.9x	3.6x	3.9x
West Penn Power Co.	2.9x	3.4x	3.5x	2.6x	3.5x	2.9x	2.6x	2.5x	3.1x	3.0x
Wisconsin Electric Power Co.	5.3x	6.6x	5.8x	5.6x	5.5x	5.5x	5.5x	5.9x	7.4x	4.9x
Wisconsin Gas LLC	N/A	N/A	N/A	N/A	3.1x	3.8x	3.7x	3.8x	4.3x	4.4x
Wisconsin Power and Light Co	2.6x	2.4x	2.9x	2.9x	2.9x	3.0x	3.0x	3.5x	3.7x	3.6x
Wisconsin Public Service Corp.	2.4x	2.6x	2.9x	3.3x	3.3x	3.9x	3.5x	3.3x	3.6x	3.7x
Median	**3.8x**	**3.5x**	**3.8x**	**3.5x**	**4.1x**	**3.7x**	**4.0x**	**4.1x**	**4.3x**	**4.5x**
Average	**3.3x**	**3.5x**	**3.6x**	**3.5x**	**3.4x**	**3.4x**	**3.4x**	**3.8x**	**4.0x**	**3.9x**
Orange & Rockland Utlts Inc.	**4.0x**	**3.7x**	**3.4x**	**3.8x**	**3.5x**	**3.9x**	**3.7x**	**3.6x**	**4.3x**	**4.0x**

	EBITDA / Interest Expense									
Company Name	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
AEP Texas Inc.	N/A	N/A	N/A	N/A	N/A	5.4x	5.6x	6.2x	6.0x	6.4x
Alabama Power Co.	7.3x	7.6x	7.9x	8.9x	9.0x	8.7x	8.3x	8.6x	7.7x	7.9x
Ameren Illinois	4.8x	4.9x	4.5x	4.6x	6.4x	5.9x	6.2x	6.4x	6.2x	6.9x
Appalachian Power Co.	3.5x	3.6x	4.8x	4.5x	4.7x	5.8x	6.1x	5.8x	4.9x	4.4x
Arizona Public Service Co.	5.7x	5.9x	6.9x	7.5x	7.5x	8.3x	8.1x	8.3x	7.7x	7.1x
Black Hills Power Inc.	4.9x	5.1x	5.0x	4.7x	4.9x	5.6x	5.7x	5.8x	5.4x	5.3x
Cleveland Elec Illuminating Co	2.4x	2.4x	2.2x	2.7x	2.3x	2.7x	2.4x	3.8x	5.6x	4.9x
Connecticut Light & Power Co.	5.0x	4.8x	4.5x	5.5x	5.1x	5.7x	6.4x	6.7x	6.2x	6.6x
Consumers Energy Co.	5.5x	5.8x	6.4x	7.1x	7.2x	7.6x	7.5x	7.7x	7.1x	7.4x
Dominion Energy South Carolina	5.0x	4.8x	5.0x	5.4x	5.6x	5.2x	5.2x	1.1x	-1.0x	-1.8x
Duke Energy Carolinas LLC	7.3x	7.5x	7.4x	8.6x	8.2x	8.4x	8.5x	8.8x	7.5x	8.3x
Duke Energy Florida LLC	5.5x	3.8x	3.4x	5.9x	8.2x	8.2x	7.6x	5.8x	6.0x	6.2x
Duke Energy Indiana, LLC	7.1x	5.6x	3.0x	6.5x	6.7x	6.2x	7.1x	7.3x	7.3x	8.1x
Duke Energy Ohio Inc.	1.9x	7.0x	7.9x	7.3x	5.3x	6.8x	6.9x	6.7x	6.3x	6.0x
Duke Energy Progress LLC	9.3x	8.8x	6.1x	8.3x	7.5x	8.2x	8.0x	7.6x	7.3x	8.5x
Entergy Arkansas LLC	8.1x	8.9x	8.5x	7.9x	7.6x	6.3x	7.5x	6.8x	4.4x	6.1x
Entergy Louisiana LLC	6.7x	4.9x	4.8x	5.8x	6.3x	5.9x	6.1x	6.7x	6.2x	6.5x
Entergy Mississippi LLC	5.3x	5.8x	4.7x	5.2x	5.4x	6.0x	6.7x	7.9x	3.9x	6.5x
Entergy New Orleans LLC	7.5x	9.0x	6.6x	4.9x	6.6x	7.8x	7.3x	7.4x	6.4x	6.4x
Entergy Texas Inc.	3.0x	3.3x	2.8x	3.1x	3.6x	3.5x	4.4x	3.9x	4.2x	4.5x
Florida Power & Light Co.	8.4x	7.9x	7.6x	9.5x	10.2x	10.9x	11.2x	9.5x	11.1x	10.2x
Georgia Power Co.	6.7x	8.7x	8.6x	9.0x	9.6x	9.5x	9.2x	9.0x	6.4x	9.3x
Hawaiian Electric Co.	5.8x	6.6x	6.4x	7.2x	7.4x	7.3x	7.6x	7.3x	7.0x	7.7x
Idaho Power Co.	4.7x	4.5x	5.5x	5.8x	5.3x	5.7x	5.6x	6.1x	5.8x	5.9x
Indiana Michigan Power Co.	5.5x	5.8x	5.3x	6.7x	7.2x	8.1x	7.2x	6.5x	6.6x	6.9x
Interstate Power & Light Co.	5.6x	5.1x	5.2x	5.6x	5.2x	5.4x	6.0x	5.5x	6.2x	6.7x
Jersey Cntrl Power & Light Co.	4.7x	4.0x	3.9x	4.2x	2.7x	2.4x	3.0x	3.9x	4.0x	5.4x
Kentucky Power Co.	3.9x	4.3x	4.3x	3.4x	5.1x	3.9x	4.5x	4.2x	5.4x	4.9x
Kentucky Utilities Co.	6.4x	7.9x	7.1x	9.0x	8.3x	8.4x	8.0x	8.1x	7.4x	7.4x
Louisville Gas & Electric Co.	8.3x	9.0x	9.5x	13.1x	10.0x	9.3x	8.2x	8.6x	7.7x	7.2x
Madison Gas and Electric Co.	9.1x	7.8x	8.3x	9.5x	9.7x	8.7x	9.0x	9.2x	8.6x	8.0x
Metropolitan Edison Co.	4.1x	3.9x	3.5x	1.2x	3.5x	4.3x	5.1x	6.4x	6.3x	6.3x
Mississippi Power Co.	10.4x	11.2x	6.1x	-19.6x	-10.2x	7.9x	1.1x	-68.6x	5.1x	6.3x
Monongahela Power Co.	3.3x	2.8x	6.8x	0.1x	4.5x	4.9x	4.8x	4.1x	5.9x	4.6x
North Shore Gas Co.	6.4x	6.9x	7.1x	9.2x	9.4x	10.5x	10.6x	10.3x	8.6x	7.2x
Northern States Power Co - WI	6.7x	7.4x	7.5x	7.7x	8.5x	8.2x	7.5x	8.3x	8.3x	7.1x
Northern States Power Co. - MN	6.3x	6.5x	6.7x	7.3x	7.0x	6.8x	7.7x	8.1x	7.5x	7.8x
NSTAR Electric Co.	9.0x	9.4x	7.9x	9.8x	9.9x	11.2x	8.7x	9.4x	8.7x	8.5x
Ohio Edison Co.	4.7x	4.5x	4.2x	5.5x	4.3x	5.2x	5.3x	8.3x	9.5x	8.2x
Ohio Power Co.	6.6x	6.5x	5.7x	6.6x	5.4x	5.5x	6.9x	8.0x	7.0x	6.4x
Oklahoma Gas and Electric Co.	6.2x	6.4x	6.0x	6.1x	5.8x	5.6x	6.2x	6.3x	5.5x	6.2x
Oncor Electric Delivery Co.	4.6x	4.7x	4.6x	5.0x	5.5x	5.6x	5.4x	5.2x	4.8x	5.0x
Pennsylvania Electric Co.	3.5x	3.1x	3.0x	3.1x	2.6x	3.7x	4.3x	5.6x	6.5x	5.5x
Pennsylvania Power Co.	6.1x	5.8x	5.6x	7.4x	4.9x	6.2x	5.9x	8.8x	7.5x	6.1x
Piedmont Natural Gas Co.	8.7x	7.7x	16.3x	14.7x	7.7x	6.4x	7.8x	5.5x	5.0x	5.8x
Potomac Edison Co.	4.0x	5.6x	7.5x	9.4x	6.8x	7.4x	6.9x	6.1x	5.8x	6.3x
PPL Electric Utilities Corp.	4.3x	5.2x	4.9x	5.8x	6.1x	6.0x	7.5x	7.5x	6.9x	7.0x
Progress Energy Inc.	4.3x	3.4x	2.9x	4.0x	5.0x	5.3x	5.4x	4.7x	4.8x	5.4x
Public Service Co. of CO	6.5x	6.2x	6.8x	7.6x	8.0x	7.8x	7.8x	7.8x	7.6x	6.6x
Public Service Co. of NH	5.4x	6.1x	5.9x	6.9x	7.3x	7.4x	7.6x	7.9x	5.2x	5.4x
Public Service Co. of NM	4.1x	4.0x	4.8x	4.6x	4.7x	2.7x	4.4x	5.2x	4.2x	4.0x
Public Service Co. of OK	4.6x	6.3x	6.0x	5.9x	5.4x	5.5x	6.6x	5.7x	5.0x	5.7x
San Diego Gas & Electric Co.	7.7x	8.8x	7.9x	6.7x	7.6x	8.3x	8.6x	7.1x	8.0x	5.1x
SCANA Corp.	4.4x	4.3x	4.4x	4.9x	5.0x	5.9x	4.8x	1.6x	-0.2x	N/A
Southern California Edison Co.	7.5x	7.8x	8.0x	6.7x	8.2x	7.9x	8.1x	6.4x	2.6x	5.2x
Southern California Gas Co.	12.7x	12.0x	11.8x	13.5x	14.1x	13.1x	11.0x	11.5x	10.1x	10.7x
Southern Company Gas	6.0x	4.7x	5.5x	6.2x	8.3x	6.7x	5.9x	6.6x	6.9x	6.2x
Southwestern Electric Power Co	4.9x	5.3x	5.4x	4.1x	4.1x	4.9x	4.5x	4.3x	4.2x	4.4x
Southwestern Public Service Co	4.8x	5.1x	5.4x	4.8x	5.7x	5.5x	5.8x	6.2x	7.1x	7.0x
Texas-New Mexico Power Co.	3.3x	3.9x	4.4x	4.7x	5.1x	5.5x	5.4x	5.4x	5.3x	6.0x
Toledo Edison Co.	3.0x	3.0x	2.5x	3.2x	2.6x	3.0x	3.0x	4.7x	6.0x	4.8x
Union Electric Co.	5.6x	5.3x	6.2x	6.4x	6.4x	6.2x	6.5x	6.7x	7.2x	7.4x
Virginia Electric & Power Co.	7.3x	7.6x	7.8x	8.6x	7.1x	7.5x	7.8x	8.4x	6.7x	6.4x
West Penn Power Co.	5.1x	7.7x	8.0x	11.6x	7.9x	10.5x	10.9x	10.1x	8.5x	8.8x
Wisconsin Electric Power Co.	7.9x	8.6x	8.3x	8.0x	8.8x	8.7x	8.7x	8.3x	6.4x	2.4x
Wisconsin Gas LLC	N/A	N/A	N/A	N/A	13.2x	12.6x	10.7x	8.4x	7.1x	7.3x
Wisconsin Power and Light Co	6.4x	6.5x	6.9x	6.7x	6.9x	6.0x	6.3x	6.4x	6.4x	6.8x
Wisconsin Public Service Corp.	6.9x	7.0x	7.9x	8.5x	6.9x	7.0x	8.7x	8.3x	8.3x	7.5x
Median	**5.3x**	**5.9x**	**5.4x**	**6.1x**	**6.4x**	**6.6x**	**5.9x**	**5.7x**	**5.5x**	**5.9x**
Average	**5.8x**	**5.9x**	**5.9x**	**6.4x**	**6.6x**	**6.8x**	**6.9x**	**6.3x**	**5.9x**	**6.3x**
Orange & Rockland Utlts Inc.	**4.4x**	**4.9x**	**5.9x**	**4.8x**	**5.5x**	**5.3x**	**5.5x**	**5.9x**	**4.9x**	**5.2x**

