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**Criteria | Governments | U.S. Public Finance: U.S. Public Finance Waterworks, Sanitary Sewer, And Drainage Utility Systems: Rating Methodology And Assumptions**

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[View Analyst Contact Information](#)

[Table of Contents](#)

I. SCOPE OF THE CRITERIA

II. SUMMARY OF THE CRITERIA

III. METHODOLOGY

IV. ENTERPRISE RISK PROFILE ASSESSMENT

Factors That Affect The Enterprise Risk Profile

A. Assessing Economic Fundamentals

B. Assessing Industry Risk

C. Assessing Market Position

D. Assessing Operational Risk Management

V. FINANCIAL RISK PROFILE ASSESSMENT

Factors That Affect The Financial Risk Profile

A. Assessing All-In Coverage

B. Assessing Liquidity And Reserves

C. Assessing Debt And Liabilities

D. Assessing Financial Risk Management

VI. APPENDIX I: GLOSSARY OF KEY TERMS

VII. APPENDIX II: MUNICIPAL RATING CALIBRATION

VIII. APPENDIX III: AN OVERVIEW OF THE HISTORY OF MUNICIPAL WATER CONSUMPTION AND BILLING IN THE U.S.

IX. APPENDIX IV: AN OVERVIEW OF IRRIGATION DISTRICTS

X. APPENDIX V: METHODOLOGY FOR ASSESSING THE IMPACT OF SECURITIZED DEBT

XI. REVISIONS AND UPDATES

XII. RELATED CRITERIA AND RESEARCH

**(Editor's Note:** On March 12, 2019, we republished this criteria article to make nonmaterial changes. See the "Revisions And Updates" section for details.)

1. The criteria article describes S&P Global Ratings' methodology for assigning issue credit ratings, issuer credit ratings (ICRs), and ratings derived from stand-alone credit profiles (SACPs), based on waterworks, sanitary sewer, and drainage utility revenue pledges of local and regional governments (LRGs) and irrigation districts in the U.S.

2. This article is related to our criteria article "Principles Of Credit Ratings (/en\_US/web/guest/article/-/view/sourceld/6485398)", published on Feb. 16, 2011.

3. These criteria provide additional transparency and comparability to help market participants better understand our approach in assigning ratings to U.S. public finance waterworks, sanitary sewer, and drainage utility systems, to enhance the forward-looking nature of these ratings, and to enhance the global comparability of our ratings through a clear, comprehensive, and globally consistent criteria framework.

4. All terms followed by an asterisk (\*) are defined in the glossary in Appendix I. "Sewer", "sanitary sewer", and "wastewater" are assumed to be interchangeable terms. Similarly, "drainage", "stormwater", and "storm sewer" are also deemed to be interchangeable terms.

## I. SCOPE OF THE CRITERIA

5. The criteria apply to all issue credit ratings, ICRs, and SACPs assigned to waterworks, sanitary sewer, and drainage utility systems of a U.S. municipality or comparable political subdivision, including irrigation districts, whose financial obligations are secured by a pledge of revenues. We have observed that these utilities primarily rely on user charges for the ongoing operations of drinking and/or raw-water sales, sanitary sewer collection and/or treatment, and/or storm drainage systems, or some combination thereof, directly to the end (retail) customer. The public or municipal enterprises within the scope of this criteria include, generally, those with the following characteristics:

The entity is a political subdivision or a wholly-owned department of a political subdivision, even if there is a concession agreement with a private operator;

The entity has a public policy-making role, mission, or mandate to deliver an essential service deemed necessary for public health, and is not a commercial entity such as an investor-owned utility or a corporation (whether a bankruptcy-remote or single-purpose entity or not);

The entity primarily relies upon user charges and has ongoing cash from operations, and has at most minimal or immaterial contractual payments or appropriations from a related political subdivision such as the general fund of the LRG; and

The entity is not registered as a commercial enterprise or public corporation and does not pay dividends (other than to its affiliated general government), establish ownership shares, or access the equity markets.

6. While not an exhaustive list, examples of debt rated under these criteria are utility revenue bonds issued by a city, utility board, retail raw-water service providers such as irrigation districts, or regional authority that provides primarily retail water and sewer service. Examples of entities that are not rated under these criteria include investor-owned utilities, master limited partnerships, and limited liability corporations. Investor-owned utilities and corporations, are rated using "Corporate Methodology (/en\_US/web/guest/article/-/view/sourceld/8314109)", published Nov. 19, 2013, and "Key Credit Factors For The Regulated Utilities Industry (/en\_US/web/guest/article/-/view/sourceld/8339577)", published Nov. 19, 2013. Master limited partnerships are rated based on "Methodology: Master Limited Partnerships And General Partnerships (/en\_US/web/guest/article/-/view/sourceld/8740073)", published Sept. 22, 2014. If we believe that the contributions from the LRG or related taxing entity could significantly change the utility's financial condition, it would also fall outside the scope of these criteria.

7. Entities whose revenues are derived entirely from sales for resale to other entities, such as traditional wholesale providers or joint action agencies, will continue to be evaluated based on the "Wholesale Utilities (/en\_US/web/guest/article/-/view/sourceld/3180554)" criteria, published May 24, 2005. An LRG often also owns and/or operates other enterprises such as electric systems, gas distribution utilities, solid waste systems, or other utility services. While many of the themes addressed below also apply in part to those other enterprises, S&P Global Ratings addresses rating criteria and methodology specifically and separately for those enterprises.

8. Many LRGs issue general obligation (GO) or other tax-secured debt\* on behalf of the utility or the utility has the legal authority to issue it itself; in those cases, the applicable GO or special tax rating criteria and methodology will continue to be applicable. When more than one type of revenue secures the debt, we apply our criteria, "Methodology: Rating Approach To Obligations With Multiple Revenue Streams (/en\_US/web/guest/article/-/view/sourceld/6982403)", published Nov. 29, 2011, to determine the rating approach.

9. U.S. municipal utilities generally operate as either a department of an LRG or are themselves an LRG. We generally do not believe that the utilities benefit from an explicit or implicit level of extraordinary support from the U.S. federal government or state government in which they operate in case of distress. Therefore, very few of them are deemed a government-related entity (GRE). For those few rated utilities that are deemed to be a GRE, these criteria are used to determine the SACP, which is used as an input to the GRE criteria (see "Rating Government-Related Entities: Methodology And Assumptions (/en\_US/web/guest/article/-/view/sourceld/9032821)", published March 25, 2015) to arrive at an ICR.

10. We consider the strength of lease revenue or certificates of participation issued by utilities to be equivalent to a pledge of the same lien of revenues. There is, therefore, generally no rating distinction on these securities, reflecting the enterprise nature of public utilities. If a utility were to issue appropriation-secured debt that did not meet the above assumptions, we would apply our criteria "Issue Credit Ratings Linked To U.S. Public Finance Obligors' Creditworthiness (/en\_US/web/guest/article/-/view/sourceld/9939600)," published Jan. 22, 2018.

11. Legal provisions, in our view, covenant the utilities to act--or not take action--in a manner that provides at least some minimal protections for the benefit of bondholders. As discussed further in paragraphs 112 and 113, we view legal provisions as generally being either credit-neutral or credit-negative. However, the complete absence of any document such as an indenture or bond resolution, or silence by existing related documents toward establishing an orderly flow of funds, a lien on pledged revenues securing the bonds, a rate covenant, and an additional bonds test would likely preclude assigning an issue credit rating based solely on these criteria. Other criteria, however, such as, for example, general obligation bonds or multiple revenue streams, might instead apply.

## II. SUMMARY OF THE CRITERIA

12. These criteria use the same framework as our criteria for other municipal enterprise sectors. Specifically, these criteria assign ratings using a framework that considers enterprise risk (enterprise risk profile) and financial risk (financial risk profile). Chart 1 depicts how the enterprise and financial risk profile assessments interact to arrive at the initial indicative rating. The indicative rating is established after applying any appropriate positive or negative overriding factors. The final outcome--which could be an issue credit rating, SACP, or ICR--is reached after making any appropriate peer adjustments. The final rating may be capped based on the presence or absence of certain conditions or characteristics. If more than one cap is applicable, the final rating would be no higher than the lowest cap.

13. If a utility meets the guidelines outlined in "Criteria For Assigning 'CCC+', 'CCC', 'CCC-', And 'CC' Ratings (/en\_US/web/guest/article/-/view/sourceld/7554329)" published on Oct. 1, 2012, then the rating will be assigned based on that criteria.

14. To increase the transparency in the rating methodology and improve the comparability of our ratings globally, the revised methodology is intended to:

Provide further detail on how we assess and calibrate each of the identified rating factors;  
Offer a more detailed explanation of how we arrive at a utility rating through the analysis of the rating factors; and  
Identify overriding factors that may result in a rating different from the initial indicative rating identified below.

15. The enterprise risk profile and financial risk profile will be measured through an evaluation of the following factors, with the respective weights in parentheses. The enterprise and financial risk profile assessments are rounded weighted averages of these factors.

### Enterprise Risk Profile

Economic fundamentals (45% of the enterprise risk profile assessment);  
Industry risk (20%);  
Market position (25%); and  
Operational management assessment (10%).

### Financial Risk Profile

All-in coverage (40% of the financial risk profile assessment);  
Liquidity and reserves (40%);  
Debt and liabilities (10%); and  
Financial management assessment (10%).

16. The initial assessment of each of the above factors may be strengthened or weakened by certain qualitative factors, as applicable, and as discussed in more detail beginning in paragraph 46, in order to arrive at the final assessment.

17. The initial indicative rating results from the combination of the enterprise and financial profile assessments in table 1.

18. In certain cases, the initial indicative rating in table 1 contains two options for a given combination of enterprise and financial risk profile assessments. In those cases, we would use our expectations of the utility's future performance to determine which of the two initial indicative ratings to use.

19. The indicative and the final rating could both be capped by the presence or absence of certain conditions, regardless of the rating outcome suggested by table 1. Rating caps are absolute, meaning that the positive relative adjustments described herein, including peer adjustments discussed in paragraph 21, do not apply and the indicative and the final rating cannot exceed the cap. These rating caps are summarized in table 2.

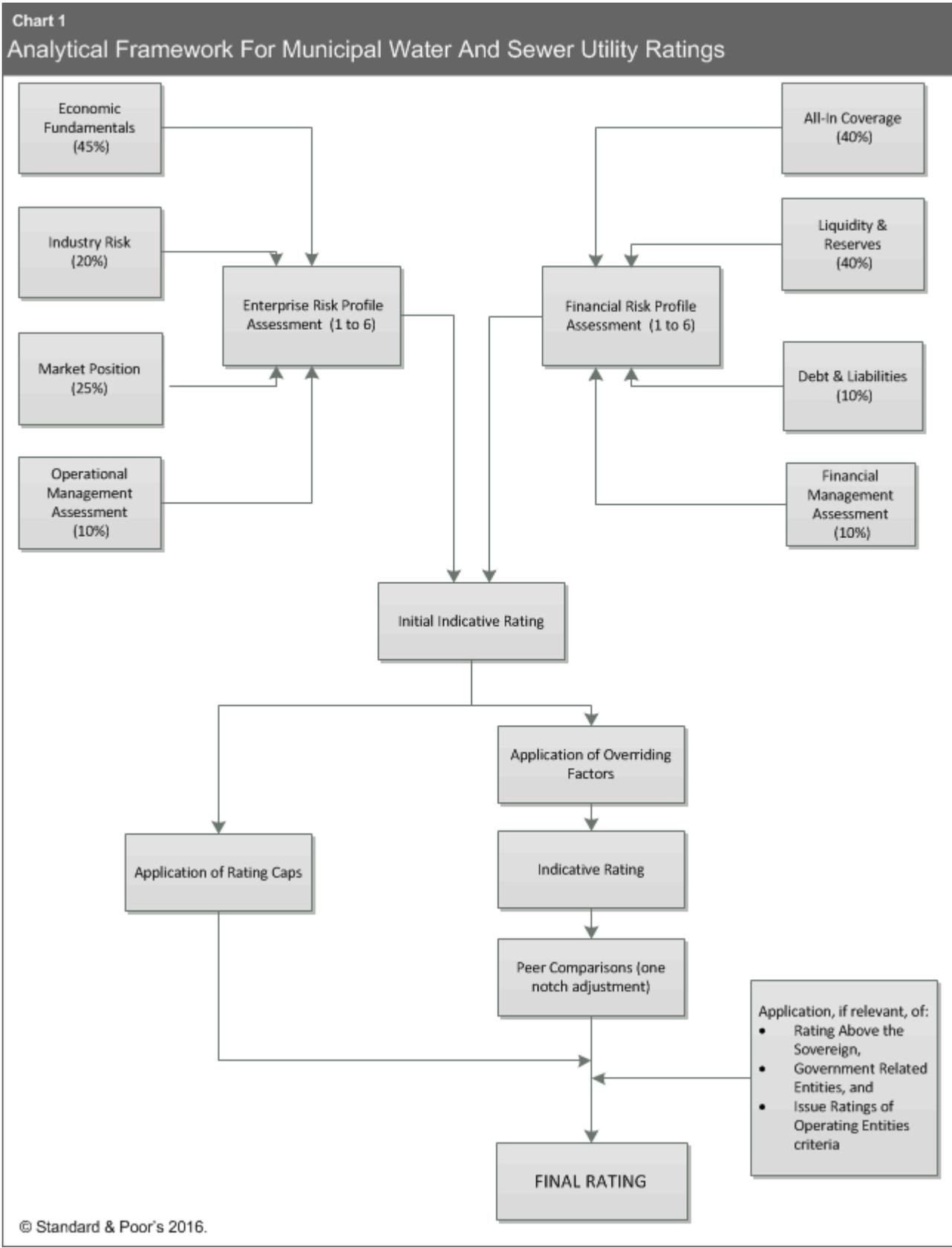
20. The indicative rating could differ from the outcome suggested by table 1 based on certain overriding factors that result in the indicative rating moving a specified number of notches above or below the initial indicative rating. These overriding factors are summarized in table 3.

