



Outlook: U.S. Public Power and Electric Cooperative Sector

American Public Power Association
Business & Finance Conference

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September 17, 2018

FitchRatings

2018 Outlook: U.S. Public Power and Electric Cooperative Sector



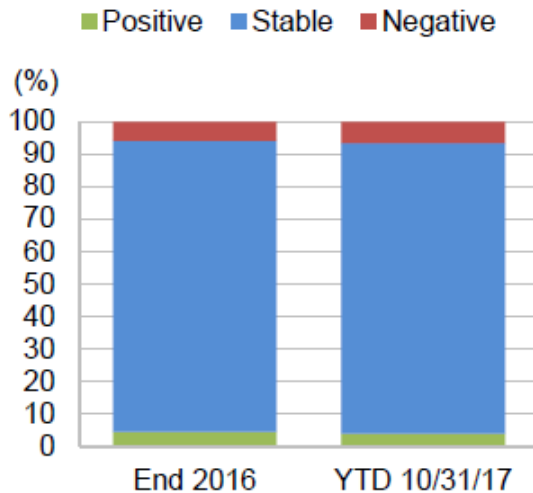
Rating Outlook

STABLE
(2017: Stable)

Sector Outlook

STABLE
(2017: Stable)

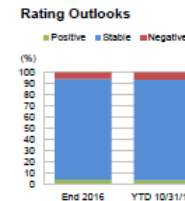
Rating Outlooks



Fitch 2018 Outlook: U.S. Public Power and Electric Cooperative Sector

Outlook Report

Rating Outlook
STABLE
(2017: Stable)



Source: Fitch.

Sector Outlook
STABLE
(2017: Stable)

- Electric affordability improves to precession levels.
- Environmental compliance burdens decline.
- Declining capital investment.

Related Research

Other Outlooks
www.fitchratings.com/outlooks

Other Research
Global Economic Outlook (December 2017)

Analysts

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Rating and Sector Outlooks Stable: Fitch Ratings' 2018 outlook for the public power and electric cooperative sector is stable. Strong sector characteristics, including autonomous rate-setting authority, the essential nature of electric service and reliable cash flow, should allow the sector to retain a solid fiscal foundation. The outlook for ratings is also stable.

Affordability Returns to Precession Levels: Strong growth in household income has contributed to electric cost affordability that has returned to precession levels, easing rate pressures for most public power and cooperative issuers. Favorable operating conditions, a continued ability and willingness to increase electric rates to preserve margins, and modest economic growth should help sustain the sector's trend of improving financial metrics.

Regulations Uncertain: Actions by the Trump administration, including a proposed repeal of the Clean Power Plan (CPP) and withdrawal from the Paris climate agreement, make the future of environmental regulations aimed at reducing carbon dioxide (CO₂) emissions uncertain at best. Revisions to the CPP and CO₂ regulations would likely benefit coal-dominant utilities over the near term by easing or eliminating the burden of compliance.

Carbon Pressures Remain: Despite the shifting regulatory landscape, Fitch expects that state-level renewable mandates as well as mounting pressure from consumers, local governments and investors will pressure public power utilities to reduce CO₂ emissions over time. The proliferation of policies that reduce liquidity or force premature retirement could result in financial strain and downward rating pressure.

Declining Rate of Capital Investment: Capital investment as a percentage of depreciation has steadily declined throughout the public power sector since 2010, driven by lower growth in electric consumption and ample access to alternative generating capacity. Lower spending ratios should continue during the near term as consumption and resource development trends limit sector-wide investment in generation. Lower funding requirements and redirection of cash flow toward reserves and debt reduction would be supportive of credit quality.

Favorable Operating Environment: Low natural gas prices and interest rates should support financial performance through the outlook period, but future gains may be limited. Fitch expects natural gas prices to remain low by historical standards at \$3.00/per thousand cubic feet (mcf) for 2018. Long- and short-term interest rates are expected to rise steadily through 2018, but higher levels should not pose a material risk to issuers given the sector's concentration of fixed-rate debt and lower funding requirements.

Outlook Sensitivities

Stable Sector Outlook: The essential services provided by the sector, monopolistic business nature and autonomous rate-setting authority are key factors in the sector's historical performance stability. Given the sector's fundamentals and Fitch's expectation for modest economic growth nationally, a shift in the sector's stable outlook in 2018 is unlikely.

Unwillingness to Support Metrics: A widely observed unwillingness of public power and cooperative issuers to raise rates to support current and projected financial metrics in response to economic weakness, increased cost pressures or declining consumption, could change the sector rating outlook to negative.



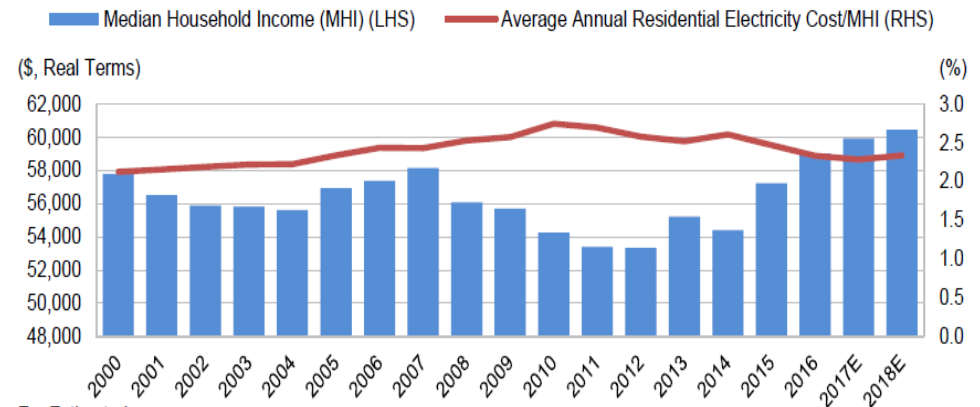
Sector Outlook: Key Issues



Affordability Returns to Prerecession Levels

- Strong growth in household income has contributed to affordability that has returned to prerecession levels, easing rate pressure.
- Real household income rose dramatically in 2015, and again in 2016; Modest improvements forecast in 2017-2018.
- Affordability ratio of 2.31% in 2017 versus 2.83% in 2010.
- Fitch's growth forecasts recently revised upward; 2018 GDP, 2.8%; 2019, 2.6%; Recent fiscal policy changes will provide a large boost to growth in the near term; Tax cuts greater than anticipated.
- Real incomes are expected to benefit from an increasingly tight labor market; Consumer spending growth remains solid; Consumer confidence readings remain near highest levels since November 2000.

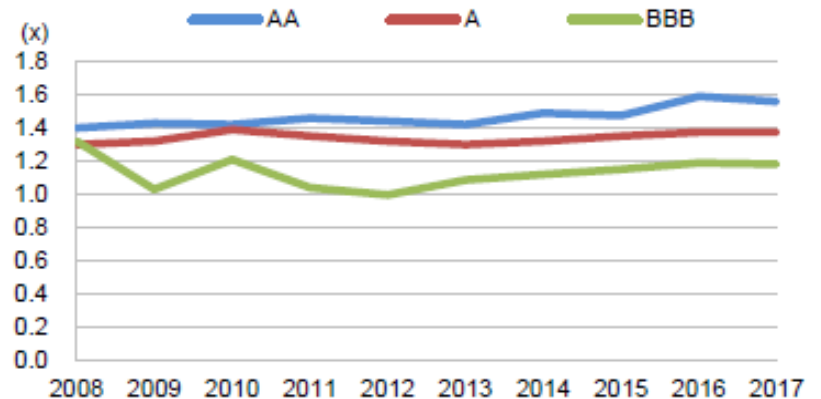
Residential Electric Cost to Median Household Income



E - Estimated.
Sources: U.S. Energy Information Administration, IHS Markit, U.S. Census, Fitch.

Coverage of Full Obligations

Indicates the margin available to meet current debt service and other fixed obligations.



Source: Fitch Ratings.

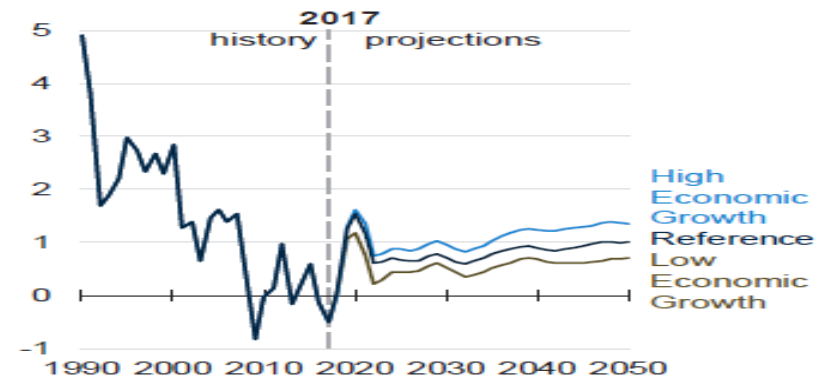
Sector Outlook: Key Issues



Affordability Returns to Prerecession Levels

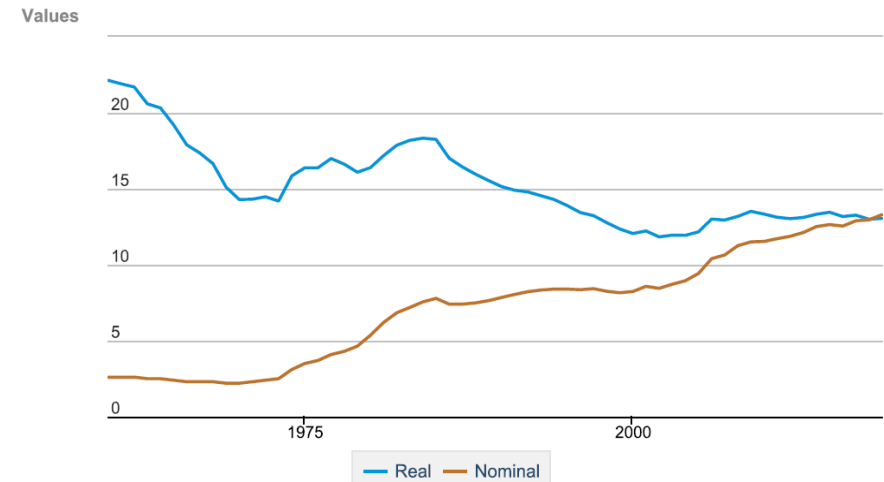
- Lower electric costs tied more to declining consumption than lower electric prices; Residential consumption declined approximately 5% 2008-2017; Real prices virtually unchanged.
- Total residential consumption declined 2.1% in 2017; increase of 2% YTD in 2018; Per capita declines continue.
- Real price increased modestly (0.6%) in 2017; Forecast 2% decline for 2018; modest increase of .7% in 2019.
- Improved affordability should support rate setting strategies.