	Capital Expenditures / Net PP&E									
Company Name	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
AEP Texas Inc.	N/A	N/A	N/A	N/A	N/A	11.3%	11.1%	14.5%	17.9%	14.3%
Alabama Power Co.	6.5%	6.9%	6.0%	7.4%	9.2%	8.0%	7.2%	9.9%	9.9%	8.1%
Ameren Illinois	6.3%	7.4%	8.7%	12.5%	13.5%	13.4%	12.4%	13.0%	13.7%	12.0%
Appalachian Power Co.	7.2%	5.9%	5.8%	4.2%	5.4%	6.8%	6.6%	8.0%	7.3%	7.7%
Arizona Public Service Co.	8.0%	9.0%	8.7%	9.5%	8.2%	9.2%	9.9%	10.5%	8.5%	8.3%
Black Hills Power Inc.	11.9%	6.0%	5.8%	9.8%	10.3%	6.8%	9.4%	8.4%	7.3%	11.1%
Cleveland Elec Illuminating Co	6.8%	6.0%	8.1%	6.3%	5.1%	6.2%	6.1%	5.8%	6.3%	6.4%
Connecticut Light & Power Co.	6.8%	7.3%	7.3%	6.7%	7.6%	7.3%	8.0%	10.0%	9.7%	9.5%
Consumers Energy Co.	8.6%	8.7%	11.2%	11.4%	12.2%	11.0%	11.0%	10.2%	10.6%	11.5%
Dominion Energy South Carolina	9.4%	9.1%	10.4%	9.9%	8.6%	8.6%	11.0%	10.7%	7.1%	5.5%
Duke Energy Carolinas LLC	11.4%	10.5%	8.4%	7.4%	7.6%	7.5%	8.3%	9.1%	9.3%	8.3%
Duke Energy Florida LLC	10.4%	7.8%	8.6%	9.5%	7.0%	9.7%	13.4%	11.2%	11.8%	11.8%
Duke Energy Indiana, LLC	15.9%	12.7%	8.6%	6.4%	7.1%	7.2%	7.6%	8.2%	7.9%	7.9%
Duke Energy Ohio Inc.	5.7%	6.2%	6.3%	5.3%	6.5%	7.6%	8.6%	11.4%	12.4%	12.8%
Duke Energy Progress LLC	12.6%	12.3%	11.7%	11.5%	8.2%	9.4%	9.4%	9.0%	10.9%	9.0%
Entergy Arkansas LLC	6.6%	8.2%	7.1%	9.2%	9.7%	10.7%	14.0%	10.7%	9.2%	8.4%
Entergy Louisiana LLC	9.2%	8.3%	13.2%	11.5%	7.2%	7.8%	12.8%	12.8%	12.6%	10.7%
Entergy Mississippi LLC	10.3%	7.6%	7.1%	6.7%	7.0%	8.8%	10.9%	13.6%	11.8%	11.2%
Entergy New Orleans LLC	15.8%	11.0%	16.0%	15.4%	10.9%	13.8%	35.6%	11.8%	18.0%	18.1%
Entergy Texas Inc.	8.0%	8.1%	8.1%	7.8%	8.0%	12.1%	11.8%	11.3%	13.2%	21.4%
Florida Power & Light Co.	12.6%	14.4%	15.6%	10.0%	10.6%	10.8%	10.9%	13.5%	12.4%	12.8%
Georgia Power Co.	10.9%	8.7%	7.7%	7.4%	8.2%	7.9%	7.9%	9.6%	10.1%	10.3%
Hawaiian Electric Co.	5.6%	6.9%	10.1%	10.0%	8.3%	8.2%	7.1%	8.9%	9.2%	8.4%
Idaho Power Co.	10.8%	10.0%	6.8%	6.8%	7.2%	7.4%	7.1%	6.7%	6.3%	6.2%
Indiana Michigan Power Co.	7.8%	6.8%	6.7%	10.1%	8.9%	8.8%	10.6%	10.7%	8.6%	8.1%
Interstate Power & Light Co.	10.3%	8.0%	8.0%	9.7%	11.5%	12.6%	12.7%	11.4%	14.6%	13.6%
Jersey Cntrl Power & Light Co.	5.8%	6.8%	7.8%	10.4%	5.5%	6.1%	8.2%	6.2%	7.1%	7.4%
Kentucky Power Co.	4.7%	5.6%	7.1%	7.4%	5.1%	6.7%	5.7%	5.3%	7.3%	8.2%
Kentucky Utilities Co.	8.3%	5.9%	9.5%	14.6%	9.7%	7.9%	5.3%	6.4%	8.0%	8.4%
Louisville Gas & Electric Co.	7.5%	6.5%	8.9%	15.6%	15.4%	14.4%	8.8%	8.7%	9.9%	8.3%
Madison Gas and Electric Co.	6.2%	6.5%	9.2%	10.3%	7.7%	5.8%	6.5%	8.1%	14.1%	10.0%
Metropolitan Edison Co.	6.9%	5.9%	6.5%	5.9%	6.6%	5.6%	6.7%	7.9%	9.2%	8.9%
Mississippi Power Co.	14.6%	34.0%	37.1%	33.2%	23.4%	14.6%	13.0%	12.1%	5.3%	5.7%
Monongahela Power Co.	5.4%	7.4%	8.2%	5.1%	7.1%	7.0%	6.4%	6.5%	6.6%	5.4%
North Shore Gas Co.	4.8%	5.5%	8.0%	11.5%	10.2%	9.3%	6.5%	9.0%	14.6%	9.6%
Northern States Power Co - WI	11.4%	11.7%	11.8%	14.0%	17.2%	13.8%	10.5%	10.5%	10.1%	9.0%
Northern States Power Co. - MN	15.4%	11.5%	12.3%	14.6%	10.6%	14.5%	9.1%	7.8%	8.5%	9.6%
NSTAR Electric Co.	7.5%	8.8%	8.7%	9.4%	8.7%	8.3%	8.6%	8.7%	8.3%	9.1%
Ohio Edison Co.	7.3%	6.8%	9.4%	7.4%	6.0%	7.4%	6.8%	7.0%	6.3%	6.6%
Ohio Power Co.	4.9%	4.5%	5.1%	14.3%	9.5%	9.0%	7.8%	9.8%	11.6%	11.4%
Oklahoma Gas and Electric Co.	13.0%	15.3%	11.7%	12.1%	8.2%	7.6%	8.6%	9.9%	6.7%	7.1%
Oncor Electric Delivery Co.	10.9%	13.3%	12.7%	9.5%	9.3%	9.2%	10.2%	11.5%	11.5%	11.3%
Pennsylvania Electric Co.	7.1%	5.9%	5.9%	7.2%	6.2%	6.0%	7.4%	7.9%	8.0%	7.0%
Pennsylvania Power Co.	7.4%	6.0%	6.0%	6.7%	7.9%	11.7%	9.5%	9.8%	8.1%	8.0%
Piedmont Natural Gas Co.	8.2%	9.3%	17.1%	16.5%	11.5%	10.2%	11.0%	11.2%	12.2%	15.5%
Potomac Edison Co.	5.0%	7.0%	7.7%	6.5%	8.5%	6.1%	6.6%	6.5%	7.5%	7.3%
PPL Electric Utilities Corp.	11.6%	12.7%	14.6%	17.8%	16.0%	16.4%	14.8%	14.6%	12.7%	11.0%
Progress Energy Inc.	11.5%	10.1%	10.4%	10.6%	7.7%	9.5%	11.0%	9.9%	11.3%	10.1%
Public Service Co. of CO	6.2%	7.7%	8.7%	9.9%	9.6%	8.2%	8.7%	10.5%	10.4%	10.1%
Public Service Co. of NH	14.4%	10.7%	8.7%	7.5%	9.7%	10.8%	10.0%	11.8%	11.2%	9.9%
Public Service Co. of NM	8.3%	8.7%	6.6%	7.7%	9.5%	11.5%	11.7%	8.2%	6.6%	8.5%
Public Service Co. of OK	7.2%	5.0%	7.6%	8.2%	10.7%	9.7%	9.2%	6.8%	6.1%	7.1%
San Diego Gas & Electric Co.	14.1%	18.2%	11.4%	9.0%	9.5%	9.2%	10.6%	10.5%	9.5%	8.9%
SCANA Corp.	9.0%	8.7%	9.8%	9.4%	8.9%	8.7%	11.0%	11.4%	8.0%	N/A
Southern California Edison Co.	15.2%	14.9%	13.7%	11.8%	11.7%	12.0%	9.9%	9.7%	10.9%	10.8%
Southern California Gas Co.	8.4%	10.3%	9.1%	10.2%	13.4%	14.6%	12.9%	12.0%	12.4%	10.7%
Southern Company Gas	11.6%	5.4%	9.4%	8.5%	7.7%	9.8%	10.6%	12.9%	12.2%	11.4%
Southwestern Electric Power Co	9.5%	11.3%	10.3%	7.4%	8.7%	8.6%	6.6%	6.1%	6.6%	5.8%
Southwestern Public Service Co	12.9%	11.9%	13.4%	17.8%	14.8%	13.8%	10.9%	11.0%	17.2%	11.8%
Texas-New Mexico Power Co.	6.9%	10.5%	13.4%	12.0%	15.4%	13.9%	12.6%	13.5%	17.8%	17.4%
Toledo Edison Co.	8.0%	6.8%	9.2%	7.1%	4.5%	6.9%	6.2%	5.8%	6.3%	7.7%
Union Electric Co.	6.4%	5.5%	5.9%	6.2%	6.9%	5.6%	6.4%	6.6%	7.6%	8.5%
Virginia Electric & Power Co.	11.8%	9.9%	10.1%	10.8%	12.1%	9.5%	9.0%	8.6%	7.3%	8.0%
West Penn Power Co.	9.1%	10.1%	9.1%	7.5%	7.6%	8.1%	9.5%	10.3%	13.0%	11.1%
Wisconsin Electric Power Co.	8.1%	8.0%	6.3%	5.8%	5.9%	5.3%	4.8%	6.0%	6.3%	6.2%
Wisconsin Gas LLC	N/A	N/A	N/A	N/A	12.8%	16.7%	9.1%	9.9%	9.5%	10.8%
Wisconsin Power and Light Co	15.8%	10.4%	19.9%	8.8%	7.9%	8.4%	10.2%	13.0%	10.9%	9.2%
Wisconsin Public Service Corp.	3.6%	3.9%	7.6%	8.2%	10.3%	10.9%	8.5%	8.8%	10.7%	11.4%
Median	**8.5%**	**8.2%**	**10.1%**	**9.9%**	**10.0%**	**9.9%**	**9.1%**	**9.7%**	**9.0%**	**8.5%**
Average	**10.0%**	**9.8%**	**10.0%**	**9.8%**	**9.5%**	**9.5%**	**9.6%**	**9.9%**	**10.0%**	**9.8%**
Orange & Rockland Utlts Inc.	**9.6%**	**7.1%**	**8.4%**	**8.2%**	**8.4%**	**8.4%**	**8.6%**	**9.1%**	**9.0%**	**9.0%**

Allowed Return on Equity
New York State vs. Rest of Country



Source: SNL Financial report, “RRA Regulatory Focus – Adjustment Clauses” (November 12, 2019).

SNL Financial Report
Adjustment Clauses – A State by State Overview

	TYPE OF ADJUSTMENT						
			Decoupling[1]			Test Year	
	Electric Fuel / Gas Commodity / Purchased Power	Energy Conser.	Full	Partial	New Capital Invest.	Forecasted	Adj. Historical
Percentage of Jurisdictions with Adjustment Clause	100%	72%	38%	43%	83%	36%	57%
Allowed by New York PSC	Yes	No	Yes		Yes[2]	Yes	

Source: SNL Financial report, "RRA Regulatory Focus – Adjustment Clauses" (November 12, 2019).

(1) Jurisdictions which allow some utilities full and others partial decoupling are counted as having full decoupling.

(2) Gas utilities may implement riders to recover carrying costs on incremental capex and O&M expenses associated with the replacement of leak prone pipe above targeted miles established in rates.

Rank	Percentile	Company	5-Year Average Return on Equity
1	100%	UNITED PARCEL SERVICE INC	369.9%
2	100%	BOEING CO/THE	359.2%
3	99%	S&P GLOBAL INC	334.6%
4	99%	CLOROX CO/THE	236.2%
5	99%	O'REILLY AUTOMOTIVE INC	166.7%
6	99%	MASTERCARD INC	100.8%
7	98%	HERSHEY CO/THE	95.3%
8	98%	ALTRIA GROUP INC	86.4%
9	98%	METTLER-TOLEDO INTERNATIONAL INC	85.6%
10	98%	POOL CORP	82.9%
11	98%	INTERNATIONAL BUSINESS MACHINES	82.3%
12	97%	KLA CORP	79.0%
13	97%	ZOETIS INC	77.8%
14	97%	SHERWIN-WILLIAMS CO/THE	68.1%
15	97%	VERIZON COMMUNICATIONS INC	63.3%
16	96%	HANESBRANDS INC	63.1%
17	96%	AMCOR PLC	61.2%
18	96%	GILEAD SCIENCES INC	60.4%
19	96%	KELLOGG CO	59.4%
20	95%	PEPSICO INC	58.4%
21	95%	SEAGATE TECHNOLOGY PLC	58.4%
22	95%	CAMPBELL SOUP CO	57.3%
23	95%	ONEOK INC	56.2%
24	95%	CDW CORP/DE	56.1%
25	94%	SIMON PROPERTY GROUP INC	54.0%
26	94%	ILLINOIS TOOL WORKS INC	53.6%
27	94%	TJX COS INC/THE	52.8%
28	94%	LOWE'S COS INC	52.7%
29	93%	LYONDELLBASELL INDUSTRIES NV	51.6%
30	93%	AMERISOURCEBERGEN CORP	50.4%
31	93%	INTUIT INC	50.3%
32	93%	3M CO	48.8%
33	93%	OMNICOM GROUP INC	48.1%
34	92%	PAYCOM SOFTWARE INC	47.9%
35	92%	ROCKWELL AUTOMATION INC	46.7%
36	92%	BROWN-FORMAN CORP	46.7%
37	92%	SYSCO CORP	46.5%
38	91%	ACCENTURE PLC	46.0%
39	91%	APTIV PLC	46.0%
40	91%	APPLE INC	44.9%

Rank	Percentile	Company	5-Year Average Return on Equity
41	91%	ROSS STORES INC	44.6%
42	90%	TEXAS INSTRUMENTS INC	44.4%
43	90%	CITRIX SYSTEMS INC	43.7%
44	90%	QUALCOMM INC	43.0%
45	90%	NORTHROP GRUMMAN CORP	42.7%
46	90%	PAYCHEX INC	42.5%
47	89%	VIACOMCBS INC	42.5%
48	89%	AVERY DENNISON CORP	42.4%
49	89%	COCA-COLA CO/THE	42.4%
50	89%	ELI LILLY AND CO	41.2%
51	88%	CH ROBINSON WORLDWIDE INC	40.8%
52	88%	WW GRAINGER INC	40.4%
53	88%	AMGEN INC	40.1%
54	88%	NVR INC	39.4%
55	88%	CELANESE CORP	39.3%
56	87%	UNITED RENTALS INC	38.4%
57	87%	BIOGEN INC	38.1%
58	87%	UNITED AIRLINES HOLDINGS INC	38.0%
59	87%	AUTOMATIC DATA PROCESSING INC	37.6%
60	86%	CBOE GLOBAL MARKETS INC	37.4%
61	86%	BOOKING HOLDINGS INC	37.2%
62	86%	LAS VEGAS SANDS CORP	37.0%
63	86%	BROADRIDGE FINANCIAL SOLUTIONS I	36.3%
64	85%	ROBERT HALF INTERNATIONAL INC	36.0%
65	85%	ESTEE LAUDER COS INC/THE	35.6%
66	85%	VERISK ANALYTICS INC	35.4%
67	85%	APPLIED MATERIALS INC	34.8%
68	85%	NIKE INC	34.1%
69	84%	GENERAL MILLS INC	33.9%
70	84%	DELTA AIR LINES INC	33.4%
71	84%	BRISTOL-MYERS SQUIBB CO	33.2%
72	84%	GAP INC/THE	32.9%
73	83%	HONEYWELL INTERNATIONAL INC	32.9%
74	83%	TRACTOR SUPPLY CO	32.5%
75	83%	F5 NETWORKS INC	32.3%
76	83%	AON PLC	32.3%
77	83%	HUNTINGTON INGALLS INDUSTRIES IN	32.1%
78	82%	CATERPILLAR INC	31.8%
79	82%	VISA INC	31.4%
80	82%	ROLLINS INC	31.3%

