



March 2022

Exposure Draft

IFRS[®] Sustainability Disclosure Standard

[Draft] IFRS S2 Climate-related Disclosures Appendix B Industry-based disclosure requirements

Volume B39—Water Utilities & Services

Comments to be received by 29 July 2022



This industry from Appendix B Industry-based disclosure requirements accompanies the Exposure Draft ED/2022/S2 *Climate-related Disclosures* (published March 2022; see separate booklet). It is published by the International Sustainability Standards Board (ISSB) for comment only. Comments need to be received by 29 July 2022 and should be submitted by email to commentletters@ifrs.org or online at <https://www.ifrs.org/projects/open-for-comment/>.

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Introduction

This volume is part of Appendix B of [draft] IFRS S2 Climate-related Disclosures and is an integral part of that [draft] Standard. It has the same authority as the other parts of that [draft] Standard.

This volume sets out the requirements for identifying, measuring and disclosing information related to an entity's significant climate-related risks and opportunities that are associated with specific business models, economic activities and other common features that characterise participation in this industry.

The industry-based disclosure requirements are derived from SASB Standards (see paragraphs B10–B12 of [Draft] IFRS S2 *Climate-related Disclosures*). Amendments to the SASB Standards, described in paragraph B11, are marked up for ease of reference. New text is underlined and deleted text is struck through. The metric codes used in SASB Standards have also been included, where applicable, for ease of reference. For additional context regarding the industry-based disclosure requirements contained in this volume, including structure and terminology, application and illustrative examples, refer to Appendix B paragraphs B3–B17.

Water Utilities & Services

Industry Description

Companies in the Water Utilities & Services industry own and operate water supply and wastewater treatment systems (generally structured as regulated utility businesses), or provide operational and other specialized water services to system owners (usually market-based operations). Water supply systems include the sourcing, treatment, and distribution of water to residences, businesses, and other entities such as governments. Wastewater systems collect and treat wastewater, including sewage, graywater, industrial waste fluids, and stormwater runoff, before discharging the resulting effluent back into the environment.

Note: The scope of the Water Utilities & Services industry (IF-WU) excludes water services that fall into the category of infrastructure design and development. These activities fall within the Engineering & Construction Services industry (IF-EC).

Sustainability Disclosure Topics & Metrics

Table 1. Sustainability Disclosure Topics & Metrics

TOPIC	METRIC	CATEGORY	UNIT OF MEASURE	CODE
Energy Management	(1) Total energy consumed, (2) percentage grid electricity, (3) percentage renewable	Quantitative	Gigajoules (GJ), Percentage (%)	IF-WU-130a.1
Distribution Network Efficiency	Water main replacement rate ⁶²	Quantitative	Rate	IF-WU-140a.1
	Volume of non-revenue real water losses	Quantitative	Thousand cubic meters (m ³)	IF-WU-140a.2
End-Use Efficiency	Percentage of water utility revenues from rate structures that are designed to promote conservation and revenue resilience	Quantitative	Percentage (%)	IF-WU-420a.1
	Customer water savings from efficiency measures, by market ⁶³	Quantitative	Cubic meters (m ³)	IF-WU-420a.2
Water Supply Resilience	Total water sourced from regions with High or Extremely High Baseline Water Stress, percentage purchased from a third party	Quantitative	Thousand cubic meters (m ³), Percentage (%)	IF-WU-440a.1
	Volume of recycled water delivered to customers	Quantitative	Thousand cubic meters (m ³)	IF-WU-440a.2
	Discussion of strategies to manage risks associated with the quality and availability of water resources	Discussion and Analysis	n/a	IF-WU-440a.3

continued...

⁶² Note to IF-WU-140a.1 – The entity shall discuss the use of and challenges associated with planned and corrective maintenance in its distribution system.

⁶³ Note to IF-WU-420a.2 – The entity shall discuss customer efficiency measures that are required by regulations for each of its relevant markets.