Electricity use growth rate
percent growth (three-year rolling average)



U.S. Energy Information Administration

Residential Electricity Prices



Source: U.S. Energy Information Administration

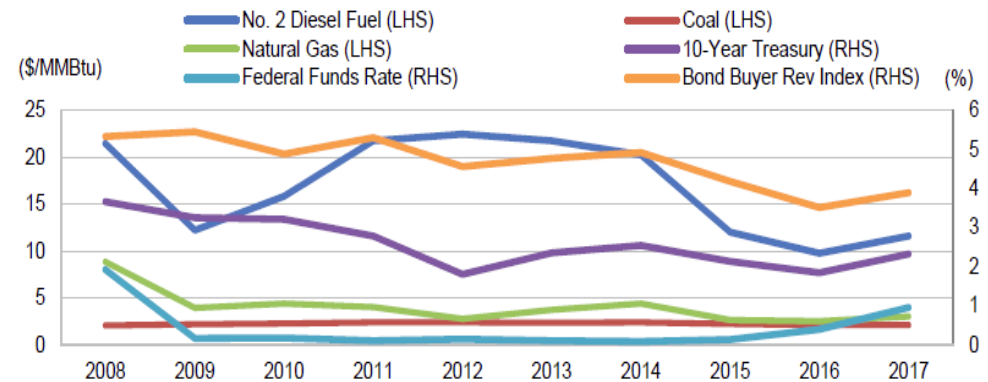
Sector Outlook: Key Issues



Lower Fuel Cost Broadly Positive

- Low fuel costs and energy prices should remain broadly positive through 2018.
- Fitch 2018 base case (\$2.75/mcf) and long-term (\$3.00/mcf) natural gas prices lowered in March; Storage levels have moved toward historical averages; Continued unit economics improvements and associated gas production growth.
- AEO 2018 Reference Case forecasts increasing gas prices through 2030 driven by production expansion into more expensive-to-produce areas and increased export demand.
- Gas prices highly sensitive to domestic resource and technology assumptions; Low R&T case assumes higher costs for Alaska and Lower 48 reserves and slower technology improvement.
- Given the sector's growing reliance on natural gas generation at ~32% in 2017, a sudden unexpected rise in cost remains a concern.

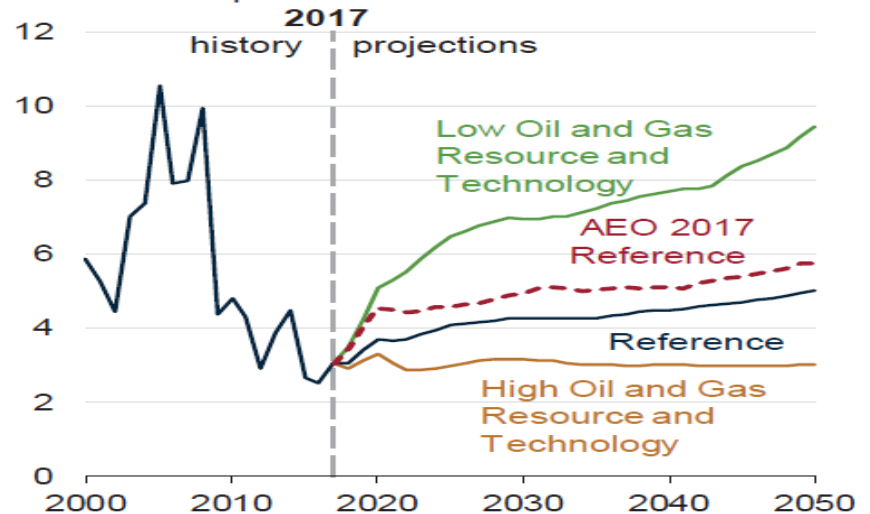
U.S. Average Cost of Delivered Fuel for Electric Generation and Interest Rates



MMBtu – Million British thermal units.

Source: U.S. Energy Information Administration, U.S. Federal Reserve.

Natural gas spot price at Henry Hub 2017 dollars per million British thermal units



Source: EIA 2018 AEO

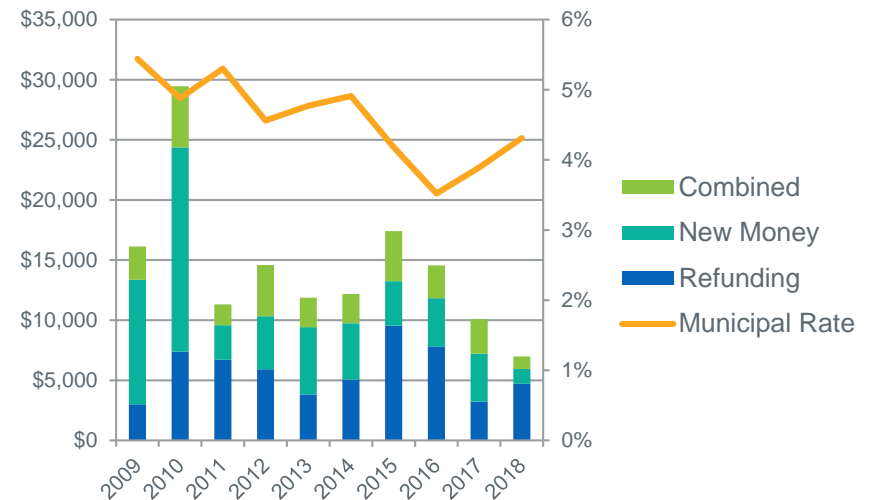
Sector Outlook: Key Issues



Low Interest Rates Positive; Upward Pressure Mounts

- Low interest rates and robust access to the capital markets have been positive.
- Replacement and refunding of debt has reduce revenue requirements; Nearly 70% of 2017-2018 electric power debt earmarked for refunding; Further gains from refunding could be limited, particularly following tax reform.
- Fitch expects the Fed to raise interest rates four times in 2018, and three times in 2019; US 10-year Treasury yield of 4.10% by the end of 2020.
- Higher short-term rates should not pose a material risk to issuers; Low percentage of short-term debt and unhedged variable rate exposure (4.9%); 58% of issuers have no variable rate exposure.
- Higher long-term rates may limit headroom created in recent years and could result in upward pressure on rates.

Municipal Bond Issuance - Electric Power Sector



Source: The Bond Buyer, Fitch

United States - Forecast Summary

(%)	Ann. Av. 2013-17	2017	2018f	2019f	2020f
GDP	2.2	2.3	2.8	2.6	2.1
Consumer Spending	2.7	2.8	2.4	2.1	2.0
Fixed Investment	4.0	4.0	5.4	3.8	2.2
Net Trade (contribution pps.)	-0.2	-0.2	-0.3	-0.2	-0.1
CPI Inflation (end-year)	1.3	2.1	2.2	2.3	2.4
Unemployment Rate	5.6	4.4	3.8	3.4	3.4
Policy Interest Rate (end-year)	0.48	1.50	2.50	3.25	3.50
Exchange Rate, US/EUR (end-year)	0.84	0.83	0.87	0.87	0.87

Source: Fitch

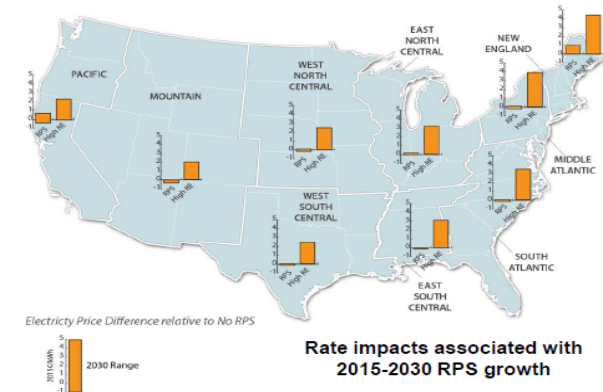
Sector Outlook: Key Issues



Higher RPS Compliance Costs Offset Other Gains

- RPS compliance costs totaled 3.0 billion in 2015, up from \$2.4 billion in 2014; 1.8% of average retail electricity bills; as high as 11% in California.
- Modest future impact under existing plans; Higher rate impact under more aggressive renewable energy growth scenarios.

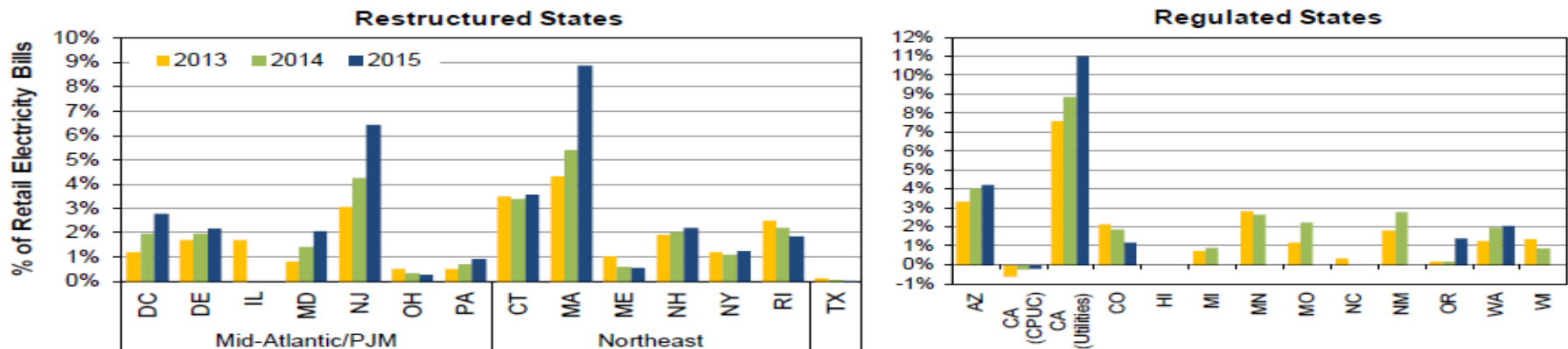
Average rate impact by Census region in 2030



Source: Lawrence Berkeley National Laboratory and the National Renewable Energy Laboratory, *Prospective Costs, Benefits, and Impacts of U.S. Renewable Portfolio Standards*, December 2016. <https://emp.lbl.gov/publications/prospective-analysis-costs-benefits>

Total RPS Compliance Costs

The figures show the state-level details underlying the summary statistics on the previous slide; separate restructured from regulated states due to the different estimation approach



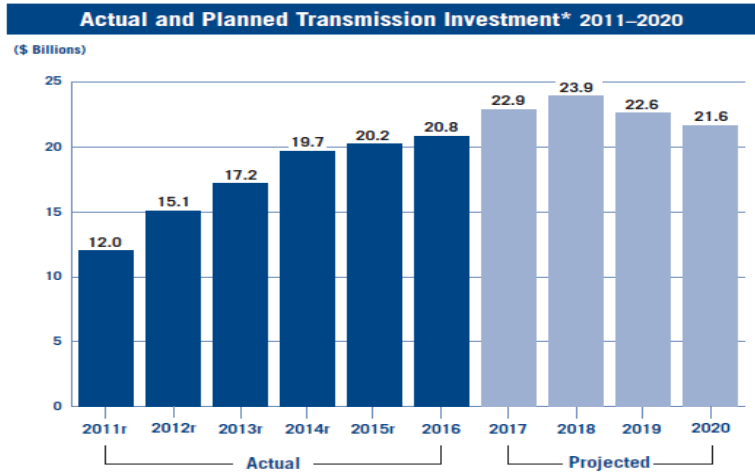
Source: Lawrence Berkeley National Laboratory, *U.S. Renewables Portfolio Standards: 2016 Annual Status Report*, April 2016. <http://rps.lbl.gov>