Rank	Percentile	Company	5-Year Average Return on Equity
81	82%	NVIDIA CORP	30.7%
82	81%	MERCK & CO INC	30.6%
83	81%	MICROSOFT CORP	30.0%
84	81%	SOUTHWEST AIRLINES CO	29.8%
85	81%	SKYWORKS SOLUTIONS INC	29.7%
86	80%	PPG INDUSTRIES INC	29.7%
87	80%	FISERV INC	29.6%
88	80%	UNION PACIFIC CORP	29.5%
89	80%	FASTENAL CO	29.5%
90	80%	HASBRO INC	29.5%
91	79%	MARKETAXESS HOLDINGS INC	29.3%
92	79%	COPART INC	29.3%
93	79%	LEGGETT & PLATT INC	29.2%
94	79%	NETAPP INC	29.2%
95	78%	AMERIPRISE FINANCIAL INC	29.0%
96	78%	KROGER CO/THE	28.9%
97	78%	MARSH & MCLENNAN COS INC	28.7%
98	78%	ARISTA NETWORKS INC	28.6%
99	78%	ULTA BEAUTY INC	28.6%
100	77%	JB HUNT TRANSPORT SERVICES INC	28.5%
101	77%	PACKAGING CORP OF AMERICA	28.4%
102	77%	LAM RESEARCH CORP	28.4%
103	77%	DISH NETWORK CORP	28.2%
104	76%	MAXIM INTEGRATED PRODUCTS INC	28.1%
105	76%	AMERICAN EXPRESS CO	27.5%
106	76%	T ROWE PRICE GROUP INC	27.4%
107	76%	JOHNSON & JOHNSON	27.4%
108	76%	GENERAL DYNAMICS CORP	27.4%
109	75%	INTERNATIONAL PAPER CO	27.3%
110	75%	EDWARDS LIFESCIENCES CORP	27.1%
111	75%	AMPHENOL CORP	27.0%
112	75%	BEST BUY CO INC	27.0%
113	74%	INTERPUBLIC GROUP OF COS INC/THE	26.9%
114	74%	MICRON TECHNOLOGY INC	26.8%
115	74%	CADENCE DESIGN SYSTEMS INC	26.7%
116	74%	WATERS CORP	26.7%
117	73%	EXPEDITORS INTERNATIONAL OF WAS	26.6%
118	73%	HILTON WORLDWIDE HOLDINGS INC	26.5%
119	73%	WHIRLPOOL CORP	26.5%
120	73%	CUMMINS INC	26.4%

Rank	Percentile	Company	5-Year Average Return on Equity
121	73%	ALASKA AIR GROUP INC	26.4%
122	72%	XILINX INC	26.4%
123	72%	DEERE & CO	26.2%
124	72%	REGENERON PHARMACEUTICALS INC	25.9%
125	72%	WASTE MANAGEMENT INC	25.8%
126	71%	GENERAL MOTORS CO	25.4%
127	71%	MCCORMICK & CO INC/MD	25.4%
128	71%	ILLUMINA INC	25.3%
129	71%	KEYSIGHT TECHNOLOGIES INC	24.9%
130	71%	ALIGN TECHNOLOGY INC	24.9%
131	70%	BALL CORP	24.8%
132	70%	EBAY INC	24.6%
133	70%	MCKESSON CORP	24.4%
134	70%	DOLLAR TREE INC	23.9%
135	69%	JACK HENRY & ASSOCIATES INC	23.9%
136	69%	CINTAS CORP	23.8%
137	69%	AMERICAN TOWER CORP	23.7%
138	69%	PUBLIC STORAGE	23.7%
139	68%	PACCAR INC	23.6%
140	68%	ELECTRONIC ARTS INC	23.4%
141	68%	DARDEN RESTAURANTS INC	23.4%
142	68%	CHURCH & DWIGHT CO INC	23.3%
143	68%	COSTCO WHOLESALE CORP	23.2%
144	67%	DISCOVER FINANCIAL SERVICES	23.2%
145	67%	EMERSON ELECTRIC CO	23.1%
146	67%	ORACLE CORP	23.0%
147	67%	A O SMITH CORP	22.9%
148	66%	MONSTER BEVERAGE CORP	22.8%
149	66%	TARGET CORP	22.4%
150	66%	GENUINE PARTS CO	22.4%
151	66%	FEDEX CORP	22.3%
152	66%	EASTMAN CHEMICAL CO	22.3%
153	65%	DOLLAR GENERAL CORP	22.2%
154	65%	TAPESTRY INC	22.2%
155	65%	STRYKER CORP	22.1%
156	65%	RESMED INC	22.1%
157	64%	INTEL CORP	22.0%
158	64%	FACEBOOK INC	21.9%
159	64%	PARKER-HANNIFIN CORP	21.8%
160	64%	UNITEDHEALTH GROUP INC	21.5%

Rank	Percentile	Company	5-Year Average Return on Equity
161	63%	SNAP-ON INC	21.5%
162	63%	BECTON DICKINSON AND CO	21.4%
163	63%	VARIAN MEDICAL SYSTEMS INC	21.4%
164	63%	BORGWARNER INC	21.3%
165	63%	INTERNATIONAL FLAVORS & FRAGRAN	21.3%
166	62%	CARMAX INC	21.0%
167	62%	ADOBE INC	20.9%
168	62%	ZEBRA TECHNOLOGIES CORP	20.9%
169	62%	PROGRESSIVE CORP/THE	20.9%
170	61%	AES CORP	20.9%
171	61%	CARDINAL HEALTH INC	20.6%
172	61%	BROADCOM INC	20.6%
173	61%	TERADYNE INC	20.4%
174	61%	CBRE GROUP INC	20.3%
175	60%	FORD MOTOR CO	20.3%
176	60%	COMCAST CORP	20.2%
177	60%	IDEX CORP	20.1%
178	60%	CISCO SYSTEMS INC	20.1%
179	59%	OLD DOMINION FREIGHT LINE INC	19.9%
180	59%	COGNIZANT TECHNOLOGY SOLUTIONS	19.6%
181	59%	WALT DISNEY CO/THE	19.6%
182	59%	PROCTER & GAMBLE CO/THE	19.6%
183	59%	EQUIFAX INC	19.5%
184	58%	CSX CORP	19.4%
185	58%	CONSTELLATION BRANDS INC	19.3%
186	58%	ECOLAB INC	19.3%
187	58%	SYNCHRONY FINANCIAL	19.2%
188	57%	XYLEM INC/NY	19.1%
189	57%	PFIZER INC	19.1%
190	57%	HORMEL FOODS CORP	18.8%
191	57%	FORTUNE BRANDS HOME & SECURITY	18.6%
192	56%	FORTIVE CORP	18.5%
193	56%	TRANE TECHNOLOGIES PLC	18.5%
194	56%	FLEETCOR TECHNOLOGIES INC	18.4%
195	56%	RAYTHEON TECHNOLOGIES CORP	18.4%
196	56%	TE CONNECTIVITY LTD	18.2%
197	55%	WALGREENS BOOTS ALLIANCE INC	17.9%
198	55%	AMETEK INC	17.8%
199	55%	DISCOVERY INC	17.8%
200	55%	DISCOVERY INC	17.8%

Rank	Percentile	Company	5-Year Average Return on Equity
201	54%	NETFLIX INC	17.7%
202	54%	FMC CORP	17.7%
203	54%	TIFFANY & CO	17.7%
204	54%	ANALOG DEVICES INC	17.6%
205	54%	IPG PHOTONICS CORP	17.6%
206	53%	INTUITIVE SURGICAL INC	17.6%
207	53%	DOVER CORP	17.6%
208	53%	TYSON FOODS INC	17.6%
209	53%	DAVITA INC	17.6%
210	52%	NEWELL BRANDS INC	17.4%
211	52%	ADVANCE AUTO PARTS INC	17.3%
212	52%	CONAGRA BRANDS INC	17.1%
213	52%	HENRY SCHEIN INC	17.1%
214	51%	GLOBAL PAYMENTS INC	17.0%
215	51%	ALPHABET INC	16.7%
216	51%	ALPHABET INC	16.7%
217	51%	CERNER CORP	16.6%
218	51%	PULTEGROUP INC	16.5%
219	50%	ENTERGY CORP	16.5%
220	50%	CHIPOTLE MEXICAN GRILL INC	16.5%
221	50%	IRON MOUNTAIN INC	16.4%
222	50%	BOSTON SCIENTIFIC CORP	16.4%
223	49%	STANLEY BLACK & DECKER INC	16.4%
224	49%	UNIVERSAL HEALTH SERVICES INC	16.4%
225	49%	ABIOMED INC	16.4%
226	49%	GARMIN LTD	16.4%
227	49%	HUMANA INC	16.3%
228	48%	DOMINION ENERGY INC	16.2%
229	48%	WALMART INC	16.2%
230	48%	CENTENE CORP	16.1%
231	48%	MICROCHIP TECHNOLOGY INC	16.0%
232	47%	WESTINGHOUSE AIR BRAKE TECHNOL	16.0%
233	47%	CHARLES SCHWAB CORP/THE	15.9%
234	47%	AMAZON.COM INC	15.9%
235	47%	AIR PRODUCTS AND CHEMICALS INC	15.8%
236	46%	ROYAL CARIBBEAN CRUISES LTD	15.7%
237	46%	NORWEGIAN CRUISE LINE HOLDINGS L	15.6%
238	46%	FLOWSERVE CORP	15.6%
239	46%	DR HORTON INC	15.5%
240	46%	RALPH LAUREN CORP	15.4%

Rank	Percentile	Company	5-Year Average Return on Equity
241	45%	SVB FINANCIAL GROUP	15.4%
242	45%	AGILENT TECHNOLOGIES INC	15.2%
243	45%	QUEST DIAGNOSTICS INC	15.2%
244	45%	CIGNA CORP	15.2%
245	44%	WEST PHARMACEUTICAL SERVICES IN	15.1%
246	44%	MARATHON PETROLEUM CORP	15.1%
247	44%	LABORATORY CORP OF AMERICA HOLI	15.0%
248	44%	EXTRA SPACE STORAGE INC	15.0%
249	44%	PHILLIPS 66	14.9%
250	43%	FIRSTENERGY CORP	14.9%
251	43%	PPL CORP	14.9%
252	43%	ALBEMARLE CORP	14.5%
253	43%	US BANCORP	14.4%
254	42%	MOHAWK INDUSTRIES INC	14.4%
255	42%	FLIR SYSTEMS INC	14.4%
256	42%	NORFOLK SOUTHERN CORP	14.4%
257	42%	HALLIBURTON CO	14.2%
258	41%	LENNAR CORP	14.2%
259	41%	NIELSEN HOLDINGS PLC	14.2%
260	41%	ARTHUR J GALLAGHER & CO	14.1%
261	41%	CMS ENERGY CORP	14.1%
262	41%	HOLOGIC INC	14.1%
263	40%	DENTSPLY SIRONA INC	14.0%
264	40%	LKQ CORP	14.0%
265	40%	EATON CORP PLC	14.0%
266	40%	ANSYS INC	13.9%
267	39%	BAXTER INTERNATIONAL INC	13.8%
268	39%	CVS HEALTH CORP	13.8%
269	39%	RAYMOND JAMES FINANCIAL INC	13.8%
270	39%	TELEDYNE TECHNOLOGIES INC	13.7%
271	39%	FORTINET INC	13.7%
272	38%	AFLAC INC	13.6%
273	38%	NUCOR CORP	13.6%
274	38%	TELEFLEX INC	13.6%
275	38%	CENTERPOINT ENERGY INC	13.4%
276	37%	VALERO ENERGY CORP	13.3%
277	37%	ANTHEM INC	13.3%
278	37%	LINCOLN NATIONAL CORP	13.2%
279	37%	BLACKROCK INC	13.1%
280	37%	FRANKLIN RESOURCES INC	13.1%

Rank	Percentile	Company	5-Year Average Return on Equity
281	36%	KANSAS CITY SOUTHERN	13.0%
282	36%	NORTHERN TRUST CORP	12.9%
283	36%	ROPER TECHNOLOGIES INC	12.9%
284	36%	PVH CORP	12.8%
285	35%	SOUTHERN CO/THE	12.8%
286	35%	PRINCIPAL FINANCIAL GROUP INC	12.8%
287	35%	PAYPAL HOLDINGS INC	12.8%
288	35%	ACTIVISION BLIZZARD INC	12.8%
289	34%	WILLIS TOWERS WATSON PLC	12.8%
290	34%	ALLSTATE CORP/THE	12.7%
291	34%	XEROX HOLDINGS CORP	12.6%
292	34%	HOLLYFRONTIER CORP	12.6%
293	34%	EDISON INTERNATIONAL	12.5%
294	33%	TYLER TECHNOLOGIES INC	12.5%
295	33%	MONDELEZ INTERNATIONAL INC	12.4%
296	33%	GENERAL ELECTRIC CO	12.2%
297	33%	STATE STREET CORP	12.2%
298	32%	FREEPORT-MCMORAN INC	12.2%
299	32%	ALEXION PHARMACEUTICALS INC	12.0%
300	32%	JUNIPER NETWORKS INC	12.0%
301	32%	CABOT OIL & GAS CORP	12.0%
302	32%	HUNTINGTON BANCSHARES INC/OH	11.9%
303	31%	MGM RESORTS INTERNATIONAL	11.8%
304	31%	NASDAQ INC	11.8%
305	31%	GLOBE LIFE INC	11.8%
306	31%	JPMORGAN CHASE & CO	11.7%
307	30%	COOPER COS INC/THE	11.6%
308	30%	TRAVELERS COS INC/THE	11.5%
309	30%	UNUM GROUP	11.5%
310	30%	ALLIANT ENERGY CORP	11.5%
311	29%	NEXTERA ENERGY INC	11.5%
312	29%	WELLS FARGO & CO	11.5%
313	29%	AT&T INC	11.4%
314	29%	WESTERN DIGITAL CORP	11.4%
315	29%	AKAMAI TECHNOLOGIES INC	11.4%
316	28%	INVESCO LTD	11.3%
317	28%	CARNIVAL CORP	11.3%
318	28%	INTERCONTINENTAL EXCHANGE INC	11.3%
319	28%	GOLDMAN SACHS GROUP INC/THE	11.3%
320	27%	PERKINELMER INC	11.3%