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TOPIC	METRIC	CATEGORY	UNIT OF MEASURE	CODE
Network Resiliency & Impacts of Climate Change	Wastewater treatment capacity located in 100-year flood zones	Quantitative	Cubic meters (m ³) per day	IF-WU-450a.1
	(1) Number and (2) volume of sanitary sewer overflows (SSO), (3) percentage of volume recovered	Quantitative	Number, Cubic meters (m ³), Percentage (%)	IF-WU-450a.2
	(1) Number of unplanned service disruptions, and (2) customers affected, each by duration category ⁶⁴	Quantitative	Number	IF-WU-450a.3
	Description of efforts to identify and manage risks and opportunities related to the impact of climate change on distribution and wastewater infrastructure	Discussion and Analysis	n/a	IF-WU-450a.4

Table 2. Activity Metrics

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Number of: (1) residential, (2) commercial, and (3) industrial customers served, by service provided ⁶⁵	Quantitative	Number	IF-WU-000.A
Total water sourced, percentage by source type ⁶⁶	Quantitative	Cubic meters (m ³), Percentage (%)	IF-WU-000.B
Total water delivered to: (1) residential, (2) commercial, (3) industrial, and (4) all other customers ⁶⁷	Quantitative	Thousand cubic meters (m ³)	IF-WU-000.C
Average volume of wastewater treated per day, by (1) sanitary sewer, (2) stormwater, and (3) combined sewer	Quantitative	Cubic meters (m ³) per day	IF-WU-000.D
Length of (1) water mains and (2) sewer pipe	Quantitative	Kilometers (km)	IF-WU-000.E

⁶⁴ Note to IF-WU-450a.3 – The entity shall discuss notable service disruptions such as those that affected a significant population or those of extended duration.

⁶⁵ Note to IF-WU-000.A – The number of customers served shall be defined, consistent with the 2017 AWWA Utility Benchmarking: Performance Management for Water and Wastewater, published by American Water Works Association, as the number of individual service agreements for water or wastewater services at single properties, where an individual may own more than one property and be counted as a customer more than once. The entity may disclose additional customer types if such customer types exist that do not fall within the scope of the customer types described above. Disclosure of the number of customers by customer type shall additionally be broken out by the number of customers (in each customer type) provided with water services, and separately, provided with wastewater services. The entity may additionally disclose the number of customers (in each customer type) by other types of services.

⁶⁶ Note to IF-WU-000.B – Water sourced shall be disclosed by the direct source in which the entity obtains water, as classified by the following water source types: groundwater, surface water, ocean water, recycled water, water purchased from third parties, and other sources.

⁶⁷ Note to IF-WU-000.C – The amount of water delivered includes drinking water, industrial process water, and recycled water.

Energy Management

Topic Summary

Companies in the Water Utilities & Services industry require significant energy inputs for the withdrawal, conveyance, treatment, and distribution or discharge of potable water and wastewater. Utility operating costs are directly related to energy use, which is typically a company's largest operating cost after purchased water, chemicals, and labor. Purchased grid electricity is the most common energy input. In more remote locations, on-site generation is used to power equipment. The inefficient use of purchased grid electricity creates environmental externalities, such as Scope 2 greenhouse gas emissions. Regulations that address environmental concerns are likely to affect the future grid energy mix, leading to increases in prices. Additionally, climate change is also expected to impact grid reliability, and affect the availability of water resources. As a result, the energy intensity of water utilities is likely to increase in the future as water sources become more difficult to access. Alternative water treatment, such as recycling and desalination, can also require more energy. Together with decisions about the use of alternative fuels, renewable energy, and on-site electricity generation, energy efficiency can play an important role in influencing both the cost and the reliability of the energy supply.

Metrics

IF-WU-130a.1. (1) Total energy consumed, (2) percentage grid electricity, (3) percentage renewable

- 1 The entity shall disclose (1) the total amount of energy it consumed as an aggregate figure, in gigajoules (GJ).
 - 1.1 The scope of energy consumption includes energy from all sources, including energy purchased from sources external to the entity and energy produced by the entity itself (self-generated). For example, direct fuel usage, purchased electricity, and heating, cooling, and steam energy are all included within the scope of energy consumption.
 - 1.2 The scope of energy consumption includes only energy directly consumed by the entity during the reporting period.
 - 1.3 In calculating energy consumption from fuels and biofuels, the entity shall use higher heating values (HHV), also known as gross calorific values (GCV), which are directly measured or taken from the Intergovernmental Panel on Climate Change (IPCC), the U.S. Department of Energy (DOE), or the U.S. Energy Information Administration (EIA).
- 2 The entity shall disclose (2) the percentage of energy it consumed that was supplied from grid electricity.
 - 2.1 The percentage shall be calculated as purchased grid electricity consumption divided by total energy consumption.
- 3 The entity shall disclose (3) the percentage of energy it consumed that is renewable energy.