Sector Outlook: Key Issues

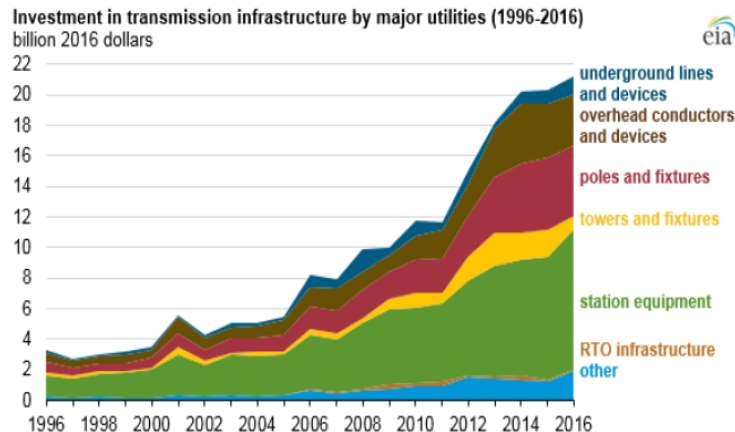


Higher Transmission and Distribution Costs Offset Other Gains

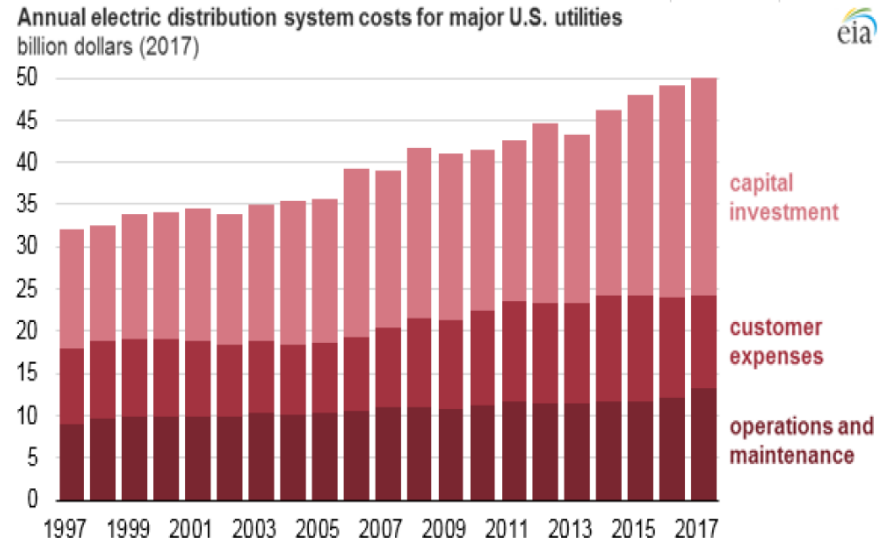
- Over 24,000 miles of new transmission lines built in 2011-2015, twice the number of miles added in 2006-2010.
- \$92 billion of new transmission investment planned by investor owned utilities and transmission companies 2017-2020.
- Spending on electric distribution systems has risen 54% over the last two decades; Annual capital investment; Nearly 43% higher since 2005.



Source: EEI



Source: U.S. Energy Information Administration, Federal Energy Regulatory Commission (FERC) Financial Reports, as accessed by Ventyx Velocity Suite
 Note: RTOs are regional transmission organizations.



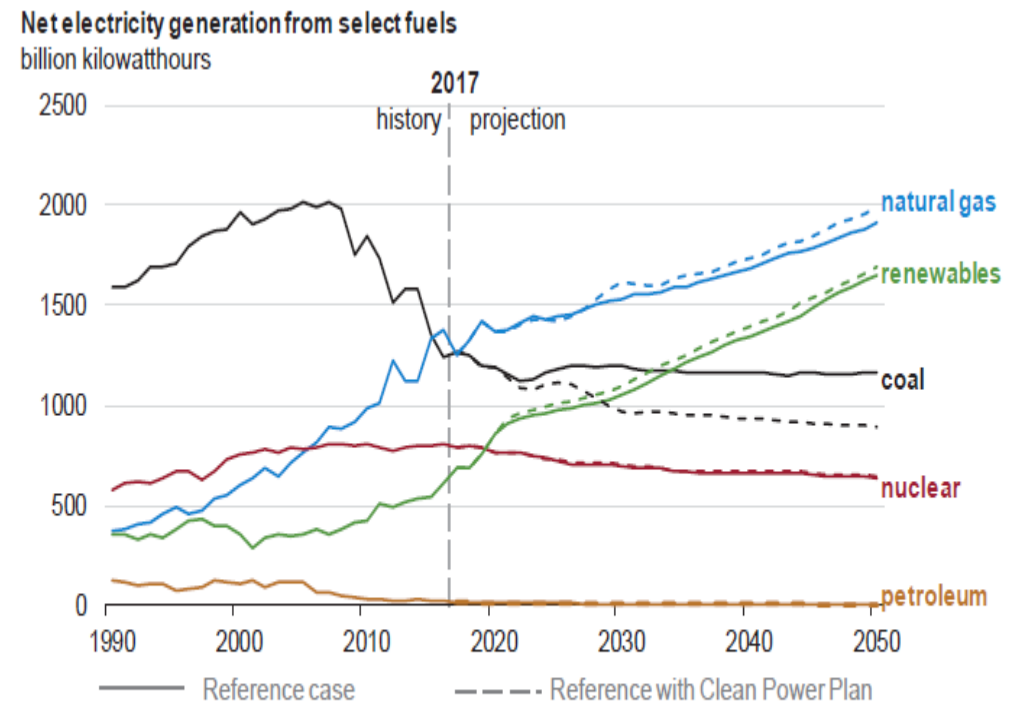
Source: U.S. Energy Information Administration, Federal Energy Regulatory Commission (FERC) Fin

Sector Outlook: Key Issues



Proposed Environmental Regulations Appear Manageable With Limited Near-term Impact....

- The EPA's proposed Affordable Clean Energy (ACE) rule would replace the 2015 Clean Power Plan (CPP), which EPA has proposed to repeal.
- The ACE rule is expected to reduce carbon emissions in 2025 by between 13 and 30 million short tons, but provides a more manageable framework and relaxed timetable for compliance than the CPP.
- The new rule could provide some flexibility and near-term benefit for coal-dominant utilities as they pursue economic dispatch of resources, but overall near-term impact should be limited.
- Any benefits for coal-fired generation are expected to be short-lived...



U.S. Energy Information Administration

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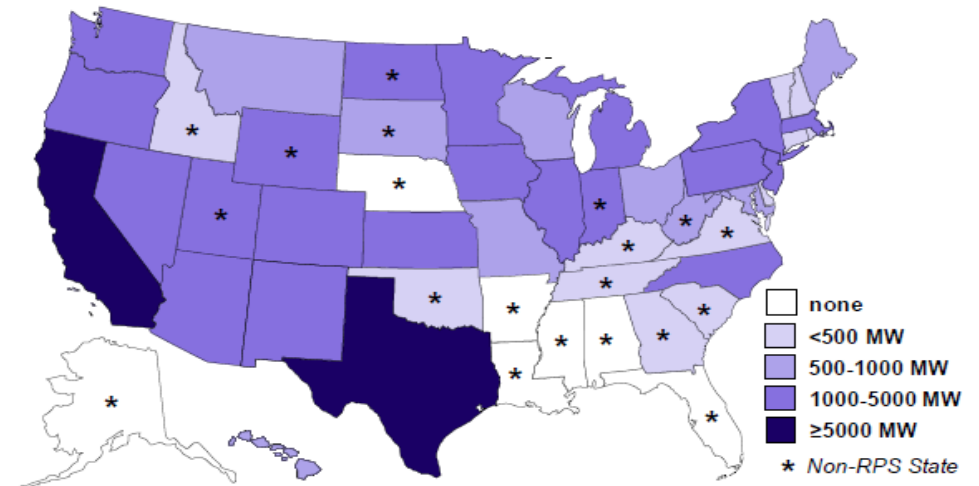
Sector Outlook: Key Issues



...but Carbon Pressures Remain

- State level renewable mandates as well as mounting pressure from consumers, local governments and investors alike are expected to affect resource planning for years to come.
- Nineteen states have adopted renewable standards or goal that apply to public power utilities.
- These initiatives, together with proposals and policies aimed at limiting investment in thermal coal, are likely to drive issuers toward strategies promoting reduced emissions.
- Proliferation could significantly reduce liquidity or force consideration of premature retirement, resulting in financial strain and downward rating pressure.

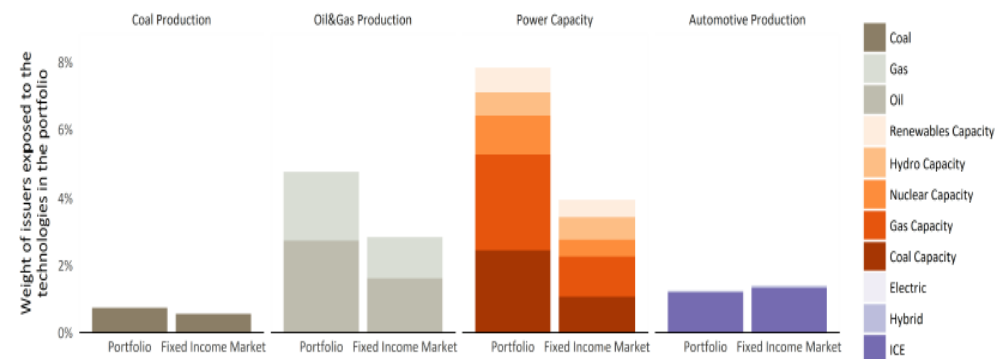
RPS Capacity Additions: 2000-2016



Source: Berkeley Lab

Notes: States denoted "Non-RPS State" if an RPS did not exist at any point over the 2000-2016 period.

Current exposure of the fixed income portfolio to high-carbon and low-carbon activities, as a % of the portfolio, compared to the fixed income market



Source: 2Dii

Sector Outlook: Key Issues



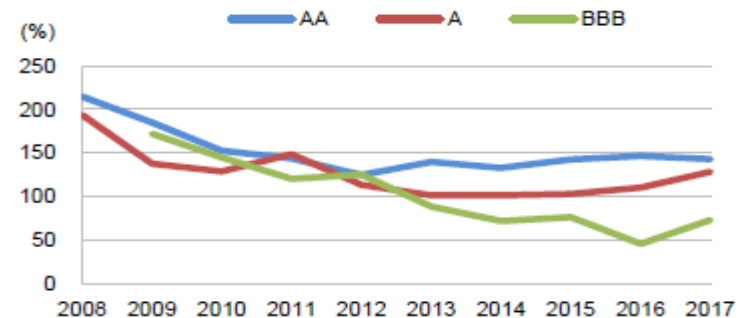
Declining Rates of Capital Investing

- Rate of capital investment for public power issuers remained low in 2017, sustaining a trend begun earlier this decade.
- Since 2010, the median ratio of capital investment to depreciation has steadily declined from 166% to 123%.
- 'A' rated wholesale systems reported a median capex/depreciation ratio of less than 100% for the second year in a row.

