

MOODY'S

INVESTORS SERVICE

RATING METHODOLOGY

18 August 2023

TABLE OF CONTENTS

Scope	1
Rating approach	3
Regulated water utilities scorecard	4
Sector overview	7
Discussion of the scorecard factors	8
Notching factor: Uplift for Structural Considerations	14
Other considerations	16
Using the scorecard to arrive at a scorecard-indicated outcome	19
Assigning issuer-level and instrument-level ratings	21
Key rating assumptions	21
Limitations	21
Moody's related publications	23

Contacts

Stefanie Voelz	+44.20.7772.5555
VP-Sr Credit Officer	
stefanie.voelz@moodys.com	
Jeffrey F. Cassella	+1.212.553.1665
VP-Sr Credit Officer	
jeffrey.cassella@moodys.com	
Ada Li	+852.3758.1606
VP-Sr Credit Officer	
ada.li@moodys.com	
Edna R Marinelarena	+1.212.553.1383
AVP-Analyst	
edna.marinelarena@moodys.com	
Graham W Taylor	+44.20.7772.5206
Senior Vice President	
graham.taylor@moodys.com	

» Contacts continued on last page

CLIENT SERVICES

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

Rating Methodology Regulated Water Utilities

This rating methodology replaces the *Regulated Water Utilities* methodology published in June 2018. We have reordered and have made editorial updates to various sections of the methodology. These updates do not change our methodological approach.

Scope

This methodology applies to regulated utilities globally that are primarily* engaged in the provision of water and/or wastewater (also referred to as sanitation or sewerage) services. Many companies rated using this methodology provide services along the entire value chain of the process, from resources/collection, transport/distribution and end-consumer supply. However, the methodology also applies to pure wholesalers, or single-asset providers (e.g., water desalination plants, water reservoirs, or sewage interceptor tunnels), where revenue is earned under a regulated licensing, concession or similar arrangement. Services may be provided under contracts, concession agreements or direct licensing arrangements with the relevant governmental authority, and the assets may be owned outright by the issuer or operated under the terms of a concession or license.

Companies rated using this methodology are primarily rate-regulated monopolies or, where there is not an outright monopoly, the company's ability to set tariffs is typically restricted through government policy or other regulation.

This methodology applies to privately-owned regulated water utilities as well as to those that are regional or national government-owned and have an operating and financial profile that is distinct from that of the government administration (they may also be distinct legal entities), with revenue linked to a regulated (or in some cases, self-regulating) tariff-setting model.

This methodology does not apply to water and sanitary sewer utilities that operate as departments, boards, or independent authorities of US states or local governments, which are typically financed with tax-exempt revenue bonds and are rated using our methodology that describes our approach for assessing US municipal utility revenue bonds.¹

*The determination of an issuer's primary business is generally based on the preponderance of the issuer's business risks, which are usually proportionate to the issuer's revenues, earnings and cash flows.

A variety of business models exist in the regulated water sector, with varying degrees of private sector involvement. Companies in this sector have also adopted a range of different funding models, including typical corporate funding with limited financial covenants, and more highly structured arrangements with credit enhancing features. Some single-asset financing structures are also rated using this methodology, but privately financed, public infrastructure projects that receive specific availability-based payments sufficient to service their debt from government procurement agencies are rated using our methodologies for PPP and PFI transactions.²

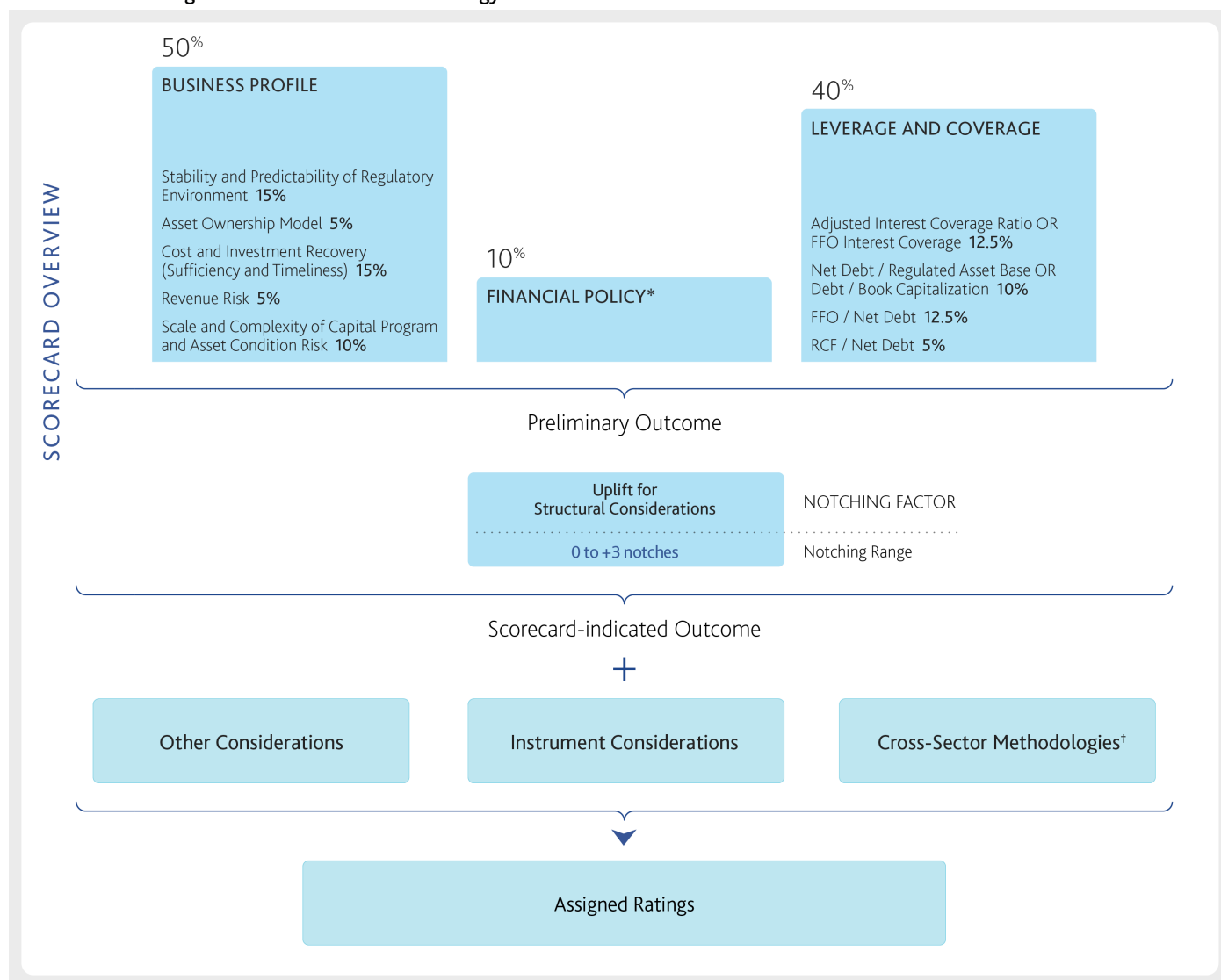
Rating approach

In this rating methodology, we explain our general approach to assessing credit risk of regulated water utilities globally, including the qualitative and quantitative factors that are likely to affect rating outcomes in this sector. We seek to incorporate all material credit considerations in ratings and to take the most forward-looking perspective that visibility into these risks and mitigants permits.

The following schematic illustrates our general framework for the analysis of regulated water utilities, which includes the use of a scorecard.³ The scorecard-indicated outcome is not expected to match the actual rating for each company. For more information, see the "Other considerations" and "Limitations" sections.

Exhibit 1

Illustration of the regulated water utilities methodology framework



* This factor has no sub-factors.

† Some of the methodological considerations described in one or more cross-sector rating methodologies may be relevant to ratings in this sector. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section

Source: Moody's Investors Service

Regulated water utilities scorecard

For general information about how we use the scorecard and for a discussion of scorecard mechanics, please see the “Using the scorecard to arrive at a scorecard-indicated outcome” section. The scorecard does not include or address every factor that a rating committee may consider in assigning ratings in this sector. Please see the “Other considerations” and “Limitations” sections.

