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RATING METHODOLOGY

US Public Power Electric Utilities with Generation Ownership Exposure Methodology

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This rating methodology replaces the *US Public Power Electric Utilities with Generation Ownership Exposure* methodology published in November 2017. In this update, we have modified the calculation of the Adjusted Debt Ratio sub-factor to include adjusted net pension liability (ANPL) in the numerator, and we have calibrated the debt ratio scoring thresholds. In addition, this update includes some editorial changes to enhance readability.

Introduction

In this rating methodology, we explain our general approach to assessing credit risk for issuers in the public power electric utilities with generation ownership exposure sector in the US, including the qualitative and quantitative factors that are likely to affect rating outcomes in this sector.

We discuss the scorecard used for this sector. The scorecard¹ is a relatively simple reference tool that can be used in most cases to approximate credit profiles in this sector and to explain, in summary form, many of the factors that are generally most important in assigning ratings to issuers in this sector. The scorecard factors may be evaluated using historical or forward-looking data or both.

We also discuss other rating considerations, which are factors that are assessed outside the scorecard, usually because the factor's credit importance varies widely among the issuers in the sector or because the factor may be important only under certain circumstances or for a subset of issuers. In addition, some of the methodological considerations described in one or more cross-sector rating methodologies may be relevant to ratings in this sector.² Furthermore, since ratings are forward-looking, we often incorporate directional views of risks and mitigants in a qualitative way.

As a result, the scorecard-indicated outcome is not expected to match the actual rating for each issuer.

Our presentation of this rating methodology proceeds with (i) the scope of this methodology; (ii) a sector overview; (iii) the scorecard framework; (iv) a discussion of the scorecard factors; (v) other rating considerations not reflected in the scorecard; (vi) the

¹ In our methodologies and research, the terms "scorecard" and "grid" are used interchangeably.

² A link to an index of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

assignment of issuer-level and instrument-level ratings; (vii) methodology assumptions; and (viii) limitations. In Appendix A, we describe how we use the scorecard to arrive at a scorecard-indicated outcome. Appendix B shows the full view of the scorecard factors, sub-factors and thresholds.

Scope of This Methodology

This methodology applies to public power utilities in the US³ that own significant generation assets or that obtain at least 20% of their capacity or energy from directly owned power generation assets or from participation in municipal joint action agencies (JAAs).

The range of operating activities of the issuers rated under this methodology is broad. Some issuers are integrated utilities that combine power generation with high-voltage transmission and lower-voltage distribution systems in order to sell power directly to end-users. Others sell the power they generate or procure power to sell on a wholesale basis to other utilities for distribution.

This methodology is used to rate the revenue debt of public power electric utilities with generation ownership exposure. The bonds issued by these utilities are paid solely from the utility and related operations. The bonds are not a general obligation of the governments that own or are related to the utilities.

US public power utilities that on a sustained basis have generation exposure under the 20% level and those that have only transmission and distribution operations are rated under a separate methodology.⁴

A number of utilities rated under this methodology are participants in municipal joint action agencies. JAAs are rated under a separate methodology.⁵

Sector Overview

US public power electric utilities with generation ownership exposure tend to operate in a near-monopoly position and typically have unregulated and independent rate-setting authority within their service area. These utilities also typically have a cost structure that is low compared with investor-owned utilities due to their ability to issue lower-cost tax exempt debt and, for some, the availability under federal statute of federal low-cost preference power. The government-owned and operated model differs fundamentally from that of investor-owned utilities because the latter have at least some profit motive.

Public power electric utilities that are rated under this methodology generally have more business complexity and fundamental credit risks than public power electric utilities that do not own generation assets. These risks include exposure to commodity markets, environmental regulation and capital requirements to maintain, refurbish or replace generation assets. Specifically, generation-owning electric utilities typically have greater operating and capital deployment risks, because they have a more complex asset conversion cycle and are subject to changes in regulation, technology and commodity prices that can affect the relative cost-efficiency of their operations. These utilities operate in a competitive wholesale power market that provides a benchmark for consumers to compare their

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

³ The issuers include autonomous US federal, state and local power authorities, and departments of a municipality. Most public power electric utilities with generation ownership exposure are owned by municipalities.

⁴ A link to an index of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

⁵ A link to an index of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

performance. The market also affects revenue derived from selling excess energy or capacity and the cost of energy or capacity that is purchased to meet demand.

US public power electric utilities that participate in JAAs do so in two different ways, either through a take-or-pay contract or an all requirements take-and-pay contract. Under a typical take-or-pay contract for a particular power plant, the utility is required to pay its share, which is usually a fixed percentage, of the JAA's total life-cycle costs associated with owning and operating that plant. The utility pays its share whether or not it takes the power the plant generates, and must pay even if the plant becomes inoperable and does not generate any power. Termination provisions under take-or-pay contracts are essentially non-existent. Under a typical all requirements take-and-pay contract, the utility agrees to purchase a portion of its power needs from the JAA and is responsible for a percentage of the JAA's total costs while the contract is in effect. The utility's obligation with respect to the JAA's costs is based on the utility's percentage share of the total power taken by all participants, which can vary over time according to usage patterns or the entry or exit of JAA participants. The utility typically has the right to terminate the all requirements take-and-pay contract after a multi-year notice period.

Scorecard Framework

The scorecard in this rating methodology is composed of five weighted factors. One of the five factors comprises a number of sub-factors. The scorecard also includes three notching factors, which may result in upward or downward adjustments, in half-notch increments, to the preliminary outcome.

EXHIBIT 1

US Public Power Electric Utilities with Generation Ownership Exposure Sector Scorecard Overview

Factor	Factor Weighting	Sub-factor	Sub-factor Weighting
Cost Recovery Framework Within Service Territory	25%	--*	25%
Willingness and Ability to Recover Costs with Sound Financial Metrics	25%	--*	25%
Generation and Power Procurement Risk Exposure	10%	--*	10%
Competitiveness	10%	--*	10%
Financial Strength and Liquidity	30%	Adjusted Days Liquidity on Hand (three-year average)	10%
		Adjusted Debt Ratio (three-year average)	10%
		Adjusted Debt Service Coverage Ratio OR Fixed Obligation Charge Coverage Ratio (three-year average)	10%
Total	100%		100%
Preliminary Outcome			
Notching Factor			Notching Range
Operational Considerations			(-2 to +1)
Debt Structure and Reserves			(-2 to +2)
Revenue Stability and Diversity			(-2 to +1)
Scorecard-Indicated Outcome			

*This factor has no sub-factors.

Please see Appendix A for general information relating to how we use the scorecard and for a discussion of scorecard mechanics. The scorecard does not include every rating consideration.⁶

Discussion of the Scorecard Factors

In this section, we explain our general approach for scoring each scorecard sub-factor or factor, and we describe why they are meaningful as credit indicators.

Factor: Cost Recovery Framework Within Service Territory (25% Weight)

Why It Matters

The utility's regulatory status – as a monopoly with unregulated rate-setting or a regulated entity with greater or lesser predictability in the cost recovery framework – directly affects the sufficiency and timeliness of cost recovery. The ability to recover costs in a timely manner is an important credit consideration for US public power electric utilities with generation ownership exposure because a delay in cost recovery may cause financial stress. The economic strength and diversity of the service territory is important because it can indirectly influence a public power electric utility's cost recovery framework.

Larger, more diverse service areas with greater economic wealth are better able than smaller, less diverse areas to support rate increases. Rate increases may be required as a result of changes in fuel and operating costs, required capital expenditures, or other causes.

In general, US public power electric utilities with generation ownership exposure can recover costs because they are effectively monopoly providers of essential electric services. With some exceptions, these utilities are not subject to rate regulation by any state public utility service commission. Management, governing boards or city councils are generally empowered to structure price-setting mechanisms without additional oversight, and they seek to limit volatility; rates therefore tend to be highly predictable. Additionally, debt financing agreements in this sector typically include a bond security covenant that requires minimum levels of coverage of current expenses (including debt service) by current revenue. The requirement is typically set between 1.0x -1.5x. This feature reinforces the need for rates to be set such that the public power electric utility can recover costs on a timely basis.

In instances where regulation of rates by a state public utility service commission applies, the regulatory framework can support or hinder the certainty and timing of cost recovery. A regulatory lag or cost disallowance that creates uncertainty around cost recovery can negatively affect credit quality. Additionally, regulatory decisions may have an effect on the capital spending plans and efficiency targets of a utility, which can affect its ability to recover costs.

How We Assess It for the Scorecard

In assessing this factor, we collectively consider three components, (i) the utility's monopoly status in its service area; (ii) whether or not rate-raising ability is unregulated and, if regulated, the predictability of the framework and; (iii) the strength of a public power utility's customer base and service area economy. Among utilities with strong monopolies and autonomous rate-setting, the assessment of the customer base and service area economic strength provides differentiation for scoring this factor.