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- 3.1 Renewable energy is defined as energy from sources that are replenished at a rate greater than or equal to their rate of depletion, such as geothermal, wind, solar, hydro, and biomass.
- 3.2 The percentage shall be calculated as renewable energy consumption divided by total energy consumption.
- 3.3 The scope of renewable energy includes renewable fuel the entity consumed, renewable energy the entity directly produced, and renewable energy the entity purchased, if purchased through a renewable power purchase agreement (PPA) that explicitly includes renewable energy certificates (RECs) or Guarantees of Origin (GOs), a Green-e Energy Certified utility or supplier program, or other green power products that explicitly include RECs or GOs, or for which Green-e Energy Certified RECs are paired with grid electricity.
 - 3.3.1 For any renewable electricity generated on-site, any RECs and GOs must be retained (i.e., not sold) and retired or cancelled on behalf of the entity in order for the entity to claim them as renewable energy.
 - 3.3.2 For renewable PPAs and green power products, the agreement must explicitly include and convey that RECs and GOs be retained or replaced and retired or cancelled on behalf of the entity in order for the entity to claim them as renewable energy.
 - 3.3.3 The renewable portion of the electricity grid mix that is outside of the control or influence of the entity is excluded from the scope of renewable energy.
- 3.4 For the purposes of this disclosure, the scope of renewable energy from ~~hydro and biomass sources is limited to the following:~~
 - 3.4.1 ~~Energy from hydro sources is limited to those that are certified by the Low Impact Hydropower Institute or that are eligible for a state Renewable Portfolio Standard;~~
 - 3.4.2 ~~Energy from biomass sources is limited to~~ materials certified to a third-party standard (e.g., Forest Stewardship Council, Sustainable Forest Initiative, Programme for the Endorsement of Forest Certification, or American Tree Farm System), materials considered eligible sources of supply according to the *Green-e Framework for Renewable Energy Certification, Version 1.0* (2017) or Green-e regional standards, and/or materials that are eligible for an applicable state renewable portfolio standard.
- 4 The entity shall apply conversion factors consistently for all data reported under this disclosure, such as the use of HHVs for fuel usage (including biofuels) and conversion of kilowatt hours (kWh) to GJ (for energy data including electricity from solar or wind energy).
- 5 The scope of disclosure includes all water, wastewater, and stormwater operations and services.

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- 5.1 The entity may break out its disclosures by water, wastewater, and/or stormwater services.

Distribution Network Efficiency

Topic Summary

Water utilities develop, maintain, and operate complex interconnected infrastructure networks that include extensive pipelines, canals, reservoirs, and pump stations. Significant volumes of water are lost in the distribution network (called "non-revenue water," as it is a distributed volume of water that is not reflected in customer billings). This water is lost primarily because of infrastructure failures and inefficiencies, such as leaking pipes and service connections. Non-revenue real water losses may negatively impact financial performance, raise customer rates, and squander water and other resources such as energy and treatment chemicals. Conversely, improvements to infrastructure and operating processes can limit non-revenue losses, positively impacting revenues and possibly reducing costs. Efficiently directing operational and maintenance expenses or capital expenditures to distribution systems—primarily pipeline and service connection repair, refurbishment, or replacement—can improve company value and provide strong investment returns.

Metrics

IF-WU-140a.1. Water main replacement rate

- 1 The entity shall disclose its water main replacement rate for the distribution system(s) that it owns and/or operates.
 - 1.1 The distribution system is defined, ~~consistent with the definition provided by the American Water Works Association's (AWWA) Water Distribution Research and Applied Development Needs~~, as including all water utility components for the distribution of finished or potable water to customers or other users. This includes the distribution of water for non-potable uses, including fire suppression.
- 2 The percentage shall be calculated as the total length of pipe replaced during the reporting period divided by the total length of water mains in its distribution system.
 - 2.1 The scope of water main replacements includes complete main replacements, as well as rehabilitations and/or renewals that substantially extend the life of the water main.
 - 2.2 The scope of water main replacements excludes water main repairs.
- 3 The scope of disclosure is limited to water operations and services (i.e., wastewater and stormwater services are excluded).

Note to **IF-WU-140a.1**

- 1 The entity shall describe the use of and challenges associated with planned and corrective maintenance in its distribution system, where:
 - 1.1 Corrective maintenance is defined, ~~consistent with the 2017 American Water Works Association (AWWA) Utility Benchmarking: Performance Management for Water and Wastewater~~, as all maintenance undertaken after asset failure.