Exhibit 2

Regulated water utilities scorecard

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Factor: Business Profile (Factor 1 — 50%)								
Stability and Predictability of Regulatory Environment	15%	Regulation is and expected to remain independent, well-established (>15 years of being predictable and stable) and transparent. Well established, published regulatory principles clearly define risk allocation between companies and customers and are consistently applied, with public or shared financial model.	Regulation is independent, reasonably well-established (>10 years of being predictable and stable) and transparent. Well-established, published regulatory principles clearly define risk allocation between companies and customers and are generally consistently applied. Regulatory or concession framework has in recent years been (and is expected to remain) highly predictable, stable and supportive of utilities.	Regulation is generally independent and developed (e.g., published regulatory principles of risk allocation between companies and customers, based on established precedents in the same jurisdiction), and has above-average predictability and reliability, although regulatory or concession regime may be sometimes less supportive of utilities.	Regulatory framework is well-developed, with evidence of some inconsistency or unpredictability in the framework's application. OR Regulatory framework is relatively new and untested, but regulatory principles are based on established precedents and jurisdiction has history of independent and transparent regulation for other utility services. Regulatory environment or concession framework may sometimes be challenging or politically charged.	Regulatory or concession framework is defined but there is a high degree of inconsistency or unpredictability in its application. Tariff-setting may be subject to negotiation and political interference: there has been a history of difficult or less supportive regulatory decisions; however, there are some precedents in the relevant jurisdiction of predictable regulation for other utility services.	Regulatory or concession framework is unclear, untested or undergoing significant change, with a history of political interference. Utility regulatory body lacks a consistent track record and is or is expected to be unsupportive, uncertain or highly unpredictable.	Regulatory or concession framework is not defined, or is expected to be extremely unsupportive, unpredictable or politically driven.
Asset Ownership Model	5%	All key water and/or sewerage assets held outright in perpetuity.	All key water and/or sewerage assets held outright subject to a license that can be terminated only for material underperformance, failure to meet certain financial parameters or insolvency OR held under long-term concession with clearly defined right to timely recovery of residual asset value at termination/end of concession underpinned by highly rated entity; clear track record of consistently applying concession termination / recovery regime.	All key water and/or sewerage assets held under long-term concession with clearly defined right to recover value of residual assets at termination/end of concession underpinned by highly rated entity but with undefined timeframe OR held/operated under medium-/long-term operating leases or management contract with very substantial portfolio diversification, very established market position and very high renewal rate (>95%).	All key water and/or sewerage assets held under long-term concession with entitlement to recover value of residual assets at termination/end of concession but procedures untested/undefined OR held/operated under medium-/long-term operating leases or management contract with substantial portfolio diversification, established market position and high renewal rate (>90%). Expropriation possible in case of insolvency or material failure to comply with license conditions, but with full compensation for asset value.	All key water and/or sewerage assets held under concession with recovery of residual asset value at termination/end of concession subject to negotiation OR held/operated under short-term operating leases or management contract with good degree of portfolio diversification and renewal rate (>80%). Expropriation possible, with some uncertainty in the prospect of full compensation.	All key water and/or sewerage assets held under concession with no recovery of residual asset value at termination/end of concession OR held/operated under short-term operating leases or management contract (limited portfolio diversification). Expropriation likely, with material uncertainty in the prospect of full compensation.	Issuer is in default under its license, concession or lease/contract, likely to lead to termination. Expropriation highly likely, with little or no prospect of compensation.

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Factor: Business Profile (Factor 1 — 50%)								
Cost and Investment Recovery (Sufficiency and Timeliness)	15%	No regulatory or contractual impediment to adjust tariffs (no approval or reviews required).	Tariff formula allows for timely recovery of operating expenditure including depreciation and a fair return on all investment. Depreciation allowance fairly reflects asset consumption. All capital expenditure is included in asset base as incurred or fully covered by specific riders/surcharges prior to the next rate case. Minimal challenges by regulators to companies' cost assumptions.	Tariff formula allows for recovery of operating expenditure including depreciation based on allowances set at frequent price reviews (e.g., 5-yearly intervals or shorter) and a fair return on all efficient investment. Depreciation allowance fairly reflects asset consumption. Capital expenditure is included in asset base as incurred or partially covered by specific riders/surcharges prior to the next rate case. Opex and capex can be subject to efficiency tests. Limited instances of regulatory challenges; limited delays to rate or tariff increases or cost recovery. Performance is likely to be in line with regulatory expectations.	Tariff formula allows for recovery of operating expenditure including depreciation and return on investment but subject to retrospective regulatory approval or infrequent price reviews (e.g., > 5-yearly intervals). Some instances of revenue back-loading (e.g., depreciation allowance set below asset consumption or operating expenditure is capitalized). OR Rate/tariff reviews and cost recovery outcomes are usually predictable, although application of tariff formula may be unclear; potentially greater tendency for regulatory intervention and/or to disallow or delay costs. Performance may be below regulatory expectations.	Tariff formula does not take into account all cost components and depreciation may be set below asset consumption. Revenues allow coverage of operating expenditures; however, investment is not clearly or fairly remunerated. OR Rate/tariff reviews are inconsistent, with some history of unwillingness to make timely rate changes. OR Operational underperformance likely to significantly impact the returns achieved by the business.	Highly uncertain rate reviews and cost recovery outcomes; regulators may materially delay or deny tariff increases based on more arbitrary questioning of the utility's costs or financing arrangements. Revenues only cover cash operating expenditures. OR Tariff formula does not take into account material cost and investment recovery components.	Revenues only partially cover cash operating costs.
Revenue Risk	5%	No exposure to volume or customer concentration risk.	Minimal exposure to volume risk and timely recovery mechanism in place. AND Very limited customer concentration of volumes and revenues and to a customer / industry viewed as stable.	Some exposure to volume risk: recovery mechanism in place with some delay until next regulatory price review; generally limited revenue volatility expected. May have small concentration of volumes and revenues to a particular customer / industry viewed as stable.	Moderate exposure to volume risk but recovery mechanism in place, with some delay until next regulatory price review; moderate revenue volatility expected. May have a moderate concentration of volumes and revenues to a particular customer / industry.	More material exposure to risk of volumes decreasing or not meeting growth targets embedded in tariff levels; recovery mechanism, may not follow regular intervals. OR Significant concentration of volumes and revenues to a particular customer / industry.	High exposure to risk of volumes decreasing or not meeting growth targets embedded in tariff levels with recovery mechanism unclear or subject to very long delays. OR Very high concentration of volumes and revenues to one particular customer / industry.	Very high exposure to risk of volumes decreasing or not meeting growth targets embedded in tariff levels with no meaningful recovery mechanism in place. OR Very high concentration of volumes and revenues to a particular customer / industry viewed as vulnerable.
Scale and Complexity of Capital Program and Asset Condition Risk	10%	Capex program is very limited in scale, with only minimum maintenance requirements (typically, total annual capex ≤ 4% of total fixed assets or regulated asset base). AND No asset condition risk (e.g. full and immediate cost pass through).	Capex program is limited in scale, with small maintenance or enhancement requirements (typically, total annual capex 4%-6% of total fixed assets or regulated asset base). AND Well-developed asset base under tight regulatory supervision; asset performance is generally stable or improving.	Modest capex program, including standard maintenance and enhancement expenditures (typically, total annual capex 6%-8% of total fixed assets or regulated asset base). Well-developed asset base and no history of serious asset failure; asset performance is generally stable or improving.	Capex program of manageable scale, including straightforward maintenance and enhancement expenditure (typically, total annual capex 8%-12% of total fixed assets or regulated asset base). Company has a reasonably developed asset base; may have some precedents of serious asset failures but asset performance is now and is expected to remain broadly stable.	Large capex program (typically, total annual capex 12%-20% of total fixed assets or regulated asset base) or challenging in scope (small number of large and complex projects may account for majority of capital program). OR Asset base not fully developed; or average asset performance is gradually deteriorating or there is some concern about asset condition.	Very large capex program (typically, total annual capex 20%-30% of total fixed assets or regulated asset base) or highly complex (one large and complex project may account for majority of capital program). OR Performance of most assets is materially deteriorating, with serious asset failures likely or ongoing, or asset development is seriously below required target.	Extremely large capex program (typically, total annual capex >30% of total fixed assets or regulated asset base) or technically highly complex (includes one or more large projects of extreme technical complexity). OR Rapidly deteriorating asset performance or condition could put issuer at risk of termination of license, concession or lease / contract.