US public power electric utilities with generation ownership exposure that are subject to rate regulation typically receive lower scores for this factor regardless of the utility's service area economic

⁶ Please see the "Other Rating Considerations" and "Limitations" sections.

strength and customer base, because rate regulation can sometimes limit or delay cost recovery. The score these utilities receive for this factor typically does not exceed Baa. In assessing the stability of the customer base, we typically consider the relative mix of residential, commercial and industrial customers. US public power electric utilities that serve a primarily residential customer base (e.g., more than 50% of sales to residential customers) generally receive higher scores for this factor because the utility benefits from residential customers' more stable electricity usage and revenue generation.

Alternatively, a public power electric utility with a customer base that is predominantly industrial, particularly if it is concentrated in one or a few customers, typically receives a lower score for this factor. A public power electric utility with such a characteristic is more susceptible to economic cycles and changes in electricity demand, which can affect the stability of its revenue.

In assessing the strength of the utility's service area, we typically consider population, employment trends, wealth indicators and local economic diversity and growth projections. Weak economic characteristics and limited economic diversity typically contribute to a lower score for this factor. We also typically consider the wealth indicators of the population that a utility serves to assess the ability of customers to pay their electric bills, if rates rise. Affluent residential customers generally have more tolerance for higher rates because the electric bill is a smaller part of their disposable income.

FACTOR

Cost Recovery Framework Within Service Territory (25%)

Factor	Factor Weight	Aaa	Aa	A	Baa	Ba	B
Cost Recovery Framework Within Service Territory	25%	Monopoly with unregulated rate setting and very strong customer base and service area economy.	Monopoly with unregulated rate setting and strong customer base and service area economy.	Monopoly with unregulated rate setting; average customer base and service area economy.	Regulation of rates by state; weak customer base / service area economy.	Regulation of rates by state with some inconsistency; or very weak customer base or service area economy.	Regulation of rates by state is unpredictable; or extremely weak customer base or service area economy.

Factor: Willingness and Ability to Recover Costs with Sound Financial Metrics (25% Weight)**Why It Matters**

A public power electric utility's willingness and ability to recover costs in order to maintain sound financial metrics is an important indicator of its future financial performance and credit strength, because utilities with strong willingness and ability to recover costs are typically better positioned to manage the impact of modest credit stress events.

Public power electric utilities with unregulated cost recovery may have the ability to raise rates unilaterally, but there can be meaningful differences in their willingness to do so for public policy reasons that may place rate-payer concerns ahead of sound financial policy. Regulated public power electric utilities that have the willingness to seek rate increases must also have the ability to obtain the necessary regulatory approvals.

Political intervention or the lack of regulatory support for an electric utility can result in its unwillingness or inability to establish rates that are sufficient to maintain sound financial metrics.

Without predictable and timely rate-setting, an electric utility's debt service coverage ratios may weaken or its liquidity may be compromised.

A utility's ability to automatically adjust rates to manage changes in fuel or power purchase costs is important given fluctuations in natural gas prices, water flow for hydroelectric generation, and the volatility of the wholesale power market. Additionally, a utility's rate-setting ability is important in the face of changes in its operating environment resulting from, for example, stricter environmental regulation or a shift to cleaner fuel sources, both of which can entail higher costs.

Where an electric utility is owned by, part of or linked to a government (the related government), the extent of support from the related government is another important consideration. For example, a city may use its authority or financial resources to prevent financial deterioration of the electric utility, which protects the utility's revenue bondholders. Conversely, the related government can take distributions, typically in the form of general fund transfers (GFTs) from surplus utility revenue to the city general fund, that limit the utility's financial flexibility. Additionally, the government can pressure the utility to hold down rates or increase capital expenditures in a manner that is detrimental to the utility's financial metrics.

How We Assess It for the Scorecard

In assessing this factor, we consider the record of transparency and timeliness of the rate-setting process by the governing board and develop a forward-looking view. We also consider the governing board's support for setting the rates and charges at a level that ensures that costs, including debt service, are fully recovered. The governing board may set rates above the level of cost recovery, which affords the utility some protection in case of unexpected revenue declines or cost increases. We may also consider the utility's ability to generate targeted revenue based on underlying volume assumptions. Utilities with a rate-setting mechanism that mitigates revenue volatility are typically viewed more favorably than those without such a mechanism.

A key consideration in our assessment is the time a utility takes to implement new rates and collect additional revenue. We typically consider utilities that delay the adjustment of rates and the recovery of costs to be weaker than those that are more proactive in adjusting rates. An automatic fuel and purchased power cost adjustment mechanism, where applicable, typically contributes to a higher score for this factor because the mechanism narrows the potential delay for cost recovery, for example, in cases of a sudden rise in fuel prices or a forced outage of a generating unit. A material time lag before a utility can recover unexpected costs likely contributes to a lower score for this factor.

In assessing this factor, we also typically consider the relationship between the related government and the electric utility, such as the utility's governing board and its rate setting authority. In addition, we typically consider the entity responsible for issuing or approving a utility's revenue bonds, and whether there are any meaningful barriers.

Where a fiscal relationship exists, we also consider the extent to which the government has the responsibility and ability to support the utility in times of financial stress. A utility is likely to receive a higher score for this factor where the interests of the utility and the government are aligned and where a highly rated local government has a strong record of supporting its public power electric utility in times of fiscal stress. Political or regulatory barriers that impede a utility's ability to enact rates and charges on a timely basis are likely to contribute to a lower score for this factor.

We also consider the policies governing general fund transfers from a utility to a government and the political environment in which GFT decisions are made. General fund transfers that are governed by a well-defined and prudent policy typically contribute to a higher score for this factor because of the

increased predictability of the transfer amount for the utility. General fund transfers that are not governed by a policy increase a utility's uncertainty and typically contribute to a lower score.

FACTOR

Willingness and Ability to Recover Costs with Sound Financial Metrics (25%)

Factor	Factor Weight	Aaa	Aa	A	Baa	Ba	B
Willingness and Ability to Recover Costs with Sound Financial Metrics	25%	Excellent rate setting record expected to continue; Rates, fuel, & purchased power cost adjustments less than 10 days; No political intervention in past or extremely high support from related government; Very limited General Fund transfers governed by policy.	Strong rate setting record expected to continue; Rates, fuel, & purchased power cost adjustments 10 to 30 days; Limited political intervention in past or high support from related government; Conservative and well-defined General Fund transfers governed by policy.	Adequate rate-setting record expected to continue; Rates, fuel, & purchased power cost adjustments 31 to 60 days; Some political intervention in past or average support from related government; Moderate General Fund transfers.	Below average rate-setting record; Rates, fuel, & purchased power cost adjustments 61 to 99 days; Persistent political intervention or below average support from related government; Large General Fund transfers not governed by policy.	Some history or expectation of insufficient rate setting; Rates, fuel, & purchased power cost adjustments 100 to 120 days; Highly political climate or very limited support from related government; Sizeable General Fund transfers not governed by policy.	Lengthy record of, or expectation for, a prolonged period of insufficient rate-setting; Rates, fuel, & purchased power cost adjustments 120 days or more; Highly contentious political climate or clear lack of support from related government; Very sizeable General Fund transfers not governed by policy.

Factor: Generation and Power Procurement Risk Exposure (10% Weight)**Why It Matters**

Generation and power procurement, power supply costs and system reliability greatly influence a power utility's ability to meet its electric service obligations. These elements are also important indicators of a utility's ability to set competitive rates and maintain stable financial metrics.

A utility's ability to meet current electricity demand and plan for future demand directly affects its customer satisfaction, rates, service reliability, level of political support and leverage. Greater customer satisfaction can translate into greater political and regulatory support to set rates that maintain the utility's financial stability.

Successful resource planning is a key consideration in the utility's health given its objective to provide a low-cost, safe and reliable power supply to customers. Maintaining a sufficient reserve margin is necessary to meet peak demand, but an excessive reserve margin increases the utility's costs and can expose it to volatile wholesale energy markets when selling excess power or capacity. Maintaining a diverse fuel and resource mix increases the utility's flexibility and reliability and limits its exposure to volatile commodity and energy prices, fuel delivery disruptions, or costs associated with a particular asset, for instance the cost associated with environmental compliance for a coal plant.

A utility's ability to manage regulatory requirements related to clean air and renewable energy standards plays an important part in its power generation and procurement strategy. Environmental standards typically vary by state, evolve over time and are often the subject of litigation that creates uncertainty around what the standards will eventually be and the timing of their implementation. The

uncertainty may complicate the utility's ability to implement a long-term power generation and procurement strategy.

How We Assess It for the Scorecard

In assessing generation and power procurement risks, we consider a utility's ability to meet its power supply commitments, the fuel mix and diversity of its power supply sources, as well as their cost and reliability. Our assessment of a utility's record of performance for its power generation may include indicators such as availability (percent of time a generation unit is operational); capacity factor (percent of time the generation unit or fleet runs on average); and heat rates (the efficiency of converting fuel into electrical energy of a unit or a fleet). Additional considerations may include the terms of any purchase power agreements and how they affect the utility's power supply mix, the positioning of the utility's generating assets on the regional dispatch curve (an indicator of their cost competitiveness), the all-in cost of power supply, the costs driving retail electricity prices and how those prices compare to peers. Above-market power supply costs can lead to higher rates charged to retail customers, which are likely to contribute to a lower score for this factor.