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- 1.2 Planned maintenance is defined, ~~consistent with the 2017 AWWA Utility Benchmarking: Performance Management for Water and Wastewater~~, as all regular maintenance activities undertaken in advance of asset failure.
- 2 Relevant challenges to describe include, but are not limited to, the impacts of corrosion and soil properties on pipe materials (e.g., cast iron, ductile iron, polyvinyl chloride, and wood), the entity's ability to finance maintenance and replacement through rate adjustments, and the age of the current distribution network.

IF-WU-140a.2. Volume of non-revenue real water losses

- 1 The entity shall disclose the amount, in cubic meters, of non-revenue real water losses from the distribution system.
 - 1.1 Non-revenue real water losses are defined, ~~consistent with the American Water Works Association (AWWA) Water Audits and Loss Control Program, Fourth Edition (M36 Manual)~~, as the physical water losses, which are not billed and produce no revenue, from the pressurized system and the utility's storage tanks up to the point of customer consumption, which is the customer meter for those utilities that meter their customers. In unmetered systems, the delineation is the point at which the customer becomes responsible for customer service connection piping maintenance and repairs. Real losses include leakage from mains and service connections and storage tank overflows.
 - 1.2 ~~The entity shall consider guidance such as the AWWA M36 Manual as normative references, thus any updates made year-on-year shall be considered updates to this guidance.~~
 - 2 The entity shall calculate the amount of non-revenue real water losses according to national, state, or local regulations where such loss occurs. ~~Relevant guidance includes, but is not limited to:~~
 - 2.1 ~~California Senate Bill 555~~
 - 2.2 ~~Texas Water Code Section 16.012~~
 - 2.3 ~~Georgia Senate Bill 370~~
 - 3 The scope of disclosure is limited to water operations and services (i.e., wastewater and stormwater services are excluded).
 - 4 Where national, state, or local regulations do not exist, the entity shall calculate the amount of real losses according to voluntary initiatives, ~~where relevant guidance includes, but is not limited to:~~
 - 4.1 ~~The AWWA M36 Manual~~
- 5 The entity may disclose the technique(s) it employs to measure non-revenue water from real losses and the amount calculated according to each technique it employs.

End-Use Efficiency

Topic Summary

Water efficiency and conservation at the consumer level, whether a product of government mandates, environmental consciousness, or demographic trends, is increasingly important for long-term resource availability and the financial performance of the water supply segment of the industry. The end-use efficiency topic addresses how utilities work with regulators to mitigate revenue declines in the context of the increasing need for resource efficiency. Water efficiency mechanisms, including rate decoupling, can ensure that a utility's revenue can adequately cover its fixed costs and provide the desired levels of returns regardless of sales volume, while simultaneously incentivizing customers to conserve water. Efficiency mechanisms can better align utilities' economic incentives with environmental and social interests, including resource efficiency, lower rates, and increased capital investments in infrastructure. Water utilities are able to manage their exposure to the impact of rate mechanisms through positive regulatory relations, forward-looking rate cases that incorporate efficiency, and a strong execution of efficiency strategy.

Metrics

IF-WU-420a.1. Percentage of water utility revenues from rate structures that are designed to promote conservation and revenue resilience

- 1 The entity shall disclose the percentage of water utility revenues from rate structures that are designed to promote conservation and revenue resilience.
 - 1.1 The scope of rate structures that are designed to promote conservation and revenue resilience is limited to rate structures that are explicitly and intentionally designed to:
 - 1.1.1 Financially incentivize customers to reduce water consumption and/or improve water efficiency; and
 - 1.1.2 Improve the revenue resilience of the water utility, primarily in circumstances of declining average customer water use and/or improving average customer water efficiency.
 - 1.2 The scope of rate structures that are designed to promote conservation and revenue resilience includes, but is not limited to, revenue decoupled rate structures.
 - 1.2.1 Revenue decoupled rate structures are defined ~~according to the U.S. National Association of Regulatory Utility Commissioners in Decoupling for Electric & Gas Utilities (September 2007)~~, as a rate adjustment mechanism that separates the utility's fixed cost recovery from the volume sold—and the utility's revenues are collected based on the regulatory determined revenue requirement.
 - 1.2.2 Revenue decoupled rate structures may also be referred to as, "revenue regulation" or "revenue cap regulation," where the regulator establishes an allowed revenue requirement and adjusts collections so as to achieve that allowed, or 'target,' revenue irrespective of actual sales—~~definition adapted from Decoupling~~

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~~Case Studies: Revenue Regulation Implementation in Six States, The Regulatory Assistance Project, July 2014).~~