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Factor: Financial Policy (Factor 2 — 10%)								
Financial Policy	10%	Long track record and expected maintenance of extremely conservative financial policy; very stable metrics; low debt levels for the industry; AND Public commitment to the highest credit quality over the long term.	Long track record and expected maintenance of a conservative financial policy; stable metrics; lower-than-average debt levels for the industry; AND Public commitment to a very high credit quality over the long term.	Extended track record and expected maintenance of a conservative financial policy; moderate debt leverage and a balance between shareholders and creditors; Not likely to increase shareholder distributions and/or make acquisitions which could lead to a weaker credit profile; Solid commitment to high credit quality.	Track record and expected maintenance of a conservative financial policy; an average level of debt for the industry and a balance between shareholders and creditors; Some risk that shareholder distributions and/or acquisitions could lead to a weaker credit profile; Solid commitment to targeted metrics.	Track record or expectation of maintenance of a financial policy that is likely to favor shareholders over creditors; higher than average, but not excessive, level of leverage; Owners are likely to focus on extracting distributions and acquisitions but not at the expense of financial stability.	Track record of aggressive financial policies or expected to have a financial policy that favors shareholders through high levels of leverage with only a modest cushion for creditors; OR High financial risk resulting from shareholder distributions or acquisitions.	Expected to have a financial policy unfavorable to creditors with a track record of or expected policy of maintaining excessively high debt leverage; OR Elevated risk of debt restructuring.
Factor: Leverage and Coverage (Factor 3 — 40%)								
Adjusted Interest Coverage Ratio ^[1]	12.5%	≥ 8x OR ≥ 10x	4.5x - 8x OR 7x - 10x	2.5x - 4.5x OR 4.5x - 7x	1.5x - 2.5x OR 2.5x - 4.5x	1.2x - 1.5x OR 1.8x - 2.5x	1.0x - 1.2x OR 1.5x - 1.8x	< 1.0x OR < 1.5x
FFO Interest Coverage ^[2]								
Net Debt / Regulated Asset Base ^[3]	10%	< 25%	25% - 40%	40% - 55%	55% - 70%	70% - 85%	85% - 100%	≥ 100%
OR Debt / Book Capitalization								
FFO / Net Debt	12.5%	≥ 40%	25% - 40%	15% - 25%	10% - 15%	6% - 10%	4% - 6%	< 4%
RCF / Net Debt	5%	≥ 30%	20% - 30%	10% - 20%	6% - 10%	4% - 6%	2% - 4%	< 2%
Preliminary outcome								
Notching factor								
Uplift for Structural Considerations								
Rating uplift of up to 3 notches provided by structural features to scorecard-indicated outcome from Factors 1-3 above.								
Scorecard-indicated outcome								

[1] The Adjusted Interest Coverage Ratio is our preferred metric for water utilities where allowed revenues/tariffs are determined using a "building block" or equivalent approach and where the components of allowed revenues/tariffs are consistently available and can be verified by from an independent source – in many cases, publications from the regulatory authority itself. For the numerator, Interest net of Inflation Accretion is added back to the extent it was deducted in calculating FFO. Capital Charges represent expenditures recovered in revenues that are not accounted for as operating expenses and are not treated as additional invested capital incrementing the RAB, including regulatory revenue profiling to smooth the impact of tariff increases on customer bills.

[2] In jurisdictions where regulatory revenues/tariffs are not determined with a "building block approach" or where the regulatory information needed to calculate Capital Charges may not be consistently available, we use the FFO Interest Coverage, calculated (or for forward periods estimated) as (FFO + Interest Expense) / Interest Expense.

[3] For the utilities regulated under a RAB-based model where the RAB accurately represents the invested capital on which the water utility will earn a return over time, we measure leverage as Net Debt to RAB. For water utilities that (1) are regulated under tariff models without a RAB; (2) are regulated under a RAB-based model but where the RAB may not accurately represent the invested capital on which the water utility will earn a return over time (e.g., because of ex-post rate-setting); or (3) where RAB may not be consistently available, we use Debt to Book Capitalization.

Source: Moody's Investors Service

Sector overview

Independently regulated water utilities form a minority of the broader universe of water utilities globally. Given the importance of water supply and the health risks related to its service provision, most water services globally are provided by government entities that are not subject to independent rate or tariff regulation. Even in jurisdictions where the water sector is privatized, strong links to national, regional or local government bodies are maintained, which facilitate compliance with environmental and health and safety standards.

Generally, regulated water utilities operating under well-developed regulatory frameworks exhibit the following characteristics:

- » Monopoly-type activities, most commonly supported by long-term license or concession agreements.
- » Strong visibility in revenue and profit generation, due to (i) the importance of water and wastewater services provided, which results in overall low demand volatility and general resilience to economic fluctuations; and (ii) clear and predictable mechanisms for tariff increases (embedded in the regulatory framework or concession regime), which sustains revenue over the long term.
- » Strong regulatory supervision due to the critical element of health and environmental implications of the water and wastewater services.

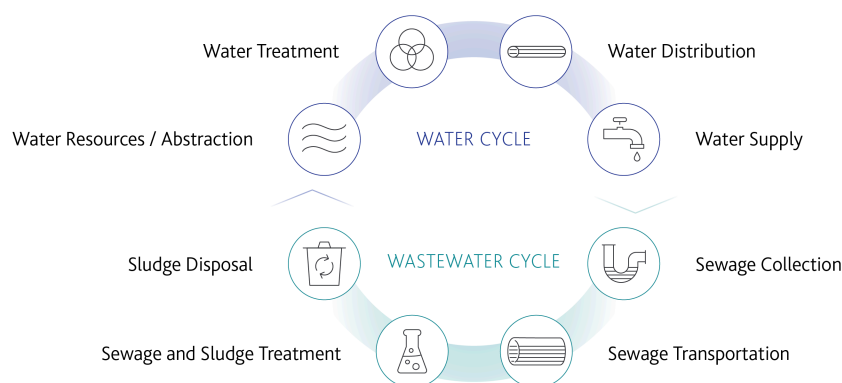
The stable and sustainable levels of cash flow afforded by these characteristics can also translate into a capacity to sustain high debt levels over the long-term. This is of particular importance as the sector as a whole has massive infrastructure funding needs for enhancement of existing facilities to meet increased health and environmental standards. Due to the significant investment requirements, ongoing access to external funding is critical as these investment requirements cannot be covered solely from internal cash flow generation. Although customer bills continue to rise to cover the additional capital costs of financing the water and wastewater infrastructure (partly offset by efficiency savings in the operations), in many jurisdictions the industry remains heavily subsidized.

The levels and forms of government subsidies vary from jurisdiction to jurisdiction. Most countries provide some form of cross-subsidization amongst customers through the application of average tariffs across water supply areas, which may differ from the actual cost of service delivery to each customer. Furthermore, there are a number of explicit or implicit measures through which governments provide subsidies, such as reduced trade taxes for utilities, or income support or targeted assistance for customers in need. Subsidies can also be built directly into the tariff system.

The entire value chain of services in the water and wastewater cycle is illustrated below:

Exhibit 3

Water and wastewater cycles



Source: Moody's Investors Service

The combination of water abstraction and treatment is also referred to as bulk supply or upstream wholesale activities. The vertical integration of the water supply chain can end at this point. This is the case in a number of EU countries, where one large utility may

be responsible for upstream water activities, while a number of smaller – usually municipal-owned – suppliers undertake distribution activities. Most rated water utilities are integrated providers of water and/or wastewater services along the entire value chain.

Varying business models have been adopted globally for the management of water and wastewater activities. In many countries, municipalities are legally responsible for water supply and wastewater treatment services. In these cases, the municipalities also own the assets. However, a variety of operational models are derived from this structure.

First, the water and wastewater infrastructure assets can be operated under direct management by the municipality itself. In these cases, the water and wastewater services are generally part of the general regional or local administration (and not rated using this rating methodology). Second, management of the water and wastewater infrastructure can be delegated to a separate entity, which in many instances is partly or wholly owned by the regional or local government with legal responsibility for the provision of water and wastewater services. Third, water and wastewater services may be completely privatized along the entire value chain of water and/or wastewater provision, which has occurred in relatively few countries.

The delegated management business model exists in a variety of different forms of contracts, concessions or license arrangements, including the following:

Management contract: This is typically a three-to-five-year arrangement for the management of operational facilities. The assets remain in public sector ownership, usually with the relevant municipality, which also collects the user charges from customers. The managing entity is remunerated by the municipality through payment of a management fee. The contract may include performance targets against which the managing entity is measured. Capital expenditure requirements and their funding are principally the responsibility of the municipality.

Lease contract: A lease contract is similar to a management contract in that the municipality continues to own the asset. However, the service operator collects the user charges directly, and may also be responsible for funding capital investments. Lease contracts commonly have an eight- to 15-year tenor.

Concession contract: Concession contracts are one of the most wide-ranging options for transferring responsibility for assets to a service undertaker. Concession arrangements usually have a 25 to 30 year tenor and transfer the economic benefits and costs of asset ownership to the service undertaker for the duration of the concession. The service undertaker therefore also bears responsibility for capital investments and their funding. The terms of the concession are negotiated on a bilateral basis, but may be based on a general legislative or regulatory framework applied throughout a jurisdiction. Given the duration of the contract, a concession also generally includes tariff reviews at specified intervals.

License: The license approach is usually very similar to a long-term concession. However, the terms of the license are typically set in law and commonly applied to all licensed undertakers. Licenses may have durations similar to those of long-term concessions or may operate in perpetuity, with an option to terminate the license for severe performance failures. For example, water companies in England and Wales operate under licenses that include a provision for license termination subject to a 25-year notice period.

For single-asset transactions or projects, a number of specific arrangements may be applied, such as Design, Build, Operate (DBO); Build, Own, Operate (BOO); or Build, Operate, Transfer (BOT). These contractual arrangements are generally used in cases involving a large investment in a single asset that can be transferred to the private sector, for example through project finance arrangements. These contracts are commonly related to a specific project, such as the construction and operation of a treatment work, and can have similar terms as concessions.