Retail Electric Trends

Capex/Depreciation and Amortization

Indicates whether annual capital spending keeps pace with depreciation.

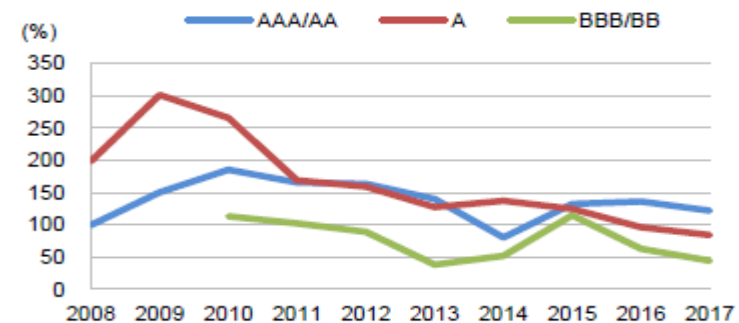


Source: Fitch Ratings.

Wholesale Electric Trends

Capex/Depreciation and Amortization

Indicates whether annual capital spending keeps pace with depreciation.



Source: Fitch Ratings.

Sector Outlook: Key Issues



Declining Rates of Capital Investing

- Low growth in electric consumption, particularly for residential users, has obviated the need for new generation build.
- Investment throughout the broader utility sector has continued, driven in part by tax credits and other incentives, offsetting retirements of coal and natural gas capacity.
- Renewal and replacement investment remains steady for public power utilities, and investment in transmission has grown.

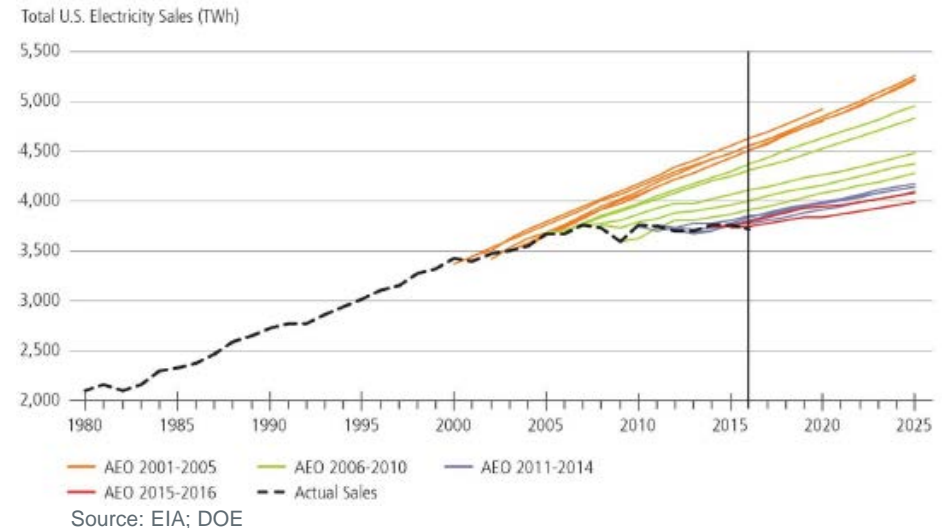
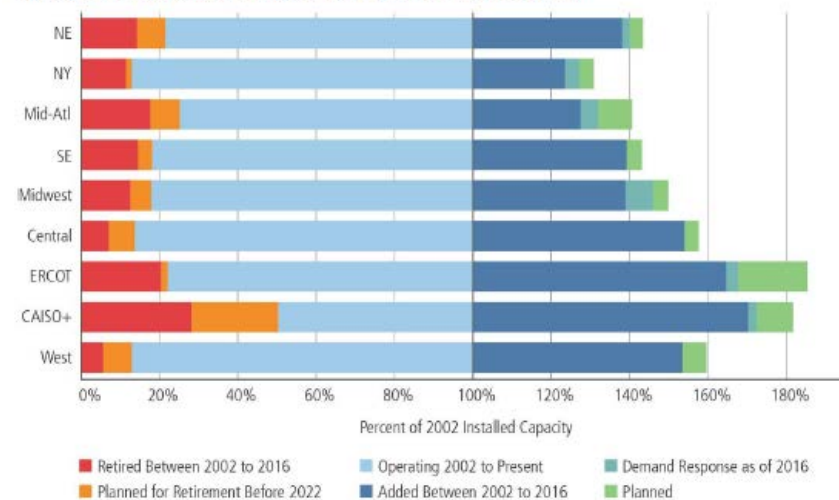


Figure 3.5. Operating Generation Capacity, Additions, Retirements, and Announced Retirements by Region for All Generation Types, January 2002–December 2022²⁸



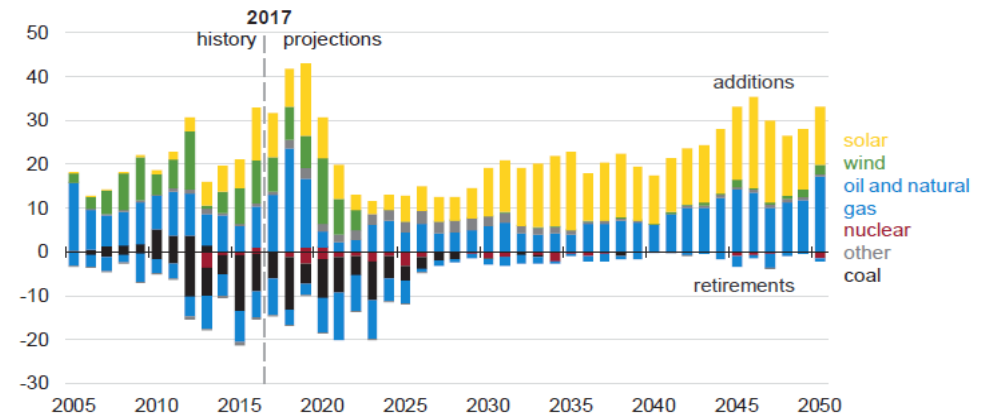
Sector Outlook: Key Issues



Declining Rates of Capital Investing

- Fitch expects the rate of investment to remain depressed over the near term.
- EIA forecasts electric power generating net capacity will decline by 2.9% during 2017–2021.
- New capacity additions of wind and solar resources will exceed 52 GW or 64% of new additions.
- Tax credits and incentives will continue to make renewable resource purchase agreements attractive for not-for-profit utilities further limiting investment.
- Virtually no additional coal or nuclear resources are anticipated.
- Regional excess capacity should remain robust; All NERC regions expected to maintain reserve margins above resource adequacy targets, but signs of weakness appearing.

Annual electricity generating capacity additions and retirements (Reference case)
gigawatts



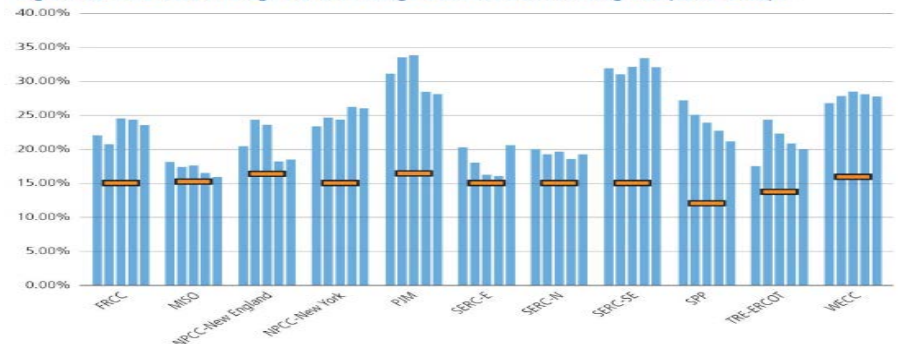
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Source: EEI; DOE

Figure 4.2. Five-Year Average Reserve Margins across Different Regions (2018–2022)^{***}



All regions have reserve margins above resource adequacy targets.

Source: EIA; DOE

FITCH: TEXAS POWER CLOSURES MAY MEAN HIGHER WHOLESALE PRICES

Sector Outlook: Key Issues

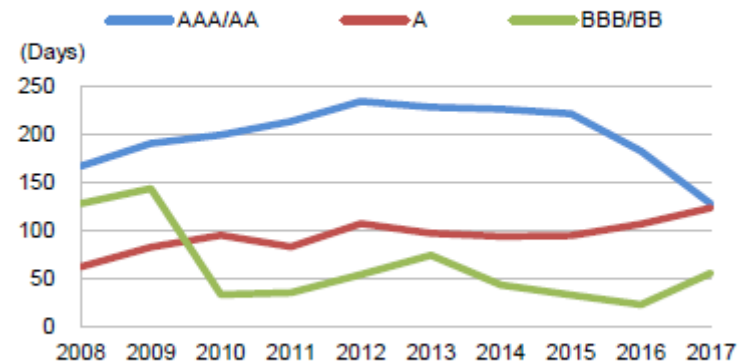


Declining Rates of Capital Investing

- Lower capital spending should support sector credit quality.
- Systems debt-funding capex should clearly benefit from lower debt levels.
- The effect on credit quality will depend on alternative use of excess cash.
- Credit effect for systems funding capex with funds from operations will depend on alternative use of cash.
- Using funds to bolster reserves and reduce outstanding debt would be viewed as more supportive of credit quality than if funds are returned to end users through a reduction in rates.

Days Cash on Hand

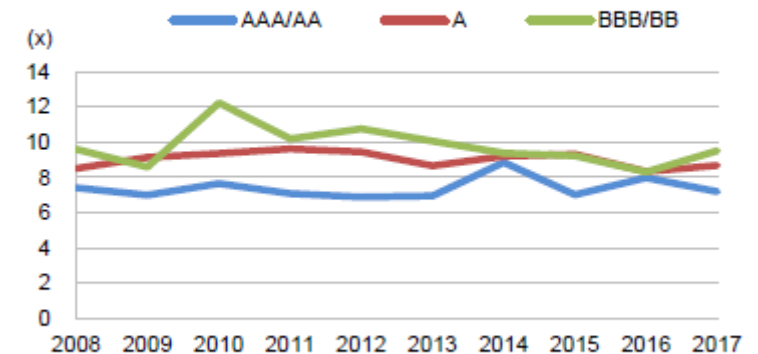
Indicates financial flexibility, specifically cash and cash equivalents, relative to expenses.



Source: Fitch Ratings.

Debt/FADS

Indicates the size of debt compared with the margin available for debt service.



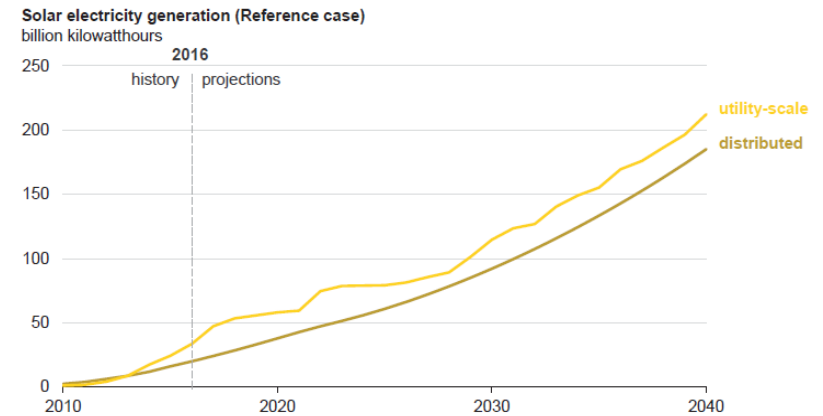
Source: Fitch Ratings.