21. The indicative rating could be raised or lowered by one notch to arrive at the final rating due to comparisons with similarly rated peers. Peer adjustments can be used to capture a more holistic view of creditworthiness. The holistic analysis includes rare or strongly positive or negative characteristics which the criteria do not separately identify. These criteria define peers as other municipal utilities. Peers may include other utilities with similar ratings, size, operational commonalities, geographic location, or financial profile characteristics. Based on our assessment, location may be defined as geographically contiguous or an area in another part of the country with similar economic and market fundamentals. Peer adjustments could also be made based on comparisons with sector-wide data, including ratio analyses. Peer groups may change through time as operating conditions or organization-specific features evolve.

22. The final rating may be constrained by the sovereign rating on the U.S., in accordance with "Ratings Above The Sovereign: Corporate And Government Ratings—Methodology And Assumptions (/en\_US/web/guest/article/-/view/sourceld/8343660)", published on Nov. 19, 2013, as further explained in "Credit FAQ: U.S. Public Finance Ratings And Criteria For Ratings Above The Sovereign (/en\_US/web/guest/article/-/view/sourceld/8399206)", published on Dec. 19, 2013.

23. We deem very few of the utilities rated by these criteria to be GREs. In rare cases where we deem a utility to be a GRE, we use these criteria to determine the stand-alone credit profile. The final rating is based upon our application of "General Criteria: Rating Government-Related Entities: Methodology And Assumptions (/en\_US/web/guest/article/-/view/sourceld/9032821)" published March 25, 2015.

24. Issue credit ratings, including subordinate-lien debt, will be determined based on our view of the ICR and the legal/covenant package, as more fully described in "Assigning Issue Credit Ratings of Operating Entities", published May 20, 2015. Further guidance regarding our view of debt security and covenants is in paragraphs 112 and 113.



25. This paragraph has been deleted.

26. This paragraph has been deleted.

### III. METHODOLOGY

#### A. Overall Framework For Rating Municipal Utilities

27. These criteria are used to assign credit ratings to utilities based on quantitative and qualitative analysis of a range of economic, financial, operational, management, and debt factors. The analytical framework is articulated around two major components: the Enterprise Risk Profile and Financial Risk Profile. The enterprise and financial risk profile assessments are determined by combining (see chart 1) and then rounding to the whole number the weighted average of the individual factors (as outlined in paragraph 15). The initial indicative rating results from the combination of the enterprise and financial risk assessments as shown in table 1.

**Table 1**

**Determining The Initial Indicative Rating**

Enterprise Risk Profile	Financial Risk Profile					
	1 Extremely Strong	2 Very Strong	3 Strong	4 Adequate	5 Vulnerable	6 Highly Vulnerable
1 Extremely Strong	aaa	aa+	aa-	a	bbb+/bbb	bb+/bb
2 Very Strong	aa+	aa/aa-	a+	a-	bbb/bbb-	bb/bb-
3 Strong	aa-	a+	a	bbb+/bbb	bbb-/bb+	bb-
4 Adequate	a	a/a-	a-/bbb+	bbb/bbb-	bb	b+
5 Vulnerable	bbb+	bbb/bbb-	bbb-/bb+	bb	bb-	b
6 Highly Vulnerable	bbb-	bb	bb-	b+	b	b-

1. The initial indicative rating results from the interaction between the enterprise and financial risk profile assessments. Potential adjustments to the initial indicative rating are noted in Table 2. The final rating could be one notch higher or one notch lower than the indicative rating based on peer comparisons. 2. For ratings below 'B-' see "Criteria For Assigning 'CCC+', 'CCC', 'CCC-', And 'CC' Ratings", published Oct. 1, 2012, as well as "Methodology: Timeliness of Payments: Grace Periods, Guarantees, and Use of 'D' and 'SD' Ratings", published Oct. 24, 2013. 3. In certain cases, the initial indicative rating in table 1 contains two options for a given combination of enterprise and financial risk profile assessments. In those cases, we would use our expected view of the utility's future performance to determine which of the two initial indicative ratings to use.

28. The enterprise and financial risk profiles described in paragraph 15 may contain sub-factors. Each factor and sub-factor is assessed on numerical scale, with '1' being the strongest outcome.

29. If the quantitative metric evaluating a particular factor falls at or near a cut-off point, we may assign the stronger assessment if trends are improving or we believe future metrics or attributes will improve, or the worse assessment if trends are weakening or we believe future metrics or attributes will deteriorate.

30. The initial, or anchor assessment for each factor may be adjusted based on qualitative factors that may be present or lacking for each characteristic or condition. Tables 6, 17, 19, and 21 describe some of the most common qualitative factors that could adjust each of the respective initial assessments. The maximum net adjustment to the initial assessment is two points. For example, if the initial assessment is a '3' and there are two favorable adjustments and one unfavorable adjustment identified, the final assessment for that factor would be a '2.' The liquidity and reserves assessment, however, can be capped at a '5' or worse regardless of the initial assessment based on paragraphs 99 through 101.

31. The criteria also include various caps and overrides (see paragraphs 32-41, as well as tables 2 and 3) to arrive at the indicative rating, as well as the ability to raise or lower the indicative rating by one notch based on peer comparisons (see paragraph 21) to establish the final rating. The final rating may be influenced by the rating on the U.S. or its associated country risk, as well as the assignment of issue credit ratings and use of subordinate-lien debt, in accordance with paragraph 24.

## B. Rating Caps And Overriding Factors

32. In certain, but rare, circumstances, the final rating is capped at a certain level. The final rating could be lower than the cap, depending on the severity of the condition present. The rating caps outlined in table 2 are absolute, meaning that the positive relative adjustments described below do not allow the final rating to exceed the cap. If multiple caps are applicable, the rating cap used will be the lower of all those that apply.

**Table 2**

**Summary Of Factors That Cap The Final Rating  
Condition Result**

Either the Operational or the Financial Management Assessment is "Vulnerable" (see paragraph 34)	Indicative and final ratings are capped at 'A'
Both the Operational and the Financial Management Assessments are "Vulnerable" or there is a going concern opinion (see paragraph 34)	Indicative and final ratings are capped at 'BBB-'
Utility or its affiliated LRG is recovering from a financial crisis, emerging out of a recent bankruptcy or receivership, or has significant consultant oversight following an event of default, including a covenant violation (see paragraph 35)	Indicative and final ratings are capped at 'BBB+'
Negative extraordinary intervention (see paragraph 36)	Indicative and final ratings are capped at the lower of 'BBB' or the GO rating of the affiliated general government
Both the all-in coverage and liquidity and reserve assessments result in a '5' or worse (see paragraph 37)	Indicative and final ratings are capped at 'BB+' although if we view liquidity as especially vulnerable, the final rating would generally be capped at 'B+'
Either the Operational or the Financial Management Assessment is "Vulnerable" and the liquidity and reserve assessment is a '5' or worse (see paragraph 38)	Indicative and final ratings are capped at 'BB+'
Both the Operational and Financial Management Assessment are "Vulnerable" and the liquidity and reserve assessment is a '5' or worse (see paragraph 38)	Indicative and final are ratings are capped at 'B+'
Management demonstrates a lack of willingness to support financial obligations, or we believe the utility may be considering bankruptcy or receivership filing (see paragraph 39)	Indicative and final ratings on any rated debt not in default are capped at 'B'

33. Certain conditions or characteristics result in an indicative rating that is different from the initial indicative rating, as follows in table 3. If multiple notch overrides are applicable, the indicative rating is based on the net effect of those overrides.

### Table 3

#### Summary Of Overriding Factors

Condition	Result
Median household effective buying income is among the top quintile of the U.S. (see paragraph 40)	Indicative rating generally will be one notch above that suggested by table 1

Median household effective buying income is among the top 10% of the U.S. (see paragraph 40)	Indicative rating generally will be two notches above that suggested by table 1
Median household effective buying income is among the lowest quintile of the U.S. (see paragraph 40)	Indicative rating generally will be one notch below that suggested by table 1
All-in coverage is at or above 3.0x or are equivalent to at least 24 months of operating expenses (see paragraph 41)	Indicative rating generally will be one notch above that rating suggested by table 1
U.S. country risk assessment of '4', '5', or '6' (see paragraphs 44 and 45)	Final enterprise risk profile assessment is capped at '4', '5', or '6'
Total indebtedness is likely to increase substantially, but magnitude, scope, and timing are not fully defined (see paragraph 82)	Final financial risk profile assessment generally will be worsened by one point

## Factors That Cap The Indicative And Final Ratings

34. Weak management. The decentralized and autonomous nature of U.S. local governments creates a stronger link between management and credit quality. In cases where either the Operational or the Financial Management Assessment (OMA, FMA; see paragraphs 70 and 106) is characterized as 'vulnerable', the indicative and final ratings will be no higher than 'A'. In cases where both the OMA and FMA are characterized as 'vulnerable' or if an auditor has delivered a going concern opinion with the most recent review of the utility's or associated LRG's financial position, the indicative and final ratings will be no higher than 'BBB-'.

35. Emergence from bankruptcy or receivership. A utility that has just emerged from bankruptcy or receivership or a period of consultant or governmental oversight by definition has just been in a period where the financial risk profile--and possibly the enterprise risk profile as well--is extremely weak. Although a credit may emerge with an improved financial risk profile after debt forgiveness or other negotiated settlements or restructuring, or under a new management team, we will cap the indicative and final ratings at 'BBB+' until the utility has re-established a two- or three-year record of audited financial performance, at which time we would re-evaluate it using that new financial history as part of the analysis.

36. Negative extraordinary intervention. The line between what may be termed "extraordinary" and "ongoing" negative intervention is not always clear. However, examples of negative extraordinary intervention include cash-stripping or other measures that the affiliated LRG may impose to divert resources from the utility, as the LRG's needs rise. In such cases, the utility's indicative and final rating will be capped at the lower of 'BBB' and the GO debt rating of the affiliated LRG.

37. Weak total liquidity combined with weak all-in coverage. If the utility's all-in coverage as well as liquidity and reserves assessments are both a '5' or worse, we will cap the indicative and final ratings at 'BB+', although if we view liquidity as a weakness that cannot be rectified by other available resources, then the rating would be no higher than 'B+'. In our view, poor assessments on both of these factors imply that the utility has no margin for error in any of its operating, debt service, or capital funds in the event of an unfavorable or unplanned variance to its annual budget.

38. Weak management and liquidity and reserves. Strong management alone can lend itself to operational and fiscal continuity and can serve as a credit stabilizer. In addition, liquidity and reserves provide working capital, funding for unexpected operational problems, and general budgetary flexibility. For example, if contingent liabilities become actual liabilities, both of these factors can together moderate or even relieve a utility from distress. Conversely, their absence creates a limiting factor and often leads to rapid credit deterioration. As such, when the OMA or FMA is characterized as 'vulnerable' and the liquidity and reserves assessment is a '5' or worse, the indicative and final ratings are capped at no higher than 'BB+'. If both management assessments are characterized as 'vulnerable' and the liquidity and reserves assessment is a '5' or worse, the indicative and final ratings are capped at no higher than 'B+'.

39. Weak willingness or capacity to support financial obligations. If the utility's or sponsoring governmental entities' representatives take actions that indicate active consideration of bankruptcy in the near term, or if there is a perceived change in the willingness or lack of capacity to honor all long-term, legally-binding financial obligations in full and on a timely basis,

the indicative and final ratings will be capped at 'B'. If applicable, we would apply "Criteria For Assigning 'CCC+', 'CCC', 'CCC-', And 'CC' Ratings (/en\_US/web/guest/article/-/view/sourceld/7554329)", published Oct. 1, 2012 or "Rating Implications Of Exchange Offers And Similar Restructurings (/en\_US/web/guest/article/-/view/sourceld/5402557)", published May 12, 2009. Such a condition might be evidenced by way of conversations with management or governance, verifiable reports in the media, public disclosure, or other informational sources we judge to be relevant. The utility's issuer ratings would be 'D' or 'SD' following a default on an actual financial obligation, or in a distressed exchange, which we would apply "Rating Implications Of Exchange Offers And Similar Restructurings (/en\_US/web/guest/article/-/view/sourceld/5402557)".

### Factors That Notch From The Initial Indicative Rating

40. Exceptionally strong or weak income indicators. Extremely favorable or unfavorable demographics--measured as well above or below the strongest or weakest initial assessments, respectively--could imply extraordinary flexibility or limitation in a utility's ability to enhance its operating revenues on an ongoing basis. Median household effective buying income (MHHEBI) at or above the highest quintile of distribution according to the U.S. Census Bureau's and Bureau of Labor Statistics' joint "Current Population Survey" would generally result in a one-notch rating uplift from the initial indicative rating. Median household effective buying income at or above the top 10% of all households would receive a two-notch rating improvement. Median household effective buying income in the lowest quintile in the U.S. would lower the initial indicative rating by one notch.

41. Exceptionally strong financial risk profile. Should there be in our view a high probability that a utility's overall extremely strong financial risk profile is likely to continue on a forward-looking basis even when allowing for stresses, volatility, and additional future obligations, the initial indicative rating would generally be improved by one notch. "Exceptionally strong" is defined specifically to mean: All-in coverage\* at or above 3x or are equivalent to at least 24 months of operating expenses (without giving favor to an already-existing debt service reserve fund, and calculated consistent with our definition of days' cash\*).

## IV. ENTERPRISE RISK PROFILE ASSESSMENT

42. The factors that are evaluated for the Enterprise Risk Profile assessment are summarized in table 4.

### Table 4

#### Description Of Enterprise Risk Profile Factors

Economic Fundamentals (45% of Enterprise Risk Profile assessment)

Economic fundamentals measure the strength of the utility's service area economy, including the utility's demographics, characteristics and trends about the customer base, and how crucial the utility's principal customers are to operating revenues.

Industry Risk (20%)

The industry risk evaluation aims to evaluate the external environment in which municipal utilities operate and its relevant characteristics, including cyclical, competitive risk, and growth environment.

Market Position (25%)

The market position measures the relative affordability of utility rates given the income indicators and relative poverty of the service area, as well as comparability of rates with those of peers in the region or state.