We typically consider the utility's main generation sources, whether the utility owns the power plant or purchases the power under contract and how the utility is managing the risks associated with each type of fuel (e.g., natural gas, coal, nuclear, hydroelectric). Such risks include fuel price (for instance, natural gas prices can demonstrate high seasonal volatility), transportation issues (e.g., availability of rail and barge delivery for coal, availability of peak period pipeline capacity for natural gas), safety regulations (including compliance with nuclear reactor safety regulations), water flow risks for hydroelectric generating units and environmental compliance issues, especially for coal-fired generating units.

In assessing a utility's generation strategy, we typically consider the utility's ability to switch among fuel sources. We may also consider a utility's ability to access fuel through alternate transportation modes or routes and its fuel storage capacity. By maintaining a sufficient power resource reserve margin, a utility is likely to be better positioned to manage an unexpected outage. A utility's exposure to risks that are not adequately mitigated may contribute to a lower score for this factor.

Public power electric utilities that have limited diversification or ones that are heavily reliant on a single type of generation and fuel source typically score lower for this factor. In some cases, such as high reliance on hydroelectric power, the risk may be mitigated somewhat by the cost competitiveness of the fuel source, provided there is ready access to alternative sources of power. A high reliance on coal-fired generation with no carbon mitigation strategy is likely to contribute to a lower score for this factor due to regulatory requirements related to carbon and other emissions.

FACTOR

Generation and Power Procurement Risk Exposure (10%)

Factor	Factor Weight	Aaa	Aa	A	Baa	Ba	B
Generation and Power Procurement Risk Exposure ^{*1}	10%	Very limited exposure to negative repercussions from generation, procurement and commodity price risks; High degree of diversification of generation and/or fuel sources; Single generation asset typically provides less than 20% of power; or up to 20% of energy from coal-fired generation with carbon mitigation strategy.	Limited exposure to negative repercussions from generation, procurement and commodity price risks; Some diversification of generation and/or fuel sources; Single generation asset typically provides less than 40% of power; or up to 40% of energy from coal-fired generation with carbon mitigation strategy.	Moderate exposure to negative repercussions from generation, procurement and commodity price risks; Some reliance in one type of generation and/or fuel source, but diversified with purchased power sources; Single generation asset may provide up to 55% of power; or up to 55% of energy from coal-fired generation with carbon mitigation strategy.	Moderate to high exposure to negative repercussions from generation, procurement and commodity price risks; Reliance on a single type of generation or fuel source, with somewhat limited diversification via purchased power; Single generation asset typically provides up to 75% of power; or up to 70% of energy from coal-fired generation with carbon mitigation strategy.	High exposure to negative repercussions from generation, procurement and commodity price risks; Very high concentration in a single type of generation or very high reliance on a single fuel source, with limited diversification via purchased power; Single generation asset typically provides up to 75% of energy from coal-fired generation with carbon mitigation strategy, or up to 50% of energy from coal with no mitigation strategy.	Very high exposure to negative repercussions from generation, procurement and commodity price risks; very high concentration in a single type of generation, almost entirely reliant on a single fuel source, with very limited diversification via purchased power; Single generation asset typically provides over 85% of power; or over 85% of energy from coal-fired generation with carbon mitigation strategy, or over 50% of energy from coal-fired generation with no mitigation strategy.

^{*1} In scoring this factor, generation includes generation from owned assets and via participation in Joint Action Agencies, market purchases, unit power arrangements and similar arrangements.

Factor: Competitiveness (10% Weight)**Why It Matters**

A public power electric utility's competitiveness is an important indicator of its ability to retain customers, recover costs and maintain debt service payments.

In general, an important advantage of this sector is the rate competitiveness for retail or wholesale customers compared with rates offered by investor-owned utilities. However, a public power electric utility that has uncompetitive rates may be exposed to political or regulatory pressure to delay rate increases or to lower rates, which can affect the utility's ability to meet its financial obligations, including its ability to meet debt service payments. Additionally, high rates may discourage economic development in the utility's service area and contribute to a stagnant or declining revenue base. A public power electric utility that has competitive rates is more likely to retain large industrial or commercial customers with energy-intensive needs. Retaining large businesses is key because the loss of these customers can place upward pressure on electric rates for the utility's remaining customers.

How We Assess It for the Scorecard

In assessing this factor, we typically consider a utility's average system retail rate relative to its regional peers. In many cases, the state average rate is relevant, but a competitiveness comparison to neighboring utilities may be more important for some issuers. For instance, in some states a single utility may dominate, rendering in-state comparisons less meaningful. For public power utilities near major metropolitan areas, the important comparison may be to neighboring utilities, especially if there are transmission constraints to in-state utilities that may have a more competitive cost base.

We generally consider retail rates in terms of the system average revenue per kilowatt hour (cents/kwh). The average system rate allows for useful comparisons among regional markets, but it does not distinguish between different customer classes and rate designs, and we may also consider comparisons of certain rate classes. For instance, for some utilities with heavy industrial loads, competitiveness of the industrial rate may be more important than the system average rate, especially if industry is a major driver of employment. For utilities in a contentious political or regulatory environment, residential rates may be most important. For utilities with meaningful wholesale generation, we typically also compare wholesale rates against regional benchmarks to assess the competitive position of that part of the utility's business. This can be a meaningful consideration because in most cases the wholesale business is less stable than a public power utility's retail supply business.

Our view of this factor is forward-looking, and when relevant we consider future capital spending plans and other cost pressures, such as those for environmental compliance, to assess the likelihood that these will create a need for rate increases that pressure the utility's competitive standing.

Utilities that have more competitive rates than the relevant benchmark and that are not facing material cost pressures generally have more flexibility to withstand competitive challenges and typically receive higher scores for this factor. Utilities with less competitive rates, currently or prospectively, typically score in the mid-to-lower portion of the scorecard for this factor.

FACTOR

Competitiveness (10%)

Factor	Factor Weight	Aaa	Aa	A	Baa	Ba	B
Competitiveness	10%	Extremely competitive current and expected rates* ² in the state and/or compared to neighboring utilities on a consistent basis (e.g. average system rates more than 25% below state average); and virtually no material prospective cost pressures that could lead to higher rates.	Very competitive current and expected rates* ² in the state and/or compared to neighboring utilities on a consistent basis (e.g. average system rates in a range of 7.5% to 25% below state average); very low likelihood of material prospective cost pressures that could lead to higher rates.	Competitive current and expected rates* ² in the state and/or compared to neighboring utilities on a consistent basis (e.g. average system rates in a range of 7.5% below state average to 7.5% above state average); modest likelihood of material prospective cost pressures that could lead to higher rates.	Somewhat competitive current and expected rates* ² in the state and/or compared to neighboring utilities on a consistent basis (e.g. average system rates in a range of 7.5% to 25% above state average); high likelihood of material prospective cost pressures that could lead to higher rates.	Uncompetitive current or expected rates* ² in the state and/or compared to neighboring utilities on a consistent basis (e.g. average system rates in a range of 25% to 35% above state average); or high likelihood of imminent, material cost pressures that could lead to higher rates.	Extremely uncompetitive current or expected rates* ² in the state and/or compared to neighboring utilities on a consistent basis (e.g. average system rates more than 35% above state average); or currently in a period of persistent cost pressures that are causing material rate increases.

² Retail rates are typically calculated as average revenue per kilowatt hour sold; however, this factor may also be assessed based on competitive positioning of rates in a dominant customer class (residential, commercial, industrial or wholesale).

Factor: Financial Strength and Liquidity (30% Weight)

Why It Matters

Financial strength and liquidity are important indicators of the ability of a public power electric utility with generation ownership exposure to pay debt service and to access credit markets when needed.

A public power utility's liquidity, debt relative to its asset base and cash available to pay debt service provide important indications of its credit strength. Public power electric utilities that own power generation assets are highly capital intensive and typically need to access debt capital markets with regularity. Public power electric utilities with weaker metrics may find their access to markets decreases if their debt affordability is viewed as unsustainable or during periods when credit markets are tight.

This factor comprises three sub-factors:

Adjusted Days Liquidity on Hand

The adjusted days liquidity on hand metric is an indicator of a utility's liquidity resources in relation to its operating and maintenance expenses. Cash and investments that are free from external restrictions or that can be readily liquidated are important considerations for assessing an issuer's near-term ability to meet unexpected expenses. When the capacity to raise rates in a timely manner is limited, public power electric utilities principally rely on unrestricted cash and investments to fund unexpected operating and maintenance costs or to pay debt service. The presence of large and readily accessible liquidity helps issuers manage through periods of financial stress and ultimately supports credit quality.

Adjusted Debt Ratio

The ratio of debt plus adjusted net pension liabilities to net capital assets plus net working capital is an important indicator of a public power electric utility's financial risk and whether it is repaying debt in proportion to how quickly the book value of assets is depreciating.