Sector Outlook: Key Issues

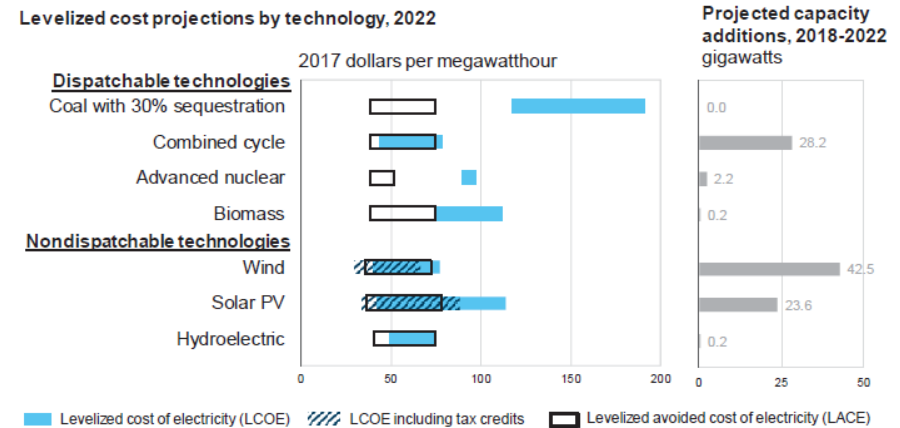


Growing Challenges to Traditional Utility Model

- Customers are increasingly demanding more options to buy renewable energy; tax subsidies, falling costs and customer preferences are driving increased distributed generation.
- Distributed PV competes against higher retail electricity prices, which do not necessarily reflect time-of-day or seasonal variation in cost.
- Not a key rating driver in the near term, given a low base, but a worrisome long-term trend for utilities.
- Development of affordable storage solution could spark customer defections over the longer term further upending the traditional utility model.
- Trend requires rate design solutions to minimize revenue loss and cross subsidization; Constructive net metering supportive.



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Sector Outlook: Key Issues



2018 Public Power Peer Review Metrics Validate Stable Outlook



U.S. Public Power
Peer Review
June 2018

Sector Outlook: Key Issues



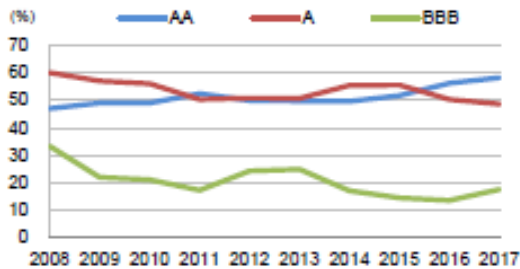
2018 Public Power Peer Review Metrics Validate Stable Outlook

Retail Electric Trends

Below, the trends of 'AA' and 'A' medians for retail electric systems are displayed for nine of the financial metrics used in Fitch's analysis. Also included are the trends of 'BBB/BB' medians for retail electric systems. However, the sample size is small.

Equity/Capitalization

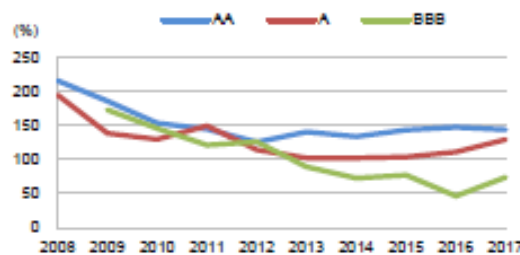
Provides a measure of cost recovery.



Source: Fitch Ratings.

Capex/Depreciation and Amortization

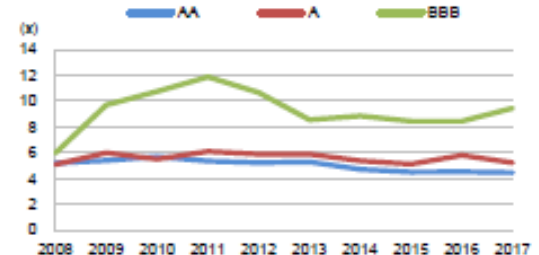
Indicates whether annual capital spending keeps pace with depreciation.



Source: Fitch Ratings.

Debt/FADS

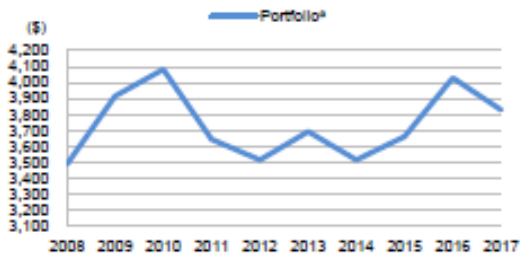
Indicates the size of debt compared with the margin available for debt service.



Source: Fitch Ratings.

Debt/Electric Customer

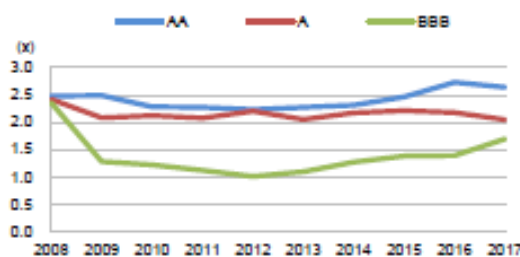
Provides a measure for relative comparison of leverage.



*Excludes one credit rated 'B' and 'CCC' in 2016 and 2017, respectively.
Source: Fitch Ratings.

Debt Service Coverage

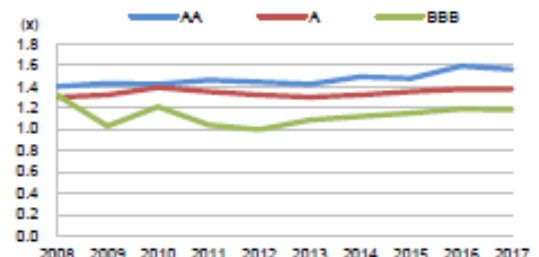
Indicates the margin available to meet current debt service requirements.



Source: Fitch Ratings.

Coverage of Full Obligations

Indicates the margin available to meet current debt service and other fixed obligations.



Source: Fitch Ratings.

FADS – Funds available for debt service. Note: Please see pages 21 and 22 for *Financial Summary Glossary of Terms and Ratio Definitions*.

Source: Fitch Ratings.

Sector Outlook: Key Issues



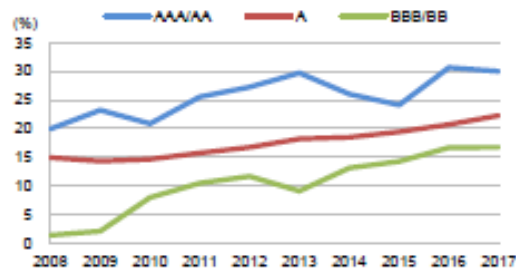
2018 Public Power Peer Review Metrics Validate Stable Outlook

Wholesale Electric Trends

Below, the trends of 'AA' and 'A' medians for wholesale electric systems are displayed for six of the financial metrics used in Fitch's analysis. Also included are the trends of 'BBB/BB' medians for wholesale electric systems. However, the sample size is small.

Equity/Capitalization

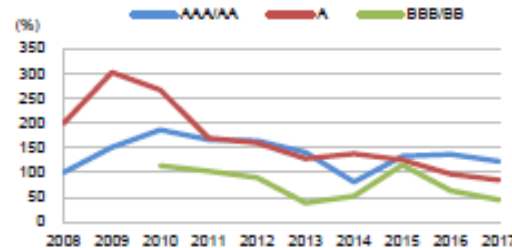
Provides a measure of cost recovery.



Source: Fitch Ratings.

Capex/Depreciation and Amortization

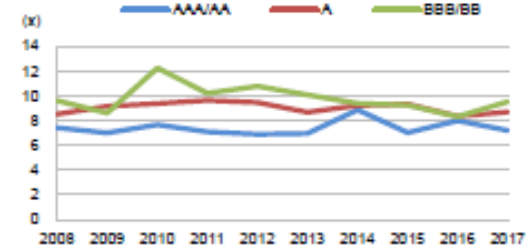
Indicates whether annual capital spending keeps pace with depreciation.



Source: Fitch Ratings.

Debt/FADS

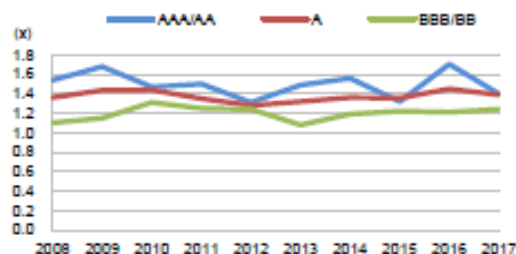
Indicates the size of debt compared with the margin available for debt service.



Source: Fitch Ratings.

Debt Service Coverage

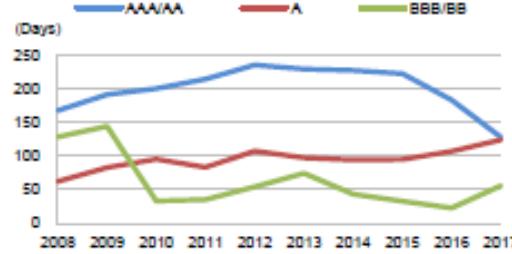
Indicates the margin available to meet current debt service requirements.



Source: Fitch Ratings.

Days Cash on Hand

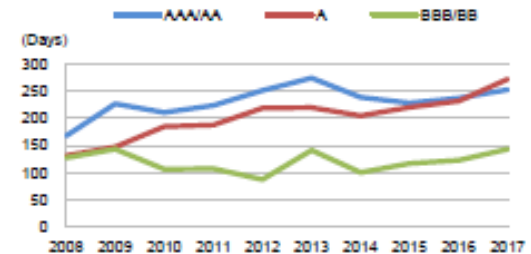
Indicates financial flexibility, specifically cash and cash equivalents, relative to expenses.



Source: Fitch Ratings.

Days Liquidity on Hand

Indicates financial flexibility, including all available sources of cash and liquidity, relative to expenses.



Source: Fitch Ratings.

FADS – Funds available for debt service. Note: Please see pages 21 and 22 for *Financial Summary Glossary of Terms and Ratio Definitions*.

Source: Fitch Ratings.

Sector Outlook: Key Issues



Criteria Revision Will Have Limited Impact on Sector or Rating Outlook

- Exposure draft launched June 14, 2018
- Comment period ended August 13, 2018
- Implementation following the consideration of comments, Fall 2018
- With the publication of revised criteria, all ratings that could incur changes as a result of the revised criteria will be designated, under criteria observation (UCO). The ratings and any existing Outlook or Watch status will remain unchanged by the UCO.
- Fitch estimates fewer than 10% of the ratings covered by the criteria will be affected by the revision, with a roughly equal mix of upgrades and downgrades.