Operational Management

Assessment (OMA; 10%)

The OMA evaluates our view of the effectiveness of utility management in ensuring that there is alignment of operational, environmental, strategic, and financial goals to support the system's success.

43. The descriptors of outcomes for the overall enterprise risk profile are based on the scale shown below in table 5. The criteria do not round to a whole number until arriving at a final enterprise risk profile.

## Table 5

Descriptors For Enterprise Risk Profile Factors	
Assessment	Description
1	Extremely Strong
2	Very Strong
3	Strong
4	Adequate
5	Vulnerable
6	Highly Vulnerable

## Factors That Affect The Enterprise Risk Profile

### Country Risk Assessment For The U.S.

44. The relevant credit risks for U.S. municipal utilities are also influenced by country-specific risks (see "Country Risk Assessment Methodology And Assumptions (/en\_US/web/guest/article/-/view/sourceld/8313032)", published Nov. 19, 2013). Country risk is the risk an entity faces by having some of its operations or assets exposed to one or more countries. Country-specific risks consist of economic risks, institutional and governance effectiveness risks, financial system risk, and payment culture/rule of law risk. The country risk assessment is determined on a scale from '1' (very low risk) to '6' (very high risk).

45. The country risk assessment with respect to these criteria derives from the U.S. country risk assessment as determined under the criteria cited above. If the U.S. country risk assessment is a '3' or better, there is generally no positive or negative impact on the final rating. However, if the U.S. country risk assessment is '4' or worse, this could affect the enterprise risk profile assessment. Specifically, if the U.S. country risk assessment is '4', '5', or '6', we will generally assign an enterprise risk profile assessment of no better than '4', '5', or '6', respectively.

### A. Assessing Economic Fundamentals

46. The assessment of economic fundamentals provides insight into the employment, socioeconomic, and demographic environment in which the utility operates as well as the health of the service area economy relative to that of the U.S. as a whole.

47. The assessment of economic fundamentals is based on two measures: median household effective buying income of the service area as a percentage of the U.S. and the trend in economic output of the service area, as measured by its real (inflation-adjusted) gross county product. If the service area spans multiple counties, these criteria pro rate the metrics based on the estimated population in each county as a percent of the total service area population.

48. The two components are combined (see table 6) to determine an initial economic fundamentals assessment. Positive and negative qualitative factors are then evaluated for applicability to achieve the final economic fundamentals assessment. The cumulative net effect of all adjustments is limited to an improvement or worsening of two points to the initial assessment.

**Table 6****Assessment Of Economic Fundamentals**

Current Median Household Effective Buying Income (% of U.S.)	Real Gross County Product, Rate Of Change Last Two Years, Plus Projected Next Two Years [1]		
	Stronger than U.S. rate of GDP annual growth by 1% or more	Within +/- 1% of U.S. rate of GDP annual growth	Weaker than U.S. rate of GDP annual growth by 1% or more
125% or more	1	1	2
100% to 125%	1	2	3
75% to 100%	2	3	4
35% to 75%	3	4	5
35% or lower	4	5	6

**Qualitative Factors Positively Affecting The Initial Assessment Include:**

Efficiencies and natural economies of scale associated with being a larger utility (see paragraph 50).

Broad and diverse employment base, or ratepayers living in the service area have access to such a base (see paragraph 51).

Unique key local employer, such as a university or military base, that serves to stabilize the economy, even if skewing income indicators unfavorably (see paragraph 55).

**Qualitative Factors Negatively Affecting The Initial Assessment Include:**

Unemployment rate of the county of 10% or worse.

A steadily declining population, or dependent population\* of more than 55%.

The lack of efficiencies and natural economies of scale because the utility is smaller (see paragraph 50).

Employment sector concentration, or inauspicious prospects exist for a key major local employer within the next 36 months (see paragraph 54).

The 10 largest customers account for 25% or more of operating revenues, or the top one is 10% or more (see paragraph 56).

Each applicable qualitative factor changes the initial assessment by one point (with the exception of the economies of scale adjuster, which can result in a one-half point change), but the net total of all adjustments would never improve or worsen the initial assessment by more than two points. [1] For example, if the base/current year is 2015, the time period examined would be 2014 (actual, full-year); 2015 (annualized estimate); 2016 (forecast) and 2017 (forecast).

49. For service areas in which there is no specific MHHEBI data available, the data from the next largest measurable geographic unit will be used. For example, if the service area is that of a small unincorporated portion of a county and if those data are not available, the MHHEBI of that county will be used. An exception could be if there is clear evidence that the service area incomes and macroeconomic trends are materially and measurably different from the geographical unit at large, in which case we will use the best available data.

50. Certain natural operating efficiencies and economies of scale are often present in larger utilities. Examples may include physical redundancies or the ability to spread fixed costs over a greater number of gallons sold. These criteria define a utility's size based on average annual gross operating revenues of the three most recent audited fiscal years. Table 7 outlines the applicable adjuster that is combined with the result from table 6. For instance, if the three most recent years resulted in operating revenues of \$21.4 million, \$24.7 million, and \$29.8 million, the simple average of the three would be \$25.3 million, resulting in a neutral adjuster rather than a worsening by 0.5. Drainage-only utilities are excluded from this adjuster, as we believe they have an inherently lower operating risk and are usually smaller by revenues by their nature. Irrigation districts are separately addressed in paragraph 57.

**Table 7**

Economies Of Scale Qualitative Factor	
Total Operating Revenues (Mil. \$)	Change to Initial Assessment
More than 150	(1)
Between 75 and 150	(0.5)
Between 25 and 75	0
Between 5 and 25	0.5
Less than 5	1

51. We assess whether the utility's service area participates in a larger, broad, and diversified economy at the federally-defined metropolitan statistical area (MSA) level. The determination is based on an evaluation of employment diversity, employment growth, and the employment base. Each of these three factors is characterized as 'strong', 'moderate', or 'weak' consistent with a similar evaluation in "Local Government GO Ratings Methodology And Assumptions

(/en\_US/web/guest/article/-/view/sourceld/8188093)", published Sept. 12, 2013. Participation in a 'strong' MSA would generally lead to a one-point improvement in the initial assessment. Conversely, no adjustment would be applied if we deem the MSA as 'weak' or if the service area does not lie within a defined MSA. If the MSA is described as moderate, applying the broad and diverse positive adjustment may still be applicable if the macroeconomic trends of the MSA and our expectations for future performance in the next two years are reasonably likely to cause existing metrics to improve.

52. The diversification of the utility's service area's economic structure is important to assess the potential volatility of its employment base and its resilience to stresses. An example of a deep, broad, and well-diversified economy would be employment-sector distribution that closely resembles that of the U.S. at large. This depth and diversity could lessen the impact on the utility's operating revenues better than an economy with more exposure to a single employer or industry or only a few employment sectors. A small and concentrated or shallow economic base also tends to be more exposed to external factors and macroeconomic cycles.

53. If employment in an individual sector--excluding education/health, government, and transportation/trade/utilities--represents more than 30% of the nonfarm work base, the local economy is deemed to be highly susceptible to that employment sector. As such, a one-point worsening of the assessment would be applied. An example would be a small town that does not participate in an MSA and has a major manufacturing component in the local labor force.

54. Regardless of the employment sector or nature of its business, if a major local employer has publicly announced that within the next 36 months it will be reducing or completely shuttering operations within the service area or we expect it to do so, a one-point unfavorable adjustment would be warranted.

55. If we do not deem there to be a broad and diverse economy, the presence of a major employer can still sometimes act as a stabilizing force, possibly even adding context to lower income indicators. In such a case, a favorable adjustment of one point may be applied. Examples of such major employers include higher education institutions, health care facilities, military installations or even, more rarely, a large and stable corporate presence.

56. Employment and customer base characteristics typically have a close correlation to utility operating revenues. If a small number of customers provide a large amount of revenues, the utility could be exposed to revenue volatility. As such, when the top 10 retail customers contribute 25% or more of total operating revenues, or the top one retail customer is 10% or more of total operating revenues, the assessment is worsened by one point.

57. For irrigation districts and comparable raw-water providers for which the end-use customer is agriculture or agriculture-related--such as ranches or dairy--MHHEBI and relative economic performance are less meaningful. In our observations, these economies generally have inherent limitations given the dominance of farming to the local economy, and non-municipal consumptive use patterns. Therefore, for these issuers, the default initial economic fundamentals assessment is a '3', although negative, but not positive, qualitative factors that adjust the initial assessment could still be applicable.

## B. Assessing Industry Risk

58. Consistent with "General Criteria: Methodology: Industry Risk (/en\_US/web/guest/article/-/view/sourceld/8304862)", published Nov. 19, 2013, we consider industry risk for utilities covered under these criteria as very low, the most favorable assessment possible on a '1' to '6' scale, with '1' being the best.

59. The following are key characteristics of the utility industry as relevant to the industry risk factor:

Cyclical risk assessment of '2' based on S&P Global Ratings' review of historic economic cycles and peak-to-trough changes in revenues and margins for regulated utilities. Economic cycles can affect nonrecurring revenues such as impact fees as well as drive priorities in the capital improvement plan but weather, not the economy, is generally the largest single determinant to a favorable or unfavorable variance to budget in any single fiscal year;

Very low competitive risk of '1', owing to legal and practical barriers to entry in nearly all jurisdictions, and that as an essential service there is no substitution risk;

Nearly all municipally-owned water, sewer, and drainage utilities are natural--and in most cases statutory-- monopolies with complete autonomy over their own rates by the local decision-making body. There are some states in which the utility must seek approval of rate adjustments by some state regulatory body, such as a public service commission. There are also some states in which large rate increases, before they can take effect, may be subject to some kind of popularly-initiated opportunity to be overturned by the electorate, such as in California via Proposition 218.

The industry risk assessment of very low risk applies to all utilities rated by these criteria regardless of the state in which they operate. While likely uncommon, limitations on rate autonomy would likely be measured elsewhere, such as in financial performance if the timeliness and magnitude of requested versus granted rate case leads to deterioration in credit quality.

## C. Assessing Market Position

60. The relative poverty rate is important because service areas that have not just lower MHHEBI levels, but disproportionately higher percentages of the population located in the lowest quintiles of the MHHEBI distribution curve, may exhibit greater sensitivity toward perceived affordability even if adjusted for low inflation or a favorable cost of living. Therefore, it is possible that the impact of utility bills and related rate increases is even more profound in those communities compared to communities with stronger economic fundamentals.

61. Actual consumption patterns vary from region to region based mainly on climate, precipitation, use of demand side management and water conservation measures, and economic factors. The market position assessment is based on the actual average monthly residential water and sewer bill. The information generally will be based on the most recent audited fiscal year, unless we believe that historical rates are not indicative of future rates. In those cases we will base the assessment on projected rates. For purposes of this assessment, we calculate the monthly bill as follows:

The total annual residential operating revenues plus any related fees, surcharges and taxes divided by the number of active residential metered accounts. The result is divided by 12 to arrive at the monthly bill.

62. There could be practical limitations to applying paragraph 61 such as transparent and timely financial reporting and disclosure details, the sophistication of the utility's customer information system database, and the possibility that the utility may deem this information as competitively sensitive and nonpublic. If the actual average monthly residential bill is not readily available, the market position assessment assumes a residential customer that in one month has used 6,000 gallons of both treated water and sanitary sewer service, conceptually similarly to the Environmental Protection Agency (EPA)'s residential indicator (see Appendix III, paragraph 133). In cases where the utility's chosen unit of billing is measured in hundred cubic feet (ccf), the closest rounded equivalent of 8 ccf is used (see Appendix III, paragraph 135). Any minimum or base charge or 'lifeline rate' is also included in the calculation, as are any related fees, surcharges, or taxes regardless of who is levying them since the burden ultimately still lies with the customer to pay it.

63. To gauge the annual utility burden to the household, the assumed monthly bill, as calculated above in paragraph 61 or 62, is multiplied by 12 to estimate the total annual cost to the household for utility service.

64. Relative rate affordability is calculated by dividing as follows: in the numerator is the annual household utility burden as calculated above from paragraph 63, and in the denominator the actual median household effective buying income of the service area of the utility (or the closest approximation, as established in paragraph 49), then multiplied by 100. This produces the cost to the household of its utility expense as a percentage of total disposable income.

65. For irrigation districts, the customer base is primarily farms in agricultural production rather than residential customers that rely on the system for essential public health needs, and in this context, poverty rates do not apply. However, the pricing power of many irrigation districts is constrained by the more elastic demand for water from these businesses, and in many cases the availability of alternative supply sources, such as groundwater produced from privately-owned wells. Therefore, for these issuers, the default initial market position assessment is a '3', although negative, but not positive, qualitative factors that adjust the initial assessment could still be applicable should they, in our view, affect the system's revenue-raising flexibility.

66. For drainage utilities rated by these criteria, rate structures tend to be exclusively either one of two types:

A flat monthly charge tied to a residential property as the base unit of billing, with larger properties or parcels assessed as if they were equivalent to multiple residential properties. For example, a strip mall may be treated for billing purposes as if it were five equivalent residential units. For those utilities whose charges are based on a flat fee, we assume the fee assessed to a single-family residential property; or

A fee based on the actual impervious surface area of the property. (S&P Global Ratings' assumption for the monthly bill is based on a residential property. For those utilities whose charges are based on impervious surface area rather than a flat fee, we assume 2,000 square feet of impervious surface area.)

67. Tables 8, 9, and 10 summarize how the criteria evaluate the market position of the utility, driven by the rate affordability and relative poverty rate. Table 8 applies to water-, or drainage-only utilities. Table 9 applies to sewer-only utilities. Table 10 applies to water and sewer/drainage utilities.

### Table 8

#### Market Position Assessment, Water- Or Drainage-Only Utilities Annual Utility Bill As A Percent Of Median Household Effective Buying Income

Percent of county's population living in poverty	Market Position Assessment		
	Less than 1%	1% to 2%	More than 2%
Less than 10%	1	2	3
10% to 20%	2	3	4
20% to 30%	3	4	5
More than 30%	4	5	6

For utilities with an anchor assessment of 5 or 6 that have recently completed or achieved substantial completion of a historically capital-intensive period, the anchor assessment may improve by one point (see paragraph 68).