Rank	Percentile	Company	5-Year Average Return on Equity
321	27%	COMERICA INC	11.2%
322	27%	REPUBLIC SERVICES INC	11.2%
323	27%	THERMO FISHER SCIENTIFIC INC	11.1%
324	27%	FIRST REPUBLIC BANK/CA	11.1%
325	26%	FEDERAL REALTY INVESTMENT TRUST	11.1%
326	26%	PRUDENTIAL FINANCIAL INC	11.1%
327	26%	PENTAIR PLC	11.0%
328	26%	SYNOPSYS INC	11.0%
329	25%	STERIS PLC	10.9%
330	25%	WEC ENERGY GROUP INC	10.9%
331	25%	DTE ENERGY CO	10.9%
332	25%	PUBLIC SERVICE ENTERPRISE GROUP	10.7%
333	24%	FIFTH THIRD BANCORP	10.6%
334	24%	KEYCORP	10.6%
335	24%	W R BERKLEY CORP	10.6%
336	24%	WILLIAMS COS INC/THE	10.6%
337	24%	ABBOTT LABORATORIES	10.5%
338	23%	XCEL ENERGY INC	10.5%
339	23%	AMERICAN ELECTRIC POWER CO INC	10.5%
340	23%	EXPEDIA GROUP INC	10.5%
341	23%	BANK OF NEW YORK MELLON CORP/TH	10.4%
342	22%	M&T BANK CORP	10.2%
343	22%	AMERICAN WATER WORKS CO INC	10.2%
344	22%	ATMOS ENERGY CORP	10.2%
345	22%	JOHNSON CONTROLS INTERNATIONAL	10.1%
346	22%	VERTEX PHARMACEUTICALS INC	10.1%
347	21%	PNC FINANCIAL SERVICES GROUP INC/	10.0%
348	21%	MEDTRONIC PLC	10.0%
349	21%	AMEREN CORP	9.9%
350	21%	MORGAN STANLEY	9.9%
351	20%	ZIMMER BIOMET HOLDINGS INC	9.9%
352	20%	MARTIN MARIETTA MATERIALS INC	9.8%
353	20%	KIMCO REALTY CORP	9.8%
354	20%	CAPITAL ONE FINANCIAL CORP	9.7%
355	20%	PINNACLE WEST CAPITAL CORP	9.7%
356	19%	SEMPRA ENERGY	9.7%
357	19%	T-MOBILE US INC	9.6%
358	19%	TRUIST FINANCIAL CORP	9.5%
359	19%	J M SMUCKER CO/THE	9.5%
360	18%	ASSURANT INC	9.4%

Rank	Percentile	Company	5-Year Average Return on Equity
361	18%	EXELON CORP	9.4%
362	18%	HARTFORD FINANCIAL SERVICES GRO	9.3%
363	18%	NORTONLIFELOCK INC	9.2%
364	17%	CME GROUP INC	9.1%
365	17%	EVERSOURCE ENERGY	9.0%
366	17%	NISOURCE INC	9.0%
367	17%	BANK OF AMERICA CORP	8.9%
368	17%	UNDER ARMOUR INC	8.8%
369	16%	UNDER ARMOUR INC	8.8%
370	16%	ARCHER-DANIELS-MIDLAND CO	8.8%
371	16%	CITIGROUP INC	8.7%
372	16%	REGIONS FINANCIAL CORP	8.7%
373	15%	CHUBB LTD	8.7%
374	15%	TECHNIPFMC PLC	8.7%
375	**15%**	**CONSOLIDATED EDISON INC**	**8.7%**
376	15%	DANAHER CORP	8.6%
377	15%	ZIONS BANCORP NA	8.5%
378	14%	VULCAN MATERIALS CO	8.4%
379	14%	EXXON MOBIL CORP	8.1%
380	14%	EVEREST RE GROUP LTD	8.1%
381	14%	WESTROCK CO	8.1%
382	13%	METLIFE INC	8.1%
383	13%	CORNING INC	7.9%
384	13%	JACOBS ENGINEERING GROUP INC	7.8%
385	13%	CINCINNATI FINANCIAL CORP	7.7%
386	12%	QUANTA SERVICES INC	7.7%
387	12%	CF INDUSTRIES HOLDINGS INC	7.7%
388	12%	FIDELITY NATIONAL INFORMATION SEF	7.7%
389	12%	DUKE ENERGY CORP	7.7%
390	12%	HEWLETT PACKARD ENTERPRISE CO	7.6%
391	11%	BOSTON PROPERTIES INC	7.4%
392	11%	WEYERHAEUSER CO	7.4%
393	11%	KRAFT HEINZ CO/THE	7.3%
394	11%	MOLSON COORS BEVERAGE CO	7.1%
395	10%	CROWN CASTLE INTERNATIONAL COR	6.8%
396	10%	DIAMONDBACK ENERGY INC	6.8%
397	10%	HOST HOTELS & RESORTS INC	6.8%
398	10%	SCHLUMBERGER NV	6.7%
399	10%	PEOPLE'S UNITED FINANCIAL INC	6.7%
400	9%	CITIZENS FINANCIAL GROUP INC	6.7%

Rank	Percentile	Company	5-Year Average Return on Equity
401	9%	BERKSHIRE HATHAWAY INC	6.3%
402	9%	EQUINIX INC	6.2%
403	9%	ETSY INC	6.2%
404	8%	AVALONBAY COMMUNITIES INC	6.1%
405	8%	EOG RESOURCES INC	6.0%
406	8%	CENTURYLINK INC	6.0%
407	8%	CHEVRON CORP	5.6%
408	7%	PERRIGO CO PLC	5.6%
409	7%	MOSAIC CO/THE	5.3%
410	7%	IHS MARKIT LTD	5.3%
411	7%	DUKE REALTY CORP	5.2%
412	7%	KINDER MORGAN INC	5.2%
413	6%	VENTAS INC	5.1%
414	6%	ESSEX PROPERTY TRUST INC	4.9%
415	6%	NEWMONT CORP	4.7%
416	6%	REGENCY CENTERS CORP	4.7%
417	5%	REALTY INCOME CORP	4.7%
418	5%	LOEWS CORP	4.5%
419	5%	PIONEER NATURAL RESOURCES CO	4.5%
420	5%	OCCIDENTAL PETROLEUM CORP	4.5%
421	5%	EQUITY RESIDENTIAL	4.1%
422	4%	HEALTHPEAK PROPERTIES INC	4.1%
423	4%	MID-AMERICA APARTMENT COMMUNIT	3.9%
424	4%	CONOCOPHILLIPS	3.9%
425	4%	BIO-RAD LABORATORIES INC	3.8%
426	3%	WELLTOWER INC	3.7%
427	3%	ALEXANDRIA REAL ESTATE EQUITIES I	3.7%
428	3%	UDR INC	3.6%
429	3%	QORVO INC	3.4%
430	2%	CONCHO RESOURCES INC	3.2%
431	2%	PROLOGIS INC	3.1%
432	2%	DIGITAL REALTY TRUST INC	3.0%
433	2%	VORNADO REALTY TRUST	2.2%
434	2%	SL GREEN REALTY CORP	2.2%
435	1%	DEVON ENERGY CORP	1.2%
436	1%	APARTMENT INVESTMENT AND MANAG	1.1%
437	1%	APACHE CORP	0.8%
438	1%	SALESFORCE.COM INC	0.7%
439	0%	NEWS CORP	0.2%
440	0%	NEWS CORP	0.2%

Rank	Percentile	Company	5-Year Average Return on Equity
441	N/A	MARATHON OIL CORP	0.2%
442	N/A	AMERICAN AIRLINES GROUP INC	0.0%
443	N/A	ABBVIE INC	0.0%
444	N/A	AUTODESK INC	0.0%
445	N/A	ALLEGION PLC	0.0%
446	N/A	ADVANCED MICRO DEVICES INC	0.0%
447	N/A	AUTOZONE INC	0.0%
448	N/A	BAKER HUGHES CO	0.0%
449	N/A	CARRIER GLOBAL CORP	0.0%
450	N/A	CHARTER COMMUNICATIONS INC	0.0%
451	N/A	COLGATE-PALMOLIVE CO	0.0%
452	N/A	CORTEVA INC	0.0%
453	N/A	DUPONT DE NEMOURS INC	0.0%
454	N/A	DOW INC	0.0%
455	N/A	DOMINO'S PIZZA INC	0.0%
456	N/A	DXC TECHNOLOGY CO	0.0%
457	N/A	EVERGY INC	0.0%
458	N/A	FOX CORP	0.0%
459	N/A	FOX CORP	0.0%
460	N/A	HCA HEALTHCARE INC	0.0%
461	N/A	HOME DEPOT INC/THE	0.0%
462	N/A	HP INC	0.0%
463	N/A	HOWMET AEROSPACE INC	0.0%
464	N/A	IDEXX LABORATORIES INC	0.0%
465	N/A	INCYTE CORP	0.0%
466	N/A	IQVIA HOLDINGS INC	0.0%
467	N/A	INGERSOLL RAND INC	0.0%
468	N/A	GARTNER INC	0.0%
469	N/A	KIMBERLY-CLARK CORP	0.0%
470	N/A	L BRANDS INC	0.0%
471	N/A	LINDE PLC	0.0%
472	N/A	LOCKHEED MARTIN CORP	0.0%
473	N/A	LAMB WESTON HOLDINGS INC	0.0%
474	N/A	MARRIOTT INTERNATIONAL INC/MD	0.0%
475	N/A	MASCO CORP	0.0%
476	N/A	MCDONALD'S CORP	0.0%
477	N/A	MOODY'S CORP	0.0%
478	N/A	MSCI INC	0.0%
479	N/A	MOTOROLA SOLUTIONS INC	0.0%
480	N/A	MYLAN NV	0.0%

Rank	Percentile	Company	5-Year Average Return on Equity
481	N/A	NRG ENERGY INC	0.0%
482	N/A	OTIS WORLDWIDE CORP	0.0%
483	N/A	PHILIP MORRIS INTERNATIONAL INC	0.0%
484	N/A	SBA COMMUNICATIONS CORP	0.0%
485	N/A	STARBUCKS CORP	0.0%
486	N/A	SEALED AIR CORP	0.0%
487	N/A	TRANSDIGM GROUP INC	0.0%
488	N/A	VF CORP	0.0%
489	N/A	VONTIER CORP	0.0%
490	N/A	VERISIGN INC	0.0%
491	N/A	WESTERN UNION CO/THE	0.0%
492	N/A	WYNN RESORTS LTD	0.0%
493	N/A	YUM! BRANDS INC	0.0%
494	N/A	NATIONAL OILWELL VARCO INC	0.0%
495	N/A	AMERICAN INTERNATIONAL GROUP IN(	-0.7%
496	N/A	LIVE NATION ENTERTAINMENT INC	-1.0%
497	N/A	TWITTER INC	-2.2%
498	N/A	TAKE-TWO INTERACTIVE SOFTWARE II	-3.6%
499	N/A	HESS CORP	-11.8%
500	N/A	SERVICENOW INC	-13.4%
501	N/A	DEXCOM INC	-16.1%
502	N/A	CATALENT INC	N/A
503	N/A	LEIDOS HOLDINGS INC	N/A
504	N/A	L3HARRIS TECHNOLOGIES INC	N/A
505	N/A	TEXTRON INC	N/A

Average	**21.0%**
Median	**14.9%**
Orange and Rockland Utilities, Inc.	**9.0%**

Rank	Percentile	Company	5-Year Average Price to Book Ratio
1	100%	NORTONLIFELOCK INC	218.3x
2	100%	S&P GLOBAL INC	89.0x
3	100%	UNITED PARCEL SERVICE INC	88.3x
4	99%	ALLEGION PLC	69.3x
5	99%	O'REILLY AUTOMOTIVE INC	43.3x
6	99%	INCYTE CORP	38.0x
7	99%	CLOROX CO/THE	36.1x
8	98%	MASTERCARD INC	30.8x
9	98%	SERVICENOW INC	28.0x
10	98%	QUALCOMM INC	27.8x
11	98%	METTLER-TOLEDO INTERNATIONAL INC	27.8x
12	97%	PAYCOM SOFTWARE INC	22.1x
13	97%	HERSHEY CO/THE	21.4x
14	97%	NETFLIX INC	21.2x
15	97%	POOL CORP	21.0x
16	97%	INTUIT INC	20.9x
17	96%	ROCKWELL AUTOMATION INC	20.5x
18	96%	ZOETIS INC	20.4x
19	96%	LOWE'S COS INC	19.8x
20	96%	DEXCOM INC	19.8x
21	95%	AMAZON.COM INC	18.9x
22	95%	ONEOK INC	18.3x
23	95%	VERTEX PHARMACEUTICALS INC	17.3x
24	95%	ELI LILLY AND CO	16.2x
25	95%	ALTRIA GROUP INC	16.0x
26	94%	BROWN-FORMAN CORP	15.3x
27	94%	SIMON PROPERTY GROUP INC	15.1x
28	94%	SHERWIN-WILLIAMS CO/THE	14.9x
29	94%	SYSCO CORP	14.2x
30	93%	ROLLINS INC	13.8x
31	93%	MARKETAXESS HOLDINGS INC	13.8x
32	93%	NETAPP INC	13.7x
33	93%	CITRIX SYSTEMS INC	13.1x
34	92%	ABIOMED INC	12.3x
35	92%	ADOBE INC	12.3x
36	92%	AMERICAN TOWER CORP	12.2x
37	92%	ESTEE LAUDER COS INC/THE	12.2x
38	92%	ILLINOIS TOOL WORKS INC	12.1x
39	91%	APPLE INC	12.1x
40	91%	ALIGN TECHNOLOGY INC	11.8x