FitchRatings

Public Finance

Public Power / U.S.A.

Exposure Draft: U.S. Public Power Rating Criteria

Sector Criteria

These proposed criteria would update and replace current criteria listed below.

Fitch believes the enhanced rating framework emphasizes the analytical areas most critical to its assessment of relative credit quality in the U.S. Public Power sector. The reframed criteria will communicate Fitch's credit opinions more clearly.

By introducing forward-looking tools into the rating process, the approach also highlights Fitch's through-the-cycle approach to ratings.

Ratings will continue to be based on analytical judgment, informed by data and experience.

Rating changes are expected to be limited.

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Concurrent with the release of this report, Fitch is releasing the new FAST Public Power - Fitch Analytical Stress Test V1.0.1.

Related Criteria

U.S. Public Finance Tax-Supported Rating Criteria (April 2018)
 Rating Criteria for Public-Sector Revenue-Supported Debt (February 2015)
 U.S. Public Finance Short-Term Debt Rating Criteria (November 2017)
 U.S. Public Finance State Revolving Fund and Municipal Finance Pool Program Rating Criteria (October 2017)
 U.S. Public Power Rating Criteria (May 2015)

Scope

This exposure draft details Fitch Ratings' criteria and proposed enhancements for rating U.S. public power utilities, including electric systems that are municipally or federally owned, and electric cooperatives. This rating methodology also applies to certain municipally owned combined utility systems, gas systems and thermal energy systems, as well as Canadian government-owned power systems.

Fitch considers the proposed revisions largely a reframing of current criteria rather than a major change in approach, as the analytical focus on revenue and cost drivers and their relationship to balance sheet strength is largely unchanged. The criteria revisions were developed primarily to improve the communication of Fitch's analysis. Rating changes are expected to affect less than 10% of the portfolio, with a roughly equal mix of upgrades and downgrades.

As an additional component of the revised criteria, Fitch will also assign Issuer Default Ratings (IDRs), which will reflect consideration of issuer-specific quantitative and qualitative factors. There is no standard weighting of factors.

Fitch invites feedback from market participants on the proposed criteria. Comments should be sent to criteria.feedback@fitchratings.com by Aug. 13, 2018.

During the exposure draft period, Fitch will apply the existing criteria for surveillance reviews and the assignment of ratings that have the same security level as outstanding Fitch-rated bonds. Fitch will only apply the criteria described in the exposure draft to new issuer/transaction ratings during the period.

Key Rating Drivers

Functional Responsibilities Establish Foundation: Fitch's analysis of public power issuers begins with consideration of the entity's functional responsibilities. This is critical to understanding the overall risk profile, and serves as the foundation for the key rating factor assessments. While some issuers are engaged in all aspects of the supply, transmission and distribution of electricity, others may have functional responsibilities that are limited to individual segments (i.e. supply or distribution). Each segment presents unique risks.

Revenue Defensibility: This entails an assessment of a public power utility's exposure to demand volatility and the flexibility within its rate-setting framework to recover costs of service and maintain operating profitability.

Operating Risk: This entails an assessment of a public utility system's operating cost burden and operating cost flexibility, as well as its current capital spending and future capital requirements.

Financial Profile: Metrics are used to evaluate the issuer's liquidity profile and leverage in the context of the issuer's overall risk profile. These metrics are evaluated on both a historical and forward-looking basis, which considers an individual utility's overall financial flexibility to withstand a stress scenario through a five-year horizon.

Asymmetric Risk Factors: Risk factors such as debt structure, management and governance, and legal and regulatory risks are also considered when assigning a rating. These risk factors are not scaled, and only weaker-than-standard characteristics affect the final rating.

www.fitchratings.com

June 14, 2018

Criteria Revision: Why?



- To provide a more transparent analysis explicitly oriented towards expectations.
- Enhanced and consistent rating framework, which emphasizes the analytical areas that are most critical to the assessment of relative credit quality in the sector.
- Ability to communicate Fitch's credit opinions more clearly.
- Introduction of forward looking tools with emphasis on Fitch's through-the-cycle approach to ratings to better express the characteristics that affect an organization's resilience.
- To provide greater context for evaluating performance metrics and conducting peer analysis.

FitchRatings **Public Finance**

Public Power / U.S.A.

Proposed U.S. Public Power Rating Criteria: FAQs
Further Details on the Exposure Draft Released June 14, 2018
Special Report

Frequently Asked Questions
Fitch Ratings' revised U.S. Public Power Rating Criteria will provide a disciplined approach to the analysis of U.S. public power credits that is grounded in data and focused on better communicating Fitch's experienced analytical judgment.

This special report contains a list of frequently asked questions as pertains to the exposure draft.

Related Research
[Exposure Draft: U.S. Public Power Rating Criteria \(June 2018\)](#)
[FAST Public Power - Fitch Analytical Stress Test \(Description and Model Foundation\) \(June 2018\)](#)
[FAST Public Power: Fitch Analytical Stress Test \(FAST\) V1.0.1 \(June 2018\)](#)
[Sector Briefing: Public Power and Electric Cooperatives \(May 2018\)](#)

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Rating Change Expectations

- What rating changes are expected?
- When will potential rating changes be determined and communicated?
- What is expected to be the leading cause of rating changes?

Changes in Analytical Focus

- How do the new proposed criteria differ from Fitch's existing criteria?
- How will an issuer's operating profile be factored into Fitch's analysis? Will retail and wholesale systems be evaluated using the same factors?
- Why is leverage profile a key focus in the proposed criteria?
- Why is Fitch emphasizing net adjusted debt to adjusted FADS versus other leverage metrics, such as debt service coverage and debt to capitalization?
- Why does Fitch consider other long-term liabilities in addition to bonded debt?
- Why are unfunded pension liabilities explicitly included when analyzing financial leverage?
- Does Fitch still care about debt service coverage?
- Why are security features not scaled? Are there not stronger and weaker bondholder protections?
- How does Fitch assess issuer-specific strategy under the new criteria?
- Is this a scoring model? If not, how is it different?
- Why is Fitch not giving specific weights to different key rating factors?
- How does key rating metrics guidance fit into the rating outcome? Does it mandate a specific rating?
- Are the metrics listed in the revised criteria the only ones Fitch will consider?
- Does the *Rating Positioning* table mandate a specific rating?
- How is management considered in the rating?
- Why are asymmetric risk factors only negative? For example, do regulatory changes not have both positive and negative effects?

Scenario Analysis

- How does the *FAST Public Power - Fitch Analytical Stress Test* work?
- What is the difference between the base case and rating case in the scenario analysis?
- How does scenario analysis inform the rating outcome?
- Will FAST be available to the market?

Implementation Timeline

- What is the timeline for implementing the revised criteria?
- What criteria will Fitch use to assign ratings during the comment period?
- How will the criteria revision alter the information Fitch presents when communicating a rating? Will the templates for press releases and new issue reports change?

Other

- How will the criteria revision change the experience of an issuer undergoing the rating process?
- What is the benefit of assigning IDRs to Public Power issuers?
- How will the criteria revision change the experience of an investor using Fitch's ratings?

www.fitchratings.com June 14, 2018

Criteria Revision: Why?



Retail Systems

Obligor	Rating	Outlook/ Watch	Region	Total Operating Revenue (\$000)	Debt Service Coverage (x)	Coverage of Full Obligations (x)	Debt/ FADS (x)	Net Adjusted Debt/ Adjusted FADS (x)	Equity/ Capital- ization (%)	Days Cash on Hand	Days Liquidity on Hand	Transfers/ Operating Revenue (%)	Capex/ D&A (%)	Debt/Electric Customer (\$)
AA+ Rated Senior Debt														
Chattanooga Electric Power Board — Electric System, TN	AA+	Stable	SERC	582,337	3.50	1.23	3.9	6.7	49.2	66	102	3.1	131.6	1,626
Chelan CO Public Utility District No. 1 — Consolidated, WA	AA+	Stable	WECC	372,857	3.41	2.93	3.0	1.6	62.2	623	623	2.4	137.4	10,703
Memphis Light, Gas & Water Division — Electric Division, TN	AA+	Stable	SERC	1,295,765	1.64	1.10	1.7	5.4	76.2	69	69	3.6	206.6	849
Nashville Electric Service, TN	AA+	Stable	SERC	1,260,957	2.66	1.19	4.5	6.4	47.2	116	124	2.7	173.8	1,729
San Antonio City Public Service (CPS Energy), TX	AA+	Stable	ERCOT	2,465,318	2.46	1.56	5.7	7.3	36.4	215	275	13.6	153.3	7,330
AA+ Rated Median				1,260,867	2.88	1.23	3.8	6.4	48.2	116	124	3.1	163.3	1,729
AA Rated Senior Debt														
Colorado Springs Utilities, CO	AA	Stable	WECC	839,822	1.59	1.41	8.6	8.8	42.6	138	265	3.8	92.0	10,420
Concord Utility Funds, NC	AA	Stable	SERC	126,372	2.31	1.47	2.6	1.6	83.7	492	492	0.5	84.7	2,126
Dover Electric Revenue Fund, DE	AA	Stable	RFC	83,614	18.78	2.24	0.6	1.7	86.6	458	458	13.5	42.9	788
Fayetteville Public Works Commission, NC	AA	Stable	SERC	313,541	3.36	1.76	3.3	4.2	74.5	211	211	4.1	164.7	3,808
Grant County Public Utility District No. 2, WA	AA	Stable	WECC	293,909	2.02	2.02	7.4	6.2	43.9	621	621	5.5	252.2	27,158
Jacksonville Beach Combined Utility Funds, FL	AA	Stable	FRCC	94,447	4.65	1.57	0.7	1.8	93.3	437	437	4.1	170.4	418
JEA (FL) — Electric System and Bulk Power Supply System, FL	AA	Stable	FRCC	1,299,592	2.55	1.83	4.5	4.2	29.4	262	401	11.7	64.3	5,146
Lincoln Electric System, NE	AA	Stable	SPP	321,549	2.50	1.66	6.9	7.2	30.6	174	300	6.3	154.1	5,347
Los Angeles Department of Water & Power — Power System, CA	AA	Stable	WECC	3,697,923	2.64	1.62	7.7	7.9	37.7	225	297	7.2	183.3	6,313
New Braunfels Utilities, TX	AA	Negative	ERCOT	132,827	4.26	1.56	3.9	5.3	77.3	171	171	5.9	232.7	2,947
Orlando Utilities Commission, FL	AA	Stable	FRCC	878,649	2.25	1.67	5.8	5.0	46.8	316	316	12.7	121.6	7,601
Pasadena Water & Power, CA	AA	Stable	WECC	202,480	2.93	1.46	4.6	3.1	66.9	595	595	8.6	147.5	4,162
Sacramento Municipal Utility District, CA	AA	Stable	WECC	1,559,336	2.49	2.08	4.3	3.6	38.9	251	251	—	107.0	3,782
Springfield Public Utility, MO	AA	Stable	SPP	432,834	2.27	1.83	5.2	4.1	62.9	266	266	3.4	135.4	5,551
AA Rated Median				917,646	2.63	1.87	4.8	4.2	64.8	264	308	6.9	141.6	4,864
AA- Rated Senior Debt														
Alameda Municipal Power, CA	AA-	Stable	WECC	63,449	6.55	1.92	1.5	1.0	73.5	517	517	6.7	171.9	730
Anaheim Electric Utilities Fund, CA	AA-	Stable	WECC	433,561	1.88	1.24	7.0	7.1	31.6	191	285	4.4	107.8	6,518
Austin Electric, TX	AA-	Stable	ERCOT	1,362,132	2.91	1.81	4.7	4.3	56.1	201	305	8.5	98.0	3,053
Bountiful Light and Power, UT	AA-	Stable	WECC	26,581	5.23	1.60	1.7	1.9	85.0	464	464	8.9	58.5	677
City of Greenville, NC	AA-	Stable	SERC	246,006	2.72	1.34	3.4	5.1	73.9	145	145	2.7	143.2	2,013
CoServ Electric, TX	AA-	Stable	ERCOT	471,051	2.01	1.36	7.0	7.1	47.8	54	144	1.1	255.9	2,660