### Table 9

**Market Position Assessment Sewer-Only Utilities  
Annual Utility Bill As A Percent Of Median Household Effective Buying Income**

Percent of county's population living in poverty	Market Position Assessment		
	Less than 1.25%	1.25% to 2.50%	More than 2.50%
Less than 10%	1	2	3
10% to 20%	2	3	4
20% to 30%	3	4	5
More than 30%	4	5	6

For utilities with an anchor assessment of 5 or 6 that have recently completed or achieved substantial completion of a historically capital-intensive period, the anchor assessment may improve by one point (see paragraph 68).

### Table 10

**Market Position Assessment For Water And Sewer/Drainage Utilities  
Annual Utility Bill As A Percent Of Median Household Effective Buying Income**

Percent of county's population living in poverty	Market Position Assessment		
	Less than 2.25%	2.25% to 4.50%	More than 4.50%
Less than 10%	1	2	3
10% to 20%	2	3	4
20% to 30%	3	4	5
More than 30%	4	5	6

For utilities with an anchor assessment of 5 or 6 that have recently completed or achieved substantial completion of a historically capital-intensive period, the anchor assessment may improve by one point (see paragraph 68).

68. Rate affordability without context may under- or over-represent credit strengths. For example, a utility with rates much higher than comparable peers that has already made the capital commitments to address a regulatory mandate driven by past noncompliance with environmental permits would be viewed more favorably than a utility with similarly high rates but that is facing a huge unfunded regulatory mandate. For utilities that have relatively high rates--as defined by an initial assessment of a '5' or '6'--but have recently completed or substantially completed an extraordinarily capital-intensive period in its history, the initial market position assessment generally will be improved by one point.

69. The criteria do not establish a preference toward a certain water and sewer utility rate structure. For example, management may use a flat or fixed rate, volume-based rates, or some combination thereof. Similarly, the criteria do not penalize a rate structure that encourages conservation--essentially incentives for lower sales through price signals.

## D. Assessing Operational Risk Management

70. The Operational Management Assessment (OMA) consists of a review of the following sub-factors, assessed from (1) strong; (2) good; (3) standard; to (4) vulnerable and weighted as shown below to calculate the OMA:

- Asset adequacy and identification of operational risks (40%);
- Organizational effectiveness, management expertise, and drought management plan (20%); and
- Rate setting practices (40%).

71. The OMA refers to risks associated with the operations of the utility; financial policy is covered by the Financial Management Assessment.

72. The results from the observed evaluations assessed in paragraph are converted to a '1' to '6' scale as shown in table 11.

### Table 11

**Operational Management Assessment (OMA) Conversion To Six-Point Scale**

Observed Evaluation	OMA	Characterization
1.0 to 1.2	1	Strong
1.2 to 1.8	2	Good
1.8 to 2.5	3	Good
2.5 to 3.1	4	Standard
3.1 to 3.6	5	Standard
3.6 to 4.0	6	Vulnerable

73. The assessment of all sub-factors is based on a preponderance of evidence. Specifically, in our judgment are most, but not necessarily all, of the described characteristics applicable? A utility receives a neutral assessment of 'standard' for any sub-factors for which there is insufficient evidence to assign either a positive or negative assessment. However, some sub-factors may receive a negative assessment if a utility has a record of failing to disclose key relevant information.

74. There is no favored governance structure for the utility within the methodology. Some municipal utilities are a department or component unit of the local political subdivision, governed by the same locally elected officials as the LRG. Other utilities are governed by an independent or quasi-independent utility board. The governance structure will be credit-neutral so long as there seems to be the ability for management to operate the utility as an ongoing, viable enterprise, largely independent from politics, with professionals who are capably engaged in risk oversight and can balance interests appropriately.

75. Asset adequacy and identification of operational risks examines how successfully management is faring by owning and operating a public water, sewer, or drainage enterprise (see table 12). Utilities are subject to the federal Safe Drinking Water Act of 1974 ("SDWA", 42 U.S.C. § 300f, as amended) and Clean Water Act of 1972 ("CWA", 33 U.S.C. § 1251, as amended), or even an municipal separate storm sewer system (MS4) drainage utility permit. However, the utility may be in various degrees of compliance or readiness. Examples include a long-term water supply that is appropriate in both quantity and quality to serve the existing and likely future customer base or treatment capacity that is sufficient to meet average and peak day demand. Recognition is given for any water reuse system in place, whether indirect or direct. Also assessed in this sub-factor is the materiality of nonrevenue water\* (see Appendix II, paragraph 136).

### Table 12

**Asset Adequacy And Identification Of Operational Risks Assessment**

Strong	<p>The utility has in place or is in the process of securing a raw-water supply that is reasonably projected to be sufficient through the life of the bonds. The integrity of the distribution and/or collection system, meters, and raw-water delivery assets is strong, or efforts are ongoing to rehabilitate them. Treatment capacity to meet average and peak day demand is sufficient in virtually every circumstance. Climate risk assessment is incorporated into planning and operations as a potential risk to the system. Water audits based on industry-accepted performance standards are incorporated into the annual budget such that nonrevenue water physical and economic losses are not material. A thorough vulnerability assessment across all critical assets has been performed to industry standards and been completed and incorporated into operations as much as reasonably possible.</p>
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Good	<p>The existing raw-water supply is sufficient for the existing customer base. The utility may need to enhance the supply sometime beyond the next 20 years, depending on growth and climatology/hydrology, but management has identified this risk into its long-term plans. Inflow, infiltration, and/or raw-water delivery are generally not problematic, or efforts are ongoing to rehabilitate them. Treatment capacity to meet average and peak day demand or flow is sufficient with only rare exceptions. Climate risk assessment is addressed in some key areas, such as supply planning or flood protection. Water audits based on industry-accepted performance standards are done on a regular, if not annual, basis such that nonrevenue water physical and economic losses are small. A vulnerability assessment has been completed to industry standards in most key areas and incorporated where management most deems relevant.</p> <p>The existing raw-water supply will likely need to be enhanced within the next 10 to 20 years, but options for addressing the need have not yet been identified or, if so, have not been fully priced. Inflow, infiltration, and/or raw-water delivery are pronounced but not yet material or are problematic but will be addressed within the current capital improvement plan. Treatment capacity to meet average day demand is sufficient, but peak day demand or wet weather flows create constraints until ongoing projects are completed. Climate risks are identified, but other priorities preclude any immediate actions. Water audits based on industry-accepted performance standards are done only when management deems them necessary, likely evidenced by nonrevenue water economic and physical losses that are material. A vulnerability assessment has been done, perhaps only partially or perhaps not in accordance with industry standards, and implementation has been either partial or not at all.</p>
Standard	<p>The existing raw-water supply and/or treatment capacity cannot currently and consistently meet peak day demand or flows. The raw-water supply is subject to a high degree of regulation and/or litigation, which can quickly introduce long-term uncertainty. Inflow, infiltration, and/or raw-water delivery are problematic and material, or the utility is highly dependent on or susceptible to another water purveyor. Climate risk is not explicitly addressed either in plans or operations. Water audits based on industry-accepted performance standards are not done and nonrevenue water economic and physical losses are problematic. No vulnerability assessment has been done.</p>
Vulnerable	<p>The existing raw-water supply and/or treatment capacity cannot currently and consistently meet peak day demand or flows. The raw-water supply is subject to a high degree of regulation and/or litigation, which can quickly introduce long-term uncertainty. Inflow, infiltration, and/or raw-water delivery are problematic and material, or the utility is highly dependent on or susceptible to another water purveyor. Climate risk is not explicitly addressed either in plans or operations. Water audits based on industry-accepted performance standards are not done and nonrevenue water economic and physical losses are problematic. No vulnerability assessment has been done.</p>

76. To evaluate organizational effectiveness, management expertise, and drought management planning, the assessment looks to the key elected or appointed decision-makers and top staff (see table 13). This sub-factor assesses how well utility leaders are able to convey the needs of the utility to external and internal stakeholders in a manner that is likely to allow the utility to continue with stability. While there may be some practical limitations due to civil service regulations, mentoring and succession planning among key staff can ensure continuity. Also evaluated is whether or not the utility has a resource management plan (voluntary or mandatory) that outlines steps it would implement in a drought situation, even if the state has its own rules or guidelines. This would be deemed separate from any existing water conservation-oriented rate schedule the utility may already have in place year-round.

## Table 13

### Organizational Effectiveness, Management Expertise, And Drought Management Plan Assessment

Strong	<p>Management communicates the utility's long-term needs and strategic goals, such as funding requirements, approval of crucial projects, and resource planning, to internal and external key officials on a regular, credible, and transparent basis, putting the utility in the best reasonable position for operational continuity. Examples might include ongoing public education campaigns, town halls, dedicated web sites, and social media. Management has considerable knowledge, experience, or a track record of success in operating all of the utility's key business units in an integrated fashion. Internal mentoring and succession plans are common. Management is able to put its strategic planning into reality; therefore, the utility is successful relative to its peers. The utility has its own drought management plan that details how much conservation it would seek depending on a drought's severity while still ensuring revenue requirements are met.</p>
Good	<p>Public outreach and transparency is a common part of the organizational culture, even if not comprehensive across all key business units. Management has reasonable expertise and experience and has established pathways for succession and continuity where it can; therefore, operational surprises are rare. Management has a good track record of successfully converting strategic decisions into constructive action. The utility has its own drought management plan that details how much conservation it would seek depending on a drought's severity although how it might meet its revenue requirements in such a scenario is uncertain.</p>

Standard	<p>Management depth or breadth is limited in some areas, such that the loss of key personnel would create, only temporarily, a learning curve for the new staff but not likely to measurably affect the utility for long. Public outreach is done generally only when necessary, often associated with a large or controversial project. Operational and financial strategies are generally aligned. The utility has no drought management plan but does operate in a state with a clearly detailed plan that already exists.</p> <p>The utility relies on one or only a few key employees or perhaps relies on external consultants. Negative variances are not uncommon. The utility has a history of regulatory or legal infractions beyond an isolated episode or outside industry norms, which introduced an as-yet-unaddressed challenge. Operational and financial strategies may have had one or more major misalignment, limiting the ability to move forward on something important. Neither the utility nor the state in which it operates has an existing drought management plan, making resource sustainability as well as meeting financial obligations uncertain.</p>
Vulnerable	

77. Most, but not all, utilities are monopolies with autonomy over their own rates. If the utility is rate-regulated, the history of timeliness on rate cases and the magnitude of what was granted versus requested will be examined. The evaluation of rate-setting practices looks beyond magnitude or frequency of rate adjustments. Instead, we evaluate whether management has acted, in our opinion, in a manner generally supportive of credit quality when tough decisions have needed to be made. Such credibility can also aid community support when such increases are needed and help protect future rate-making decisions from short-term political manipulation and decrease the potential for rate shock (see table 14).

## Table 14

### Rate-Setting Practices Assessment

Strong	<p>When rate increases have been needed, the decision-making body has been supportive and timely, even to the extent that multiyear, preapproved rate increases are common, if not standard. Financial decisions are prudent, in our view, rather than simply politically expedient and that could possibly be to the detriment of the utility's near-term financial health. Periodic rate studies (internal or external) are common.</p>
Good	<p>Rate considerations are done on a year-to-year planning horizon rather than over a long-term time frame, but generally are apolitically approved if and when necessary.</p>

Standard	<p>The rate covenant and/or additional bonds test are the de facto guide as to when rate adjustments are necessary, but that is still enough for the political decision makers to agree to a rate increase.</p>
Vulnerable	<p>Rate increases are often in reaction to a weakened financial position, including a technical default or some other legal covenant violation, even if the recent debt service payments were made on time and in full. There is clear evidence of recent political decisions to defer or downsize needed rate increases.</p>

## V. FINANCIAL RISK PROFILE ASSESSMENT

78. The factors that are evaluated for the Financial Risk Profile assessment are summarized in table 15.

### Table 15

#### Description Of Financial Risk Profile Factors

All-In Coverage (40% of Financial Risk Profile assessment)

Analysis includes examination of historical and preferably GAAP-based results, the current financial condition of the utility, and projected scenarios for the next one to three fiscal years. The focus is on total financial capacity versus total revenue requirements.

Liquidity and Reserves (40%)

This factor incorporates all lawfully available cash reserves and external working capital or liquidity sources, including bank lines in force within the life of any short-term obligations.

Debt and Liabilities (10%)

This factor incorporates mainly quantitative, but also qualitative, analyses about not just the absolute measure of the utility's indebtedness but also the capacity to incur and support additional debt, especially in relation to maintaining any minimum financial metrics as covenanted to bondholders. Measurable liabilities such as pension and postemployment benefits can lead to adjustments to this initial factor.

#### Financial Management Assessment (10%)

Analysis includes an evaluation of ongoing management practices and policies that can be supportive of financial performance and continuity, as well as internal controls and reporting. Examples include establishing a minimum level of acceptable working capital, predictability of cash transfers from the utility system, and creating and perpetually updating a long-term financial forecast.

79. The descriptors for the overall financial risk profile are based on the scale in table 16.

## Table 16

### Descriptors For Financial Risk Profile Factors

Description	Corresponding Assessment
Extremely Strong	1
Very Strong	2
Strong	3
Adequate	4
Vulnerable	5
Highly Vulnerable	6

80. These criteria use assessments derived from historical and projected financial performance. In most cases, the ratio calculations are based on the three most recent independently audited financial statements. Our analytical assessment of pro forma or projected data will be used for those ratios affected by additional debt issuance or funded from cash reserves, or when we believe that historical financial performance is not representative of expected future performance.

81. For all-in coverage or liquidity and reserves assessments that use multiple years of historical and projected data, each single year receives a preliminary assessment. The preliminary assessments from each applicable year are averaged together to then derive one single assessment for that factor.

## Factors That Affect The Financial Risk Profile

### Significant Additional Upcoming Debt

82. If a utility has potentially sizable, but as yet unspecified, capital plans that could result in material additional debt and/or the use of reserves—including when there is or will be high levels of nondiscretionary capital funding, and we determine that such plans have a reasonable likelihood of occurrence but are not specific enough yet to determine pro forma or projected

financial metrics--we generally will worsen the entire financial profile by one point. Compelling factors that would likely preserve credit quality include preapproved rate adjustments multiple years into the future, or an existing debt service schedule that allows for the new debt to be layered on in a manner that we believe is unlikely to worsen financial performance.