Adjusted Debt Service Coverage Ratio or Fixed Obligation Charge Coverage Ratio

The coverage of debt service and other fixed charges by net revenue is an important indicator of a public power electric utility's financial flexibility to pay debt service and other fixed charges in the event of a downturn in revenue or an increase in operating costs.

How We Assess It for the Scorecard

ADJUSTED DAYS LIQUIDITY ON HAND (THREE-YEAR AVERAGE):

The numerator is a utility's available unrestricted cash and investments and eligible unused bank lines of credit and capacity under commercial paper programs, multiplied by 365. The denominator is the utility's annual operating and maintenance expenses excluding depreciation and amortization and the debt service portion of annual payments made to JAAs under take-or-pay contracts.

For the numerator, we include in unrestricted cash and investments certain designated reserves if they are available for general use by the utility. We do not include debt service funds and reserve requirements maintained as restricted funds to comply with specific terms as typically defined under the bond documents.

To be included in this ratio, eligible bank lines must meet all of the following criteria:

- » Committed facilities
- » Remaining tenor of committed drawdown availability is at least one year
- » Absence of impediments to drawdown, including:
 - No material adverse change (MAC) representation requirement for borrowings
 - No material adverse litigation (MAL) representation requirement for borrowings
 - No covenants set at a level reasonably expected to restrict borrowings
- » If bilateral, provided by a bank rated P-1
- » If syndicated, provided by a group of banks predominantly rated P-1

Bank lines that do not meet the eligibility requirements are not included in calculating the ratio, but they may be assessed qualitatively (please see our discussion of liquidity in the "Other Rating Considerations" section).

For utilities that have commercial paper programs backed by letters of credit, the unused portion is included in the numerator if the bank issuing the letter of credit is rated P-1.

ADJUSTED DEBT RATIO (THREE-YEAR AVERAGE):

The numerator is total debt net of debt service and debt service reserve funds plus adjusted net pension liability (ANPL),⁷ and the denominator is fixed assets net of accumulated depreciation plus net working capital. Net working capital is defined as cash and investments plus receivables expected to be collected minus current liabilities unrelated to debt.

ADJUSTED DEBT SERVICE COVERAGE RATIO OR FIXED OBLIGATION CHARGE COVERAGE RATIO (THREE-YEAR AVERAGE):

In assessing this sub-factor, we consider the generation procurement and financing strategy that a utility adopts. In order to improve comparability, we use the adjusted debt service coverage ratio for a public power electric utility that does not have any generation exposure through take-or-pay contracts with JAAs. For a utility that purchases some portion of its power under a take-or-pay contract with a JAA that has issued debt related to that contract, we use the fixed obligation charge coverage ratio.

Adjusted Debt Service Coverage Ratio

The numerator is annual recurring revenue plus interest income minus recurring annual cash operating expenses⁸ and GFTs, and the denominator is aggregate annual debt service.

In the numerator, recurring revenue and recurring expenses exclude special, one-time items. Annual cash operating expenses exclude depreciation and amortization expenses. In order to provide

⁷ Our calculation or estimate of ANPL is typically based on the issuer's pension disclosures. In cases where pension information is disclosed only at the level of the corresponding government, we typically attribute a proportionate amount of the government's ANPL to the utility based on its share of compensation expenses or the number of its employees as a percentage of the total. Where there is not sufficient information to estimate the ANPL, typically where it is immaterial, we do not include it in the ratio and assess any pension-related credit risk outside of the scorecard.

⁸ Operating expenses are adjusted to exclude non-cash pensions and other post-employment benefit (OPEB) expenses. For an explanation of ANPL and our standard adjustments, please see our methodology that discusses adjusting reported pension data for US public entities such as states and local governments.

comparability, we treat the GFTs as an operating expense because, in practical terms, the transfer is a requirement that in many cases is made on a monthly basis.

Fixed Obligation Charge Coverage Ratio

The numerator is annual recurring revenue plus interest income minus recurring annual cash operating expenses⁹ and GFTs plus the debt service portion of annual payments made to JAAs under take-or-pay contracts. The denominator is aggregate annual debt service plus the debt service portion of annual payments made to JAAs under take-or-pay contracts.

In the numerator, recurring revenue and recurring expenses exclude special, one-time items. Annual cash operating expenses exclude depreciation and amortization expenses. We consider a take-or-pay contractual obligation as fixed and the debt service portion of annual payments made to the JAA as a debt service obligation of the utility because of the unconditional payment obligation under the take-or-pay arrangement and because many utilities enter into these agreements to have direct access to power generation resources in order to increase power reliability, diversify the power resource mix and decrease power costs.

⁹ Operating expenses are adjusted to exclude non-cash pensions and other post-employment benefit (OPEB) expenses. For an explanation of ANPL and our standard adjustments, please see our methodology that discusses adjusting reported pension data for US public entities such as states and local governments.

FACTOR

Financial Strength and Liquidity (30%)

Sub-factor	Sub-factor Weight	Aaa	Aa	A	Baa	Ba	B
Adjusted Days Liquidity on Hand ^{*3} (three-year average) (days)	10%	≥ 250	150 - 250	90 - 150	30 - 90	15 - 30	< 15
Adjusted Debt Ratio ^{*4} (three-year average) (%)	10%	< 35%	35 - 60%	60 - 80%	80 - 100%	100 - 120%	≥ 120%
Adjusted Debt Service Coverage Ratio ^{*5} OR Fixed Obligation Charge Coverage Ratio ^{*6} (three-year average) (x)	10%	≥ 2.5x	2 - 2.5x	1.5 - 2x	1.1 - 1.5x	1 - 1.1x	< 1x

^{*3} Defined as: (available unrestricted cash and investments and eligible unused bank lines of credit and capacity under commercial paper programs) x 365 / (annual operating and maintenance expenses excluding depreciation and amortization and the debt service portion of annual payments made to JAAs under take-or-pay contracts).

For the numerator, in unrestricted cash and investments, we include certain designated reserves if they are available for general use by the utility. We do not include debt service funds and reserve requirements maintained as restricted funds to comply with specific terms as typically defined under the bond documents. To be included in this ratio, eligible bank lines must meet all of the following criteria:

- >> Committed facilities
- >> Remaining tenor of committed drawdown availability is at least one year
- >> Absence of impediments to drawdown, including:
 - No material adverse change (MAC) representation requirement for borrowings
 - No material adverse litigation (MAL) representation requirement for borrowings
 - No covenants set at a level reasonably expected to restrict borrowings
- >> If bilateral, provided by a bank rated P-1
- >> If syndicated, provided by a group of banks predominantly rated P-1

Bank lines that do not meet the eligibility requirements are not included in calculating the ratio, but they may be assessed qualitatively (please see our discussion of liquidity in the "Other Rating Considerations" section). For utilities that have commercial paper programs backed by letters of credit, the unused portion is included in the numerator if the bank issuing the letter of credit is rated P-1.

^{*4} Defined as: (total debt net of debt service and debt service reserve funds) plus ANPL / (fixed plant assets net of accumulated depreciation plus net working capital). Net working capital is defined as cash and investments plus receivables expected to be collected minus current liabilities unrelated to debt.

^{*5} Defined as: (annual recurring revenue plus interest income minus recurring annual cash operating expenses minus GFTs) / aggregate annual debt service. In the numerator, recurring revenue and recurring expenses exclude special, one-time items. Annual cash operating expenses exclude depreciation and amortization expenses. We treat the general fund transfers (GFT) as an operating expense because, in practical terms, the transfer is a requirement that in many cases is made on a monthly basis.

^{*6} Defined as: (annual recurring revenue plus interest income minus recurring annual cash operating expenses and GFTs plus the debt service portion of annual payments made to JAAs under take-or-pay contracts) / (aggregate annual debt service plus the debt service portion of annual payments made to JAAs under take-or-pay contracts).

Notching Factors

The scorecard includes notching factors. Our assessment of these factors may result in upward or downward adjustments to the preliminary outcome that results from the Cost Recovery Framework Within Service Territory, Willingness and Ability to Recover Costs with Sound Financial Metrics, Generation and Power Procurement Risk Exposure, Competitiveness, and Financial Strength and Liquidity factors. Adjustments may be made in half-notch increments within the ranges shown in the table below. In cases where the factor has multiple considerations, we apply a single net notching adjustment encompassing all considerations. In aggregate, the notching factors can result in (and are limited to) a total of up to three upward or three downward notches from the preliminary outcome to arrive at the scorecard-indicated outcome. In cases where we consider that the credit weakness or credit strength represented by a notching factor, or by these factors in aggregate, is greater than the scorecard range, we incorporate this view into the issuer's rating, which may be different from the scorecard-indicated outcome.

Notching Factor	Notching Range
Operational Considerations	-2 to +1
Debt Structure and Reserves	-2 to +2
Revenue Stability and Diversity	-2 to +1

Operational Considerations

Why It Matters

Operational considerations include a public power electric utility's risks in completing construction projects on schedule and on budget and the utility's relative importance in providing vital services in its service area. Construction delays and cost overruns can result in the need for additional debt financing, increasing financial pressure on a utility to recover costs, including debt service. When a utility is a vital service provider in a large economic region, it typically has more diversified revenue sources and greater ability to pass along cost increases in rates charged to customers.