FADS — Funds available for debt service. D&A — Depreciation and amortization. RW — Rating Watch. SERC — Southeast Electric Reliability Council. WECC — Western Electric Coordinating Council. ERCOT — Electric Reliability Council of Texas. RFC — Reliability First Corporation. FRCC — Florida Reliability Coordinating Council. SPP — Southwest Power Pool. NPCC — Northeast Power Coordinating Council. MRO — Midwest Reliability Organization. Note: Fiscal 2015 audit — Anchorage Electric Utility Fund, AK; Coffeyville, KS; Fort Collins, CO; Grays Harbor County Public Utility District No. 1 — Elec., WA; Memphis Light, Gas & Water Division — Electric Division, TN; Modesto Irrigation District, CA; Virgin Islands Water & Power Authority, VI. Continued on next page. Source: Fitch Ratings.

Criteria Revision: What's New?



Three Primary Key Rating Factors Assessed

- Revenue Defensibility:** An assessment of the organization's exposure to demand volatility and flexibility within its rate-setting framework to recover costs of service and maintain operating profitability
- Operating Risk:** An assessment of the organization's operating cost burden and operating cost flexibility, as well as, its current capital spending and future capital requirements.
- Financial Profile:** An assessment of the organization's liquidity profile and overall leverage in the context of the organization's overall risk profile.
- Asymmetric Additive Risk Factors:** Includes risk factors such as debt structure, management and governance, and legal and regulatory issues that may impact the ability to repay debt. These risk factors are not scaled and only weaker-than-standard characteristics affect the final rating.

Key Rating Factors — Retail Public Power Systems

Revenue Defensibility	aa	a	bbb	bb
Revenue Source Characteristics	Nearly all revenue is derived from services or business lines exhibiting stable demand. Reliance on revenue from highly volatile sources is insignificant.	A significant portion of total revenue is derived from services or business lines exhibiting stable demand. Reliance on revenue from highly volatile sources is manageable.	A majority of total revenue is derived from services or business lines exhibiting stable demand. Reliance on revenue from highly volatile sources is meaningful.	Less than 50% of total revenue is derived from services or business lines exhibiting stable demand. Reliance on revenue from highly volatile sources is significant.
Service Area Characteristics	Very favorable demographic trends characterized by strong customer growth, above-average income levels and low unemployment rates.	Favorable demographic trends characterized by average customer growth, with average income levels or average unemployment rates.	Stable demographic trends characterized by little or no customer growth, and below-average income and above-average unemployment rates.	Weak demographic trends characterized by a declining customer base, well below average wealth levels and high unemployment.
Rate Flexibility	Independent legal ability to increase service rates without external approval.	Legal ability to increase service rates is subject to approval of external authorities. History and expectation of operating and capital costs being recovered on a timely basis is strong.	Legal ability to increase service rates is subject to approval of external authorities. History and expectation that operating and capital costs may not be recovered on a full or timely basis.	Legal ability to increase service rates is subject to approval of external authorities. History and expectation that operating and capital cost recovery will be neither full nor timely.
Asymmetric Rating Factor Considerations	Average retail rates are solidly below the state average. The analysis of an issuer's revenue defensibility also considers the effect of customer concentration, customer mix, industry concentration, affordability, wholesale contract structure and counterparty risk on the utility's revenue defensibility.	Average retail rates reasonably approximate the state average.	Average retail rates are solidly above the state average.	Average retail rates are well above the state average.
Operating Risk				
Operating Cost Burden	Ratio of total operating expenses to total kWh sales is less than \$0.10/kWh.	Ratio of total operating expenses to total kWh sales is between \$0.10/kWh and \$0.15/kWh.	Ratio of total operating expenses to total kWh sales is between \$0.15/kWh and \$0.20/kWh.	Ratio of total operating expenses to total kWh sales is greater than \$0.20/kWh.
Capex Requirements	Moderate lifecycle investment needs supported by adequate historical and manageable planned capital investment.	Elevated lifecycle investment needs and supported by adequate historical and manageable planned capital investment.	High lifecycle investment needs that are sufficiently addressed by planned capital investment.	High lifecycle investment needs insufficiently addressed by planned capital investment.
Operating Cost Flexibility (Asymmetric Risk Factor)	The analysis of an issuer's operating cost flexibility is an asymmetric risk factor, where weaker elements can constrain the overall assessment of operating risk. Fitch will consider available reserve margin, regional energy markets, fuel concentration, asset concentration, environmental standards, regulatory restrictions and contract structure. Resource management and counterparty risks can also constrain the assessment.			
Financial Profile				
Leverage Profile	Refer to the Rating Positioning table on page 20.	Refer to the Rating Positioning table on page 20.	Refer to the Rating Positioning table on page 20.	Refer to the Rating Positioning table on page 20.
Liquidity Profile	Liquidity profile is based on coverage of full obligations and liquidity cushion. A weaker liquidity profile can constrain the financial profile assessment.			

Key Rating Factors — Wholesale Public Power Suppliers

Revenue Defensibility	aa	a	bbb	bb
Revenue Source Characteristics	Required revenues are derived from unconditional wholesale contracts that provide for full cost recovery, as well as the unlimited reallocation of costs among contracted purchasers.	Required revenues are derived from unconditional wholesale contracts that provide for full cost recovery, but include limited reallocation of costs among contracted purchasers.	Required revenues are derived from wholesale contracts that may include some degree of conditionality or no reallocation of costs among contracted purchasers.	Not applicable.
Rate Flexibility	Independent legal ability to increase service rates without external approval.	Legal ability to increase service rates is subject to approval of external authorities. History and expectation of operating and capital costs being recovered on a timely basis is strong.	Legal ability to increase service rates is subject to approval of external authorities. History and expectation that operating and capital costs may not be recovered on a full or timely basis.	Legal ability to increase service rates is subject to approval of external authorities. History and expectation that operating and capital cost recovery will be neither full nor timely.
Purchaser Credit Quality (PCQ)	Very strong purchaser credit quality.	Strong purchaser credit quality.	Midrange purchaser credit quality.	Weak purchaser credit quality.
Asymmetric Rating Factor Considerations	The analysis of revenue defensibility also considers the term, tenor and conditionality of relevant supply contracts, and any reliance on non-utility revenue.			
Operating Risk				
Operating Cost Burden	Ratio of total operating expenses to total kWh sales is less than 5 cents/kWh.	Ratio of total operating expenses to total kWh sales is between 5 cents/kWh and 10 cents/kWh.	Ratio of total operating expenses to total kWh sales is between 10 cents/kWh and 15 cents/kWh.	Ratio of total operating expenses to total kWh sales is greater than 15 cents/kWh.
Capex Requirements	Moderate lifecycle investment needs supported by adequate historical and manageable planned capital investment.	Elevated lifecycle investment needs and supported by adequate historical and manageable planned capital investment.	High lifecycle investment needs that are sufficiently addressed by planned capital investment.	High lifecycle investment needs insufficiently addressed by planned capital investment.
Operating Cost Flexibility (Asymmetric Risk Factor)	The analysis of an issuer's operating cost flexibility is an asymmetric risk factor where weaker elements can constrain the overall assessment of operating risk. Fitch will consider available reserve margin, regional energy markets, fuel concentration, asset concentration, environmental standards, regulatory restrictions and contract structure. Resource management and counterparty risks can also constrain the assessment.			
Financial Profile				
Leverage Profile	Refer to the Rating Positioning table on page 20.	Refer to the Rating Positioning table on page 20.	Refer to the Rating Positioning table on page 20.	Refer to the Rating Positioning table on page 20.
Liquidity Profile	Liquidity profile is based on coverage of full obligations and liquidity cushion. A weaker liquidity profile can constrain the financial profile assessment.			

Criteria Revision: Financial Profile



Liquidity Profile

Coverage of Full Obligations (COFO)

Metrics to Support Assessment

- COFO less than 1.0x is “weak” and risk additive.
- COFO below 1.0x may not be considered risk additive if a borrower maintains unrestricted cash on hand over 120 days.

Cash Days on Hand: $\text{Unrestricted Cash} / (\text{Operating Expenses} - \text{Depreciation} + \text{Amortization}) * 365$

Liquidity Cushion

Metric to Support Assessment

- A liquidity cushion above 60 days is neutral to ratings, as long as the combination of net margin and unrestricted cash is above 30 days. A liquidity cushion below 60 days or combination of net margin and unrestricted cash below 30 days are considered “weak” and risk additive.

Leverage Profile

Net Adjusted Debt to Adjusted FADS Ratio

$$\frac{\text{Total Debt} + \text{Capitalized Fixed Charges} + \text{Pension Obligation} - \text{Unrestricted Cash} - \text{Funds Restricted for Debt Service}}{\text{FADS} + \text{Fixed Charges} - \text{Transfers/Distributions}}$$

Fixed Charges: $(\text{Purchased Power Expenses} * 30\%) + \text{Operating Leases}$

Capitalized Fixed Charges: $\text{Fixed Charges} * 8$

Pension Obligation: See *Rationale for Pension Treatment in Leverage Metrics* on page 15

Unrestricted Cash: Cash and short-term investments available for short-term liquidity needs with no limitations on use. Funds restricted solely by board or management policy and available for general system purposes may also be included.

Funds Restricted for Debt Service: Includes amounts deposited in debt service and debt service reserve funds, as well as the cushion of credit program administered by the Rural Utilities Service.

FADS: EBITDA plus interest income.

Transfers/Distributions: Includes general fund transfer payments, payments in lieu of taxes (PILOTs), free services provide and other taxes, dividends and distributions paid, as applicable.

FADS – Funds available for debt service.



Rating Positioning

Revenue Defensibility Assessment	Operating Risk Assessment	Financial Profile Assessment Leverage (Net Adjusted Debt/Adjusted FADS) (x)			
		aa	a	bbb	bb
aa	aa	< 10	10–12	12–15	> 15
aa	a	< 8	8–10	10–15	> 15
a	aa	< 8	8–10	10–15	> 15
aa/a	bbb	< 6	6–8	8–12	> 12
a	a	< 6	6–8	8–12	> 12
bbb	aa/a	< 4	4–6	6–10	> 10
aa/a	bb	< 4	4–6	6–10	> 10
bbb	bbb	< 0	0–4	4–6	> 6
bbb	bb	< 0	< 2	2–4	> 4
bb	a/aa	—	< 1	2–4	> 4
bb	bbb	—	< 0	0–2	> 2
bb	bb	—	< (3)	< 0	> 0
Suggested Analytical Outcome		AA	A	BBB	BB

FADS – Funds available for debt service.