Rank	Percentile	Company	5-Year Average Price to Book Ratio
41	91%	CDW CORP/DE	11.8x
42	91%	NIKE INC	11.8x
43	90%	AUTOMATIC DATA PROCESSING INC	11.5x
44	90%	NVIDIA CORP	11.5x
45	90%	KLA CORP	11.1x
46	90%	TJX COS INC/THE	11.0x
47	89%	PAYCHEX INC	10.8x
48	89%	BROADRIDGE FINANCIAL SOLUTIONS INC	10.4x
49	89%	3M CO	10.4x
50	89%	VISA INC	10.3x
51	89%	FORTINET INC	10.3x
52	88%	CBOE GLOBAL MARKETS INC	10.3x
53	88%	MONSTER BEVERAGE CORP	10.2x
54	88%	COCA-COLA CO/THE	10.2x
55	88%	ROSS STORES INC	10.1x
56	87%	CAMPBELL SOUP CO	9.7x
57	87%	VERISK ANALYTICS INC	9.5x
58	87%	ACCENTURE PLC	9.4x
59	87%	TEXAS INSTRUMENTS INC	9.2x
60	86%	BOOKING HOLDINGS INC	9.1x
61	86%	EDWARDS LIFESCIENCES CORP	8.9x
62	86%	ULTA BEAUTY INC	8.7x
63	86%	MICROSOFT CORP	8.6x
64	86%	CHIPOTLE MEXICAN GRILL INC	8.5x
65	85%	COPART INC	8.2x
66	85%	FISERV INC	8.1x
67	85%	ETSY INC	8.0x
68	85%	AON PLC	7.9x
69	84%	REGENERON PHARMACEUTICALS INC	7.9x
70	84%	LIVE NATION ENTERTAINMENT INC	7.8x
71	84%	WW GRAINGER INC	7.8x
72	84%	JACK HENRY & ASSOCIATES INC	7.7x
73	84%	CH ROBINSON WORLDWIDE INC	7.6x
74	83%	PUBLIC STORAGE	7.6x
75	83%	INTERNATIONAL BUSINESS MACHINES CORP	7.5x
76	83%	LAS VEGAS SANDS CORP	7.5x
77	83%	RESMED INC	7.5x
78	82%	AMGEN INC	7.5x
79	82%	MAXIM INTEGRATED PRODUCTS INC	7.5x
80	82%	XILINX INC	7.5x

Rank	Percentile	Company	5-Year Average Price to Book Ratio
81	82%	COSTCO WHOLESALE CORP	7.4x
82	81%	SALESFORCE.COM INC	7.4x
83	81%	ARISTA NETWORKS INC	7.2x
84	81%	APTIV PLC	7.2x
85	81%	OMNICOM GROUP INC	7.1x
86	81%	FASTENAL CO	7.1x
87	80%	SEAGATE TECHNOLOGY PLC	7.0x
88	80%	VERIZON COMMUNICATIONS INC	6.9x
89	80%	INTUITIVE SURGICAL INC	6.8x
90	80%	CINTAS CORP	6.6x
91	79%	NORTHROP GRUMMAN CORP	6.6x
92	79%	ORACLE CORP	6.5x
93	79%	VARIAN MEDICAL SYSTEMS INC	6.3x
94	79%	IRON MOUNTAIN INC	6.3x
95	78%	TYLER TECHNOLOGIES INC	6.3x
96	78%	BRISTOL-MYERS SQUIBB CO	6.3x
97	78%	JB HUNT TRANSPORT SERVICES INC	6.2x
98	78%	ROBERT HALF INTERNATIONAL INC	6.2x
99	78%	F5 NETWORKS INC	6.1x
100	77%	AMPHENOL CORP	6.1x
101	77%	ZEBRA TECHNOLOGIES CORP	6.1x
102	77%	ELECTRONIC ARTS INC	6.1x
103	77%	CHURCH & DWIGHT CO INC	6.0x
104	76%	TAKE-TWO INTERACTIVE SOFTWARE INC	5.9x
105	76%	FACEBOOK INC	5.9x
106	76%	WASTE MANAGEMENT INC	5.9x
107	76%	NVR INC	5.7x
108	76%	GENERAL MILLS INC	5.7x
109	75%	UNDER ARMOUR INC	5.7x
110	75%	MARSH & MCLENNAN COS INC	5.6x
111	75%	MERCK & CO INC	5.6x
112	75%	HONEYWELL INTERNATIONAL INC	5.6x
113	74%	WEST PHARMACEUTICAL SERVICES INC	5.6x
114	74%	EXPEDITORS INTERNATIONAL OF WASHINGTO	5.5x
115	74%	A O SMITH CORP	5.5x
116	74%	EQUINIX INC	5.5x
117	73%	BALL CORP	5.4x
118	73%	VIACOMCBS INC	5.4x
119	73%	EBAY INC	5.4x
120	73%	HUNTINGTON INGALLS INDUSTRIES INC	5.4x

Rank	Percentile	Company	5-Year Average Price to Book Ratio
121	73%	PPG INDUSTRIES INC	5.4x
122	72%	APPLIED MATERIALS INC	5.4x
123	72%	ECOLAB INC	5.3x
124	72%	BIOGEN INC	5.2x
125	72%	PAYPAL HOLDINGS INC	5.2x
126	71%	STRYKER CORP	5.1x
127	71%	EQUIFAX INC	5.1x
128	71%	LEGGETT & PLATT INC	5.1x
129	71%	HOLOGIC INC	5.1x
130	70%	DARDEN RESTAURANTS INC	5.0x
131	70%	FLEETCOR TECHNOLOGIES INC	5.0x
132	70%	GILEAD SCIENCES INC	4.9x
133	70%	CROWN CASTLE INTERNATIONAL CORP	4.9x
134	70%	CATALENT INC	4.9x
135	69%	PROCTER & GAMBLE CO/THE	4.9x
136	69%	IDEX CORP	4.9x
137	69%	CATERPILLAR INC	4.9x
138	69%	EXTRA SPACE STORAGE INC	4.9x
139	68%	LAM RESEARCH CORP	4.9x
140	68%	EMERSON ELECTRIC CO	4.9x
141	68%	KEYSIGHT TECHNOLOGIES INC	4.8x
142	68%	FEDERAL REALTY INVESTMENT TRUST	4.8x
143	68%	ANSYS INC	4.7x
144	67%	GLOBAL PAYMENTS INC	4.7x
145	67%	AGILENT TECHNOLOGIES INC	4.7x
146	67%	INTERNATIONAL FLAVORS & FRAGRANCES IN	4.7x
147	67%	UNION PACIFIC CORP	4.7x
148	66%	LYONDELLBASELL INDUSTRIES NV	4.7x
149	66%	BOSTON SCIENTIFIC CORP	4.7x
150	66%	CELANESE CORP	4.6x
151	66%	MICROCHIP TECHNOLOGY INC	4.6x
152	65%	DEERE & CO	4.6x
153	65%	DOLLAR GENERAL CORP	4.5x
154	65%	SYNOPSYS INC	4.5x
155	65%	GENERAL DYNAMICS CORP	4.4x
156	65%	ALPHABET INC	4.4x
157	64%	CISCO SYSTEMS INC	4.3x
158	64%	APARTMENT INVESTMENT AND MANAGEMENT	4.3x
159	64%	SKYWORKS SOLUTIONS INC	4.3x
160	64%	DISH NETWORK CORP	4.3x

Rank	Percentile	Company	5-Year Average Price to Book Ratio
161	63%	BEST BUY CO INC	4.3x
162	63%	UNITEDHEALTH GROUP INC	4.2x
163	63%	XYLEM INC/NY	4.2x
164	63%	TELEFLEX INC	4.2x
165	62%	AIR PRODUCTS AND CHEMICALS INC	4.2x
166	62%	GENUINE PARTS CO	4.2x
167	62%	CABOT OIL & GAS CORP	4.2x
168	62%	CARDINAL HEALTH INC	4.1x
169	62%	TERADYNE INC	4.1x
170	61%	UNITED RENTALS INC	4.0x
171	61%	OLD DOMINION FREIGHT LINE INC	4.0x
172	61%	BECTON DICKINSON AND CO	4.0x
173	61%	EXPEDIA GROUP INC	4.0x
174	60%	PACKAGING CORP OF AMERICA	4.0x
175	60%	FMC CORP	3.9x
176	60%	AMETEK INC	3.9x
177	60%	HORMEL FOODS CORP	3.9x
178	59%	T ROWE PRICE GROUP INC	3.9x
179	59%	INTERPUBLIC GROUP OF COS INC/THE	3.9x
180	59%	CONSTELLATION BRANDS INC	3.9x
181	59%	AMERICAN EXPRESS CO	3.8x
182	59%	KROGER CO/THE	3.8x
183	58%	BAXTER INTERNATIONAL INC	3.8x
184	58%	COOPER COS INC/THE	3.7x
185	58%	IPG PHOTONICS CORP	3.7x
186	58%	DOLLAR TREE INC	3.7x
187	57%	TIFFANY & CO	3.7x
188	57%	DOVER CORP	3.7x
189	57%	UDR INC	3.7x
190	57%	PARKER-HANNIFIN CORP	3.7x
191	57%	ACTIVISION BLIZZARD INC	3.6x
192	56%	ABBOTT LABORATORIES	3.6x
193	56%	CHARLES SCHWAB CORP/THE	3.6x
194	56%	ROPER TECHNOLOGIES INC	3.6x
195	56%	TARGET CORP	3.6x
196	55%	L3HARRIS TECHNOLOGIES INC	3.6x
197	55%	CONAGRA BRANDS INC	3.5x
198	55%	BOSTON PROPERTIES INC	3.5x
199	55%	WALMART INC	3.5x
200	54%	CBRE GROUP INC	3.5x

Rank	Percentile	Company	5-Year Average Price to Book Ratio
201	54%	COGNIZANT TECHNOLOGY SOLUTIONS CORP	3.5x
202	54%	FORTUNE BRANDS HOME & SECURITY INC	3.5x
203	54%	INTERNATIONAL PAPER CO	3.4x
204	54%	CARMAX INC	3.4x
205	53%	FLOWSERVE CORP	3.4x
206	53%	CSX CORP	3.4x
207	53%	HALLIBURTON CO	3.4x
208	53%	ANALOG DEVICES INC	3.4x
209	52%	TAPESTRY INC	3.4x
210	52%	APACHE CORP	3.4x
211	52%	PFIZER INC	3.4x
212	52%	AKAMAI TECHNOLOGIES INC	3.4x
213	51%	MCKESSON CORP	3.3x
214	51%	HUMANA INC	3.3x
215	51%	NIELSEN HOLDINGS PLC	3.3x
216	51%	VORNADO REALTY TRUST	3.3x
217	51%	SOUTHWEST AIRLINES CO	3.3x
218	50%	TRANE TECHNOLOGIES PLC	3.2x
219	50%	TWITTER INC	3.2x
220	50%	EOG RESOURCES INC	3.2x
221	50%	CUMMINS INC	3.2x
222	49%	THERMO FISHER SCIENTIFIC INC	3.2x
223	49%	WALT DISNEY CO/THE	3.2x
224	49%	ALEXION PHARMACEUTICALS INC	3.2x
225	49%	VULCAN MATERIALS CO	3.2x
226	49%	FLIR SYSTEMS INC	3.1x
227	48%	LEIDOS HOLDINGS INC	3.1x
228	48%	AMERIPRISE FINANCIAL INC	3.1x
229	48%	GAP INC/THE	3.1x
230	48%	DIGITAL REALTY TRUST INC	3.1x
231	47%	PROGRESSIVE CORP/THE	3.1x
232	47%	DAVITA INC	3.0x
233	47%	RAYTHEON TECHNOLOGIES CORP	3.0x
234	47%	AES CORP	3.0x
235	46%	GENERAL ELECTRIC CO	3.0x
236	46%	CMS ENERGY CORP	3.0x
237	46%	WILLIAMS COS INC/THE	3.0x
238	46%	TE CONNECTIVITY LTD	2.9x
239	46%	DELTA AIR LINES INC	2.9x
240	45%	PENTAIR PLC	2.9x

Rank	Percentile	Company	5-Year Average Price to Book Ratio
241	45%	ALASKA AIR GROUP INC	2.9x
242	45%	DOMINION ENERGY INC	2.9x
243	45%	CF INDUSTRIES HOLDINGS INC	2.8x
244	44%	WESTINGHOUSE AIR BRAKE TECHNOLOGIES (	2.8x
245	44%	AMERICAN WATER WORKS CO INC	2.8x
246	44%	WHIRLPOOL CORP	2.8x
247	44%	MARTIN MARIETTA MATERIALS INC	2.8x
248	43%	FEDEX CORP	2.8x
249	43%	PACCAR INC	2.8x
250	43%	DANAHER CORP	2.8x
251	43%	ARTHUR J GALLAGHER & CO	2.8x
252	43%	REPUBLIC SERVICES INC	2.8x
253	42%	WEYERHAEUSER CO	2.7x
254	42%	STERIS PLC	2.7x
255	42%	FIRSTENERGY CORP	2.7x
256	42%	ESSEX PROPERTY TRUST INC	2.7x
257	41%	NORFOLK SOUTHERN CORP	2.6x
258	41%	COMCAST CORP	2.6x
259	41%	MONDELEZ INTERNATIONAL INC	2.6x
260	41%	EQUITY RESIDENTIAL	2.6x
261	41%	CIGNA CORP	2.5x
262	40%	NEXTERA ENERGY INC	2.5x
263	40%	FIDELITY NATIONAL INFORMATION SERVICES	2.5x
264	40%	ALBEMARLE CORP	2.5x
265	40%	NEWELL BRANDS INC	2.5x
266	39%	LKQ CORP	2.5x
267	39%	AVALONBAY COMMUNITIES INC	2.5x
268	39%	QUEST DIAGNOSTICS INC	2.5x
269	39%	CENTERPOINT ENERGY INC	2.5x
270	38%	CENTENE CORP	2.4x
271	38%	WILLIS TOWERS WATSON PLC	2.4x
272	38%	INTERCONTINENTAL EXCHANGE INC	2.4x
273	38%	WALGREENS BOOTS ALLIANCE INC	2.4x
274	38%	KANSAS CITY SOUTHERN	2.4x
275	37%	REGENCY CENTERS CORP	2.4x
276	37%	HEALTHPEAK PROPERTIES INC	2.4x
277	37%	MGM RESORTS INTERNATIONAL	2.4x
278	37%	BORGWARNER INC	2.4x
279	36%	RALPH LAUREN CORP	2.3x
280	36%	PIONEER NATURAL RESOURCES CO	2.3x