## A. Assessing All-In Coverage

83. While there are a variety of financial metrics that measure the ratio of revenues to revenue requirements, including financing obligations, we believe that all-in coverage best gauges the utility's true total financial capacity.

84. All-in coverage is our internally adjusted debt service coverage metric that we believe best tracks the use of every dollar of utility operating revenues, regardless of lien position, accounting treatment or ultimate purpose. It also incorporates recognition of fixed charges or costs, which we define as certain long-term recurring items that are debt-like in nature, even if legally treated as an operating expense. An example of a fixed cost would be the take-or-pay minimum payment to the utility's wholesale provider of treated water. Other examples of fixed costs would include rental expenses for a sale-leaseback arrangement, GO debt which we consider self-supporting debt\*, or other situations that reflect support of off-balance sheet debt. Vertically integrated utilities may not have any fixed costs. We would not include any tax-supported debt for which there is a dedicated tax revenue, nor would we include the tax revenue itself that is meant specifically to pay the tax-supported debt. All-in coverage also excludes adjustments to fixed costs for small or nonmaterial financing obligations such as a capital equipment lease for a vehicle or copy machine.

85. These criteria also look to total revenues less expenses (but excluding noncash items), even if the pledge to bondholders is gross operating revenues. This is because we assume that the utility must be a viable, ongoing, cash flow-positive enterprise. S&P Global Ratings' defines all-in coverage as:

$$\frac{[(\text{Revenues} - \text{Expenses} - \text{Total Net Transfers Out}) + \text{Fixed Costs}]}{(\text{All Revenue Bond Debt Service} + \text{Fixed Costs} + \text{Self Supporting Debt Service})}$$

Total net transfers out are defined as transfers from the utility fund minus transfers into the utility fund, including but not limited to:

Transfers that are viewed as general fund resources, such as a payment in lieu of taxes, indirect cost reimbursements, and open-ended transfers;

Transfers that reimburse the general fund for pension and other postemployment benefit (OPEB) payments the general fund made on behalf of utility employees and retirees;

Transfers that fund pay-as-you-go capital expenditures in another governmental fund; and

Transfers to support any other governmental operations regardless of the destination fund.

We deem net transfers out that legally or by practice support debt service of another governmental fund as part of the denominator's self-supporting debt. Cash that does not truly leave the utility, such as a set-aside into a rate stabilization reserve or pay-as-you-go fund are not included as transfers out. Similarly, the application of a rate stabilization fund (RSF) or other cash on hand as a transfer in would not be included in the all-in coverage calculation, although we would note the presence and use of the RSF as a qualitative adjustment to the all-in coverage assessment as described in paragraph 89.

86. The accounting treatments and even provisions in the bond documents vary; for example transfers are usually a use of surplus net revenues, but sometimes may be treated as an operating expense. The methodology would treat recurring transfers as an operating expense to measure the general government's reliance on the transfer payment. An annual transfer payment that is consistent in nature, such as based on a percentage of operating revenues or a fixed dollar amount, is more predictable than one that is not defined and therefore could be as big as the general government decides it should be. For example, an all-in coverage calculation of less than 1x might suggest a net cash withdrawal from the utility fund. Table 17 summarizes the all-in coverage evaluation.

87. In cases where an unconditional take-or-pay minimum, capacity payment or demand charge does not exist or is not explicit, these criteria will impute what we deem to be a logical and reasonable equivalent for the purpose of calculating all-in coverage. The methodology uses the utility's relative contribution to its wholesaler provider's total operating revenues as the basis for the fixed-cost imputation. For example, if the utility being rated accounts for 15% of its wholesale provider's total annual operating revenues, and the wholesaler's total annual debt service payments are \$10 million, then \$1.5 million will be imputed as fixed costs for all-in coverage calculation purposes.

## Table 17

Assessment Of All-In Coverage	
Initial Assessment	All-In Coverage

1	1.60x or above
2	1.40x to 1.60x
3	1.20x to 1.40x
4	1.10x to 1.20x
5	1.00x to 1.10x
6	Below 1.00x

**Qualitative Factors Positively Affecting The Initial Assessment Include:**

A significant portion of operating revenues have a high degree of certainty, such as from wholesale sales with take-or-pay minimums, even if those wholesale sales serve to depress total debt service coverage due to cost-of-service rates (see paragraph 88).

The planned, but infrequent use of a rate-stabilization fund indicates the absence of a weakness, all other things being equal, as opposed to the presence of a credit-positive characteristic. Still, it could explain poor coverage that has otherwise been consistently better (see paragraph 89).

**Qualitative Factors Negatively Affecting The Initial Assessment Include:**

A debt service schedule that makes it extremely likely the utility will need significant growth or large rate increases to meet future requirements, such as a deferral of principal repayment far into the future.

Debt service coverage that is reliant on new customer fees or nonrecurring nonoperating cash inflows just to achieve a ratio of at least 1x (see paragraph 90).

Exposure to interest-rate sensitivity via variable-rate debt that is enough to lead to a worse initial assessment (see paragraph 91).

Each applicable qualitative factor changes the initial assessment by one point, but the net total of all adjustments would never improve or worsen the initial assessment by more than two points.

88. Some utilities provide mostly retail service directly to the consumptive-use customer, but may also generate operating revenues via sales for resale, or wholesale sales. Wholesale sales are often at a cost-recovery rate with much smaller net operating margins, serving to depress total all-in coverage. For utilities with between 20% and 49% of operating revenues coming from firm (contractual) wholesale sales, a one-point improvement in the all-in coverage assessment would be applied to put the depressed all-in coverage into better context.

89. The planned use of rate stabilization funds (RSF) or equivalent designated reserves from time to time could, analytically, temper measurable declines from a trend of stronger financial performance. Yet recurring reliance on an RSF in lieu of other measures such as rate adjustments to address imbalances among revenues, expenses, and debt service can be evidence of a credit weakness. Utilities that perform down to the level of permissive legal covenants, such as the allowance of the use of certain cash balances toward satisfying a rate covenant or additional bonds test and potentially creating a weak alignment between revenues and expenses, would see the initial assessment lowered by one point. This is especially true when actual performance indicates insufficient pledged revenues without the use of cash.

90. It is not uncommon for utilities to charge a one-time fee as new structures hook up to the system (exclusive of any deposit that may be required), often called a connection or impact fee. The all-in coverage ratio will be stressed by hypothetically removing these nonrecurring items from total revenues, to gauge a utility's relative dependence upon these fees just to achieve sufficient financial performance. Such fees are strongest during periods of high growth in the number of metered accounts. While perhaps they are pledged revenues, impact fees can overstate revenues available for debt service. Conversely, a slowdown or cessation of such growth--especially if not expected by management--could create a precipitous drop in the utility's financial performance and expose vulnerability in the financial risk profile. Achieving a ratio of less than 1x solely from recurring revenues on a consistent basis indicates structural budgetary imbalance and would worsen the assessment by one point.

91. These criteria do not establish a guideline as to an allocation of variable-rate debt as a percentage of total long-term debt. However, if all-in coverage by our projections would change between one of the initial assessments to another in table 17 as a result of a change in interest rates, the all-in coverage assessment will reflect the worse of the two possible outcomes.

## B. Assessing Liquidity And Reserves

92. The liquidity and reserves analysis measure is days' cash\* available to the utility as well as the available reserves. As noted in paragraph 50 for the enterprise risk profile assessment, size is also a factor in the utility's financial risk profile. A utility may have available reserves, for example, that are equivalent to a high days' cash number yet these reserves may be nominally very small. Both days' cash and available reserves are evaluated based on table 18. The resultant preliminary evaluations are applied to table 19 to produce the initial liquidity and reserves assessment.

93. For example, a utility with \$1.2 million of cash on hand, which for this example equated to 74 days of operating expenses, would receive a '3' for the days' cash ratio, and a '4' for the available reserve levels, based on table 18. When each preliminary evaluation is applied to the matrix in table 19, the initial liquidity and reserves assessment would be at the intersection of (3, 4), or an assessment result of '4.' Qualitative factors, if any, would then be applied to improve or worsen the '4' to arrive at the final liquidity and reserves assessment.

94. The liquidity and reserves assessment is intended to measure how the utility's internal sources, such as cash reserves and cash flow generation, and external sources--namely undrawn capacity under committed lines of credit--provide it the working capital to fund immediate needs on an ongoing basis. The undrawn, available portion of committed bank lines maturing beyond the next 12 months is included in the available reserves when applying tables 18 and 19; draws are included with both long-term debt and, if due within the next 12 months, debt service.

95. The liquidity analysis looks not only to cash and equivalents that are unrestricted or unassigned (i.e., unencumbered by legally enforceable agreements and not earmarked for specific purposes) and immediately available, but also gives credit to reserves that are designated, but ultimately available, for any lawful purpose. Examples include renewal and replacement funds, RSF, or other similar set-aside (but not truly restricted) cash. The criteria make no distinction between reserves that can only be appropriated by action of the highest decision-making body, or reserves that can be appropriated by simple administrative action, so long as the reserves are ultimately lawfully available for any purpose regardless of the reporting entity's label on it as determined by Governmental Accounting Standards Board (GASB) statement No. 54. Issuers that do not use a generally accepted accounting principles (GAAP) basis of presentation, or for which the financial statements do not provide a transparent and explicit breakdown of cash, must provide details of their cash position.

96. Cash that we deem to be restricted--for example a debt service payment-to-be-made, customer deposits, a fiduciary responsibility like a pension or decommissioning fund, unspent bond proceeds, or is related to a posting of collateral, among other restrictions--will never be included in the analysis of liquidity. Any debt service reserve fund will also be excluded.

97. Intragovernmental borrowing sometimes occurs between the utility and its associated general government, or sometimes even between one division of the utility and another division. Cash in other funds in most cases would not be used to calculate the liquidity ratios, since those other funds likely have their own operating requirements. If a utility pools its cash with other major operating funds or governmental units, only cash that is truly the utility's will be counted in the calculation.

### Table 18

Liquidity And Reserves Preliminary Evaluation		
Preliminary Assessment	Days' Cash	Available Reserves
1	Greater than 150	More than \$75 million
2	90 to 150	\$20 million to \$75 million
3	60 to 90	\$5 million to \$20 million
4	30 to 60	\$1 million to \$5 million
5	15 to 30	\$500,000 to \$1 million
6	Less than 15	Less than \$500,000

### Table 19

Liquidity And Reserves Assessment						
Days' Cash Ratio, Preliminary Evaluation	Available Reserves, Preliminary Evaluation					
	1	2	3	4	5	6
1	1	1	2	2	3	4
2	1	2	2	3	3	4
3	2	2	3	4	4	5
4	2	3	4	4	5	5
5	3	3	4	5	5	6

6 4 4 5 5 6 6

**Qualitative Factors Positively Affecting The Initial Assessment Include:**

The utility is a distribution- and/or collection-only system with predictable wholesale costs, reducing the level of working capital the utility needs to maintain (see paragraph 98).

**Qualitative Factors Negatively Affecting The Initial Assessment Include:**

Liquidity is skewed by seasonality or is otherwise not indicative of actual average daily working capital levels.

The lack of a "pass-through" component to the rate structure if the utility could face the potential of rapid volatility in operating costs, such as raw-water or commodity costs, implying the utility is using its own cash to subsidize changes in expenses.

High refinancing risk over the next two to three years.

Exposure to contingent liabilities can cap this assessment at a '5' or a '6' (see paragraphs 99 to 101 and table 20).

Each applicable qualitative factor changes the initial assessment by one point, but the net total of all adjustments would never improve or worsen the initial assessment by more than two points unless an assessment cap of '5' or '6' is applicable.

98. In cases where the utility is a distribution- and/or collection-only system and off-balance sheet obligations are predictable, the utility's working capital requirements, and therefore liquidity levels, may not need to be as high. In those cases, the liquidity and reserves assessment may be improved by one point.

99. As described in "Contingent Liquidity Risks (/en\_US/web/guest/article/-/view/sourceId/7172396)", published March 5, 2012, contingent liabilities\* correspond to explicit or implicit obligations that a utility may incur under certain circumstances. These risks could affect the utility's financial position if they materialize and if not otherwise offset by factors such as available liquidity, undrawn capacity under committed lines of credit, or market access. Furthermore, contingent liabilities might arise from a series of smaller risks that, by themselves, may not otherwise appear material, but could cascade in magnitude as proximity to the trigger or timing becomes less remote.

100. These criteria measure both contingent liabilities as a percentage of total long-term debt, as well as available reserves\* that may be legally utilized to mitigate some or all of the potential claims on the utility's available reserves.

101. For utilities assessed as a '5' on table 20, the liquidity and reserves assessment is the lower of a one-point worsening of the initial assessment or a cap of '5'. For utilities whose table 20 initial assessment results in a '6', the liquidity and reserves assessment is capped at '6'. Any other result is not impactful to the liquidity and reserves assessment.

**Table 20****Contingent Liabilities Assessment**

Available Reserves/Contingent Liabilities (%)	Contingent Liabilities/Total Long-Term Debt (%)					
	<20	20 to 30	30 to 40	40 to 50	50 to 60	>60
Above 250	--	--	--	--	--	--
200 to 250	--	--	--	--	--	--
150 to 200	--	--	--	--	--	--
100 to 150	--	--	--	--	--	5
50 to 100	--	--	--	--	5	6
Below 50	--	--	--	5	6	6

**C. Assessing Debt And Liabilities**

102. The analysis of a utility's indebtedness is useful for a number of reasons: it can give insight into, for example, whether the utility is in the middle of a large growth- or rehabilitation-driven capital program. It can also be closely tied to the utility's rates and capacity for additional debt, which incorporates the analysis of the capital improvement plan (CIP). For the debt and liabilities assessment we use debt to capitalization\*. In cases where the obligor uses securitization debt that meets S&P Global Ratings' criteria for enterprise securitization, please see Appendix V.