Generally, contracts and concessions are initially awarded through competitive tender and are re-tendered at their expiry.

Discussion of the scorecard factors

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

Factor: Business Profile (50% weight)

Why it matters

The business profile of a regulated water utility provides important indications of its revenue stability and its ability to recover costs in a timely manner.

Regulated water utilities typically provide highly regulated, monopoly-type, relatively price-inelastic services that are a necessity for society. Most issuers in this sector benefit from high levels of business visibility and revenue stability that stem from the combination of essentiality of service and the existence of regulatory frameworks that are typically well-established. As a result, regulated water utilities often have long-term strategic and financial horizons. Accordingly, the stability of a regulated water utility's business and cash flow generation is a critical component of our analysis. Revenue and cash flow are generally a function of tariff levels and tariff-setting mechanisms, as well as volumes sold. Tariffs are embedded in the broader regulatory framework or in a utility's concession agreement or lease contract. Therefore, the characteristics and transparency of the concession(s) and regulations under which the utility operates, and the track record of the regulator in setting tariffs and applying regulations consistently are core aspects of the overall stability of a water utility's business profile. Execution risk associated with a water utility's investment program and asset quality, which can have a material influence on its ability to provide services that meet regulatory expectations and on its future financial position, are also important considerations.

How we assess it for the scorecard

Scoring for this factor is based on five sub-factors: Stability and Predictability of Regulatory Environment; Asset Ownership Model; Cost and Investment Recovery (Sufficiency and Timeliness); Revenue Risk; and Scale and Complexity of Capital Program and Asset Condition Risk.

STABILITY AND PREDICTABILITY OF REGULATORY ENVIRONMENT

In assessing this sub-factor, we consider the regulatory and/or concession framework under which the water utility operates.

Water and wastewater services are generally provided on a monopoly or quasi-monopoly basis and regulated at a national or regional level. Where water services are provided by a private sector company, the monopoly services are typically performed under a concession agreement or license. The enabling legislation/legal framework often sets out common terms and conditions for concessions and lays out the framework under which tariff decisions are made, but the granularity and transparency of the framework can vary. The stability and predictability of the regulatory regime or concession framework is a key aspect of our assessment of a water utility's business profile.

Issuers operating under regulatory regimes that have a very long track record of having clearly defined risk allocation principles that have been consistently applied and transparently disclosed to the public, typically receive higher scores for this sub-factor. Issuers operating in a jurisdiction that has not implemented a defined regulatory framework or has implemented a framework that is extremely unpredictable or politically driven typically receive lower scores for this sub-factor. For instance, the regulator or government may have a track record of making unilateral changes to the terms and conditions of concessions in the water sector (or in relevant other infrastructure sectors) to the detriment of the concession-holder and without providing compensation. Where regulatory or legislative changes do occur, water utilities can still receive a high score for this sub-factor if the regulator includes affected water utilities in the process and the changes are sufficiently consulted upon and supportive of utilities' credit quality. In contrast, water utilities will likely score lower for this sub-factor if changes to the regulatory framework have been implemented without consultation, if they are unclear, or if they are detrimental to credit quality. Concerns about the independence of the regulatory authorities and the risk of politically motivated intervention in the regulatory process generally also result in a lower score for this sub-factor.

In considering whether a regulatory framework is independent and developed, we also assess the strength of the rule of law within the relevant jurisdiction, and whether an independent judiciary allows for legal rights, especially concession rights, to be enforceable. Scoring for this sub-factor will typically reflect weakness resulting from a water company being located in a country with generally poor institutional strength.

Where water companies operate in multiple jurisdictions or under regulatory or concession models with differing characteristics, the score for this sub-factor reflects our assessment of the blended profile of these regulatory frameworks.

ASSET OWNERSHIP MODEL

The rated universe includes companies that own the assets outright in perpetuity and companies that operate the assets for a defined period under a concession or other contractual agreement.

We assess the risk that termination of the license or franchise agreement may lead to loss of asset ownership. We also consider the duration of the right to operate the assets and the risk of non-renewal as well as the recovery mechanism for any residual value of assets value at the end of a concession or other contractual arrangement.

A water company that owns all its key water and wastewater assets and has ultimate control over them would typically receive a higher score for this sub-factor. A utility that operates the assets under a concession contract, which may have a relatively short tenor or lack clear principles for the recovery of the residual asset value at the termination of the concession, would typically receive a lower score for this sub-factor. In such instances, a track record of concession renewal or consistent application of compensation arrangements could weigh positively in our assessment.

Most rated regulated water utilities own their key assets subject to a license regime or in conjunction with a long-term concession, meaning that if the operational license/concession is terminated, the ownership right will also end. Outright ownership in perpetuity is less common. Operators with multiple concession arrangements are generally assessed based on the average concession life, weighted by each concession's contribution to overall cash flows.

The general rule of law and the value and enforcement of asset property rights and contracts are important considerations in our assessment as they affect water companies' ability to gain economic benefit from its assets or concessions/contracts and the likelihood that end of concession/contract expected compensation will be paid. For example, if political circumstances increase the risk of expropriation of assets, we would score a company lower for this sub-factor, even though the company may own the assets. Expropriation risk may be elevated for water and wastewater assets due to the essentiality of the services.

COST AND INVESTMENT RECOVERY (SUFFICIENCY AND TIMELINESS)

The ability of a regulated water utility to recover its operating costs and invested capital in a timely manner is another key element of our assessment of the regulatory or concession regime and in our evaluation of the stability of cash flow generation. In assessing this sub-factor, we consider the nature of the tariff regime, including the mechanisms under which the water utility is able to recover its ongoing costs and invested capital and earn a fair return on it, as well as the risk allocation between the water utility and its customers. We consider whether the regulator seeks to insulate consumers from the volatility and the uncertainty associated with operating and financial costs, whether there is risk-sharing between the water utility and its customers, and whether the water utility is easily able to pass through its incurred costs, including financial costs.

Issuers regulated under frameworks that provide highly flexible arrangements to adjust tariffs as required to reflect the full range of incurred costs and investments typically receive higher scores for this sub-factor. At the other end of the spectrum are tariff mechanisms that do not adequately cover the operator's costs, for instance due to politically motivated low tariffs that hinder the utility's viability in the absence of government support.

Most tariff formulas aim to achieve a balance between reliability and quality of service standards, incentives for operational efficiency, consumer protection from monopoly-overcharging and delivering certain social objectives, while allowing an adequate return for companies to be able to attract the debt and equity capital required to finance their investments.

In jurisdictions with separate regional regulation, e.g., in the US or Spain, we typically assess each state or region that the issuer operates in individually to consider the various factors that affect the utilities' profitability, including the type of fixed-rate design versus variable-rate design allowed, historically authorized tariff decisions, and the existence of mechanisms that permit recovery of operating and capital costs outside a general tariff setting process. Furthermore, we consider contractual obligations that restrict a water utility's ability to submit a tariff reset for approval within a defined period of time.

The ability of a water utility to recover its costs also depends on its performance against regulatory cost allowances and efficiency targets. Companies that have a track record of significant overspending or are unlikely to meet target allowances may receive lower scores for this sub-factor. We also consider whether the tariffs are affordable. Affordability can be measured, for example, through the

level of unpaid bills. A water utility would normally score lower for this sub-factor than the theoretical tariff formula may imply if the level of unpaid bills is high or is increasing materially.

REVENUE RISK

In assessing this sub-factor, we consider potential revenue volatility, including volume risk. Usage volumes may be affected by supply scarcity or demand decrease. Some utilities are exposed to greater weather pattern differences from year to year. Others have a more concentrated customer base or a reliance on a particular customer for a large proportion of overall volumes. If a water utility's revenue is exposed to volume risk, such a customer choosing a different service provider or closing its operations could result in a significant portion of revenue being lost. Similarly, a high proportion of industrial customers or a tariff plan that assumes increasing revenues will be generated from new customers may have a negative impact on revenue in an economic recession.

In scoring this sub-factor, we also consider whether the regulatory regime provides mechanisms for companies to adjust tariffs within a regulatory period or at the next price review to reflect a divergence between collected and allowed revenues caused by fluctuating volumes.

Issuers that have no exposure to volume or customer concentration risk and therefore are effectively immune from revenue risk typically score Aaa for this sub-factor. Water companies that are exposed to some revenue risk but benefit from regulatory safeguards under a tested and transparent procedure that allows tariff adjustments to recover lost revenue typically receive scores below Aaa but still at the higher end of the scorecard for this sub-factor. Water utilities that are subject to greater revenue risks from changes in volume (from droughts, recession, or a material reliance on new customer connections, for example) that are not offset by increases in tariffs, or where the tariff re-set is delayed or uncertain, typically receive lower scores for this sub-factor.