- 1.2.3 Additional guidance on the scope of revenue decoupled rate structures is contained in *Alternative Regulation and Ratemaking Approaches for Water Companies*, The Brattle Group, September 23, 2013.
- 1.3 The scope of rate structures that are designed to promote conservation and revenue resilience includes, but is not limited to, rate structures that contain a lost revenue adjustment mechanism (LRAM).
 - 1.3.1 Rate structures that contain an LRAM are defined as volumetric rates that contain a mechanism which allows the entity to recover revenues lost directly resulting from water conservation, water efficiency, and/or demand side management programs that are directly managed and/or implemented by the entity.
 - 1.3.2 Additional guidance on the scope of revenue decoupled rate structures is contained in *Alternative Regulation and Ratemaking Approaches for Water Companies*, The Brattle Group, September 23, 2013.
 - 1.3.3 The scope of LRAM includes mechanisms that allow the estimation of lost revenues based on the programs' actual impacts, but excludes lost revenues from planned or forecasted programs impacts (as described in *Alternative Regulation and Ratemaking Approaches for Water Companies*, The Brattle Group, September 23, 2013).
- 1.4 The scope of rate structures that are designed to promote conservation and revenue resilience excludes straight fixed-variable rate design, absent other rate mechanisms that are explicitly designed to promote conservation.
- 2 The percentage shall be calculated as the regulated water utility revenue from rate structures that are designed to promote conservation and revenue resilience divided by total regulated water utility revenue.
- 3 The scope of disclosure is limited to water operations and services (i.e., wastewater and stormwater services are excluded).

IF-WU-420a.2. Customer water savings from efficiency measures, by market

- 1 The entity shall disclose the total volume of water savings, in cubic meters, from water efficiency measures installed or otherwise supported by the entity during the reporting period for each of its markets.
 - 1.1 Markets are defined as those operations that are subject to distinct public utility regulatory oversight.
- 2 Water savings shall be defined according to the gross savings approach as the changes in water consumption and/or demand that result from program-related actions taken by participants in an efficiency program, regardless of why they participated.

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- 2.1 The entity should list those markets where it reports water savings on a net savings basis, and thus may be different from the figures disclosed here.
- 2.1.1 Net water savings are defined as changes in consumption that are specifically attributable to a water efficiency program and that would not otherwise have happened in the absence of the program.
- 3 Water savings shall be calculated on a gross basis but consistent with the methodology set forth in state or local evaluation, measurement, and verification (EM&V) regulations where such savings occur. ~~Relevant regulations include, but are not limited to:~~
- 3.1 ~~California Public Utilities Commission Decision 07-12-050~~
- 4 Where state or local regulations do not exist, the entity shall calculate water savings in a manner consistent with the measurement and verification methods outlined by Efficiency Valuation Organization's (EVO) International Performance Measurement and Verification Protocol: Concepts and Options for Determining Energy and Water Savings, Volume 1 (IPM&V Protocol).
- 5 The entity shall consider the EVO IPM&V Protocol and state regulations as normative references, thus any updates made year-on-year shall be considered updates to this guidance.
- 6 The scope of disclosure is limited to water operations and services (i.e., wastewater and stormwater services are excluded).

Note to **IF-WU-420a.2**

- 1 The entity shall describe customer efficiency measures that are required by regulations for each of its relevant markets, including a discussion of:
- 1.1 The amount or percentage of water savings from efficiency measures required by regulations for each market.
- 1.2 Instances of non-compliance with water savings obligations.
- 1.2.1 In such instances, the entity shall disclose the difference between the water savings delivered and the amount required by the regulation.
- 1.3 Water savings delivered that exceed those required by regulations that resulted in the entity receiving energy efficiency performance incentives, including the value of any such incentives.
- 2 ~~Relevant regulations include, but are not limited to:~~
- 2.1 ~~The California Water Conservation Act of 2009.~~
- 2.3 The entity shall describe the forms of regulation in each market that allow for or incentivize water efficiency, including a discussion of the benefits, challenges, and financial impacts associated with such regulations.
- 3.4 Relevant policy mechanisms to discuss include, but are not limited to:
- 3.1 ~~4.1~~ Deferral decoupling
- 3.2 ~~4.2~~ Current period decoupling

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~~3.3~~ 4.3 Single fixed variable rates

~~3.4~~ 4.4 Lost revenue adjustments

~~3.5~~ 4.5 Water efficiency feebates

- 4 5 The entity may describe incentives it has developed for its customers that promote end-use efficiency, including, but not limited to, dynamic pricing, water efficiency rebates, and other measures to subsidize customer water efficiency.
- ~~5~~ 6 The entity may describe voluntary initiatives, ~~such as the U.S. Environmental Protection Agency WaterSense program~~, that it has engaged in to manage end-user water efficiency.