Rank	Percentile	Company	5-Year Average Price to Book Ratio
281	36%	DUKE REALTY CORP	2.3x
282	36%	DENTSPLY SIRONA INC	2.3x
283	35%	DISCOVER FINANCIAL SERVICES	2.3x
284	35%	NASDAQ INC	2.3x
285	35%	SCHLUMBERGER NV	2.3x
286	35%	REALTY INCOME CORP	2.3x
287	35%	MEDTRONIC PLC	2.3x
288	34%	T-MOBILE US INC	2.3x
289	34%	ALLIANT ENERGY CORP	2.3x
290	34%	UNIVERSAL HEALTH SERVICES INC	2.3x
291	34%	SVB FINANCIAL GROUP	2.3x
292	33%	UNITED AIRLINES HOLDINGS INC	2.3x
293	33%	LABORATORY CORP OF AMERICA HOLDINGS	2.3x
294	33%	WEC ENERGY GROUP INC	2.3x
295	33%	FREEPORT-MCMORAN INC	2.2x
296	32%	NORWEGIAN CRUISE LINE HOLDINGS LTD	2.2x
297	32%	TEXTRON INC	2.2x
298	32%	ROYAL CARIBBEAN CRUISES LTD	2.2x
299	32%	OCCIDENTAL PETROLEUM CORP	2.2x
300	32%	EASTMAN CHEMICAL CO	2.2x
301	31%	CME GROUP INC	2.2x
302	31%	BLACKROCK INC	2.2x
303	31%	ATMOS ENERGY CORP	2.2x
304	31%	MOHAWK INDUSTRIES INC	2.1x
305	30%	ZIMMER BIOMET HOLDINGS INC	2.1x
306	30%	FIRST REPUBLIC BANK/CA	2.1x
307	30%	NORTHERN TRUST CORP	2.1x
308	30%	TYSON FOODS INC	2.1x
309	30%	SEMPRA ENERGY	2.1x
310	29%	PPL CORP	2.1x
311	29%	JUNIPER NETWORKS INC	2.1x
312	29%	SOUTHERN CO/THE	2.1x
313	29%	XCEL ENERGY INC	2.1x
314	28%	KIMCO REALTY CORP	2.1x
315	28%	VENTAS INC	2.0x
316	28%	MID-AMERICA APARTMENT COMMUNITIES INC	2.0x
317	28%	CVS HEALTH CORP	2.0x
318	27%	ALEXANDRIA REAL ESTATE EQUITIES INC	2.0x
319	27%	ANTHEM INC	2.0x
320	27%	DEVON ENERGY CORP	2.0x

Rank	Percentile	Company	5-Year Average Price to Book Ratio
321	27%	EATON CORP PLC	2.0x
322	27%	BIO-RAD LABORATORIES INC	2.0x
323	26%	PROLOGIS INC	2.0x
324	26%	WELLTOWER INC	2.0x
325	26%	DTE ENERGY CO	2.0x
326	26%	AMEREN CORP	1.9x
327	25%	NUCOR CORP	1.9x
328	25%	AMERICAN ELECTRIC POWER CO INC	1.9x
329	25%	DR HORTON INC	1.9x
330	25%	US BANCORP	1.9x
331	24%	CONOCOPHILLIPS	1.9x
332	24%	PHILLIPS 66	1.9x
333	24%	DIAMONDBACK ENERGY INC	1.9x
334	24%	NISOURCE INC	1.9x
335	24%	DISCOVERY INC	1.9x
336	23%	DISCOVERY INC	1.9x
337	23%	EDISON INTERNATIONAL	1.8x
338	23%	J M SMUCKER CO/THE	1.8x
339	23%	HOST HOTELS & RESORTS INC	1.8x
340	22%	JACOBS ENGINEERING GROUP INC	1.8x
341	22%	RAYMOND JAMES FINANCIAL INC	1.8x
342	22%	EXXON MOBIL CORP	1.8x
343	22%	QORVO INC	1.8x
344	22%	EVERSOURCE ENERGY	1.8x
345	21%	PINNACLE WEST CAPITAL CORP	1.8x
346	21%	ENTERGY CORP	1.8x
347	21%	CORNING INC	1.8x
348	21%	SYNCHRONY FINANCIAL	1.8x
349	20%	PUBLIC SERVICE ENTERPRISE GROUP INC	1.8x
350	20%	CONCHO RESOURCES INC	1.8x
351	20%	MARATHON PETROLEUM CORP	1.7x
352	20%	JOHNSON CONTROLS INTERNATIONAL PLC	1.7x
353	19%	W R BERKLEY CORP	1.7x
354	19%	GLOBE LIFE INC	1.7x
355	19%	PULTEGROUP INC	1.7x
356	19%	WESTERN DIGITAL CORP	1.6x
357	19%	AT&T INC	1.6x
358	18%	PERRIGO CO PLC	1.6x
359	18%	VALERO ENERGY CORP	1.6x
360	18%	CINCINNATI FINANCIAL CORP	1.6x

Rank	Percentile	Company	5-Year Average Price to Book Ratio
361	18%	MICRON TECHNOLOGY INC	1.6x
362	**17%**	**CONSOLIDATED EDISON INC**	**1.6x**
363	17%	NEWMONT CORP	1.6x
364	17%	FRANKLIN RESOURCES INC	1.5x
365	17%	MOLSON COORS BEVERAGE CO	1.5x
366	16%	M&T BANK CORP	1.5x
367	16%	STATE STREET CORP	1.5x
368	16%	ALLSTATE CORP/THE	1.5x
369	16%	WELLS FARGO & CO	1.5x
370	16%	PVH CORP	1.5x
371	15%	JPMORGAN CHASE & CO	1.5x
372	15%	SL GREEN REALTY CORP	1.5x
373	15%	COMERICA INC	1.4x
374	15%	HUNTINGTON BANCSHARES INC/OH	1.4x
375	14%	HESS CORP	1.4x
376	14%	TRAVELERS COS INC/THE	1.4x
377	14%	HOLLYFRONTIER CORP	1.4x
378	14%	CHEVRON CORP	1.4x
379	14%	AFLAC INC	1.4x
380	13%	FORD MOTOR CO	1.4x
381	13%	DUKE ENERGY CORP	1.4x
382	13%	XEROX HOLDINGS CORP	1.4x
383	13%	PRINCIPAL FINANCIAL GROUP INC	1.3x
384	12%	QUANTA SERVICES INC	1.3x
385	12%	PNC FINANCIAL SERVICES GROUP INC/THE	1.3x
386	12%	TECHNIPFMC PLC	1.3x
387	12%	TRUIST FINANCIAL CORP	1.3x
388	11%	GENERAL MOTORS CO	1.3x
389	11%	BANK OF NEW YORK MELLON CORP/THE	1.3x
390	11%	ARCHER-DANIELS-MIDLAND CO	1.3x
391	11%	INVESCO LTD	1.3x
392	11%	CHUBB LTD	1.3x
393	10%	EXELON CORP	1.3x
394	10%	ASSURANT INC	1.3x
395	10%	HARTFORD FINANCIAL SERVICES GROUP INC/	1.2x
396	10%	KEYCORP	1.2x
397	9%	KINDER MORGAN INC	1.2x
398	9%	FIFTH THIRD BANCORP	1.2x
399	9%	ZIONS BANCORP NA	1.2x
400	9%	EVEREST RE GROUP LTD	1.1x

Rank	Percentile	Company	5-Year Average Price to Book Ratio
401	8%	WESTROCK CO	1.1x
402	8%	MORGAN STANLEY	1.1x
403	8%	GOLDMAN SACHS GROUP INC/THE	1.1x
404	8%	REGIONS FINANCIAL CORP	1.1x
405	8%	PEOPLE'S UNITED FINANCIAL INC	1.0x
406	7%	BANK OF AMERICA CORP	1.0x
407	7%	HEWLETT PACKARD ENTERPRISE CO	1.0x
408	7%	MOSAIC CO/THE	1.0x
409	7%	NATIONAL OILWELL VARCO INC	0.9x
410	6%	UNUM GROUP	0.9x
411	6%	CENTURYLINK INC	0.9x
412	6%	CAPITAL ONE FINANCIAL CORP	0.9x
413	6%	MARATHON OIL CORP	0.9x
414	5%	LINCOLN NATIONAL CORP	0.9x
415	5%	CITIGROUP INC	0.9x
416	5%	CITIZENS FINANCIAL GROUP INC	0.8x
417	5%	METLIFE INC	0.8x
418	5%	NEWS CORP	0.8x
419	4%	NEWS CORP	0.8x
420	4%	LOEWS CORP	0.8x
421	4%	PRUDENTIAL FINANCIAL INC	0.8x
422	4%	AMERICAN INTERNATIONAL GROUP INC	0.8x
423	3%	AMERICAN AIRLINES GROUP INC	N/A
424	3%	ADVANCE AUTO PARTS INC	N/A
425	3%	ABBVIE INC	N/A
426	3%	AMERISOURCEBERGEN CORP	N/A
427	3%	AUTODESK INC	N/A
428	2%	AMCOR PLC	N/A
429	2%	ADVANCED MICRO DEVICES INC	N/A
430	2%	BROADCOM INC	N/A
431	2%	AVERY DENNISON CORP	N/A
432	1%	AUTOZONE INC	N/A
433	1%	BOEING CO/THE	N/A
434	1%	BAKER HUGHES CO	N/A
435	1%	BERKSHIRE HATHAWAY INC	N/A
436	0%	CARRIER GLOBAL CORP	N/A
437	0%	CARNIVAL CORP	N/A
438	N/A	CADENCE DESIGN SYSTEMS INC	N/A
439	N/A	CERNER CORP	N/A
440	N/A	CHARTER COMMUNICATIONS INC	N/A

Rank	Percentile	Company	5-Year Average Price to Book Ratio
441	N/A	COLGATE-PALMOLIVE CO	N/A
442	N/A	CORTEVA INC	N/A
443	N/A	DUPONT DE NEMOURS INC	N/A
444	N/A	DOW INC	N/A
445	N/A	DOMINO'S PIZZA INC	N/A
446	N/A	DXC TECHNOLOGY CO	N/A
447	N/A	EVERGY INC	N/A
448	N/A	FOX CORP	N/A
449	N/A	FOX CORP	N/A
450	N/A	FORTIVE CORP	N/A
451	N/A	ALPHABET INC	N/A
452	N/A	GARMIN LTD	N/A
453	N/A	HASBRO INC	N/A
454	N/A	HANESBRANDS INC	N/A
455	N/A	HCA HEALTHCARE INC	N/A
456	N/A	HOME DEPOT INC/THE	N/A
457	N/A	HILTON WORLDWIDE HOLDINGS INC	N/A
458	N/A	HP INC	N/A
459	N/A	HENRY SCHEIN INC	N/A
460	N/A	HOWMET AEROSPACE INC	N/A
461	N/A	IDEXX LABORATORIES INC	N/A
462	N/A	ILLUMINA INC	N/A
463	N/A	IHS MARKIT LTD	N/A
464	N/A	INTEL CORP	N/A
465	N/A	IQVIA HOLDINGS INC	N/A
466	N/A	INGERSOLL RAND INC	N/A
467	N/A	GARTNER INC	N/A
468	N/A	JOHNSON & JOHNSON	N/A
469	N/A	KELLOGG CO	N/A
470	N/A	KRAFT HEINZ CO/THE	N/A
471	N/A	KIMBERLY-CLARK CORP	N/A
472	N/A	L BRANDS INC	N/A
473	N/A	LENNAR CORP	N/A
474	N/A	LINDE PLC	N/A
475	N/A	LOCKHEED MARTIN CORP	N/A
476	N/A	LAMB WESTON HOLDINGS INC	N/A
477	N/A	MARRIOTT INTERNATIONAL INC/MD	N/A
478	N/A	MASCO CORP	N/A
479	N/A	MCDONALD'S CORP	N/A
480	N/A	MOODY'S CORP	N/A

Rank	Percentile	Company	5-Year Average Price to Book Ratio
481	N/A	MCCORMICK & CO INC/MD	N/A
482	N/A	MSCI INC	N/A
483	N/A	MOTOROLA SOLUTIONS INC	N/A
484	N/A	MYLAN NV	N/A
485	N/A	NRG ENERGY INC	N/A
486	N/A	OTIS WORLDWIDE CORP	N/A
487	N/A	PEPSICO INC	N/A
488	N/A	PERKINELMER INC	N/A
489	N/A	PHILIP MORRIS INTERNATIONAL INC	N/A
490	N/A	SBA COMMUNICATIONS CORP	N/A
491	N/A	STARBUCKS CORP	N/A
492	N/A	SEALED AIR CORP	N/A
493	N/A	SNAP-ON INC	N/A
494	N/A	STANLEY BLACK & DECKER INC	N/A
495	N/A	TRANSDIGM GROUP INC	N/A
496	N/A	TELEDYNE TECHNOLOGIES INC	N/A
497	N/A	TRACTOR SUPPLY CO	N/A
498	N/A	UNDER ARMOUR INC	N/A
499	N/A	VF CORP	N/A
500	N/A	VONTIER CORP	N/A
501	N/A	VERISIGN INC	N/A
502	N/A	WATERS CORP	N/A
503	N/A	WESTERN UNION CO/THE	N/A
504	N/A	WYNN RESORTS LTD	N/A
505	N/A	YUM! BRANDS INC	N/A