SCALE AND COMPLEXITY OF CAPITAL PROGRAM AND ASSET CONDITION RISK

Our assessment of a regulated water company's risk exposure captures (i) the general operational risk of executing an extensive capital expenditure program and management's ability to deliver it without significant delays or cost overruns; (ii) the technological challenges of very complex investment projects; and (iii) the financing risk that a significant capital expenditure program may pose, if it cannot be funded from operating cash flows.

The size of a water utility's capital expenditure plans can, to some extent, be representative of the complexity of the program. Thus, we consider the planned annual capital spending as a percentage of Regulated Asset Base (RAB; where applicable, it is typically obtained from regulatory filings) or the Fixed Assets (tangible and intangible) as reported in financial statements. For the purpose of this comparison capital expenditure is considered before any government grants, construction subsidies or developers' contributions, to assess the full scale of the investment program and potential execution risk. Fixed assets would typically be used where a RAB is not available and tends to refer to net property, plant and equipment but may include intangible assets for companies that report concession assets as intangibles; goodwill would not be included.

The resulting percentage may not directly correlate to risk in all scenarios, and replacement programs that are large in scope may nevertheless present only limited execution risk. For example, a large capital expenditure program could comprise a significant number of individual projects where overall execution risk is reduced through diversification, the repetitive nature of the program, or the ability to reduce or modify the plan in light of changing circumstances. The experience of the utility in accepting expansion projects and delivering them within budget is also a relevant consideration in our assessment.

Capital expenditure programs that are very large relative to the existing asset base have greater potential to result in significant tariff increases for customers or for the disallowance or delay of cost and investment recovery by a regulator. For example, the asset value of companies that have been privatized may not reflect the actual replacement costs of such assets (essentially a form of subsidy to consumers to keep tariffs low). These companies may be required to undertake very large capital investment programs to maintain and upgrade their infrastructure compared with a relatively small regulatory asset base, with the attendant execution and cost recovery risks. Expansionary programs may not deliver expected revenue increases if new demand does not materialize, and even when tariff adjustments for lower-than-expected volumes are permitted, such adjustments may result in customer dissatisfaction and regulatory pressure.

Some regulatory frameworks or concession regimes may incentivize investment, either generally or for a particular project, in a manner that limits a company's exposure to capex-related risks such as cost overruns, which can positively impact scoring for this sub-factor.

However, some incentive programs simply provide capital that reduces the regulatory asset base (essentially a subsidy for consumers) without reducing the water utility's exposure to construction risks.

In scoring this sub-factor, we also consider the underlying asset condition and the related risk of potential asset failure. A functioning asset base is critical for water and wastewater utilities in order to comply with their regulatory duties and to ensure stable cash flows. Deferred maintenance and under-investment may lead to penalties for underperformance and rapidly increasing spending needs in future.

Issuers with large, modern asset bases requiring a limited amount of simple maintenance (and where capital expenditures represent a small percentage of fixed assets) typically receive higher scores for this sub-factor. In contrast, water utilities that are engaged in highly complex, concentrated programs (and where capital expenditures represent a high percentage of fixed assets) typically receive lower scores for this sub-factor. Furthermore, a water utility that has a history of serious asset failures or exhibits a significant deterioration in asset performance typically receives a score of Ba or lower for this sub-factor, depending on the severity of failures.

Factor: Financial Policy (10% weight)

Why it matters

Management and shareholder tolerance for financial risk is an important rating factor because it directly affects debt levels, credit quality and risk in the capital structure (e.g., refinancing risk, counterparty risk or exposure to interest rates or foreign exchange movements).

The generally stable and predictable cash flows of a regulated water utility create significant capacity to incur debt financing and potentially to invest in related businesses. While debt financing may be considered essential to the efficient capital structure of a water utility, a desire to enhance shareholder returns may lead to the pursuit of higher leverage, which increases credit risk. The way in which a water utility's owner uses its debt capacity, therefore, is a key rating consideration.

How we assess it for the scorecard

In assessing this factor, we consider the likelihood that financial policy decisions, in their totality, could add uncertainty to future cash flow levels and divert resources away from creditors. In this regard, management's track record and their public commitment to maintaining the issuer's credit quality are key considerations.

We consider the company's approach to financing its activities, in particular the balance it strikes in apportioning risk between shareholders and creditors. We assess both the company's historical track record and its stated objectives with respect to leverage and financing decisions, as well as the investment return requirements of its owners. The behavior of owners can be a key differentiating credit consideration – where owners' objectives are short term, opaque or where there is a lack of track record, the regulated water utility will likely receive a lower score for this factor than if its shareholders have more long-term return requirements and may be willing to forgo near-term distributions to maintain financial flexibility.

Issuers that have an extended track record of low levels of leverage plus a public commitment to maintaining high levels of credit quality typically receive higher scores for this factor. A water utility that has demonstrated a commitment to maintaining an average level of leverage for the industry (e.g., to a level implied within the regulator's allowed rate return) is likely to be scored in the middle of the range. However, scores of Baa and above would generally only apply where there are no (or only very limited) concerns regarding owners' behavior – this would be the case, for example, for listed companies, government majority-owned companies or those owned by industrial shareholders. Issuers with consistently higher levels of leverage or those with a less transparent financial policy would likely score Ba or lower on this factor.

This factor is scored separately from a notching factor for specific structural enhancements that provide additional creditor protection. However, where they exist, such enhancements are considered to the extent they define or clarify the issuer's overall financial policy.

Factor: Leverage and Coverage (40% weight)

Why it matters

Leverage and coverage measures are critical indicators of a regulated water utility's financial flexibility and long-term viability, including the ability to adapt to changes in the economic and regulatory environments in which it operates.

Adjusted Interest Coverage Ratio or Funds from Operations Interest Coverage

The Adjusted Interest Coverage Ratio (AICR) and Funds from Operations (FFO) Interest Coverage are indicators of a regulated water utility's ability to meet its interest obligations.

We use the AICR where allowed revenues/tariffs are determined using a "building block" or equivalent approach and where the components of allowed revenues/tariffs are routinely published and can be verified by an independent source, which in most cases is the regulatory authority. Typical components of the revenue building block include: (i) the amount of expenditure recovered on an annual basis and not capitalized into the Regulated Asset Base (RAB), also known as regulatory asset value, capital value or rate base (the monetary value attributed in the regulatory model to the capital invested by the water utility); (ii) the depreciation of the RAB, as well as a depreciation or maintenance allowance for assets that may not be fully captured in the RAB; and (iii) the return allowed over the invested capital, typically calculated or estimated by applying an industry- or company-specific rate of return on the RAB. The building block generally also includes several other elements, such as taxes and levies, and adjustments for past over- or under-recoveries.

The AICR aims to measure the amount of "headroom" afforded by a company's cash flows in servicing its debt after taking into account the cost of maintaining a stable asset base. It thus recognizes that the regulatory revenue allowances for a water utility include significant amounts that customers are required to pay to enable the utility to maintain and replenish its assets.

The AICR adjusts FFO by the amount of capital charges that the regulator includes within current revenue at the expense or benefit of future revenue. The regulatory capital charges effectively represent the portion of revenue (and thus FFO) that is needed to replenish the RAB. The maintenance of a stable asset base ensures that the earned return does not fall due to a decline in the asset base. Regulators – or issuers as part of their business plan submissions to a regulator during the price review process – may decide to allow more revenue today to the detriment of a slower growing asset base and, consequently, lower revenue in the future, or vice versa.

Capital charges may also include timing differences or other similar adjustments, e.g., to smooth the impact of tariff increases on customer bills. The removal of capital charges from FFO allows for greater comparability of interest coverage for water utilities within a regulatory regime and for utilities across different regulatory regimes.

We use FFO Interest Coverage for regulated water utilities in jurisdictions where regulatory revenues/tariffs are not determined with a building block approach or where the regulatory information needed to calculate capital charges may not be consistently available.

Net Debt / Regulated Asset Base (RAB) or Debt / Book Capitalization

The ratio of net debt to regulated asset base (Net Debt/RAB) and the ratio of debt to book capitalization are indicators of debt serviceability and financial leverage. These ratios provide a basis for comparing the size of an issuer's debt relative to that of its peers. We use Net Debt/RAB for regulated water utilities where the RAB serves as a proxy for the long-term average enterprise value of a regulated business. The RAB is analogous to the rate base in the US, albeit with some differences. Under some regulatory regimes, RAB may not accurately represent the invested capital on which a water utility earns a return over time (e.g., because of ex-post rate-setting), or the information may not be publicly available. In these cases, we use Debt/Book Capitalization.

FFO / Net Debt

The ratio of FFO to net debt (FFO/Net Debt) is more useful in comparing the ability of a water utility (or a peer group of water utilities operating under similar regulatory financial models) to generate sufficient cash flow to cover future debt repayments over time, than in comparing companies operating under very different regulatory financial models. More specifically, a higher FFO/Net Debt ratio may not be a sign of financial strength where it is driven by a higher level of regulatory depreciation. Nevertheless, in comparing two companies that maintain a similar Net Debt/RAB ratio over time, a higher FFO/Net Debt ratio is usually indicative of greater financial strength.