Water Supply Resilience

Topic Summary

Water supply systems obtain water from groundwater and surface water sources. Water supplies may either be accessed directly or purchased from a third party, often a government entity. Water scarcity, water source contamination, infrastructure failures, regulatory restrictions, competing users, and overconsumption by customers are all factors that can jeopardize access to sufficient water supplies. These issues, combined with an increasing risk of extreme and frequent drought conditions due to climate change, may lead to inadequate supplies or mandated water restrictions. The related financial impacts may manifest in different ways, depending on rate structure, but are most likely to impact company value through decreased revenue. Water supply challenges may also lead to increases in the price of purchased water, which could result in higher operating costs. Failures of critical infrastructure such as aqueducts and canals, which could result from events such as earthquakes, are capable of presenting catastrophic risks to customers of the water supply system and could inflict untold financial consequences. Companies are able to mitigate water supply risks (and the resulting financial risks) through diversification of water supplies, sustainable withdrawal levels, technological and infrastructure improvements, contingency planning, positive relations with regulators and other major users, as well as rate structures.

Metrics

IF-WU-440a.1. Total water sourced from regions with High or Extremely High Baseline Water Stress, percentage purchased from a third party

- 1 The entity shall disclose the amount of fresh water, in thousands of cubic meters, that was sourced from all sources in regions with High (40-80 percent) or Extremely High (>80 percent) Baseline Water Stress.
 - 1.1 Water sources include surface water (including water from wetlands, rivers, and lakes), groundwater, and wholesale water purchased from a third party.
 - 1.2 Fresh water may be defined according to the local laws and regulations where the entity operates. Where there is no legal definition, fresh water shall be considered to be water that has less than 1,000 parts per million of dissolved solids ~~per the U.S. Geological Survey~~.
 - 1.3 Water obtained from a water utility in compliance with ~~U.S. National Primary Drinking Water Regulations~~ jurisdictional drinking water regulations can be assumed to meet the definition of fresh water.
 - 1.4 High or Extremely High Baseline Water Stress shall be classified by the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct.
- 2 The entity shall disclose the percentage of fresh water sourced in regions with High or Extremely High Baseline Water Stress that was purchased from a third party.

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- 2.1 The percentage shall be calculated as the amount of fresh water sourced in regions with High or Extremely High Baseline Water Stress (in thousands of cubic meters) that was purchased from a third party divided by the total amount of fresh water sourced in regions with High or Extremely High Baseline Water Stress (in thousands of cubic meters).

IF-WU-440a.2. Volume of recycled water delivered to customers

- 1 The entity shall disclose the volume, in cubic meters, of water it has recycled and delivered to its customers.
- 2 Recycled water shall be defined as wastewater that has been treated to meet specific water quality criteria with the intent of being used for a range of purposes, including, but not limited to:
 - 2.1 Potable reuse, such as direct augmentation of the drinking water supply and indirect augmentation of a drinking water source where an environmental buffer precedes drinking water treatment
 - 2.1.1 Water recycled for potable reuse shall be treated to the standards established through the Safe Drinking Water Act.
 - 2.2 Non-potable reuse, such as recreational landscape irrigation, agricultural reuse, industrial process reuse, and environmental reuse (e.g., wetland enhancement and groundwater recharge)
- 3 The amount of recycled water delivered shall be calculated as the amount of water that meets the quality standards for approved uses of recycled water as set forth through the state and local regulations where the recycling occurs. ~~Examples of such regulations include, but are not limited to:~~
 - ~~3.1 California State Water Resources Control Board: Regulations Related to Recycled Water~~
 - ~~3.2 Florida Administrative Code Chapter 62-610 and Chapter 62-600~~
 - ~~3.3 Arizona Administrative Code Title 18, Chapter 11, Article 3: Reclaimed Water Quality Standards~~
- 4 ~~Where state regulations have not established criteria for wastewater recycling but where such practices are legal, recycled water shall meet the Suggested Regulatory Guidelines as set forth in Chapter 4.4.2 of the U.S. Environmental Protection Agency's (EPA) 2012 Guidelines for Water Reuse.~~