How We Assess It for the Scorecard

We assess a utility's construction risks and may apply a downward adjustment of up to two notches to the preliminary scorecard-indicated outcome based on the construction program's complexity, technical difficulty and scale of the capital program relative to the size of the utility. We also consider how the risk is allocated between the utility and its contractors for cost overruns and delays. We may consider feasibility studies and third-party engineer reports in our assessment. Elements that mitigate a utility's construction risks may include fixed-price contracts that contain provisions for liquidated damages, performance and payment bonds, and program management oversight. Technological risk typically increases for first-in-kind engineering projects.

We also assess whether the utility provides vital services to a very large economic region. We may apply an upward adjustment of up to one notch in cases where the utility serves as a provider of vital transmission and power generation services for a variety of utilities in that region.

In aggregate, these considerations may result in an adjustment to the preliminary outcome of up to one upward notch or up to two downward notches.

Notching Factor: Operational Considerations (-2 to +1)

We consider construction risks and whether the utility is a vital service provider.

Construction risks: up to two negative notches.

Vital services to a very large economic region: up to one positive notch.

Debt Structure and Reserves

Why It Matters

A public power utility's debt structure and reserves can pose additional risks or provide important mitigants to other types of risk.

Some utilities benefit from preferential borrowing or guarantee arrangements with strong governmental entities. These arrangements may provide alternate sources of liquidity, assured borrowing access even where markets are in turmoil, or patient capital that can provide flexibility in the debt terms, (e.g., payment-in-kind in lieu of cash interest or deferrable principal payments).

Most public power utilities primarily use fixed-rate amortizing debt. In cases where a utility uses other types of debt or financing instruments, the principal risk is an unexpected drain on liquidity resulting, for instance, from short or long-term debt maturities, suddenly higher interest expense, unexpected collateral calls, a decrease in available bank and commercial paper backstop facilities, or market disruptions.

Some potential concerns with swaps and other derivatives, depending on their terms, are requirements the utility may face to post mark-to-market collateral and the termination rights of the swap counterparty upon occurrence of certain events, such as a downgrade of the utility below a certain rating level.

Fully funded reserve funds that cover maximum annual debt service are important because they represent dedicated liquidity and provide meaningful bondholder protections, particularly during periods of uncertainty in the credit markets.

How We Assess It for the Scorecard

In assessing this factor, we consider the utility's debt structure, special borrowing arrangements and debt service reserves. In aggregate, these considerations may result in an upward adjustment of up to two notches or a downward adjustment of up to two notches from the preliminary outcome.

The use of debt types other than amortizing debt or financing instruments may add meaningful incremental risk that can result in a downward adjustment of up to two notches to the preliminary outcome.

In assessing the debt structure, we typically evaluate the existing and expected debt structure, including reliance on short-term debt, bond-covenanted legal protections, the amortization profile (especially bullet, balloon or other large maturities), use of variable rate debt, exposure to interest rate swap agreements, any use of unusual derivatives, and collateral posting requirements. We generally evaluate exposure to unhedged variable rate instruments in relation to the utility's liquidity and its debt management record, including the absolute level of variable rate debt. We may also consider debt management and interest rate swap policies, board oversight of interest rate swaps, and a utility's disclosure of the risks and exposures associated with its debt.

Another important aspect of debt structure is the utility's bond security provisions. Weak provisions relative to the industry norm, for instance a lack of a covenant requiring the utility to set rates sufficient to support a DSCR of at least one time, may lead to a downward adjustment in this factor.

Where arrangements such as preferential borrowing or guarantee arrangements are particularly important and are provided by very highly rated government lenders, we may apply an upward adjustment of up to two notches to the preliminary outcome.

The lack of a debt service reserve fund can result in a downward adjustment of up to one notch. For a utility that has less than a full year debt service reserve fund, we also consider the other elements of its liquidity position in determining the level of downward adjustment, which is typically one half or one notch. However, in cases where the utility maintains at least 100 days of liquidity on hand on a sustained basis, the downward adjustment may be reduced or eliminated.

Notching Factor: Debt Structure and Reserves (-2 to +2)

We consider the utility's debt service reserves, special borrowing arrangements and debt structure.

Debt service reserves: up to one negative notch.

Preferential borrowing/guarantee arrangements: up to two positive notches.

Debt structure: up to two negative notches.

Revenue Stability and Diversity

Why It Matters

Revenue stability and diversity considerations are an important indicator of a public power electric utility's ability to manage business risks and maintain financial flexibility.

In general, public power electric utilities have a very low business risk profile, typically based on their status as monopoly providers of essential services and their ability to set retail rates at a level that allows recovery of all costs, including debt service. Utilities that have meaningful exposure to wholesale power markets or other higher risk businesses (including telephone service) face incremental credit risks, which may include price and revenue volatility, competition, greater liquidity needs and potential asset stranding.

Typically, wholesale public power electric utilities sell electricity under long-term power supply contracts with established, financially sound counterparties that ensure cost recovery, and these contracts can insulate them from wholesale markets, provided the counterparty has high credit quality and the contracts can be renewed at maturity. However, some utilities that have excess supply may sell into wholesale energy markets without having long-term contracts, often using the potentially larger near-term margins earned to limit retail rate increases on native-load retail customers. The strategy introduces meaningful revenue and cash flow volatility. Wholesale market exposure may be mitigated if the utility has strong liquidity permitting it to withstand a period of lower wholesale energy margins and a timely and transparent rate-setting process that allows it to recover costs in retail rates when wholesale margins are lower.

Large customer concentration can create credit pressure, especially at smaller utilities. For example, a single large customer (or group of customers in a particular sector) may leave the system without compensating the utility for any outstanding debt used to construct the generation facilities needed to serve that load and may leave the utility with excess power that can only be sold into the wholesale market.

The presence of other material essential utility services such as water, sewer and wastewater and natural gas in the utility's business mix, (i.e., a combined utility enterprise system), may reduce risk by providing revenue diversity that offsets weather-related and seasonal volume fluctuations, or by increasing the enterprise's importance to the related government.

Notching Factor: Revenue Stability and Diversity (-2 to +1)

Considerations include exposure to wholesale power markets and other higher risk businesses, customer concentration and diversity from combined utility operations.

Exposure to wholesale power markets and other higher risk businesses: up to two negative notches.

Customer concentration: up to two negative notches.

Revenue diversity: up to one positive notch.

How We Assess It for the Scorecard

We consider a utility's revenue stability and diversity by assessing the risk from expiring contracts, and the likelihood that they can be extended or replaced on similar terms with creditworthy counterparties. We also consider a utility's exposure to wholesale purchasers with weak credit quality and to wholesale power markets where mitigants are insufficient or to other higher risk businesses. Where these risks are material, they may result in a downward adjustment to the preliminary outcome of up to two notches for this notching factor.

Meaningful customer concentration can typically lead to a downward adjustment of one half to one notch in this factor, depending on the level of fixed system costs that would have to be shared with the remaining customer base if a large customer were to leave the system. We also consider the resultant significance of potential rate increases. However, the downward adjustment in this factor may be up to two notches in circumstances where a customer is particularly large and engaged in a competitive, cyclical industry or a very weak sector. Customer concentration with a stable university, government or health care institution may not lead to a downward adjustment unless that customer has a notable weakness.

We may apply an upward adjustment of one-half to one notch to the preliminary outcome in cases where a utility owns other material low-risk businesses that are well-managed, depending on the level of diversity and stability they provide.

In aggregate, these considerations may result in adjustment of up to one upward notch or up to two downward notches from the preliminary outcome.

Other Rating Considerations

Ratings may include additional factors that are not in the scorecard, usually because the factor's credit importance varies widely among the issuers in the sector or because the factor may be important only under certain circumstances or for a subset of issuers. Such factors include financial controls and the quality of financial reporting; legal structure; the quality and experience of management; assessments of governance as well as environmental and social considerations; exposure to uncertain licensing regimes; and possible government interference in some countries. Regulatory, litigation, liquidity, technology and reputational risk as well as changes to consumer and business spending patterns, competitor strategies and macroeconomic trends also affect ratings.

Following are some examples of additional considerations that may be reflected in our ratings and that may cause ratings to be different from scorecard-indicated outcomes.

Impact of Non-Core Businesses

This methodology scorecard applies to issuers whose primary activity is operating a US public power electric utility with generation ownership exposure. Where the utility has or will seek to diversify its operations towards other non-core business activities, we consider the impact that such diversification could have on the utility's financial stability and its credit quality. A utility that has material participation in businesses or sectors considered to have higher credit risk than its own, is likely to have an assigned rating that is lower than the scorecard-indicated outcome.

Size

The size and scale of a public power electric utility with generation ownership exposure has generally not been a major determinant of its credit. However, size can still be a very important consideration in our assessment of certain risks that impact ratings, including the ability of the utility to withstand natural and man-made disasters and event risk, and access to external funding. Additionally, while construction risk is specifically considered in a scorecard notching factor when it is very high relative to the size of the utility, its impact on ratings may be much greater than the standard weights for these factors would otherwise imply.