RCF / Net Debt

The ratio of retained cash flow to net debt (RCF/Net Debt) is an indicator of a water utility's cash generation (before working capital movements and capital expenditures, and after dividend payments) relative to its net debt (total debt minus cash and cash equivalents). Dividend obligations can be substantial, quasi-permanent outflows that can affect the ability of a water utility to cover its debt obligations. This ratio can also provide insight into a water utility's financial policies. The higher the level of retained cash flow relative to debt, the more cash the utility has to support its capital expenditure program.

How we assess it for the scorecard

Scoring for this factor is based on the following sub-factors: Adjusted Interest Coverage Ratio or FFO Interest Coverage; Net Debt to Regulated Asset Base (RAB) or Debt to Book Capitalization; Funds from Operation (FFO) to Net Debt; and Retained Cash Flow (RCF) to Net Debt.

ADJUSTED INTEREST COVERAGE RATIO

The numerator is FFO plus interest expense minus inflation accretion minus capital charges. For clarity, we calculate interest expense minus inflation accretion and add this number back to FFO. To the extent FFO is calculated after interest expense but without deducting inflation accretion, we typically add this inflation accretion to FFO.

$$\frac{\text{FFO} + (\text{Interest Expense} - \text{Inflation Accretion}) - \text{Capital Charges}}{(\text{Interest Expense} - \text{Inflation Accretion})}$$

The denominator is interest expense minus inflation accretion.

Inflation accretion typically arises when companies issue inflation-linked debt. This tends to be the case where the regulatory authority sets tariffs for the water utility in real terms, using a real rate of return, and then allows the utility to adjust tariffs annually by an inflation index. In this type of regulatory model, the utility's RAB is also revalued annually by inflation. Issuing inflation-linked debt aligns the utility's debt service requirements with its future cash flows, because the utility only pays a real rate of interest on the outstanding principal, which is adjusted annually by an inflation index. With positive inflation, the debt grows annually at the rate of inflation, and this non-cash increment is typically reported as part of the interest expense in the company's income statement. The related increase in debt is also included in the reported balance sheet amount and captured by the leverage ratio below.

For regulated water utilities that use unconventional debt funding, such as zero-coupon, or inflation-linked swap arrangements, we may make adjustments to the ratio calculations to improve consistency and comparability to the peer portfolio.

FFO INTEREST COVERAGE

The numerator is FFO plus interest expense, and the denominator is interest expense.

NET DEBT / REGULATED ASSET BASE

The numerator is net debt (total debt minus cash and cash equivalents), and the denominator is the regulated asset base.

DEBT / BOOK CAPITALIZATION

The numerator is total debt, and the denominator is book capitalization.

FFO / NET DEBT

The numerator is FFO, and the denominator is net debt (total debt minus cash and cash equivalents). We use net debt based on the sector's propensity to pre-fund its significant capital investments, which can result in substantial cash amounts held on balance sheet. The use of net debt also recognizes the requirements under certain financing structures to maintain liquidity and debt service reserves. Where the debt position of a company may be overstated or understated by the debt figures as reported in the financial statements, we typically make non-standard adjustments for certain derivative transactions subject to the relevant hedge accounting rules for US Generally Accepted Accounting Principles (US GAAP) and International Financial Reporting Standards (IFRS) accounting.

RCF / NET DEBT

The numerator is RCF (FFO less dividends), and the denominator is net debt (total debt minus cash and cash equivalents).

Notching factor: Uplift for Structural Considerations

Our assessment of the Uplift for Structural Considerations notching factor may result in an upward adjustment to the preliminary outcome that results from the three weighted scorecard factors for issuers that benefit from structural enhancements in their corporate structure, their regulatory license or their financing arrangements. This notching factor has mainly been relevant for highly-leveraged financing structures that apply to an entire corporate group and for project financings. Adjustments are made in half-notch increments.

In aggregate, structural features that we consider effective may result in up to three upward notches from the preliminary outcome to arrive at the scorecard-indicated outcome. However, typical uplift is between zero and two notches. In cases where we consider that the credit impact represented by this notching factor is greater than the scorecard range, we incorporate this view into the rating, which may be different from the scorecard-indicated outcome.

Why it matters

A regulated water utility's debt structure may contain structural features that can provide creditors meaningful protection against losses. Such enhancements may be incorporated into the terms and conditions of financing agreements pertaining to essentially all of a utility's securities holders, or they may be a feature within the utility's regulatory license and include requirements such as maintaining a certain credit rating and demonstrating sufficient operating and financial resources. These features are important because they can restrict the issuer's ability to take actions that could increase credit risk, thereby reducing the likelihood of default or increasing the likelihood of higher recovery in the event of default, or both.

How we assess it for the scorecard

We typically consider the extent to which structural features and regulatory ring-fence provisions (i) reduce the likelihood of default; and (ii) give creditors either the right, or ability, to influence a water utility's decision to take corrective action to stop or reverse credit deterioration. The impact of these structural features on notching is based on a holistic assessment of their effectiveness.

In order for structural features to provide ratings uplift they typically must benefit all creditors, although individual creditors may be subject to different payment priorities.

STRUCTURAL FEATURES THAT REDUCE THE LIKELIHOOD OF DEFAULT

In assessing structural features that reduce the likelihood of default, we typically assess the following:

Restriction on business activities

- » The extent to which an issuer is prohibited from engaging in new activities or making acquisitions.

Restrictions on raising additional debt

- » Whether restrictions on additional indebtedness reduce the risk that additional obligations could cause a payment default.

Distribution lock-up tests

- » The extent to which an issuer is prohibited from distributing cash to shareholders in periods of financial stress.

Limits on debt structure

- » Whether the issuer is required to remove or mitigate certain financial risks, such as interest rate, currency or refinancing risk. Structural features that can reduce refinancing risk include restrictions on debt maturity concentration and the implementation of a fully amortizing debt structure, which by itself can result in one notch of ratings uplift. Covenants can also restrict the issuer's use of derivative products, thus reducing the likelihood of additional or sizeable claims on the business.

Reserves to cover large future or unforeseen costs

- » The presence of dedicated timing reserves for large-cost items, e.g., a one-off capital expenditure.

STRUCTURAL FEATURES THAT GIVE CREDITORS THE RIGHT, OR ABILITY, TO INFLUENCE A WATER UTILITY'S DECISION TO TAKE CORRECTIVE ACTION

We assess the ability of debtholders to force owners to reduce debt before equity value is lost and debt is impaired, and to take action to repay debt through the enforcement of security provisions if this is not achieved. Financing document events of default or other events giving rise to debtholder controls, and the consequences of their breach or trigger, are key elements of this protection. To provide effective protection to creditors, these features work within the context of the business being financed, in most cases to allow the operating businesses to continue as going concerns and to allow debt service to be paid through available liquidity facilities while action is being taken.

In assessing structural features that provide control rights, we typically consider the following:

Effectiveness of control rights

- » The extent to which the exercise of control rights may be impeded (e.g., local jurisdiction laws or certain regulatory restrictions). We assess the proposed terms and conditions in conjunction with legal guidance to ascertain whether the proposed control rights are likely to operate as intended.

Length of the control period

- » The length of time creditors have to exercise control rights before the issuer loses the right to generate cash flow from the assets (e.g., before an insolvency process or before a concession/regulatory license is terminated).

Dedicated liquidity support

- » The extent to which dedicated liquidity support covers ongoing debt service while control rights are exercised. To be considered effective, such dedicated liquidity would need to be available for use in circumstances where control rights are exercised.

To be considered effective, structural features typically include the following:

- » The entity subject to the financing and the restrictions is separated from the wider ownership group and any wider business group. The separation is achieved through legal means related to the creation of the issuer or restrictions in the financial structure.
- » All creditors are subject to common terms that ensure that an individual creditor or a group of creditors cannot take unilateral action to destabilize the financing.
- » Creditor step-in rights are specifically permitted under the concession, regulatory license or legal framework, as well as the financing documents. In our assessment, we consider security arrangements to be one element, albeit usually a critical element, of a wider package of features designed to improve creditors' ability to detect early potential problems and rectify them if possible (in the first instance by retaining cash surpluses within the company). In addition, if remedial action is not possible or fails, the security arrangements are used to maximize recovery prospects.

In assessing rating uplift, we consider the package as a whole in order to gauge the overall effectiveness. For example, independent validation of compliance with financial ratio covenants may be an important consideration in assessing the ongoing effectiveness of such covenants.

Security is sometimes not allowed or is not enforceable on certain assets, the title of which may be retained by the state or other granting authority, or where the company is restricted from giving security over its assets by a pre-existing statute.