Average	**6.2x**
Median	**3.4x**

Rank	Percentile	Company	Analyst Recommendation
1	100%	ASSURANT INC	5.0
2	100%	FOX CORP	5.0
3	100%	ALPHABET INC	5.0
4	99%	PHILLIPS 66	5.0
5	99%	AMAZON.COM INC	4.9
6	99%	JACOBS ENGINEERING GROUP INC	4.9
7	99%	MICROSOFT CORP	4.9
8	99%	CATALENT INC	4.8
9	98%	MONDELEZ INTERNATIONAL INC	4.8
10	98%	CENTENE CORP	4.8
11	98%	CONOCOPHILLIPS	4.8
12	98%	GENERAL MOTORS CO	4.8
13	98%	DUPONT DE NEMOURS INC	4.8
14	97%	PIONEER NATURAL RESOURCES CO	4.8
15	97%	BOSTON SCIENTIFIC CORP	4.8
16	97%	LABORATORY CORP OF AMERICA HOLDINGS	4.8
17	97%	CIGNA CORP	4.8
18	97%	ALPHABET INC	4.8
19	96%	SYNOPSYS INC	4.8
20	96%	INTERCONTINENTAL EXCHANGE INC	4.7
21	96%	VALERO ENERGY CORP	4.7
22	96%	LEIDOS HOLDINGS INC	4.7
23	96%	NISOURCE INC	4.7
24	95%	DIAMONDBACK ENERGY INC	4.7
25	95%	L3HARRIS TECHNOLOGIES INC	4.7
26	95%	FMC CORP	4.7
27	95%	WILLIAMS COS INC/THE	4.7
28	95%	TELEDYNE TECHNOLOGIES INC	4.7
29	94%	EQUINIX INC	4.7
30	94%	ETSY INC	4.6
31	94%	TJX COS INC/THE	4.6
32	94%	VERTEX PHARMACEUTICALS INC	4.6
33	94%	DANAHER CORP	4.6
34	93%	VISA INC	4.6
35	93%	ACTIVISION BLIZZARD INC	4.6
36	93%	SALESFORCE.COM INC	4.6
37	93%	FISERV INC	4.6
38	93%	NRG ENERGY INC	4.6
39	92%	VONTIER CORP	4.6
40	92%	MASTERCARD INC	4.6

Rank	Percentile	Company	Analyst Recommendation
41	92%	KEYSIGHT TECHNOLOGIES INC	4.6
42	92%	ALEXANDRIA REAL ESTATE EQUITIES INC	4.6
43	92%	COCA-COLA CO/THE	4.6
44	91%	MERCK & CO INC	4.6
45	91%	PAYPAL HOLDINGS INC	4.6
46	91%	TELEFLEX INC	4.6
47	91%	BLACKROCK INC	4.6
48	91%	LAM RESEARCH CORP	4.6
49	90%	AMERIPRISE FINANCIAL INC	4.6
50	90%	MEDTRONIC PLC	4.6
51	90%	QUANTA SERVICES INC	4.6
52	90%	SYNCHRONY FINANCIAL	4.6
53	90%	BROADCOM INC	4.6
54	89%	AES CORP	4.6
55	89%	CITIGROUP INC	4.6
56	89%	HARTFORD FINANCIAL SERVICES GROUP INC	4.6
57	89%	MCKESSON CORP	4.6
58	89%	MARATHON PETROLEUM CORP	4.6
59	88%	UNITEDHEALTH GROUP INC	4.6
60	88%	FACEBOOK INC	4.6
61	88%	GLOBAL PAYMENTS INC	4.6
62	88%	T-MOBILE US INC	4.5
63	88%	IQVIA HOLDINGS INC	4.5
64	88%	ARCHER-DANIELS-MIDLAND CO	4.5
65	87%	DEVON ENERGY CORP	4.5
66	87%	ANTHEM INC	4.5
67	87%	HCA HEALTHCARE INC	4.5
68	87%	ABBVIE INC	4.5
69	87%	FIDELITY NATIONAL INFORMATION SERVICES	4.5
70	86%	LKQ CORP	4.5
71	86%	NIKE INC	4.5
72	86%	NORTHROP GRUMMAN CORP	4.5
73	86%	SERVICENOW INC	4.5
74	86%	RAYTHEON TECHNOLOGIES CORP	4.5
75	85%	MCDONALD'S CORP	4.5
76	85%	MICROCHIP TECHNOLOGY INC	4.5
77	85%	AMERICAN ELECTRIC POWER CO INC	4.5
78	85%	BAXTER INTERNATIONAL INC	4.5
79	85%	METLIFE INC	4.5
80	84%	APPLIED MATERIALS INC	4.5

Rank	Percentile	Company	Analyst Recommendation
81	84%	ANALOG DEVICES INC	4.5
82	84%	ROSS STORES INC	4.5
83	84%	MICRON TECHNOLOGY INC	4.5
84	84%	DR HORTON INC	4.5
85	83%	LOWE'S COS INC	4.5
86	83%	HASBRO INC	4.4
87	83%	SBA COMMUNICATIONS CORP	4.4
88	83%	TECHNIPFMC PLC	4.4
89	83%	CAPITAL ONE FINANCIAL CORP	4.4
90	82%	CVS HEALTH CORP	4.4
91	82%	BAKER HUGHES CO	4.4
92	82%	AMETEK INC	4.4
93	82%	DOLLAR GENERAL CORP	4.4
94	82%	EOG RESOURCES INC	4.4
95	81%	FREEPORT-MCMORAN INC	4.4
96	81%	JOHNSON & JOHNSON	4.4
97	81%	CHARTER COMMUNICATIONS INC	4.4
98	81%	THERMO FISHER SCIENTIFIC INC	4.4
99	81%	NVIDIA CORP	4.4
100	80%	ADOBE INC	4.4
101	80%	HUMANA INC	4.4
102	80%	MOTOROLA SOLUTIONS INC	4.4
103	80%	S&P GLOBAL INC	4.4
104	80%	TAKE-TWO INTERACTIVE SOFTWARE INC	4.4
105	79%	DTE ENERGY CO	4.4
106	79%	ENTERGY CORP	4.4
107	79%	PHILIP MORRIS INTERNATIONAL INC	4.4
108	79%	AMERICAN TOWER CORP	4.4
109	79%	BRISTOL-MYERS SQUIBB CO	4.4
110	78%	CITIZENS FINANCIAL GROUP INC	4.4
111	78%	MORGAN STANLEY	4.4
112	78%	TARGET CORP	4.4
113	78%	COMCAST CORP	4.4
114	78%	LINDE PLC	4.4
115	77%	ZIMMER BIOMET HOLDINGS INC	4.3
116	77%	WALMART INC	4.3
117	77%	ATMOS ENERGY CORP	4.3
118	77%	BECTON DICKINSON AND CO	4.3
119	77%	BERKSHIRE HATHAWAY INC	4.3
120	76%	WALT DISNEY CO/THE	4.3

Rank	Percentile	Company	Analyst Recommendation
121	76%	DIGITAL REALTY TRUST INC	4.3
122	76%	DEXCOM INC	4.3
123	76%	CARMAX INC	4.3
124	76%	LAS VEGAS SANDS CORP	4.3
125	75%	PROLOGIS INC	4.3
126	75%	QORVO INC	4.3
127	75%	SKYWORKS SOLUTIONS INC	4.3
128	75%	TRANSDIGM GROUP INC	4.3
129	75%	ALASKA AIR GROUP INC	4.3
130	74%	ABBOTT LABORATORIES	4.3
131	74%	AUTODESK INC	4.3
132	74%	NEWMONT CORP	4.3
133	74%	O'REILLY AUTOMOTIVE INC	4.3
134	74%	AKAMAI TECHNOLOGIES INC	4.3
135	73%	EXELON CORP	4.3
136	73%	MASCO CORP	4.3
137	73%	EDISON INTERNATIONAL	4.3
138	73%	HOLOGIC INC	4.3
139	73%	DARDEN RESTAURANTS INC	4.3
140	72%	ARTHUR J GALLAGHER & CO	4.3
141	72%	QUALCOMM INC	4.3
142	72%	PULTEGROUP INC	4.3
143	72%	CONSTELLATION BRANDS INC	4.3
144	72%	FEDEX CORP	4.3
145	71%	STANLEY BLACK & DECKER INC	4.3
146	71%	SOUTHWEST AIRLINES CO	4.3
147	71%	CONCHO RESOURCES INC	4.3
148	71%	AUTOZONE INC	4.3
149	71%	EVERGY INC	4.3
150	70%	FIFTH THIRD BANCORP	4.3
151	70%	ULTA BEAUTY INC	4.2
152	70%	JOHNSON CONTROLS INTERNATIONAL PLC	4.2
153	70%	REALTY INCOME CORP	4.2
154	70%	PEPSICO INC	4.2
155	69%	AMEREN CORP	4.2
156	69%	HOWMET AEROSPACE INC	4.2
157	69%	APPLE INC	4.2
158	69%	CHUBB LTD	4.2
159	69%	ESTEE LAUDER COS INC/THE	4.2
160	68%	GENERAL ELECTRIC CO	4.2

Rank	Percentile	Company	Analyst Recommendation
161	68%	UNION PACIFIC CORP	4.2
162	68%	BIO-RAD LABORATORIES INC	4.2
163	68%	CERNER CORP	4.2
164	68%	DOMINO'S PIZZA INC	4.2
165	67%	MYLAN NV	4.2
166	67%	APTIV PLC	4.2
167	67%	GOLDMAN SACHS GROUP INC/THE	4.2
168	67%	ELECTRONIC ARTS INC	4.2
169	67%	INTUIT INC	4.2
170	66%	NEXTERA ENERGY INC	4.2
171	66%	WESTERN DIGITAL CORP	4.2
172	66%	HOME DEPOT INC/THE	4.2
173	66%	ALTRIA GROUP INC	4.2
174	66%	FLEETCOR TECHNOLOGIES INC	4.2
175	65%	LOCKHEED MARTIN CORP	4.2
176	65%	COSTCO WHOLESALE CORP	4.2
177	65%	QUEST DIAGNOSTICS INC	4.2
178	65%	MONSTER BEVERAGE CORP	4.2
179	65%	SEMPRA ENERGY	4.2
180	64%	SCHLUMBERGER NV	4.2
181	64%	CF INDUSTRIES HOLDINGS INC	4.2
182	64%	CABOT OIL & GAS CORP	4.1
183	64%	CSX CORP	4.1
184	64%	EASTMAN CHEMICAL CO	4.1
185	63%	PARKER-HANNIFIN CORP	4.1
186	63%	REGENERON PHARMACEUTICALS INC	4.1
187	63%	TE CONNECTIVITY LTD	4.1
188	63%	ZOETIS INC	4.1
189	63%	DUKE REALTY CORP	4.1
190	63%	HONEYWELL INTERNATIONAL INC	4.1
191	62%	HESS CORP	4.1
192	62%	AIR PRODUCTS AND CHEMICALS INC	4.1
193	62%	AMPHENOL CORP	4.1
194	62%	IDEX CORP	4.1
195	62%	MOODY'S CORP	4.1
196	61%	CHEVRON CORP	4.1
197	61%	COPART INC	4.1
198	61%	CDW CORP/DE	4.1
199	61%	DEERE & CO	4.1
200	61%	ALLIANT ENERGY CORP	4.1

Rank	Percentile	Company	Analyst Recommendation
201	60%	WEYERHAEUSER CO	4.1
202	60%	EATON CORP PLC	4.1
203	60%	TYSON FOODS INC	4.1
204	60%	DOLLAR TREE INC	4.1
205	60%	CADENCE DESIGN SYSTEMS INC	4.1
206	59%	PAYCOM SOFTWARE INC	4.1
207	59%	TAPESTRY INC	4.1
208	59%	BALL CORP	4.1
209	59%	WYNN RESORTS LTD	4.1
210	59%	STATE STREET CORP	4.1
211	58%	ELI LILLY AND CO	4.0
212	58%	TRUIST FINANCIAL CORP	4.0
213	58%	REGIONS FINANCIAL CORP	4.0
214	58%	JPMORGAN CHASE & CO	4.0
215	58%	ARISTA NETWORKS INC	4.0
216	57%	AGILENT TECHNOLOGIES INC	4.0
217	57%	ACCENTURE PLC	4.0
218	57%	CBRE GROUP INC	4.0
219	57%	DXC TECHNOLOGY CO	4.0
220	57%	F5 NETWORKS INC	4.0
221	56%	IDEXX LABORATORIES INC	4.0
222	56%	LEGGETT & PLATT INC	4.0
223	56%	LENNAR CORP	4.0
224	56%	NETFLIX INC	4.0
225	56%	PROCTER & GAMBLE CO/THE	4.0
226	55%	POOL CORP	4.0
227	55%	REPUBLIC SERVICES INC	4.0
228	55%	TERADYNE INC	4.0
229	55%	WESTROCK CO	4.0
230	55%	CHIPOTLE MEXICAN GRILL INC	4.0
231	54%	SHERWIN-WILLIAMS CO/THE	4.0
232	54%	CORTEVA INC	4.0
233	54%	GENERAL DYNAMICS CORP	4.0
234	54%	EQUIFAX INC	4.0
235	54%	CHARLES SCHWAB CORP/THE	4.0
236	53%	AMERISOURCEBERGEN CORP	3.9
237	53%	AMERICAN INTERNATIONAL GROUP INC	3.9
238	53%	ALLSTATE CORP/THE	3.9
239	53%	BANK OF NEW YORK MELLON CORP/THE	3.9
240	53%	CARRIER GLOBAL CORP	3.9