IF-WU-440a.3. Discussion of strategies to manage risks associated with the quality and availability of water resources

- 1 The entity shall identify and describe its significant risks associated with the quality and availability of, and access to, water resources, including a discussion of its strategies to manage such risks.
 - 1.1 Relevant information to provide includes, but is not limited to:

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- 1.1.1 Environmental constraints—such as water resources in water-stressed regions, drought, interannual or seasonal variability, severe weather events, risks due to the impact of climate change, and any impacts or risks associated with contaminated sources
 - 1.1.2 Regulatory, infrastructure, and financial constraints—such as reliance on key infrastructure to obtain water, risk of restrictions to obtaining sufficient water due to regulations or the entity's ability to obtain and retain water rights, permits, and allocations, and stakeholder perceptions and concerns related to water sources (e.g., those from local communities, non-governmental organizations, and regulatory agencies).
 - 1.1.3 How risks may vary by water source—including surface water (including water from wetlands, rivers, lakes, and oceans), groundwater, rainwater, or wholesale water supplies.
- 2 The entity shall include a description of the potential impacts that these risks may have on its operations and the timeline over which such risks are expected to manifest.
 - 2.1 Impacts may include, but are not limited to, those associated with costs, revenues, liabilities, continuity of operations, access to water, and reputation.
 - 3 The entity shall provide a discussion of its short-term and long-term strategy or plans to manage these risks, including the following, where relevant:
 - 3.1 Diversification of water sources
 - 3.2 Contingency planning in the event of critical infrastructure failure
 - 3.3 The use of alternative, watershed-based approaches to align overall infrastructure decisions with overall watershed goals, ~~as described in Effective Utility Management: A Primer for Water and Wastewater Utilities~~
 - 3.4 The scope of its strategy, plans, or targets, such as whether they pertain differently to different business units (e.g., residential versus industrial), geographies, or regulatory frameworks (e.g., rate structures and/or mandated water-use restrictions)
 - 3.5 The activities and investments established to address water sourced from areas of water stress or scarcity and any risks or limiting factors that might affect the ability to address water scarcity
 - 3.6 The efforts to secure and retain reliable long-term water supplies through senior water rights, permits, and/or allocations, including the entity's ability to secure water (e.g., through purchase from a third party) should it not be able to retain sufficient allocations
 - 4 Disclosure of strategies, plans, and infrastructure investments shall be limited to activities that were ongoing (active) or reached completion during the reporting period.

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- 5 Disclosure of strategies, plans, and infrastructure investments shall be limited to activities that were ongoing (active) or reached completion during the reporting period.
- 6 The entity shall discuss if its management of water scarcity results in any additional lifecycle impacts or tradeoffs—including tradeoffs in land use (e.g., development of water storage facilities such as reservoirs), energy consumption, and greenhouse gas (GHG) emissions—and why the entity chose these practices despite lifecycle tradeoffs.

Network Resiliency & Impacts of Climate Change

Topic Summary

Climate change is likely to create business uncertainty for water supply systems and wastewater systems due to potential impacts on infrastructure and operations. Climate change can lead to increased water stress, more frequent severe weather events, reduced water quality, and rising sea levels that could impair utility assets or the ability to operate. Water supply and wastewater disposal are basic services for which maintaining continuity is of utmost importance. The increasing frequency and severity of storms challenge water and wastewater treatment facilities, and can affect continuity of service. Intense precipitation may lead to sewage volumes that exceed the capacity of treatment facilities, resulting in the release of untreated effluent. Minimizing current and future risks of service disruptions and inadequate service quality can require additional capital expenditures and operational expenses. As climate change leads to a greater likelihood of extreme weather events, companies that address these risks through redundancies and strategic planning will be better able to serve customers and protect shareholder value.