103. The debt and liabilities assessment is summarized in table 21.

**Table 21****Assessment Of Debt And Liabilities**

<b>Initial Assessment</b>	<b>Debt To Capitalization</b>
1	Up to 20%
2	20% to 35%
3	35% to 50%
4	50% to 65%
5	65% to 80%
6	Greater than 80%

#### **Qualitative Factors Positively Affecting The Initial Assessment**

##### **Include:**

A relatively rapid roll-off of the long-term debt, with 65% or more coming due in 10 years or less, assuming there are no bullet maturities within that schedule that would realistically need to be refinanced. Total debt is not reduced by the presence of a debt service reserve fund.

#### **Qualitative Factors Negatively Affecting The Initial Assessment**

##### **Include:**

Concerns about pension funding, which could be evidenced by a funded ratio of less than 80%, an actuarial study that is more than three years old, or a trend of not fully funding the annual required contribution for the pension or postemployment benefits (see paragraph 105).

104. Given the recent emphasis on recognition and funding as on-balance sheet long-term liabilities for both pension (GASB Statements 67 and 68) and other postemployment benefits (OPEB; GASB Statement 45), consideration as to the utility's share of unfunded liabilities as measured on the balance sheet or accompanying notes will be noted. Although these obligations are debt-like in nature, they are not equivalents to debt because the magnitude and timing of the obligation are not completely certain based on factors such as actuarial assumptions, future benefit levels, and earnings of the fiduciary fund or trust. Similarly, the annual required contributions and pay-as-you-go actual cash outlays are commonly treated as part of total personnel-related expenses if not accounted for in fiduciary funds or net transfers; these criteria focus on actual cash expended, not a noncash item such as one related to fair value reporting. Finally, the unfunded liability may lie elsewhere, as many utility employees are civil servants and therefore beneficiaries by way of the associated municipal general government's umbrella plans, rather than a utility-specific plan. If the utility is part of a larger general government rather than a stand-alone entity, we assume the utility's funded ratio is proportionally the same as that of the entire unit of government absent better information.

105. Nevertheless, unfunded or underfunded obligations can be a credit factor. The impact of pension and OPEB obligations depends on the degree to which such costs will likely escalate and whether the government has plans to address them. If the funded ratio for the largest plan in which the utility participates is not at least 80%, and if any of the following also is true, the assessment will be worsened by one point:

The actuarial study is more than three years old, or  
The utility has a trend of not fully funding its pension ARC.

If there is no credible plan to address the obligation(s), the assessment will be worsened by two points.

## **D. Assessing Financial Risk Management**

106. S&P Global Ratings evaluates established and ongoing management practices and policies in the seven areas under control of management that are most likely to affect credit quality. The FMA, like the OMA, ranges from (1) strong; (2) good; (3) standard; or (4) vulnerable. These areas and their weights are:

Revenue and expense assumptions (10% of total FMA),  
Budget monitoring and interim reporting (10%),  
Long-term financial planning (15%),  
Long-term capital planning and asset management (20%),  
Investment and liquidity policies (20%),  
Debt management policies (10%),  
Transparency and accountability (15%).

107. To convert the FMA to a '1' to '6' scale, see table 22.

## **Table 22**

**Financial Management Assessment (FMA) Conversion To Six-Point Scale**

Observed Evaluation	FMA	Characterization
1.0 to 1.2	1	Strong
1.2 to 1.8	2	Good
1.8 to 2.5	3	Good
2.5 to 3.1	4	Standard
3.1 to 3.6	5	Standard
3.6 to 4.0	6	Vulnerable

**Qualitative Factor Negatively Affecting The Initial Assessment**

Weak legal provisions when assigning issue credit ratings (see paragraphs 112 and 113).

108. The ability of a utility's management team to implement measures on a timely basis that will in our opinion proactively shape the utility's financial and operating condition can be crucial to maintaining credit stability. The assessment looks at the environment in which financial decisions affecting the utility occur. Generally, higher-rated entities will, over time, develop "best practices" that not only serve as guiding rules of thumb (or actual codified policies) to ensure continuity, but also ensure logical rhyme-and-reason to decisions that are made.

109. This assessment is based on a preponderance of evidence. Specifically, in our judgment are most, but not necessarily all, of the described characteristics applicable? A utility receives a neutral assessment of 'standard' for any sub-factors for which there is insufficient evidence to assign either a positive or negative assessment. However, some sub-factors may receive a negative assessment if a utility has a record of failing to disclose key relevant information.

110. By focusing on a utility's policies and practices, the FMA is not an evaluation of the competency or aptitude of individual finance professionals; nor is it an evaluation of management's ability to handle unique challenges. Moreover, the nature of the utility's governing body, the effectiveness of its governance practices, and issues of public policy involved in utility-related decisions are beyond the scope of this analysis. The FMA analyzes the environment in which financial decisions are made, including how both the ordinary and extraordinary are identified and addressed as relevant to the utility's ability to fund them and to what degree those risks are transparently reviewed and reported to ensure ongoing continuity. Financial results are assumed to manifest themselves in other visible ways and are addressed elsewhere in these criteria. The purpose of the focus on policies and practices is to evaluate the potential for credit quality to move away from that which is currently indicated by results.

111. Transparency and accountability in reporting, regardless of governance structure, is important in order to ascertain key quantitative data. States that require annual audited financial statements increase the likelihood that financial information will be available, and late audits will be noted. The use of GAAP usually enhances reporting detail and consistency across the sector, making it easier to have a sufficient uniform method of interpretation. States that allow cash accounting tolerate a lesser degree of completeness and consistency, and transparency suffers. As noted in "Alternative Financing: Disclosure Is Critical To Credit Analysis In Public Finance (/en\_US/web/guest/article/-/view/sourceld/8463571)", published Feb. 18, 2014, a review of alternative financings and exposure to contingencies is a key component to understanding the entirety of all the risks and revenue requirements to which the utility is exposed.

112. We believe that creditor security can be weakened without a minimum set of covenants that constrains the utility's behavior. If we view the utility's legal provisions as sufficiently weak, the initial FMA would generally be worsened by one point. We believe that in the municipal utility sector those minimums generally include the below covenants and that they must exist at all times:

A rate covenant to maintain an annual debt service coverage ratio of at least 1.0x or higher from recurring or ongoing revenues. However, where indentures permit the utility to use cash balances to achieve rate covenants, whether the cash is in the form of a rate stabilization account or other available funds, we factor the use of such funds into the ratings evaluation in accordance with paragraph 89;

An additional bonds test that places some limits on the amount of increased leverage that will otherwise impair credit quality of the entity; and

Provisions establishing remedies for when a rate covenant is violated, such as a review of the current rates.

113. In addition, when the liquidity and reserves assessment for existing rated utilities is a '4' or worse, we will worsen the FMA by one point if there is no debt service reserve fund (DSRF) in an amount equivalent to at least half of the average annual debt service requirements. A DSRF typically provides immediately available supplemental liquidity in the event of pledged revenue insufficiency for the payment on the obligations then due.

We would not recognize the utility as having a DSRF at all if it is only conditionally funded, such as a so-called "springing" DSRF. In such cases, this is, in our view, associated with conditions likely to come at a time when the utility is least able to

afford additional demands on its cash flow.

A DSRF may be satisfied with an unconditional surety policy or similar arrangements with another financial counterparty. If we believe that the counterparty would be unable to provide funding for the DSRF in a stress scenario, and the counterparty could not be easily replaced on a timely basis, we would not recognize the utility as having a DSRF.

114. The following tables detail each of the seven financial practice areas examined by the FMA.

115. The revenue and expense assumptions assessment evaluates if the organization's financial assumptions that support the annual budget and any financial forecast are realistic and well-grounded from both long-term and recent trend perspectives.

## Table 23

### Revenue And Expense Assumptions Assessment

Strong	Weather-normalized, formal historical trend analysis is performed and updated annually for both revenue and expenses; regular effort is made to determine whether one or more factors will cause revenues or expenses to deviate from their long-term trends over the next few years.
Good	Assumptions for most key line items in pro forma reports are analyzed and updated regularly, while others may assume simplistic changes over time such as linear or inflationary growth or flat from year to year. Optimistic assumptions exist that, while supportable, add risk;
Standard	assumptions are based on recent performance, but little evidence of questioning or validating assumptions exists.
Vulnerable	Assumptions neglect likely shortfalls, expense pressures, or other pending issues; assumptions lack prudent validation.

116. The evaluation of budget monitoring and interim reporting examines how, if at all, management reconciles year-to-date progress versus the budget adopted at the beginning of the fiscal year. This component evaluates if there are procedures for reviewing the budget based on updated information and actual-to-date performance to ensure fiscal targets and revenue requirements are met, and to what degree the interim reporting is disclosed.

## Table 24

### Budget Monitoring And Interim Reporting Assessment

Strong	At least quarterly budget surveillance is maintained to identify problem areas, which are publicly reported to the utility's governing body.
Good	Semiannual budget reviews exist; management identifies causes for variances between budget and actual performance and reports them to the utility's governing body.

Standard	A deviation from the budget is only reported because it has occurred; material variances between budget and actual performance are identified after they have occurred but not captured in projections for the remainder of the fiscal period.
Vulnerable	No formal process exists for regular review and timely updating of budget during the year.

117. The long-term financial planning assessment focuses on whether or not a financial forecast exists, the length of the planning horizon is, and if it includes a comprehensive identification of all reasonably likely upcoming revenue requirements to determine how the utility will meet those revenue requirements, such as adjusting rates or implementing cost containment measures.

## Table 25

### Long-Term Financial Planning Assessment

Strong	A regularly updated pro forma financial projection exists with a planning horizon of at least three years beyond the current budget year. The forecast includes future impacts to operating and maintenance (O&M) expenses and total financing obligations--both existing and probable--are identified. Impacts to rates or the ability to generate appropriate levels of pledged revenues through cost containment measures, for example, are clear. Planned use of designated cash reserves may occur infrequently, but structural balance is a clear goal.
Good	Pro forma projections exist and are comprehensive as described for a 'strong,' but are typically over a planning horizon of no more than the upcoming budget year plus one to two years into the future.
Standard	Multiyear projections are done but not updated until the last year of the current forecast. Multiyear projections are done, but with focus only on existing revenue requirements and exclude debt financing that is likely to be issued within the planning horizon, or ignore looming infrastructure investment needs such as growth or regulatory mandates.

Vulnerable No long-term financial planning exists; O&M planning is done on a year-to-year (or budget-to-budget) basis. Near-term challenges are met with short-term fixes.

118. The asset management and long-term capital planning sub-factor assesses if a CIP exists, the length of the planning horizon, how and why projects make the list, and a summary of the most likely funding sources for the identified projects.

## Table 26

### Asset Management And Long-Term Planning Assessment

Strong	Strategic and comprehensive planning focusing on the utility's infrastructure requirements, physical and other assets, and ability to continue to meet service levels is combined with likely sources of funding for identified projects; the plan and its priorities are regularly updated and transparently communicated. A characterization of "strong" will include planning not only the current budget year but also for at least five years beyond that. A comprehensive multiyear capital improvement program exists as described for a "strong" assessment but the planning horizon is less than five years.
Good	The current-year capital expenditures are identified in the budget, but any future projects are currently nothing more than a wish list; a multiyear capital plan exists but funding sources are unclear or absent.
Standard	Capital planning is done as needs arise, but no more frequently than on a year-to-year (or budget-to-budget) basis.
Vulnerable	

119. Seasonal cash flow needs, capital requirements, unbudgeted or unanticipated items, and contingency hedges all suggest at least some level of working capital cushion to be maintained. The investments and liquidity policies assessment evaluates if management has identified preferred cash reserves by way of an adopted policy or even a target. Liquidity policies and targets must be grounded in reality; these criteria would not give credit for a liquidity policy if it is set at a level so far above current or recent financial performance that we would not view it as attainable. Further, this sub-factor identifies if there are locally-adopted permitted investments guidelines, and if management reconciles and reports on its cash and investments with any regularity.

## Table 27

### Investment And Liquidity Policies Assessment

Strong	<p>The utility has embedded policies on the maintenance of minimum reserves, regardless of whether such reserves are deemed by management to be unrestricted or designated yet available for any lawful purpose; the policies are reflective of realistically attainable and sustainable levels. Permitted investments guidelines or policies exist, even if the utility's policies reflect or even mimic the state's policies. Reports on the utility's investment portfolio are prepared and reported to the utility's governing body at least quarterly.</p>
Good	<p>Targets for reserve levels exist by practice, are tied to meaningful levels, and are generally met or exceeded. While the utility's de facto cash management guidelines may defer to the state's permitted investment statutes, no local policy exists. The utility's management reports on its investments at least semiannually to its governing body.</p>
Standard	<p>Management has a target for a preferred level of cash reserves but it seems to be unrealistic given financial performance, or is so newly defined that it may be many years before such reserves are accumulated. Informal or nonpublished investment policies exist, are tracked by administrative staff but only irregularly or at the end of the fiscal year.</p>
Vulnerable	<p>Absence of informal reserve policies; even if they exist, they have been suspended or ignored. Weakness in cash flow adequacy has resulted in a greater appetite for risk in its investments. Investments are monitored irregularly and an external auditor deems there to be weakness or risk in cash handling and monitoring duties.</p>

120. The debt management assessment evaluates if the utility has in place robust guidelines on the use of debt, excluding any covenant already established in its legal provisions. Examples include minimum savings thresholds for refunding bonds; stated preferences regarding final maturity, structure, and overall tenor of its debt, and the use of variable-rate debt,

derivative products, floating-rate notes, or direct placement arrangements. If the debt instrument requires a financial institution counterpart, this assessment looks to any policies the utility may have regarding counterparty risk.