Other Pension Related Considerations

In addition to including pension liabilities in calculating or estimating certain scorecard metrics, we may incorporate pension-related considerations into our analysis in other ways.

For example, we may estimate the pension contribution necessary to prevent unfunded pension liabilities from growing, year over year, in nominal dollars, if all actuarial assumptions are met. This estimate, which we refer to as the tread water indicator, can provide an important indication of the strength or weakness of a utility's pension contributions relative to reported plan funding needs.¹⁰ For scorecard metrics that include cash pension contributions, we may consider how an alternate version of the metric using the tread water indicator would affect the scorecard-indicated outcome.

In addition, we may consider the impact of the long-term liabilities of other post-employment benefits (OPEB) by imputing a debt equivalent, to assess how it would affect scorecard metrics.

We may also consider the tread water indicator or OPEB liabilities as part of our qualitative analysis, including for peer comparisons.

Relationship of the Public Power Electric Utility and the Related Government

The scorecard for the US public power electric utilities with generation ownership exposure sector primarily focuses on factors relating to the stand-alone credit profile of the enterprise, because debt rated under this methodology is non-recourse to any other government entity. Where a utility is owned by, part of or linked to a government (the related government), the credit profile of the government can have a material impact on the overall credit profile of the utility, especially if the government's rating¹¹ is meaningfully lower than the utility's stand-alone credit profile.

In cases where the related government's rating diverges meaningfully from the utility's stand-alone credit profile, we typically consider the credit linkages between the utility and the government, including a comparison of the economic base of the government and the service area of the utility, the

¹⁰ Please see our methodology that discusses our adjustments to reported pension data for US state and local governments, which provides more information about the tread water indicator. A link to an index of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

¹¹ The relevant government rating is typically the general obligation rating of the municipality, state or the senior unsecured rating of the federal government.

organizational structure, management and governance, separation or commingling of cash, the government's dependence on transfers from the utility, bond structure, and overlap in access to credit and capital markets. In these cases, we may also consider how a scenario of government distress or insolvency could affect the utility.

- » Economic Base and Service Area: A public power electric utility usually provides service to a geographic area that is the same as, or largely the same as, the government's jurisdiction. In such a case, the government derives tax revenue and the utility derives electric revenue from essentially the same base. Where the utility's service area is meaningfully different from the economic base of the government, we may consider whether the utility's area is larger and more economically diverse or smaller and less diverse than that of the government.
- » Organizational Structure: A public power electric utility can be organized in a variety of ways that create different levels of financial and legal ties to the related government, e.g., as a department or component unit of the government (which usually implies very close ties), or as a separate authority or a separately constituted subsidiary (where there may be greater separation, depending on our assessment of the considerations below). In some cases, the utility is not directly exposed to the credit quality of a government.
- » Management and Governance: Management of the government and the utility may fully overlap or have close ties. For example, the government may appoint the utility's managers or board members, in which case the utility may be exposed to the risk of decision-making that benefits the related government at the expense of the utility's credit profile. The governance structure can also affect the ability of the government to interfere in the utility's operations.
- » Cash and Liabilities: The extent to which the utility and the government commingle cash is a very important consideration. We typically assess the extent of the government's access to the utility's cash; for example, whether the government is restricted from accessing the utility's cash and the durability of those restrictions. We also consider exposure to the same liabilities, e.g., whether the utility is exposed to the government's pension-related liabilities beyond the allocated ANPL.
- » Dependence on Transfers: Transfers are discussed in the Willingness and Ability to Recover Costs with Sound Financial Metrics factor. Transfers take on greater importance where the credit quality of the related government is weak.
- » Bond Structure: We typically assess important bond provisions, including cross-defaults and covenants that may limit how the government can intervene in the utility's affairs. Where the utility's bond indentures contain events of default and acceleration that are tied to the insolvency or bankruptcy of the general government, the credit linkage is typically strong.
- » Overlap in Access to Capital Markets: We typically consider how the government's credit profile may affect the public power electric utility's access to credit and capital markets over time.
- » Government Bankruptcy or Insolvency Scenario: Bankruptcy courts and other courts overseeing insolvency proceedings typically have wide latitude to make decisions affecting bondholders' recovery, including the breadth of the entities drawn into the proceedings and whether or not specific debt classes will be subject to a stay in the payment of debt service. Unless there is clear credit de-linkage, the potential for contagion typically limits the extent to which the rating of a public power electric utility can be higher than the rating of the related government. Visibility into a bankruptcy scenario is usually very limited until the utility or the government is in, or nearing, distress. Where there is meaningful clarity on likely default scenarios for a public power electric utility or the related government, there is greater potential for a wider differential between the

ratings of the utility and the government; however, there are also scenarios where the ratings would converge.

Because governments typically expect their public power electric utilities to be self-supporting, we do not generally incorporate expectations of parental support into our assessment. However, if we consider that the related government clearly has the financial capacity and willingness to provide support to the issuer, for instance in a time of stress or financial need (e.g., a major capital investment), or has already done so in the past, ratings would reflect that support expectation. We consider that any willingness to support would be based on the strategic interest of the government, for example to protect the general government's own tax base. We generally also expect that the government will be strongly interested in the continuation of electric service, which is vital to the economy; however, the operations of utilities that have defaulted on their debt or entered bankruptcy have typically continued uninterrupted.

Financial Controls

We rely on the accuracy of audited financial statements to assign and monitor ratings in this sector. The quality of financial statements may be influenced by internal controls, including the proper tone at the top, centralized operations, and consistency in accounting policies and procedures. Auditors' reports on the effectiveness of internal controls, auditors' comments in financial reports and unusual restatements of financial statements or delays in regulatory filings may indicate weaknesses in internal controls.

Management Strategy

The quality of management is an important factor supporting a utility's credit strength. Assessing the execution of business plans over time can be helpful in assessing management's business strategies, policies and philosophies and in evaluating management performance relative to performance of competitors and our projections. For example, additional considerations in assessing a utility's willingness and ability to recover costs with sound financial metrics may include the utility's capacity to meet revenue targets based on its underlying assumptions for electricity demand. A record of consistency provides insight into management's likely future performance in stressed situations and can be an indicator of management's tendency to depart significantly from its stated plans and guidelines.

Regulatory Considerations

Issuers in the US public power electric utilities with generation ownership exposure sector are subject to varying degrees of regulatory oversight. Effects of these regulations may entail limitations on operations, higher costs, and higher potential for technology disruptions and demand substitution. Regional differences in regulation, implementation or enforcement may advantage or disadvantage particular issuers.

Our view of future regulations plays an important role in our expectations of future financial metrics as well as our confidence level in the ability of an issuer to generate sufficient cash flows relative to its debt burden over the medium and longer term. Regulatory considerations also play a role in our scoring of an issuer's cost-recovery framework within the service territory and the willingness and ability of the utility to recover costs to maintain sound financial metrics. In some circumstances, regulatory considerations may also be a rating factor outside the scorecard, for instance when regulatory change is swift.

Environmental, Social and Governance Issues

Environmental, social and governance (ESG) considerations may affect the ratings of issuers in the US public power electric utilities with generation ownership exposure sector.

There is a wide regional variation in fuel mix in this sector, and some US public power electric utilities have a very material exposure to coal-fired generation. In assessing the credit effects of carbon regulation, we consider a utility's level of exposure to coal and, to a lesser extent, other fossil fuels, the federal regulatory landscape, including how it may change as a result of different presidential administrations' enforcement policies, and state-level regulations, including renewable energy standards. We also typically consider how market dynamics and technology risks will affect carbon transition. Utilities in this sector have a long track record in managing evolving and stringent environmental regulations, and they typically have a strong ability to pass through costs into rates, including fuel and purchased power, costs of investments (including for environmental remediation), and plant abandonment costs. For the majority of public power utilities that do not face rate regulation, their willingness to raise rates and any resultant affordability issues for consumers are the main concerns. Public power utilities that are regulated will face oversight regarding tariffs and prudence of investment decisions, and may face pressures to limit rate shocks for customers.

Utilities in the Pacific Northwest have large hydroelectric facilities. Droughts and regulations on water flows to protect fish and wildlife can cause wide variations in hydro generation seasonally and from year to year, requiring those utilities to purchase much more expensive power when hydro production is low. Most thermal generation requires large amounts of water for cooling and is thus exposed to water regulations and shortages.

Social considerations, such as occupational and community related health and safety, may affect public power electric utilities with generation ownership. Governance issues may also affect public power utilities, including interference into the utility's operations from governments.

For information about our approach to assessing ESG issues, please see our methodology that describes our general principles for assessing these risks.¹²

Liquidity

Liquidity is an important rating consideration for US public power electric utilities with generation ownership exposure, although it may not have a substantial impact in discriminating between two issuers with a similar credit profile.