Rank	Percentile	Company	Analyst Recommendation
241	52%	CROWN CASTLE INTERNATIONAL CORP	3.9
242	52%	CONAGRA BRANDS INC	3.9
243	52%	DOMINION ENERGY INC	3.9
244	52%	DOVER CORP	3.9
245	52%	UNIVERSAL HEALTH SERVICES INC	3.9
246	51%	STRYKER CORP	3.9
247	51%	KINDER MORGAN INC	3.9
248	51%	WESTINGHOUSE AIR BRAKE TECHNOLOGIES	3.9
249	51%	ZEBRA TECHNOLOGIES CORP	3.9
250	51%	ADVANCE AUTO PARTS INC	3.9
251	50%	DISCOVER FINANCIAL SERVICES	3.9
252	50%	KANSAS CITY SOUTHERN	3.9
253	50%	INCYTE CORP	3.9
254	50%	FORTIVE CORP	3.9
255	50%	KIMCO REALTY CORP	3.9
256	49%	NASDAQ INC	3.9
257	49%	RALPH LAUREN CORP	3.9
258	49%	BANK OF AMERICA CORP	3.9
259	49%	CENTERPOINT ENERGY INC	3.9
260	49%	GARTNER INC	3.9
261	48%	VERISK ANALYTICS INC	3.9
262	48%	EDWARDS LIFESCIENCES CORP	3.9
263	48%	ADVANCED MICRO DEVICES INC	3.9
264	48%	REGENCY CENTERS CORP	3.9
265	48%	SVB FINANCIAL GROUP	3.9
266	47%	TYLER TECHNOLOGIES INC	3.9
267	47%	INTERPUBLIC GROUP OF COS INC/THE	3.9
268	47%	LINCOLN NATIONAL CORP	3.9
269	47%	NIELSEN HOLDINGS PLC	3.9
270	47%	NVR INC	3.9
271	46%	PPG INDUSTRIES INC	3.9
272	46%	PVH CORP	3.9
273	46%	STARBUCKS CORP	3.9
274	46%	SYSCO CORP	3.9
275	46%	NORFOLK SOUTHERN CORP	3.9
276	45%	VF CORP	3.9
277	45%	BORGWARNER INC	3.8
278	45%	INTERNATIONAL FLAVORS & FRAGRANCES IN	3.8
279	45%	PUBLIC SERVICE ENTERPRISE GROUP INC	3.8
280	45%	UDR INC	3.8

Rank	Percentile	Company	Analyst Recommendation
281	44%	AMGEN INC	3.8
282	44%	HILTON WORLDWIDE HOLDINGS INC	3.8
283	44%	IHS MARKIT LTD	3.8
284	44%	DELTA AIR LINES INC	3.8
285	44%	ALIGN TECHNOLOGY INC	3.8
286	43%	FIRSTENERGY CORP	3.8
287	43%	DENTSPLY SIRONA INC	3.8
288	43%	CATERPILLAR INC	3.8
289	43%	COOPER COS INC/THE	3.8
290	43%	FLIR SYSTEMS INC	3.8
291	42%	HUNTINGTON INGALLS INDUSTRIES INC	3.8
292	42%	KLA CORP	3.8
293	42%	EVEREST RE GROUP LTD	3.8
294	42%	SEALED AIR CORP	3.8
295	42%	UNITED RENTALS INC	3.8
296	41%	CISCO SYSTEMS INC	3.8
297	41%	OTIS WORLDWIDE CORP	3.8
298	41%	CELANESE CORP	3.8
299	41%	INTUITIVE SURGICAL INC	3.8
300	41%	EBAY INC	3.8
301	40%	CITRIX SYSTEMS INC	3.8
302	40%	EMERSON ELECTRIC CO	3.8
303	40%	IPG PHOTONICS CORP	3.8
304	40%	MSCI INC	3.8
305	40%	CMS ENERGY CORP	3.8
306	39%	HEALTHPEAK PROPERTIES INC	3.8
307	39%	FOX CORP	3.8
308	39%	AMERICAN WATER WORKS CO INC	3.8
309	39%	INGERSOLL RAND INC	3.8
310	39%	IRON MOUNTAIN INC	3.8
311	38%	LAMB WESTON HOLDINGS INC	3.8
312	38%	LIVE NATION ENTERTAINMENT INC	3.8
313	38%	TRACTOR SUPPLY CO	3.7
314	38%	BEST BUY CO INC	3.7
315	38%	US BANCORP	3.7
316	38%	DUKE ENERGY CORP	3.7
317	37%	HUNTINGTON BANCSHARES INC/OH	3.7
318	37%	GILEAD SCIENCES INC	3.7
319	37%	KRAFT HEINZ CO/THE	3.7
320	37%	EXTRA SPACE STORAGE INC	3.7

Rank	Percentile	Company	Analyst Recommendation
321	37%	MOSAIC CO/THE	3.7
322	36%	STERIS PLC	3.7
323	36%	WEST PHARMACEUTICAL SERVICES INC	3.7
324	36%	FORTINET INC	3.7
325	36%	MARRIOTT INTERNATIONAL INC/MD	3.7
326	36%	ORACLE CORP	3.7
327	35%	ABIOMED INC	3.7
328	35%	APACHE CORP	3.7
329	35%	AVERY DENNISON CORP	3.7
330	35%	HANESBRANDS INC	3.7
331	35%	MID-AMERICA APARTMENT COMMUNITIES INC	3.7
332	34%	NORWEGIAN CRUISE LINE HOLDINGS LTD	3.7
333	34%	UNDER ARMOUR INC	3.7
334	34%	WASTE MANAGEMENT INC	3.7
335	34%	BOEING CO/THE	3.7
336	34%	HALLIBURTON CO	3.7
337	33%	VERIZON COMMUNICATIONS INC	3.6
338	33%	YUM! BRANDS INC	3.6
339	33%	KELLOGG CO	3.6
340	33%	CINTAS CORP	3.6
341	33%	JB HUNT TRANSPORT SERVICES INC	3.6
342	32%	PERKINELMER INC	3.6
343	32%	WELLS FARGO & CO	3.6
344	32%	CORNING INC	3.6
345	32%	BOOKING HOLDINGS INC	3.6
346	32%	APARTMENT INVESTMENT AND MANAGEMENT	3.6
347	31%	ALEXION PHARMACEUTICALS INC	3.6
348	31%	BOSTON PROPERTIES INC	3.6
349	31%	GARMIN LTD	3.6
350	31%	PROGRESSIVE CORP/THE	3.6
351	31%	DISH NETWORK CORP	3.6
352	30%	FORTUNE BRANDS HOME & SECURITY INC	3.6
353	30%	COGNIZANT TECHNOLOGY SOLUTIONS CORP	3.6
354	30%	AMERICAN EXPRESS CO	3.6
355	30%	EXPEDIA GROUP INC	3.6
356	30%	A O SMITH CORP	3.6
357	29%	PPL CORP	3.6
358	29%	ROPER TECHNOLOGIES INC	3.6
359	29%	UNITED PARCEL SERVICE INC	3.6
360	29%	FIRST REPUBLIC BANK/CA	3.6

Rank	Percentile	Company	Analyst Recommendation
361	29%	LYONDELLBASELL INDUSTRIES NV	3.6
362	28%	FEDERAL REALTY INVESTMENT TRUST	3.6
363	28%	SIMON PROPERTY GROUP INC	3.6
364	28%	ESSEX PROPERTY TRUST INC	3.5
365	28%	MARTIN MARIETTA MATERIALS INC	3.5
366	28%	CUMMINS INC	3.5
367	27%	L BRANDS INC	3.5
368	27%	TRANE TECHNOLOGIES PLC	3.5
369	27%	NETAPP INC	3.5
370	27%	NORTONLIFELOCK INC	3.5
371	27%	PINNACLE WEST CAPITAL CORP	3.5
372	26%	CARDINAL HEALTH INC	3.5
373	26%	HOLLYFRONTIER CORP	3.5
374	26%	VULCAN MATERIALS CO	3.5
375	26%	NATIONAL OILWELL VARCO INC	3.5
376	26%	CME GROUP INC	3.5
377	25%	DISCOVERY INC	3.5
378	25%	PENTAIR PLC	3.5
379	25%	PERRIGO CO PLC	3.5
380	25%	RESMED INC	3.5
381	25%	ROLLINS INC	3.5
382	24%	VERISIGN INC	3.5
383	24%	WILLIS TOWERS WATSON PLC	3.5
384	24%	AON PLC	3.5
385	24%	HENRY SCHEIN INC	3.5
386	24%	TEXTRON INC	3.5
387	23%	KROGER CO/THE	3.5
388	23%	BIOGEN INC	3.5
389	23%	AVALONBAY COMMUNITIES INC	3.5
390	23%	COLGATE-PALMOLIVE CO	3.5
391	23%	PFIZER INC	3.5
392	22%	BROADRIDGE FINANCIAL SOLUTIONS INC	3.4
393	22%	INTERNATIONAL BUSINESS MACHINES CORP	3.4
394	22%	MOHAWK INDUSTRIES INC	3.4
395	22%	PNC FINANCIAL SERVICES GROUP INC/THE	3.4
396	22%	CBOE GLOBAL MARKETS INC	3.4
397	21%	ROYAL CARIBBEAN CRUISES LTD	3.4
398	21%	SOUTHERN CO/THE	3.4
399	21%	VIACOMCBS INC	3.4
400	21%	AMCOR PLC	3.4

Rank	Percentile	Company	Analyst Recommendation
401	21%	ANSYS INC	3.4
402	20%	CHURCH & DWIGHT CO INC	3.4
403	20%	EVERSOURCE ENERGY	3.4
404	20%	HERSHEY CO/THE	3.4
405	20%	INTERNATIONAL PAPER CO	3.4
406	20%	MARKETAXESS HOLDINGS INC	3.4
407	19%	MARATHON OIL CORP	3.4
408	19%	ZIONS BANCORP NA	3.4
409	19%	ONEOK INC	3.4
410	19%	RAYMOND JAMES FINANCIAL INC	3.4
411	19%	WELLTOWER INC	3.4
412	18%	KIMBERLY-CLARK CORP	3.4
413	18%	SEAGATE TECHNOLOGY PLC	3.4
414	18%	HEWLETT PACKARD ENTERPRISE CO	3.4
415	18%	HP INC	3.4
416	18%	SL GREEN REALTY CORP	3.4
417	17%	UNITED AIRLINES HOLDINGS INC	3.3
418	17%	MAXIM INTEGRATED PRODUCTS INC	3.3
419	17%	PRINCIPAL FINANCIAL GROUP INC	3.3
420	17%	PACKAGING CORP OF AMERICA	3.3
421	17%	TEXAS INSTRUMENTS INC	3.3
422	16%	DISCOVERY INC	3.3
423	16%	DAVITA INC	3.3
424	16%	GENERAL MILLS INC	3.3
425	16%	MOLSON COORS BEVERAGE CO	3.3
426	16%	WW GRAINGER INC	3.3
427	15%	OMNICOM GROUP INC	3.3
428	15%	PACCAR INC	3.3
429	15%	DOW INC	3.3
430	15%	PEOPLE'S UNITED FINANCIAL INC	3.3
431	15%	PRUDENTIAL FINANCIAL INC	3.3
432	14%	FORD MOTOR CO	3.3
433	14%	NEWS CORP	3.2
434	14%	CAMPBELL SOUP CO	3.2
435	14%	MARSH & MCLENNAN COS INC	3.2
436	14%	WHIRLPOOL CORP	3.2
437	13%	VENTAS INC	3.2
438	13%	AT&T INC	3.2
439	13%	ECOLAB INC	3.2
440	13%	HOST HOTELS & RESORTS INC	3.2

Rank	Percentile	Company	Analyst Recommendation
441	13%	SNAP-ON INC	3.2
442	13%	TRAVELERS COS INC/THE	3.2
443	12%	W R BERKLEY CORP	3.2
444	12%	GAP INC/THE	3.2
445	12%	KEYCORP	3.2
446	12%	TWITTER INC	3.2
447	12%	FLOWSERVE CORP	3.2
448	11%	ROCKWELL AUTOMATION INC	3.2
449	11%	EXXON MOBIL CORP	3.1
450	11%	CLOROX CO/THE	3.1
451	11%	JACK HENRY & ASSOCIATES INC	3.1
452	11%	OLD DOMINION FREIGHT LINE INC	3.1
453	10%	UNDER ARMOUR INC	3.1
454	10%	NORTHERN TRUST CORP	3.1
455	10%	XYLEM INC/NY	3.1
456	10%	AUTOMATIC DATA PROCESSING INC	3.1
457	10%	M&T BANK CORP	3.1
458	9%	INTEL CORP	3.1
459	9%	XILINX INC	3.1
460	9%	CARNIVAL CORP	3.0
461	9%	CINCINNATI FINANCIAL CORP	3.0
462	9%	FASTENAL CO	3.0
463	8%	GLOBE LIFE INC	3.0
464	8%	GENUINE PARTS CO	3.0
465	8%	ILLUMINA INC	3.0
466	8%	JUNIPER NETWORKS INC	3.0
467	8%	LOEWS CORP	3.0
468	7%	MGM RESORTS INTERNATIONAL	3.0
469	7%	NUCOR CORP	3.0
470	7%	NEWELL BRANDS INC	3.0
471	7%	NEWS CORP	3.0
472	7%	PAYCHEX INC	3.0
473	6%	T ROWE PRICE GROUP INC	3.0
474	6%	VARIAN MEDICAL SYSTEMS INC	3.0
475	6%	XCEL ENERGY INC	3.0
476	6%	ALBEMARLE CORP	2.9
477	6%	CH ROBINSON WORLDWIDE INC	2.9
478	5%	EQUITY RESIDENTIAL	2.9
479	5%	3M CO	2.9
480	5%	TIFFANY & CO	2.9

Rank	Percentile	Company	Analyst Recommendation
481	5%	PUBLIC STORAGE	2.9
482	5%	ROBERT HALF INTERNATIONAL INC	2.9
483	4%	ALLEGION PLC	2.8
484	4%	MCCORMICK & CO INC/MD	2.8
485	4%	AFLAC INC	2.8
486	4%	ILLINOIS TOOL WORKS INC	2.8
487	4%	OCCIDENTAL PETROLEUM CORP	2.8
488	3%	INVESCO LTD	2.8
489	3%	J M SMUCKER CO/THE	2.8
490	3%	COMERICA INC	2.8
491	3%	WEC ENERGY GROUP INC	2.7
492	3%	WALGREENS BOOTS ALLIANCE INC	2.7
493	2%	XEROX HOLDINGS CORP	2.7
494	2%	VORNADO REALTY TRUST	2.7
495	2%	WESTERN UNION CO/THE	2.7
496	2%	HORMEL FOODS CORP	2.5
497	2%	CENTURYLINK INC	2.5
498	1%	UNUM GROUP	2.5
499	1%	EXPEDITORS INTERNATIONAL OF WASHINGT(	2.5
500	**1%**	**CONSOLIDATED EDISON INC**	**2.4**
501	1%	WATERS CORP	2.4
502	1%	FRANKLIN RESOURCES INC	2.4
503	0%	BROWN-FORMAN CORP	2.3
504	0%	METTLER-TOLEDO INTERNATIONAL INC	2.2
505	0%	AMERICAN AIRLINES GROUP INC	2.2