## Table 28

### Debt Management Policies Assessment

Strong	<p>Debt policies exist and are thorough and well-defined, even if they reflect or mimic state statutes. These policies are widely communicated and followed. While management has a general tendency toward risk-aversion, robust policies and sophistication among key finance officials make it likely that debt instruments that may require heightened levels of monitoring will make surprises a remote occurrence.</p>
Good	<p>Policies exist but may not address some key areas. In the absence of policies, management defers to state statutes that themselves are strong; some of the utility's financing obligations may be of the type that require a heightened level of monitoring, and management has some reliance on external consultants to help ensure remoteness of risks associated with those particular debt instruments.</p>
Standard	<p>Legal provisions and state laws are the sole guiding influences on management's use of and attitudes toward debt, or any internal guidelines are not meaningful beyond very basic or minimum debt management or are identified as unwritten goals. Absence of basic policies or clear evidence that basic policies are not being followed.</p>
Vulnerable	<p>Nontraditional financing options are utilized but there is no internalized knowledge, or utility management relies very heavily on consultants to monitor or manage the risk.</p>

121. The transparency and accountability sub-factor assesses whether or not management has established for the independent review of important financial and operational data as well as the quality, regularity, and timeliness of its continuing disclosure practices, even for things that the utility may not be legally required to disclose. Even with annual audited financial statements produced according to GAAP, nonpublic disclosure of an alternative financing such as a direct placement arrangement would result in an assessment of 'vulnerable' for this sub-factor.

## Table 29

### Transparency And Accountability Assessment

Strong	<p>Management produces annual independently audited financial statements that comply with GAAP. Alternative financings and exposure to contingent risks are voluntarily disclosed as they are entered into, and overall continuing disclosure is deemed as robust and timely.</p>
Good	<p>Management produces annual independently audited financial statements that comply with GAAP. Alternative financings, exposure to contingent risks, and overall continuing disclosure are done, but generally only on an annual basis.</p>
Standard	<p>Management produces independently audited annual financial statements, but on a cash or other non-GAAP basis of presentation. Audits typically are released more than 180 days after fiscal year-end. The disclosure of alternative financings and contingent risk is not always timely but generally updated on an annual basis.</p>
Vulnerable	<p>Management produces independently audited financial statements, but cash or other non-GAAP basis of presentation is permitted. Audits typically are late or not produced each year. Regardless of frequency and quality of the audited financial statements, alternative financings and contingent risk are not voluntarily disclosed or overall continuing disclosure is poor and not timely.</p>

## VI. APPENDIX I: GLOSSARY OF KEY TERMS

In our criteria, "utility" refers to a municipally-owned utility or other legally authorized political subdivision that provides raw and/or potable water, sanitary sewer, and/or drainage services at the retail level, or with wholesale (sales for resale) service not more than 49% of total operating revenues. The utility is most often, but not always, an enterprise within a larger general government, or an independent utility with its own governing board.

"Sewer", "sanitary sewer", and "wastewater" are used as interchangeable terms.

"Drainage", "stormwater", and "storm sewer" are used as interchangeable terms.

The following terms are based on the definitions provided in the article "Methodology: Definitions And Related Analytic Practices For Covenant And Payment Provisions In U.S. Public Finance Revenue Obligations (/en\_US/web/guest/article/-/view/sourceld/6708927)," published on Nov. 29, 2011:

### Other terms

**Annual required contribution:** The actuarially calculated amount that the utility (or its sponsoring plan provider) must make to completely fund its next associated payment on its pension and/or OPEB liability.

**Available reserves:** Unrestricted cash and equivalents plus any working capital that resides on the utility's balance sheet and is lawfully available for any purpose plus any undrawn capacity under committed lines of credit. Examples include emergency and contingency funds, rate stabilization reserves and other cash that may be designated in purpose but not restricted for debt service, fiduciary purposes, or asset retirement obligations.

**Contingent liabilities:** Variable-rate demand bonds, commercial paper, bullet payments due within five years, bonds with mandatory tender dates in five years or less, direct bank debt with acceleration clauses, the potential for a wholesale provider to reallocate its costs to the utility in an unbudgeted or otherwise unpredictable manner or the obligation is not based on an availability payment structure, swap or related termination payments if the current rating is two notches or less from the termination trigger, and other identifiable contingencies.

**Days' cash:** A measure of cash, investments and equivalents, calculated as follows:

**Numerator:** Available reserves.

**Denominator:** 1/365th of income statement operating expenses. For operating expenses, depreciation, amortization, and other noncash items, such as those that update a fair value on a derivative or pension obligation, are excluded. Transfers are included in operating expenses.

**Debt to capitalization:** A measure of the relative leverage of the utility, as follows:

**Numerator:** The sum total of all short- and long-term debt both on the utility's balance sheet and that which is allocable to the utility, including draws on credit lines, commercial paper notes and other loans, debt or material obligations even if not rated by S&P Global Ratings.

**Denominator:** The total debt as calculated in the numerator plus the utility's net position, which we view as public sector accounting's closest approximation of equity.

**Dependent population:** The total population of the service area that is younger than 15 years old plus the total population of the same area older than 65 years old.

**GAAP:** Generally accepted accounting principles are the common set of accounting principles, standards, and procedures that most governments and utilities in the U.S. follow. GAAP is determined by the Governmental Accounting Standards Board.

**Nonrevenue water:** As defined by the American Water Works Assn., the sum total of leaks, water that is incorrectly billed (whether because of an inaccurate meter or human error), theft, unbilled, and unmetered water such as that which is used for fire protection or line flushing, and unbilled but metered water such as water provided to schools or churches that because of local policy is provided free of charge.

**Off-balance sheet:** An obligation for which the utility is legally responsible, but which may appear only in the rated utility's financial statement notes, or another entity's balance sheet, but not within the long-term debt of the rated utility itself.

**Other postemployment benefits:** Health care, along with dental, vision, disability, long-term care, and life insurance benefits offered to qualified retirees of the utility.

**Self-supporting debt:** Debt is considered self-supported if the debt issued by the affiliated unit of government on behalf of the utility--such as a city issuing GO or special tax to fund projects for the betterment of its water system--is fully paid by practice from the utility's surplus net revenues. Full self-support means surplus net revenues must be at least as large as the principal and interest payments then-due on that tax-secured debt.

**Tax-secured debt:** Debt that is secured by a full faith and credit general obligation pledge (whereby revenues are commonly derived by the levy of a property tax) or special tax--such as a local option sales tax or parcel tax.

## **VII. APPENDIX II: MUNICIPAL RATING CALIBRATION**

122. We calibrate our utility rating criteria based on our analysis of the history of defaults, the impact of changes in regulatory mandates over time, our view of the industry's essentiality, the industry's sensitivity to economic cycles, and the credit strength of this sector compared with that of other sectors.

123. Municipally-owned utilities and utility authorities are the monopolistic provider--naturally and often statutorily--of services to their defined customer base. We generally view them as having a business profile that is low in risk and does not stray from its core business of providing retail waterworks and/or sanitary sewer services. We have seen that the local decision-making body, such as the city council or utility board, is usually the one entity solely responsible for approving and implementing rate adjustments, as only a few states require municipal rates to be approved by a utility regulatory body such as a public service commission. We do not view rate regulation as an impediment to credit quality unless there is clear evidence otherwise as measured by the timeliness and magnitude of requested versus approved rate cases. Municipal utilities, in our view, tend to operate on a cost recovery basis, not a rate-of-return model; any kind of return on investment usually comes in the form of a transfer payment to the general government, not a dividend derived from a profit margin.

124. Defaults and bankruptcy filings among U.S. municipal utilities are extremely rare. Of the 73 nonhousing defaults from 1986 through 2014 among all U.S. public finance issuers, only three (4%) were utilities. While rare, we observed that these defaults were associated with credit-specific characteristics such as weak financial management or a deterioration in the local utility or local government's financial condition, which are the most common indicators of distress.

125. Within U.S. public finance, water and sewer utilities currently comprise about 7% of S&P Global Ratings' total ratings. The federal courts' own data note, "In the more than 60 years since Congress established a federal mechanism for the resolution of municipal debts, there have been fewer than 500 municipal bankruptcy petitions filed." The vast majority of these were real estate-related special districts, sanitation entities, or industrial development authorities. The EPA's statistics show that there are over 50,000 community water systems in the U.S., about 85% of which are publicly owned. Therefore, we believe U.S. municipal utility defaults are infrequent. We do not expect a change in the historically extraordinarily low default rate in this sector. When there is a rapid deterioration, we do expect to continue to see multi-notch downgrades. Please see "The Time Dimension Of Standard & Poor's Credit Ratings (/en\_US/web/guest/article/-/view/sourceld/6196504)", published Sept. 22, 2010, for a description of potential ratings migration.

126. This assumption is further supported by research, cited in "Local Government GO Ratings Methodology And Assumptions (/en\_US/web/guest/article/-/view/sourceld/8188093)", published Sept. 12, 2013, that the broader historical rate of municipal defaults, dating back over a century in works by Hempel, Hillhouse et al, is extremely low.

127. While generally not rate-regulated, the U.S. municipal utility sector is still highly regulated. Water and sewer utilities are required to comply with numerous environmental regulatory standards at the federal and state levels to ensure public health and safety. The high level of regulation is, in our view, indicative of a public perception that utilities have an essential purpose. The regulatory framework, capital-intensive nature of utilities, and monopolistic nature preclude competition. However, this does not guarantee financial or operational performance. Failure to meet regulatory or environmental compliance could have larger implications and possibly impair credit quality. Our ratings are calibrated to seek a balance between our view that the sector is essential and the fact that each utility is not guaranteed to perform at a certain level.

128. The utility sector, in general, tends to have less susceptibility than other sectors to economic cycles due to the relatively price-inelastic nature of water and belief that sewer service is necessary for public health. We have observed that utilities derive nearly the entirety of operating revenues from local user charges and therefore are not beholden to flat growth in property tax bases or even year-over-year declines in local option sales tax revenues or cuts in state-shared programs. Operating revenues flow directly to the utility, not first to the sovereign central government (the U.S. federal government) or state government, and utility managers enjoy significant revenue, expense, and overall budgetary autonomy. Some local service areas have a principal utility customer that is also a key local or regional employer, and the utility's financial health may sometimes rise or fall with the prospects of that employer. However, as measured by the number of metered accounts, most utility systems are disproportionately residential in nature, which often tends to create diversity among operating revenues regardless of where in a cycle the local economy is.

## **VIII. APPENDIX III: AN OVERVIEW OF THE HISTORY OF MUNICIPAL WATER CONSUMPTION AND BILLING IN THE U.S.**

129. Local and regional water conservation programs--both voluntary and mandatory--have for decades succeeded in reducing per capita per day consumptive use, especially in the South and West. Even the federal government, with the Energy Policy Act of 1992, established water-efficient standards for all indoor plumbing fixtures manufactured after 1994 (Section 123, Energy Policy Act of 1992. Public Law 102-486, 102nd Congress. Washington, D.C., Oct. 24, 1992). There is therefore no broadly applicable direct correlation between economic growth and system demands. However, economic fundamentals are still a critical proxy for the current and likely future ability of the customer base to support utility operations and its revenue requirements, as municipal utilities tend to derive nearly all operating revenues from the local rate base.

130. Regardless of the condition of the utility's service area economy, the relative ability of its customer base to pay the utility bill has remained important not only to credit quality but also to the sector itself. Both the EPA and the water utility industry's leading professional organization, the American Water Works Assn. (AWWA) have developed guidelines for measuring affordability.

131. AWWA's "Principles of Water Rates, Fees and Charges: Manual M-1 of Water Supply Practices (6th Edition, 2012)", often cited by the municipal utility industry as the definitive guide for rate studies, notes: "Unfortunately, it is neither economically practical nor often possible to determine the cost responsibility and applicable rates for each individual customer served" (page 75). For utilities, then, AWWA notes that the household is the base unit of measurement for virtually every component of a water utility, such as billing, pumping, water supply and capacity factors. The EPA also uses household, not per capita, income for measuring rate affordability.

132. As first discussed in section 1416(a)(1) of Public Law 93-523, commonly known as the Safe Drinking Water Act of 1974, a state which has primary enforcement powers may grant water systems an exemption from the SDWA "due to compelling factors (which may include economic factors)" The exemptions are not permanent and require the utility to demonstrate that it is unable to make the improvements to meet any such applicable regulatory requirements within a certain timeline and/or the service area is economically disadvantaged.

133. Such exemptions were more fully developed by the federal government with the 1986 and 1996 amendments to the SDWA. Around this same time, the EPA also developed its Interim Economic Guidance for Water Quality Standards Workbook, (EPA 823-B-95-002, March 1995), specifically section 4, and Combined Sewer Overflows--Guidance for Financial Capability Assessment and Schedule Development (EPA 832-B-97-004, February 1997), specifically section 3, to develop affordability criteria for sewer systems, including the residential indicator, which measures the annual utility burden as a percentage of median household income, and a number of additional secondary screening criteria such as the local unemployment rate versus the national rate.

134. Because these affordability measures are generally accepted and used throughout the industry--even as we acknowledge they are only guidelines and targets--they are also used in our criteria. This methodology, however, is based on median household effective buying income since it better captures aftertax, disposable income, or take-home pay. EPA's secondary screening affordability criteria also take into account the household tax burden (Combined Sewer Overflows--Guidance for Financial Capability Assessment and Schedule Development (EPA 832-B-97-004; February 1997, pp. 32-36), so we view the approach as consistent.

135. It is common practice in the U.S. to measure retail billing units in volumes based either on per 1,000 gallons of water or per hundred cubic feet (ccf). Eight ccfs are equal to 5,984 gallons, or about 6,000 gallons. However, it is currently uncommon for a utility to measure billings in increments of per 500 gallons, so these criteria also round up to the closest equivalent.

136. Regardless of the unit of measurement used by the utility for billing purposes, it is common for there to be some variance between how much water the utility pumps into the system and how much actually gets billed. Most often this is due to leaks in the distribution or storage infrastructure, as well as aged or malfunctioning meters that underrepresent the actual volume of water used by that account. By the time the water leaves the treatment plant, the utility has incurred all the costs associated with that water, such as rights for the raw-water source and the treatment, transmission, and distribution expenses. The AWWA (as defined in its M-36 manual) uses an array of water resources as well as operational and performance indicators. Taken into account are both the volume of the losses and their cost impact. AWWA has stated that the most useful performance indicator for financial purposes is the nonrevenue water, with a financial measure characterized as the cost impact of all losses divided by total system operating costs. S&P Global Ratings' criteria uses as evidence nonrevenue water volume and cost, the quality and frequency of water system audits, and anecdotal evidence from management.