Other considerations

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

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

Impact of non-core businesses / multi-utilities

This methodology scorecard is applied to the assessment of issuers whose primary activity is the ownership and operation of regulated water and wastewater assets. Where the company has or will seek to diversify its operations towards other business types, we consider

the impact of such diversification on credit quality. In particular, the ownership of material businesses with higher credit risk than regulated water and wastewater services would likely result in an actual rating that is lower than the scorecard-indicated outcome.

In some cases, it is generally useful to apply this methodology to the monopoly-based water and wastewater business of multi-utilities, but a multi-utility's overall credit quality will reflect a combination of risk factors related to the combined group's activities, which may include regulated electric and gas networks, environmental services, etc.

Liquidity

Liquidity is an important rating consideration for all water utilities, although it may not have a substantial impact in discriminating between two issuers with a similar credit profile. Liquidity can be particularly important for companies in highly seasonal operating environments where working capital needs must be considered, and ratings can be heavily affected by extremely weak liquidity. We form an opinion on likely near-term liquidity requirements from the perspective of both sources and uses of cash. For more details on our approach, please see our liquidity cross-sector methodology.⁴

Liquidity and access to financing are of particular importance in this sector. Some water and wastewater assets have a very long useful life, even in excess of 50 years, as well as being costly to build or purchase. Furthermore, the sector has historically experienced prolonged periods of negative free cash flow, such that a portion of capital expenditure must be debt financed. Dividends also represent a quasi-permanent outlay, as companies rarely cut their dividend. Liquidity is also important in funding maturing obligations, which are often large.

Our assessment of liquidity for regulated water utilities typically involves an analysis of total sources and uses of cash over the next 12 months or more. Using our financial projections and our analysis of its available sources of liquidity (including an assessment of the quality and reliability of alternate liquidity such as committed credit facilities), we evaluate how a company's projected sources of cash (cash from operations, cash on hand and existing committed multi-year credit facilities) compare to its projected uses (including all or most capital expenditures, dividends, maturities of short and long-term debt, our projection of potential liquidity calls on financial hedges, and important issuer-specific items such as special tax payments). In this assessment, we assume the company has no access to capital markets or additional liquidity sources, existing credit facilities are not renewed, and dividends are not cut from current levels. Using this scenario, we assess a company's liquidity profile, its ability to make adjustments to improve its liquidity position and any dependence on liquidity sources with lower quality and reliability.

Management strategy

The quality of management is an important factor supporting a company's credit strength. Assessing the execution of business plans over time can be helpful in assessing management's business strategies, policies, and philosophies and in evaluating management performance relative to performance of competitors and our projections. Management's track record of adhering to stated plans, commitments and guidelines provides insight into management's likely future performance, including in stressed situations.

Size

The size and scale of companies in this sector has generally had a limited impact on credit quality. However, size can still be a very important factor in our rating assessment, including in our assessment of event risk, construction risk and external funding access. While the scorecard incorporates some of the execution risk around large or complex projects into the Scale and Complexity of Capital Program and Asset Condition Risk sub-factor, the impact of these considerations on credit quality may not be fully captured within the scorecard in every case.

Interaction of ratings with government policies and sovereign ratings

Regulated water utilities are more exposed to government actions. Credit impacts can occur directly through regulation, and indirectly through environmental and tax policies. While Factor 1 – Business Profile considers many of these risks, the impact of these considerations on credit quality may not be fully captured within the scorecard in every case. As purely domestic enterprises (in most cases), water utilities are typically subject to the same macro-economic trends as the government of the country they operate in.

Parental support

Ownership can provide ratings lift for a particular water utility if it is owned by a highly rated owner(s) and is viewed to be of strategic importance to those owners. In our analysis of parental support, we consider whether the parent has the financial capacity and strategic incentives to provide support to the issuer in times of stress or financial need (e.g., a major capital investment or advantaged

operating agreement), or has already done so in the past. Conversely, if the parent puts a high dividend burden on the issuer, which in turn reduces its flexibility, the ratings would typically reflect this risk.

Government-related issuers may receive ratings uplift due to expected government support. However, for certain issuers, government ownership can have a negative impact on the underlying Baseline Credit Assessment.⁵ For example, price controls, onerous taxation and high distributions can have a negative effect on an issuer's underlying credit profile.

Environmental, social and governance considerations

Environmental, social and governance (ESG) considerations may affect the ratings of issuers in the regulated water utilities sector. For information about our approach to assessing ESG issues, please see our methodology that describes our general principles for assessing these risks.⁶

Droughts can result in a significant reduction in the water resource available to water utilities, and natural and man-made disasters can result in contamination or otherwise reduce potable water supplies. The cash flow impact of drought and water rationing, or flooding or other disasters that interrupt service can vary by region and by regulatory framework. Water shortages can increase customer dissatisfaction and damage relationships with regulators. A drought may be a catalyst for large increases in capital spending, to secure water supplies or reduce leakage in the system. Severe or long-lasting droughts may impact revenues and cash flows in a manner that causes actual ratings to vary more materially from scorecard-indicated outcomes, particularly for issuers subject to regulatory frameworks where the utility is exposed to changes in usage.

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

Financial controls

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

Event risk

We also recognize the possibility that an unexpected event could cause a sudden and sharp decline in an issuer's fundamental creditworthiness, which may cause actual ratings to be lower than the scorecard-indicated outcome. Event risks — which are varied and can range from leveraged recapitalizations to sudden regulatory changes or liabilities from an accident — can overwhelm even a stable, well-capitalized firm. Some other types of event risks include M&A, asset sales, spin-offs, shareholder distributions, capital restructuring programs, litigation, pandemics, significant cyber-crime events and geopolitical conflicts.

Structural subordination

A regulated water company can finance itself in many different ways, including through a regulated operating company (OpCo) and a holding company (HoldCo) structure with debt located at different levels in the corporate structure. Creditors of the HoldCo usually have a secondary claim on the group's cash flows and assets after OpCo creditors, leading to structural subordination. HoldCo debt ratings are usually notched downwards from our assessment of group credit quality (which ignores priority of claim). Our analysis also incorporates other factors, including:

- » Regulatory or other barriers to cash movement from OpCos to HoldCos
- » Specific ring-fencing provisions or financial covenants in the OpCo financing documents
- » HoldCo exposure to subsidiaries with high business risk or volatile cash flows
- » Strained liquidity at the HoldCo level

Low inflation and deflation / high inflation

In a number of regulatory models, tariffs are set in real price values (as opposed to nominal price values), where allowed revenue is computed with reference to a fixed price base and subsequently inflated by a retail, consumer or other price index. Part of the stated

purpose of indexation is to spread the cost of the service more evenly across different generations of customers and to provide utilities with some protection against cost inflation. However, water utilities operating within a real price regulatory model generally need to raise a material, if not predominant portion of their debt on a conventional nominal basis (i.e., debt instruments whose coupon is based on nominal fixed interest rates, which include an assumption of long-term inflation rates within the interest cost). This may cause a timing mismatch of cash flows and debt service, as well as a potentially higher reliance on continued market access to raise debt. Furthermore, subject to a company's dividend policy and tendency to maintain leverage (measured in relation to the regulated asset base) at constant levels close to the guidelines supporting their rating category, lower-than-expected inflation or deflation could lead certain companies to breach such parameters. In such cases, affected utilities have typically taken corrective actions (e.g. in the form of temporary reduction in shareholder distributions) to ensure that such breaches, if any, are of a temporary nature only. In the absence of such actions, ratings pressure may result.

Other regulatory models typically reference nominal tariff rates based on actual capital costs at the time of rate-setting. Although these frameworks may have some forward-looking cost components, they are rarely linked to inflation. High inflation represents a risk for companies operating under these frameworks as tariff-setting typically lags well behind incurred expenditures. When deflation or inflation is severe, actual ratings may vary more materially from scorecard-indicated outcomes.

Using the scorecard to arrive at a scorecard-indicated outcome

1. Measurement or estimation of factors in the scorecard

In the "Discussion of the scorecard factors" section, we explain our analytical approach for scoring each scorecard factor or sub-factor,⁷ and we describe why they are meaningful as credit indicators.

The information used in assessing the sub-factors is generally found in or calculated from information in the company's financial statements or regulatory filings, derived from other observations or estimated by Moody's analysts. We may also incorporate non-public information.

Our ratings are forward-looking and reflect our expectations for future financial and operating performance. However, historical results are helpful in understanding patterns and trends of a company's performance as well as for peer comparisons. Financial metrics,⁸ unless otherwise indicated, are typically calculated based on an average of historical data over the last three years. However, the factors in the scorecard can be assessed using various time periods. For example, rating committees may find it analytically useful to examine both historical and expected future performance for periods of several years or more.

All of the quantitative credit metrics incorporate our standard adjustments⁹ to income statement, cash flow statement and balance sheet amounts for restructuring, impairment, off-balance sheet accounts, receivable securitisation programs, underfunded pension obligations and recurring operating leases. We may also make other analytical adjustments that are specific to a particular company.