Liquidity can be particularly important for utilities in highly seasonal operating environments, where working capital needs must be considered, and ratings can be heavily affected by extremely weak liquidity. We form an opinion on likely near-term liquidity requirements from the perspective of both sources and uses of cash. For additional insight into general principles for assessing liquidity, please see our liquidity cross-sector methodology.¹³

Our assessment of days liquidity on hand in the scorecard does not include bank lines that do not meet the eligibility requirements noted in that section. However, depending on their strength, we may assess bank lines qualitatively to consider if they provide a utility with incremental liquidity. While bank lines with a remaining tenor of committed drawdown availability of at least one year are included in the ratio, bank line maturities are considered in the broader context of a utility's future cash flow requirements, including capital expenditures, and loan or bond amortizations. Longer dated tenors are more favorable from a credit perspective.

While liquidity is specifically considered in the scorecard, when it is very weak, the impact it has on ratings may be much greater than the standard scorecard notching would imply.

¹² A link to an index of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

¹³ A link to an index of our cross-sector methodologies can be found in the "Moody's Related Publications" section.

Additional Metrics

The metrics included in the scorecard are those that are generally most important in assigning ratings to issuers in this sector; however, we may use additional metrics to inform our analysis of specific US public power electric utilities with generation ownership exposure. These additional metrics may be important to our forward view of metrics that are in the scorecard or other rating factors.

For example, in addition to the scorecard metrics, the bond ordinance coverage ratio may also be important to our analysis.

Event Risk

We also recognize the possibility that an unexpected event could cause a sudden and sharp decline in an issuer's fundamental creditworthiness, which may cause actual ratings to be lower than the scorecard-indicated outcome. Event risks — which are varied and can range from natural disasters to sudden regulatory changes or liabilities from an accident — can overwhelm even a stable, well-funded utility. Some other types of event risks include litigation and significant cyber-crimes.

Seasonality

Seasonality is an important driver of customer demand for electricity and can cause swings in cash balances and working capital positions for electric utilities. Higher volatility creates less room for errors in meeting customer demand or operational execution.

Assigning Issuer-Level and Instrument-Level Ratings

After considering the scorecard-indicated outcome, other rating considerations and relevant cross-sector methodologies, we typically assign a senior revenue bond rating. Individual debt instrument ratings may be notched up or down from the senior revenue bond rating to reflect our assessment of differences in expected loss related to an instrument's seniority level. We may also assign an issuer rating.

Assumptions

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

Our forward-looking opinions are based on assumptions that may prove, in hindsight, to have been incorrect. Reasons for this could include unanticipated changes in any of the following: the macroeconomic environment, general financial market conditions, sector competition, disruptive technology, or regulatory and legal actions.

Limitations

In the preceding sections, we have discussed the scorecard factors, many of the other rating considerations that may be important in assigning ratings, and certain key assumptions. In this section, we discuss limitations that pertain to the scorecard and to the overall rating methodology.

Limitations of the Scorecard

There are various reasons why scorecard-indicated outcomes may not map closely to actual ratings.

The scorecard in this rating methodology is a relatively simple tool focused on indicators for relative credit strength. Credit loss and recovery considerations, which are typically more important as an issuer gets closer to default, may not be fully captured in the scorecard. The scorecard is also limited by its upper and lower bounds, causing scorecard-indicated outcomes to be less likely to align with ratings for issuers at the upper and lower ends of the rating scale.

The weights for each sub-factor and factor in the scorecard represent an approximation of their importance for rating decisions across the sector, but the actual importance of a particular factor may vary substantially based on an individual issuer's circumstances.

Factors that are outside the scorecard, including those discussed above in the "Other Rating Considerations" section, may be important for ratings, and their relative importance may also vary from issuer to issuer. In addition, certain broad methodological considerations described in one or more cross-sector rating methodologies may be relevant to ratings in this sector.¹⁴ Examples of such considerations include the following: how sovereign credit quality affects non-sovereign issuers, the assessment of credit support from other entities, the relative ranking of different classes of debt and hybrid securities, and the assignment of short-term ratings.

We may use the scorecard over various historical or forward-looking time periods. Furthermore, in our ratings we often incorporate directional views of risks and mitigants in a qualitative way.

General Limitations of the Methodology

This methodology document does not include an exhaustive description of all factors that we may consider in assigning ratings in this sector. Issuers in the sector may face new risks or new combinations of risks, and they may develop new strategies to mitigate risk. We seek to incorporate all material credit considerations in ratings and to take the most forward-looking perspective that visibility into these risks and mitigants permits.

Ratings reflect our expectations for an issuer's future performance; however, as the forward horizon lengthens, uncertainty increases and the utility of precise estimates, as scorecard inputs or in other rating considerations, typically diminishes. In any case, predicting the future is subject to substantial uncertainty.

¹⁴ A link to an index of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

Appendix A: Using the Scorecard to Arrive at a Scorecard-Indicated Outcome

1. Measurement or Estimation of Factors in the Scorecard

In the "Discussion of the Scorecard Factors" section, we explain our analytical approach for scoring each scorecard sub-factor or factor,¹⁵ and we describe why they are meaningful as credit indicators.

The information used in assessing the sub-factors is generally found in or calculated from information in the bond financing documentation, financial statements or regulatory filings; and other publicly available information provided by the issuer; and information derived from other observations or estimated by Moody's analysts. We may also incorporate non-public information.

Our ratings are forward-looking and reflect our expectations for future financial and operating performance. However, historical results are helpful in understanding patterns and trends of a company's performance as well as for peer comparisons. Financial ratios, unless otherwise indicated, are typically calculated on an average of annual ratios over three years. However, the factors in the scorecard can be assessed using various time periods or interim financial statements. For example, rating committees may find it analytically useful to examine the most recent historical period or expected future performance for periods of several years or more.

Financial metrics may incorporate analytical adjustments that are specific to a particular US public power electric utility with generation ownership exposure. These may include adjustments for restructurings, impairments and off-balance-sheet accounts.

2. Mapping Scorecard Factors to a Numeric Score

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

The numeric value of each alpha score is based on the scale below.

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

3. Determining the Overall Scorecard-Indicated Outcome

The numeric score for each sub-factor (or each factor, when the factor has no sub-factors) is multiplied by the weight for that sub-factor (or factor), with the results then summed to produce an aggregate numeric score before notching factors (the preliminary outcome). We then consider whether the preliminary outcome that results from the five weighted factors should be notched upward or downward¹⁶ in order to arrive at an aggregate numeric score after notching factors, based on Operational Considerations, Debt Structure and Reserves and Revenue Stability and Diversity. In aggregate, the notching factors can result in a total of up to three upward notches or up to three downward notches from the preliminary outcome to arrive at the scorecard-indicated outcome.

¹⁵ When a factor comprises sub-factors, we score at the sub-factor level. Some factors do not have sub-factors, in which case we score at the factor level.

¹⁶ Numerically, a downward notch adds 1 to the score, and an upward notch subtracts 1 from the score.

The aggregate numeric score before and after notching factors is mapped to an alphanumeric. For example, an issuer with an aggregate numeric score before notching factors of 11.7 would have a Ba2 preliminary outcome, based on the ranges in the table below. If the combined notching factors totaled two upward notches, the aggregate numeric score after notching factors would be 9.7, which would map to a Baa3 scorecard-indicated outcome. In general, the scorecard-indicated outcome is oriented to the senior revenue bond rating.

EXHIBIT 2

Scorecard-Indicated Outcome

Scorecard-Indicated Outcome	Aggregate Numeric Score
Aaa	$x < 1.5$
Aa1	$1.5 \leq x < 2.5$
Aa2	$2.5 \leq x < 3.5$
Aa3	$3.5 \leq x < 4.5$
A1	$4.5 \leq x < 5.5$
A2	$5.5 \leq x < 6.5$
A3	$6.5 \leq x < 7.5$
Baa1	$7.5 \leq x < 8.5$
Baa2	$8.5 \leq x < 9.5$
Baa3	$9.5 \leq x < 10.5$
Ba1	$10.5 \leq x < 11.5$
Ba2	$11.5 \leq x < 12.5$
Ba3	$12.5 \leq x < 13.5$
B1	$13.5 \leq x < 14.5$
B2	$14.5 \leq x < 15.5$
B3	$15.5 \leq x < 16.5$
Caa1	$16.5 \leq x < 17.5$
Caa2	$17.5 \leq x < 18.5$
Caa3	$18.5 \leq x < 19.5$
Ca	$x \geq 19.5$

Appendix B: US Public Power Electric Utilities with Generation Ownership Exposure Sector Scorecard