137. Utility billings and financial metrics can and often do vary from year to year for a variety of reasons, with the most common examples being:

Weather--temperatures and precipitation patterns can cause a pronounced variance to annual usage and revenue in either a favorable or unfavorable direction, and no widely accepted normalizer exists in the sector, such as heating or cooling degree days in the electric sector;

Debt service schedule--a utility's debt service payments are not always the same from year to year, and can and often do change very significantly into the future; and

Infrastructure investment requirements--capital spending needs, whether for growth, rehabilitation, or regulatory mandates, or to address short-term emergencies.

## **IX. APPENDIX IV: AN OVERVIEW OF IRRIGATION DISTRICTS**

138. Irrigation districts are special districts that share a broad range of common features with other rated water districts; however, certain credit characteristics are materially different and therefore affect our evaluation of credit quality. In contrast to water utilities that primarily provide water for municipal and industrial uses, irrigation districts often have operations that are limited to the production and distribution of water supply for agricultural purposes. Customers of these districts are predominantly farms of varying size for which the cost of water supply is one input into the production of agricultural goods ranging from cotton to almonds. In this context, the service area's income levels and unemployment rates are less meaningful, and we focus more broadly on the fact that the customer base is concentrated in a single industry--agriculture--that can be susceptible to unique risks such as poor weather conditions such as drought and frost, or pests, which may materially affect the ability of customers to pay their bills timely and in full.

139. Operationally, irrigation districts often provide a supplemental source of supply rather than a primary source of supply for customers. District activity typically focuses on the distribution of raw water with no treatment required since water is utilized by customers for agricultural production rather than potable consumption. Many, although not all, farms have private groundwater wells that serve as a source of supply, and the cost of water from this source is typically calculated based on the depth to groundwater in the aquifer, the electricity cost to operate pumps to produce the lift required to extract groundwater, and a nominal allocation of maintenance expense for the pumps. We believe that the availability of an inexpensive alternative water supply materially constrains an irrigation district's revenue raising flexibility since in the short term we anticipate that businesses will select the lowest cost of supply all else equal. Also, while irrigation districts often have some of the oldest established water rights to a given surface water source, others depend on contractual rights or permanent water rights to supply from large scale water projects--such as the U.S. Bureau of Reclamation's Central Valley Project or the California State Water Project--that may be subject to allocation methodologies that prioritize supply for municipal uses over agricultural uses due to public health concerns.

140. We have observed that limitations on sources of supply during drought periods may result in volatile debt service coverage patterns, including periods of insufficiency, that are generally inconsistent with the vast majority of rated water utilities and we view as a material credit weakness for this portion of the sector. Furthermore, while capital needs for irrigation districts are often limited to renewal and replacement of existing infrastructure, we have observed that irrigation districts may have unexpected and sizable capital needs for the acquisition of additional water rights or development of water banking capabilities--either internal capability development or participation in an external water bank--that make it very difficult to predict future capital spending patterns.

## **X. APPENDIX V: METHODOLOGY FOR ASSESSING THE IMPACT OF SECURITIZED DEBT**

141. This appendix addresses the financial adjustments we may make when the issuer's debt portfolios include securitization debt. When the securitization financing meets the elements of our securitization criteria, and there is statutory provision for a mandated recovery of the securitization costs, the securitization effectively makes all consumers responsible for principal and interest payments, and the utility is simply a pass-through entity for servicing the debt. As such, we deconsolidate securitization debt. The ratings evaluation of the securitization debt is distinct from this methodology, and is addressed exclusively by our securitization criteria, "Securitizing Stranded Costs (/en\_US/web/guest/article/-/view/sourceId/1341705)", Jan. 18, 2001,

142. Segregated securitized debt that securitizes a portion of an enterprise's revenue debt reduces an issuer's exposure to direct debt obligations because securitization financings create a revenue pledge that is legally separate from the revenues that fund utility operations and debt service because of a statutory authorization that mandates recovery, even when securitization and nonsecuritization charges are billed together on customers' billing statements. At the same time, even where utility financial statements consolidate securitization debt, a securitization financing does not have a claim on utility revenues that fund utility operations and unsecuritized debt service.

143. When securitization financings contain the structural features described in this paragraph, we deconsolidate segregated securitized debt from the utility's financial statements, meaning we remove securitization debt, revenues, and expenses from the utility's financial statements, and we remove the securitization-related debt service from our debt service calculations. The securitization financing must be pursuant to statutes enacted by a government entity constitutionally authorized to mandate recovery of securitization financing costs that are segregated for specialized recovery. Also, the securitization financing structure needs to exhibit protective features, including: an irrevocable, non-bypassable charge and an absolute transfer and first-priority security interest in transition property; periodic adjustments ("true-up") of the charge to remediate over- or under-collections compared with the debt service obligation to ensure collections match debt service over time and do not diverge significantly in the short run; and reserve accounts to cover any temporary shortfall in collections.

144. Specifically, S&P Global Ratings makes the following financial adjustments for segregated securitized debt:

Adjustment to debt: We subtract the securitized debt from total debt.

Adjustment to revenues: We reduce revenue allocated to securitized debt principal and interest. The adjustment is the sum of securitization interest and principal payments made during the year.

Adjustment to interest expense: We remove the interest expense of the securitized debt from total interest expense.

Adjustment to debt service: We reduce debt service by netting out the securitization debt's principal and interest payments.

145. After deconsolidating segregated securitized debt, we assign our ratings to the utility's unsecuritized debt in accordance with these criteria.

146. Utilities generally act as the servicers for segregated securitized debt and collect securitization debt service requirements for the benefit of securitization debt bondholders. Utilities aggregate these charges on customer bills together with ordinary charges covering operating expenses and unsecuritized debt service. It is our view that customers focus on the total amount of a utility bill, rather than its component parts. We believe that customers do not disaggregate securitization charges from traditional utility charges in assessing whether the utility's traditional charges are favorable or onerous following a securitization. Consequently, while we exclude securitization-related revenue collections, debt, and debt service from the analysis of a utility's financial metrics, we do not make any adjustment for securitization in our qualitative assessments of financial and rate-making flexibility. As such, the analysis of a utility's capacity to adjust rates, a fundamental element of the qualitative analysis of utility credit quality, takes into consideration the entire amount of the customer bill, including securitization-related charges.

## XI. REVISIONS AND UPDATES

This article was originally published on Jan. 19, 2016.

This article followed the publication of "Request For Comment: U.S. Public Finance Waterworks, Sanitary Sewer, And Drainage Utility Systems: Methodology And Assumptions (/en\_US/web/guest/article/-/view/sourceld/8941072)" on Dec. 10, 2014.

These criteria superseded the following articles: "Standard & Poor's Revises Criteria For Rating Water, Sewer, And Drainage Utility Revenue Bonds (/en\_US/web/guest/article/-/view/sourceld/5009060)," published Sept. 15, 2008; "Key Water And Sewer Utility Credit Ratio Ranges (/en\_US/web/guest/article/-/view/sourceld/5009263)," published Sept. 15, 2008; and "Water And Sewer Ratings (/en\_US/web/guest/article/-/view/sourceld/1945375)," published June 25, 2007.

Changes introduced after original publication:

We republished this article on Dec. 16, 2016, with no changes to the rating methodology, adding Appendix V to incorporate the referenced (and now fully superseded) criteria article "Methodology For Assessing The Impact Of Securitized Debt On The Ratings Of U.S. Public Finance Waterworks, Sanitary Sewer, Electric And Gas Enterprise Issuers And Their Unsecuritized Debt (/en\_US/web/guest/article/-/view/sourceld/9081779)," published March 17, 2015. We also updated our contacts and related criteria.

Following our periodic review completed on Jan. 17, 2017, we updated the contact information; deleted paragraphs 1, 25, and 26, which were related to the initial publication of the criteria and no longer relevant; and made other small typographical corrections. Further, we aligned the definitions of various liquidity concepts used in the "Liquidity And Reserves" section. Following our periodic review completed on Jan. 12, 2018, we made no changes.

On March 12, 2019, we republished this criteria article to make nonmaterial changes--we updated the contact information and updated references to related criteria and research.

## XII. RELATED CRITERIA AND RESEARCH

### Related Criteria

Issue Credit Ratings Linked To U.S. Public Finance Obligors' Creditworthiness (/en\_US/web/guest/article/-/view/sourceld/9939600), Jan. 22, 2018

USPF Criteria: Assigning Issue Credit Ratings Of Operating Entities (/en\_US/web/guest/article/-/view/sourceld/9161081), May 20, 2015

General Criteria: Rating Government-Related Entities: Methodology And Assumptions (/en\_US/web/guest/article/-/view/sourceld/9032821), March 25, 2015

Methodology: Master Limited Partnerships And General Partnerships (/en\_US/web/guest/article/-/view/sourceld/8740073), Sept. 22, 2014

General Criteria: Methodology: Industry Risk (/en\_US/web/guest/article/-/view/sourceld/8304862), Nov. 20, 2013

Corporate Methodology (/en\_US/web/guest/article/-/view/sourceld/8314109), Nov. 19, 2013

Country Risk Assessment Methodology And Assumptions (/en\_US/web/guest/article/-/view/sourceld/8313032), Nov. 19, 2013

Key Credit Factors For The Regulated Utilities Industry (/en\_US/web/guest/article/-/view/sourceld/8339577), Nov. 19, 2013

Ratings Above The Sovereign: Corporate And Government Ratings—Methodology And Assumptions (/en\_US/web/guest/article/-/view/sourceld/8343660), Nov. 19, 2013

Timeliness Of Payments: Grace Periods, Guarantees, And Use Of 'D' And 'SD' Ratings (/en\_US/web/guest/article/-/view/sourceld/8097062), Oct. 24, 2013

Local Government GO Ratings Methodology And Assumptions (/en\_US/web/guest/article/-/view/sourceld/8188093), Sept. 12, 2013

Criteria For Assigning 'CCC+', 'CCC', 'CCC-', And 'CC' Ratings (/en\_US/web/guest/article/-/view/sourceld/7554329), Oct. 1, 2012

Contingent Liquidity Risks In U.S. Public Finance Instruments: Methodology And Assumptions (/en\_US/web/guest/article/-/view/sourceld/7172396), March 5, 2012

Methodology: Definitions And Related Analytic Practices For Covenant And Payment Provisions In U.S. Public Finance Revenue Obligations (/en\_US/web/guest/article/-/view/sourceld/6708927), Nov. 29, 2011

Methodology: Rating Approach To Obligations With Multiple Revenue Streams (/en\_US/web/guest/article/-/view/sourceld/6982403), Nov. 29, 2011

Principles Of Credit Ratings (/en\_US/web/guest/article/-/view/sourceld/6485398), Feb. 16, 2011

Stand-Alone Credit Profiles: One Component Of A Rating (/en\_US/web/guest/article/-/view/sourceld/6219375), Oct. 1, 2010

Use Of CreditWatch And Outlooks (/en\_US/web/guest/article/-/view/sourceld/5612636), Sept. 14, 2009

Rating Implications Of Exchange Offers And Similar Restructurings (/en\_US/web/guest/article/-/view/sourceld/5402557), May 12, 2009

Wholesale Utilities (/en\_US/web/guest/article/-/view/sourceld/3180554), May 24, 2005

Securitizing Stranded Costs (/en\_US/web/guest/article/-/view/sourceld/1341705), Jan. 18, 2001

## Related Research

Economic Growth Peaked In 2018: Updated Scores For U.S. Metropolitan Statistical Areas Based On Local Government GO Criteria (/en\_US/web/guest/article/-/view/sourceld/10859537), Feb. 5, 2019

2017 Annual U.S. Public Finance Default Study And Rating Transitions (/en\_US/web/guest/article/-/view/sourceld/10521883), May 8, 2018

Affordability As A Component Of U.S. Water And Sewer Utility Ratings (/en\_US/web/guest/article/-/view/sourceld/9480844), Jan. 19, 2016

Credit FAQ: All-In Coverage, Transfer Payments, And Credit Quality (/en\_US/web/guest/article/-/view/sourceld/9481138), Jan. 19, 2016

Credit FAQ: An Overview Of Standard & Poor's Updated Methodology For Rating U.S. Public Finance Waterworks, Sanitary Sewer, And Drainage Utility Systems (/en\_US/web/guest/article/-/view/sourceld/9472935), Jan. 19, 2016

Credit Rating Model: Water/Sewer Credit Scoring (/en\_US/web/guest/article/-/view/sourceld/9406459), Jan. 19, 2016

Management Is Key For U.S. Water Utilities To Align Operations And Finances (/en\_US/web/guest/article/-/view/sourceld/9481136), Jan. 19, 2016

RFC Process Summary: Rating Methodology And Assumptions For U.S. Municipal Waterworks And Sanitary Sewer Utility Revenue Bonds (/en\_US/web/guest/article/-/view/sourceld/9476774), Jan. 19, 2016

Alternative Financing: Disclosure Is Critical To Credit Analysis In Public Finance (/en\_US/web/guest/article/-/view/sourceld/8463571), Feb. 18, 2014

Credit FAQ: U.S. Public Finance Ratings And Criteria For Ratings Above The Sovereign (/en\_US/web/guest/article/-/view/sourceld/8399206), Dec. 19, 2013

U.S. Public Finance Rating Characteristics (/en\_US/web/guest/article/-/view/sourceld/4677783), March 7, 2008  
(And watch the related CreditMatters TV segment titled "Standard & Poor's Updates Its Criteria For Rating U.S. Municipal Water And Sewer Systems," dated Jan. 19, 2016.)

These criteria represent the specific application of fundamental principles that define credit risk and ratings opinions. Their use is determined by issuer- or issue-specific attributes as well as Standard & Poor's Ratings Services' assessment of the credit and, if applicable, structural risks for a given issuer or issue rating. Methodology and assumptions may change from time to time as a result of market and economic conditions, issuer- or issue-specific factors, or new empirical evidence that would affect our credit judgment.

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