2. Mapping scorecard factors to a numeric score

After estimating or calculating each factor or sub-factor, each outcome is mapped to a broad Moody's rating category (Aaa, Aa, A, Baa, Ba, B or Caa, also called alpha categories) and to a numeric score.

Qualitative factors are scored based on the description by broad rating category in the scorecard. The numeric value of each alpha score is based on the scale below.

Exhibit 4

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

Source: Moody's Investors Service

A further weighting is applied by rating category as shown in the table below.

Exhibit 5

Aaa	Aa	A	Baa	Ba	B	Caa
1	1	1	1.15	2	3	5

Source: Moody's Investors Service

We weight lower scores more heavily than higher scores for two reasons. In the first instance, we need to adjust for those situations where an issuer exhibits weak characteristics across the first two factors, which are not typically encountered within the rated universe and which would require more demanding thresholds for the credit metrics. Secondly, we recognize that a serious weakness in one area often cannot be completely offset by a strength in another area and that the lack of flexibility normally associated with high degrees of leverage can heighten risk.

The actual weighting applied to each sub-factor is the product of that sub-factor's standard weighting and its over-weighting, divided by the sum of these products for all the sub-factors (an adjustment that brings the sum of all the sub-factor weightings back to 100%).

3. Determining the overall scorecard-indicated outcome

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

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

Exhibit 6

Scorecard-indicated outcome

Scorecard-indicated outcome	Aggregate numeric score
Aaa	$x < 1.50$
Aa1	$1.50 \leq x < 2.50$
Aa2	$2.50 \leq x < 3.50$
Aa3	$3.50 \leq x < 4.50$
A1	$4.50 \leq x < 5.50$
A2	$5.50 \leq x < 6.50$
A3	$6.50 \leq x < 7.50$
Baa1	$7.50 \leq x < 8.50$
Baa2	$8.50 \leq x < 9.50$
Baa3	$9.50 \leq x < 10.50$
Ba1	$10.50 \leq x < 11.50$
Ba2	$11.50 \leq x < 12.50$
Ba3	$12.50 \leq x < 13.50$
B1	$13.50 \leq x < 14.50$
B2	$14.50 \leq x < 15.50$
B3	$15.50 \leq x < 16.50$
Caa1	$16.50 \leq x < 17.50$
Caa2	$17.50 \leq x < 18.50$
Caa3	$18.50 \leq x < 19.50$

Source: Moody's Investors Service

In general, the scorecard-indicated outcome is oriented to the corporate family rating (CFR) for speculative-grade issuers and to the senior unsecured rating for investment-grade issuers. For issuers that benefit from rating uplift from parental support, government ownership or other institutional support, we consider the underlying credit strength or Baseline Credit Assessment for comparison to the scorecard-indicated outcome. For an explanation of the Baseline Credit Assessment, please refer to *Rating Symbols and Definitions* and to our cross-sector methodology for government-related issuers.¹⁰

Assigning issuer-level and instrument-level ratings

After considering the scorecard-indicated outcome, other considerations and relevant cross-sector methodologies, we typically assign a CFR to speculative-grade issuers or a senior unsecured rating for investment-grade issuers. We may also assign a CFR to investment-grade issuers where the secured debt structure contains structural features that provide creditors meaningful protection against losses (see notching factor description above). For issuers that benefit from rating uplift from government ownership, we may assign a Baseline Credit Assessment.¹¹

Individual debt instrument ratings may be notched up or down from the CFR or the senior unsecured rating to reflect our assessment of differences in expected loss related to an instrument's seniority level and collateral. The documents that provide broad guidance for such notching decisions are the rating methodology on loss given default for speculative-grade non-financial companies, the methodology for notching corporate instrument ratings based on differences in security and priority of claim, and the methodology for assigning short-term ratings.¹²

Key rating assumptions

For information about key rating assumptions that apply to methodologies generally, please see *Rating Symbols and Definitions*.¹³

Limitations

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

Limitations of the scorecard

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

The scorecard in this rating methodology is a relatively simple reference tool that can be used in most cases to approximate credit profiles of issuers in this sector and to explain, in summary form, many of the factors that are generally most important in assigning ratings to these issuers. Credit loss and recovery considerations, which are typically more important as an issuer gets closer to default, may not be fully captured in the scorecard. The scorecard is also limited by its upper and lower bounds, causing scorecard-indicated outcomes to be less likely to align with ratings for issuers at the upper and lower ends of the rating scale.

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

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

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

General limitations of the methodology

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

Ratings reflect our expectations for an issuer's future performance; however, as the forward horizon lengthens, uncertainty increases and the utility of precise estimates, as scorecard inputs or in other considerations, typically diminishes. Our forward-looking opinions are based on assumptions that may prove, in hindsight, to have been incorrect. Reasons for this could include unanticipated changes in any of the following: the macroeconomic environment, general financial market conditions, industry competition, disruptive technology, or regulatory and legal actions. In any case, predicting the future is subject to substantial uncertainty.

Moody's related publications

Credit ratings are primarily determined through the application of sector credit rating methodologies. Certain broad methodological considerations (described in one or more cross-sector rating methodologies) may also be relevant to the determination of credit ratings of issuers and instruments. A list of sector and cross-sector credit rating methodologies can be found [here](#).

For data summarizing the historical robustness and predictive power of credit ratings, please click [here](#).

For further information, please refer to *Rating Symbols and Definitions*, which is available [here](#).

Moody's Basic Definitions for Credit Statistics (User's Guide) can be found [here](#).

Authors:

Stefanie Voelz

Tomás O'Loughlin

Endnotes

- [1](#) A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.
- [2](#) A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.
- [3](#) In our methodologies and research, the terms "scorecard" and "grid" are used interchangeably.
- [4](#) A link to a list of our cross-sector methodologies can be found in the "Moody's related publications" section.
- [5](#) For an explanation of the Baseline Credit Assessment, please refer to *Rating Symbols and Definitions* and to our cross-sector methodology for government-related issuers. A link to a list of our sector and cross-sector methodologies and a link to *Rating Symbols and Definitions* can be found in the "Moody's related publications" section.
- [6](#) A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.
- [7](#) When a factor comprises sub-factors, we score at the sub-factor level. Some factors do not have sub-factors, in which case we score at the factor level.
- [8](#) For definitions of our most common metrics, please see *Moody's Basic Definitions for Credit Statistics (User's Guide)*. A link can be found in the "Moody's related publications" section.
- [9](#) For an explanation of our standard adjustments, please see the cross-sector methodology that describes our financial statement adjustments in the analysis of non-financial corporations.
- [10](#) A link to a list of our sector and cross-sector methodologies and a link to *Rating Symbols and Definitions* can be found in the "Moody's related publications" section.
- [11](#) For an explanation of the Baseline Credit Assessment, please refer to *Rating Symbols and Definitions* and to our cross-sector methodology for government-related issuers. A link to a list of our sector and cross-sector methodologies and a link to *Rating Symbols and Definitions* can be found in the "Moody's related publications" section.
- [12](#) A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.
- [13](#) A link to *Rating Symbols and Definitions* can be found in the "Moody's related publications" section.
- [14](#) A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.

© 2023 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved. CREDIT RATINGS ISSUED BY MOODY'S CREDIT RATINGS AFFILIATES ARE THEIR CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND MATERIALS, PRODUCTS, SERVICES AND INFORMATION PUBLISHED BY MOODY'S (COLLECTIVELY, "PUBLICATIONS") MAY INCLUDE SUCH CURRENT OPINIONS. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT OR IMPAIRMENT. SEE APPLICABLE MOODY'S RATING SYMBOLS AND DEFINITIONS PUBLICATION FOR INFORMATION ON THE TYPES OF CONTRACTUAL FINANCIAL OBLIGATIONS ADDRESSED BY MOODY'S CREDIT RATINGS. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS, NON-CREDIT ASSESSMENTS ("ASSESSMENTS"), AND OTHER OPINIONS INCLUDED IN MOODY'S PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S PUBLICATIONS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. AND/OR ITS AFFILIATES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS DO NOT COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS, ASSESSMENTS AND OTHER OPINIONS AND PUBLISHES ITS PUBLICATIONS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.

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

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

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

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

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

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

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

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

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

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

MJKK or MSFJ (as applicable) hereby disclose that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MJKK or MSFJ (as applicable) have, prior to assignment of any credit rating, agreed to pay to MJKK or MSFJ (as applicable) for credit ratings opinions and services rendered by it fees ranging from JPY100,000 to approximately JPY550,000,000.

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

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the issuer/deal page on <https://ratings.moody.com> for the most updated credit rating action information and rating history.

REPORT NUMBER 1345390

Contacts

Corrado Trippa +34.91.768.8307
VP-Senior Analyst
corrado.trippa@moodys.com

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

Ning Loh +852.3758.1668
Associate Managing Director
ning.loh@moodys.com

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

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

Paul Marty +33.1.5330.3371
Senior Vice President/Manager
paul.marty@moodys.com