Factor or Sub-factor Weight		Aaa	Aa	A	Baa	Ba	B
Factor: Cost Recovery Framework Within Service Territory (25%)							
Cost Recovery Framework Within Service Territory	25%	Monopoly with unregulated rate setting and very strong customer base and service area economy.	Monopoly with unregulated rate setting and strong customer base and service area economy.	Monopoly with unregulated rate setting; average customer base and service area economy.	Regulation of rates by state; weak customer base / service area economy.	Regulation of rates by state with some inconsistency; or very weak customer base or service area economy.	Regulation of rates by state is unpredictable; or extremely weak customer base or service area economy.
Factor: Willingness and Ability to Recover Costs with Sound Financial Metrics (25%)							
Willingness and Ability to Recover Costs with Sound Financial Metrics	25%	Excellent rate-setting record expected to continue; Rates, fuel, & purchased power cost adjustments less than 10 days; No political intervention in past or extremely high support from related government; Very limited General Fund transfers governed by policy.	Strong rate-setting record expected to continue; Rates, fuel, & purchased power cost adjustments 10 to 30 days; Limited political intervention in past or high support from related government; Conservative and well-defined General Fund transfers governed by policy.	Adequate rate-setting record expected to continue; Rates, fuel, & purchased power cost adjustments 31 to 60 days; Some political intervention in past or average support from related government; Moderate General Fund transfers.	Below average rate-setting record; Rates, fuel, & purchased power cost adjustments 61 to 99 days; Persistent political intervention or below average support from related government; Large General Fund transfers not governed by policy.	Some history or expectation of insufficient rate-setting; Rates, fuel, & purchased power cost adjustments 100 to 120 days; Highly political climate or very limited support from related government; Sizeable General Fund transfers not governed by policy.	Lengthy record of, or expectation for, a prolonged period of insufficient rate-setting; Rates, fuel, & purchased power cost adjustments 120 days or more; Highly contentious political climate or clear lack of support from related government; Very sizeable General Fund transfers not governed by policy.

	Factor or Sub-factor Weight	Aaa	Aa	A	Baa	Ba	B
Factor: Generation and Power Procurement Risk Exposure (10%)							
Generation and Power Procurement Risk Exposure ^{*1}	10%	Very limited exposure to negative repercussions from generation, procurement and commodity price risks; High degree of diversification of generation and/or fuel sources; Single generation asset typically provides less than 20% of power; or up to 20% of energy from coal-fired generation with carbon mitigation strategy.	Limited exposure to negative repercussions from generation, procurement and commodity price risks; Some diversification of generation and/or fuel sources; Single generation asset typically provides less than 40% of power; or up to 40% of energy from coal-fired generation with carbon mitigation strategy.	Moderate exposure to negative repercussion from generation, procurement and commodity price risks; Some reliance in one type of generation and/or fuel source, but diversified with purchased power sources; Single generation asset may provide up to 55% of power; or up to 55% of energy from coal-fired generation with carbon mitigation strategy.	Moderate to high exposure to negative repercussion from generation, procurement and commodity price risks; Reliance on a single type of generation or fuel source, with somewhat limited diversification via purchased power; Single generation asset typically provides up to 75% of power; or up to 70% of energy from coal-fired generation with carbon mitigation strategy.	High exposure to negative repercussion from generation, procurement and commodity price risks; Very high concentration in a single type of generation or very high reliance on a single fuel source, with limited diversification via purchased power; Single generation asset typically provides up to 75% of energy from coal-fired generation with carbon mitigation strategy, or up to 50% of energy from coal with no mitigation strategy.	Very high exposure to negative repercussion from generation, procurement and commodity price risks; very high concentration in a single type of generation, almost entirely reliant on a single fuel source, with very limited diversification via purchased power; Single generation asset typically provides over 85% of power; or over 85% of energy from coal-fired generation with carbon mitigation strategy, or over 50% of energy from coal-fired generation with no mitigation strategy.

	Factor or Sub-factor Weight	Aaa	Aa	A	Baa	Ba	B
Factor: Competitiveness (10%)							
Competitiveness	10%	Extremely competitive current and expected rates ^{*2} in the state and/or compared to neighboring utilities on a consistent basis (e.g. average system rates more than 25% below state average); and virtually no material prospective cost pressures that could lead to higher rates.	Very competitive current and expected rates ^{*2} in the state and/or compared to neighboring utilities on a consistent basis (e.g. average system rates in a range of 7.5% to 25% below state average); very low likelihood of material prospective cost pressures that could lead to higher rates.	Competitive current and expected rates ^{*2} in the state and/or compared to neighboring utilities on a consistent basis (e.g. average system rates in a range of 7.5% below state average to 7.5% above state average); modest likelihood of material prospective cost pressures that could lead to higher rates.	Somewhat competitive current and expected rates ^{*2} in the state and/or compared to neighboring utilities on a consistent basis (e.g. average system rates in a range of 7.5% to 25% above state average); high likelihood of material prospective cost pressures that could lead to higher rates.	Uncompetitive current or expected rates ^{*2} in the state and/or compared to neighboring utilities on a consistent basis (e.g. average system rates in a range of 25% to 35% above state average); or high likelihood of imminent, material cost pressures that could lead to higher rates.	Extremely uncompetitive current or expected rates ^{*2} in the state and/or compared to neighboring utilities on a consistent basis (e.g. average system rates more than 35% above state average); or currently in a period of persistent cost pressures that are causing material rate increases.
Factor: Financial Strength and Liquidity (30%)							
Adjusted Days Liquidity on Hand ^{*3} (three-year average) (days)	10%	≥ 250	150 - 250	90 - 150	30 - 90	15 - 30	< 15
Adjusted Debt Ratio ^{*4} (three-year average) (%)	10%	< 35%	35 - 60%	60 - 80%	80 - 100%	100 - 120%	≥ 120%
Adjusted Debt Service Coverage Ratio ^{*5} OR Fixed Obligation Charge Coverage Ratio ^{*6} (three-year average) (x)	10%	≥ 2.5x	2 - 2.5x	1.5 - 2x	1.1 - 1.5x	1 - 1.1x	< 1x
Preliminary Outcome							

Notching Factor

In aggregate, these factors can result in a total of 3 notches up or down from the Preliminary Outcome.

Notching Factor: Operational Considerations (-2 to +1)

We consider construction risks and whether the utility is a vital service provider.

Construction risks: up to two negative notches.

Vital services to a very large economic region: up to one positive notch.

Notching Factor: Debt Structure and Reserves (-2 to +2)

We consider the utility's debt service reserves, special borrowing arrangements and debt structure.

Debt service reserves: up to one negative notch

Preferential borrowing/guarantee arrangements: up to two positive notches.

Debt structure: up to two negative notches.

Notching Factor: Revenue Stability and Diversity (-2 to +1)

Considerations include exposure to wholesale power markets and other higher risk businesses, customer concentration and diversity from combined utility operations.

Exposure to wholesale power markets and other higher risk businesses: up to two negative notches.

Customer concentration: up to two negative notches.

Revenue diversity: up to one positive notch.

*1 In scoring this factor, generation includes generation from owned assets and via participation in Joint Action Agencies, unit power arrangements and similar arrangements.

*2 Retail rates are typically calculated as average revenue per kilowatt hour sold; however, this factor may also be assessed based on competitive positioning of rates in a dominant customer class (residential, commercial, industrial or wholesale).

*3 Defined as: (available unrestricted cash and investments and eligible unused bank lines of credit and capacity under commercial paper programs) x 365 / (annual operating and maintenance expenses excluding depreciation and amortization and the debt service portion of annual payments made to JAAs under take-or-pay contracts).

For the numerator, in unrestricted cash and investments, we include certain designated reserves if they are available for general use by the utility. We do not include debt service funds and reserve requirements maintained as restricted funds to comply with specific terms as typically defined under the bond documents. To be included in this ratio, eligible bank lines must meet all of the following criteria:

- >> Committed facilities
- >> Remaining tenor of committed drawdown availability is at least one year
- >> Absence of impediments to drawdown, including:
 - No material adverse change (MAC) representation requirement for borrowings
 - No material adverse litigation (MAL) representation requirement for borrowings
 - No covenants set at a level reasonably expected to restrict borrowings
- >> If bilateral, provided by a bank rated P-1
- >> If syndicated, provided by a group of banks predominantly rated P-1

Bank lines that do not meet the eligibility requirements are not included in calculating the ratio, but they may be assessed qualitatively (please see our discussion of liquidity in the "Other Rating Considerations" section). For utilities that have commercial paper programs backed by letters of credit, the unused portion is included in the numerator if the bank issuing the letter of credit is rated P-1.

- *4 Defined as: (total debt net of debt service and debt service reserve funds) plus ANPL / (fixed plant assets net of accumulated depreciation plus net working capital). Net working capital is defined as cash and investments plus receivables expected to be collected minus current liabilities unrelated to debt.
- *5 Defined as: (annual recurring revenue plus interest income minus recurring annual cash operating expenses minus GFTs) / aggregate annual debt service. In the numerator, recurring revenue and recurring expenses exclude special, one-time items. Annual cash operating expenses exclude depreciation and amortization expenses. We treat the general fund transfers (GFT) as an operating expense because, in practical terms, the transfer is a requirement that in many cases is made on a monthly basis.
- *6 Defined as: (annual recurring revenue plus interest income minus recurring annual cash operating expenses and GFTs plus the debt service portion of annual payments made to JAAs under take-or-pay contracts) / (aggregate annual debt service plus the debt service portion of annual payments made to JAAs under take-or-pay contracts).

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