Criteria Revision: Fitch Analytical Stress Test (FAST)

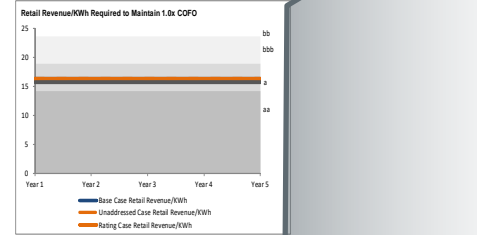
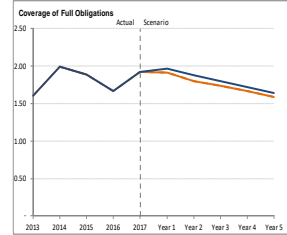
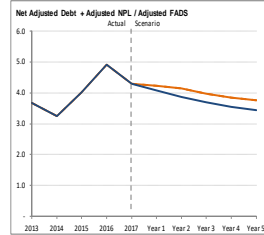


Issuer Name FAST PUBLIC POWER - FITCH ANALYTICAL STRESS TEST - SCENARIO ANALYSIS FitchRatings V1.0.0

Scenario Analysis

Interpretive Notes:

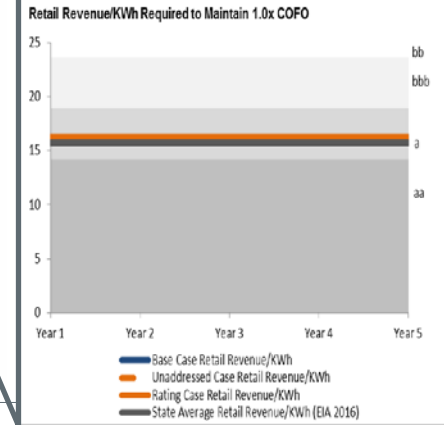
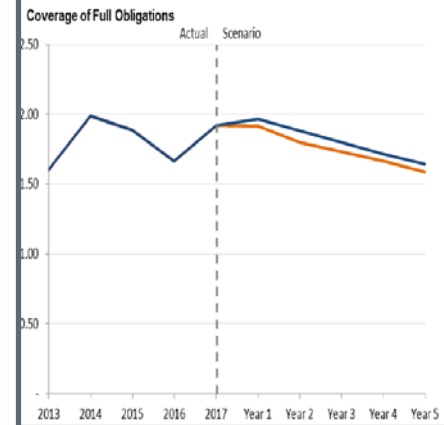
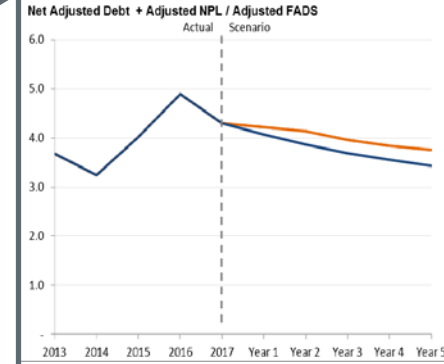
1) The scenarios depicted below incorporate certain placeholder assumptions about issuer behavior in the outyears. In practice, analysts will adjust the Base Case using actual issuer projections, where available, and that will, in turn, be the foundation for the final Unaddressed and Rating cases.
 2) In certain cases, historical data displayed will differ from published audits due to analytical interpretations applied.



Key Financial Metrics	Base Case					Unaddressed Case					Rating Case									
	2013	2014	2015	2016	2017	Year 1	Year 2	Year 3	Year 4	Year 5	Year 1	Year 2	Year 3	Year 4	Year 5	Year 1	Year 2	Year 3	Year 4	Year 5
Net Adjusted Debt (Adj. for Purch. Pwr) + Adj. NPL / Adjusted FADS (COFO)	3.7	3.2	4.0	4.9	4.3	4.1	3.9	3.7	3.6	3.4	4.2	4.1	4.0	3.8	3.8	4.2	4.1	4.0	3.8	3.8
Net Adjusted Debt (Adj. for Purch. Pwr) / Adjusted FADS (COFO)	3.7	3.2	2.7	2.9	2.5	2.3	2.0	1.8	1.6	1.5	2.3	2.1	2.0	1.8	1.7	2.3	2.1	2.0	1.8	1.7
Coverage of Full Obligations	1.6	2.0	1.9	1.7	1.9	2.0	1.9	1.8	1.7	1.6	1.9	1.8	1.7	1.7	1.6	1.9	1.8	1.7	1.7	1.6
Days Cash & Investments on Hand	257	211	310	285	271	344	411	472	527	576	344	407	460	508	552	344	407	460	508	552
Debt Service Coverage	5.2	7.4	6.2	5.6	6.6	7.7	6.7	5.8	5.2	4.6	7.4	6.2	5.5	4.9	4.4	7.4	6.2	5.5	4.9	4.4

Analyst Overrides	2013	2014	2015	2016	2017	Base Case Assumptions					Unaddressed Case Assumptions					Rating Case Assumptions				
						Year 1	Year 2	Year 3	Year 4	Year 5	Year 1	Year 2	Year 3	Year 4	Year 5	Year 1	Year 2	Year 3	Year 4	Year 5
Rating Case Rate Target:																				
Total Retail Electric Sales (% Change in MWh)																				
Total Wholesale Electric Sales (% Change in MWh)																				
Total Gas Sales (% Change in Mcf)																				
Inflation Assumption (% Change)						2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%

NOTE: Dollar amounts (\$) in thousands	2013	2014	2015	2016	2017	Base Case Assumptions					Unaddressed Case Assumptions					Rating Case Assumptions				
						Year 1	Year 2	Year 3	Year 4	Year 5	Year 1	Year 2	Year 3	Year 4	Year 5	Year 1	Year 2	Year 3	Year 4	Year 5
Total Retail Electric Sales (MWh)	363,444	353,913	342,202	348,820	343,765	342,871	341,980	341,091	340,204	339,320	333,463	327,526	325,662	330,810	329,950	333,463	327,526	325,662	330,810	329,950
Retail Electric Revenue/KWh (c/KWh)	14.0	14.4	14.8	15.5	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3
Total Retail Electric Revenue (\$)	50,704	51,138	50,791	54,221	56,905	55,780	55,635	55,491	55,346	55,203	54,250	53,284	53,631	53,618	53,678	54,250	53,284	53,631	53,618	53,678
Total Wholesale Electric Sales (MWh)																				
Total Wholesale Electric Revenue/KWh (c/KWh)																				
Total Wholesale Electric Revenue (\$)																				
Implied Wholesale Electric Revenue/KWh as % of Portfolio Median (For Referen	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total Gas Sales (Mcf)																				
Gas Revenue/Mcf (\$/Mcf)																				
Total Gas Revenue (\$)																				
Implied Gas Revenue/Mcf as % of State Average (For Reference)																				



Visualizations of Net Adjusted Debt / Adjusted FADS, COFO, and Rate Assumptions

Summary of Key Financial Metrics

Key Assumptions Underlying Scenario

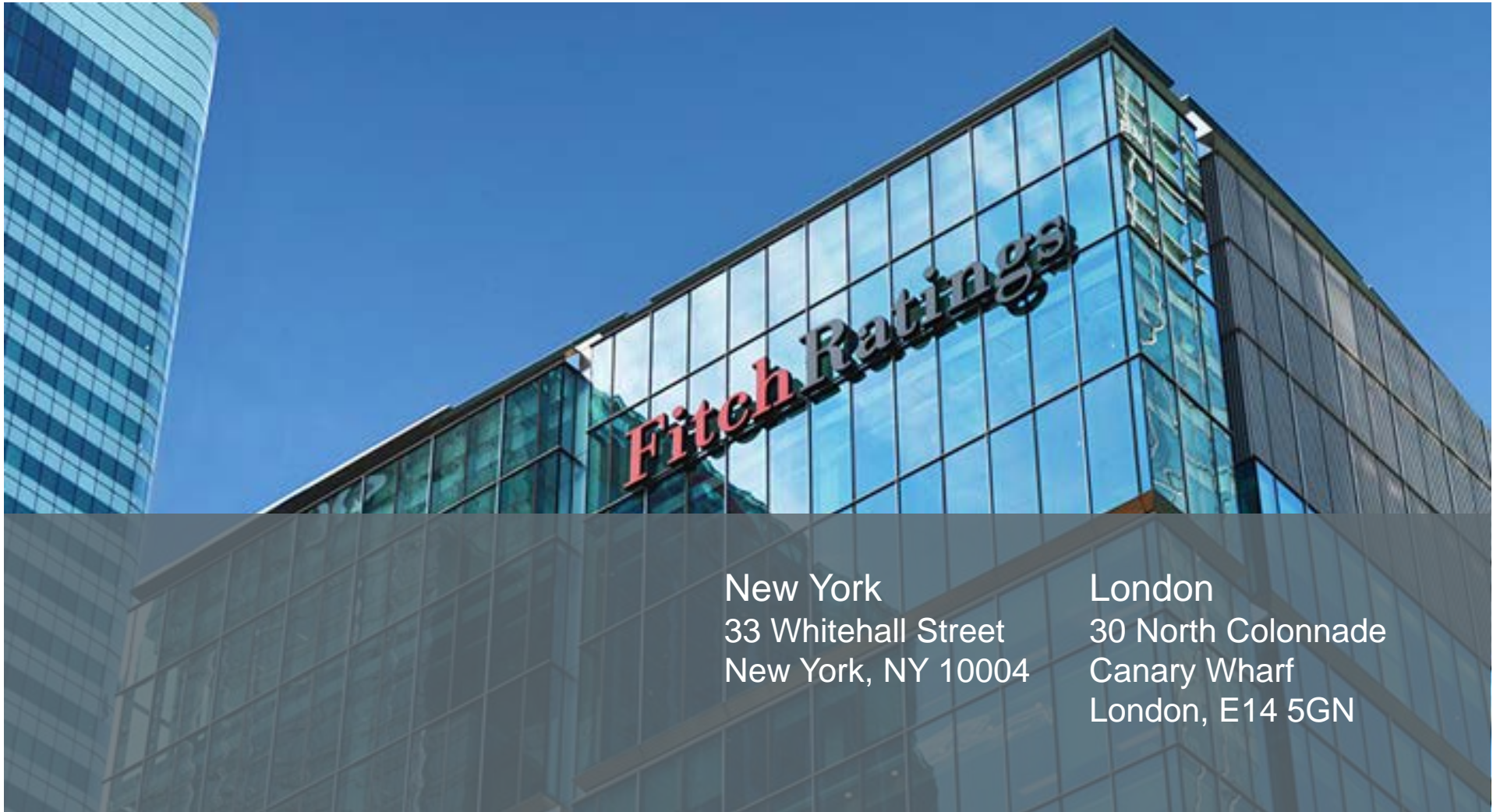
Analyst Data Entry Area

Financial Statement Details Underlying Scenario

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