Metrics

IF-WU-450a.1. Wastewater treatment capacity located in 100-year flood zones

- 1 The entity shall disclose the capacity, in cubic meters per day, of its wastewater treatment facilities that are located in 100-year flood zones.
 - 1.1 100-year flood zones are defined as land areas subject to a one-percent or greater chance of flooding in any given year. Such areas may also be referred to as being subject to the one-percent annual chance flood, the one-percent annual exceedance probability flood, or the 100-year flood.
 - 1.1.1 Examples of 100-year flood zones may include, but are not limited to, coastal flood plains, flood plains along major rivers, and areas subject to flooding from ponding in low-lying areas.
 - 1.2 ~~For water treatment facilities located in the U.S., 100-year flood zones shall include those land areas designated by the U.S. Federal Emergency Management Agency (FEMA) as special flood hazard areas (SFHA).~~
 - 1.2.1 ~~SFHAs are defined as land area in the flood plain subject to a one-percent or greater chance of flooding in any given year. The area may be designated in the applicable flood insurance rate map, as per the U.S. National Flood Insurance Program, as Zones A, AO, AH, A1-30, AE, A99, AR, AR/A1-30, AR/AE, AR/AO, AR/AH, AR/A, VO, V1-30, VE, and V. This definition is derived from U.S. 44 CFR 59.1.~~
- 2 The scope of disclosure shall include all of the entity's wastewater treatment facilities that are located in 100-year flood zones, regardless of the country of their location.

IF-WU-450a.2. (1) Number and (2) volume of sanitary sewer overflows (SSO), (3) percentage of volume recovered

- 1 The entity shall disclose the (1) number of sanitary sewer overflows (SSO) originating from sewer systems under the entity's operational control.

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- 1.1 SSOs are defined, ~~consistent with the Sewage Overflow Community Right-To-Know Act~~, as overflows, spills, releases, or diversions of wastewater from a sanitary sewer system.
- 1.2 Where regulations do not require reporting of SSOs, the entity shall disclose the calculation methodology or combination of methodologies used, where relevant methodologies include, but are not limited to:
 - 1.2.1 Duration and flow rate comparison method
 - 1.2.2 Upstream lateral connections method
 - 1.2.3 Continuous flow metering
- 2 The entity shall disclose the (2) volume, in cubic meters, of SSOs originating from sewer systems under the entity's operational control.
 - 2.1 The volume of SSOs shall be calculated according to the methodologies used for regulatory reporting in the corresponding jurisdiction.
- 3 The entity shall report the (3) percentage of SSOs recovered, by volume.
 - 3.1 The percentage shall be calculated as the volume, in cubic meters, of sewage discharged to the environment through SSOs that was recovered divided by the total amount of sewage discharged to the environment through SSOs.
 - 3.2 The recovered volume is defined as the amount of sewage discharged that was captured and returned to the sanitary sewer system, private lateral, or collection system.
 - 3.3 The volume of SSOs recovered shall be calculated according to the methodologies used for regulatory reporting in the corresponding jurisdiction.
 - 3.4 Where regulations do not require reporting the recovery of SSOs, the entity shall disclose the calculation methodology or combination of methodologies used, where relevant methodologies include, but are not limited to:
 - 3.4.1 Measured volume method
 - 3.4.2 Visual estimation method
- 4 The entity may describe programs and initiatives—including those programs overseen by national, state, and local governments, and those developed internally by the entity—that it is involved in to reduce the number and volume of SSOs and its efforts to mitigate any such occurrences.

IF-WU-450a.3. (1) Number of unplanned service disruptions, and (2) customers affected, each by duration category

- 1 The entity shall disclose the (1) number of unplanned service disruptions to its drinking water supply services and (2) the total number of customers affected by such disruptions.

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- 1.1 An unplanned service disruption shall be defined according to the applicable local regulations where the disruption occurred.
- 1.2 In cases where regulations to define disruptions do not exist, disruptions shall be considered as incidents of complete water shutoff, low flow restrictions, boil-water advisories, and water main flushing, and excludes those incidents when a reduction of service occurs but normal activities (e.g., dishwashing, showering, laundry washing, and toilet flushing) are maintained.
- 1.3 The scope of unplanned service disruptions shall be limited to those disruptions that were not planned or scheduled and those disruptions exceeding the scheduled duration of disruption.
 - 1.3.1 A scheduled disruption shall be defined according to local regulations where the disruption occurred. Where such regulations do not exist, a scheduled disruption shall be considered a disruption for which the entity has provided a minimum of 24 hours advance notification.
- 1.4 Customers are defined, ~~consistent with the 2017 American Water Works Association (AWWA) Utility Benchmarking: Performance Management for Water and Wastewater~~, as the number of individual service agreements for water services at single properties, where an individual may own more than one property and be counted as a customer more than once.
- 2 The entity shall disclose the number of unplanned service disruptions and the number of customers affected, by the length of duration category.
 - 2.1 The length of duration categories are: under 4 hours, between 4 and 12 hours, or 12 hours or more.
 - 2.2 The duration of a disruption is defined, ~~consistent with the 2017 AWWA Utility Benchmarking: Performance Management for Water and Wastewater~~, as the time taken for all unplanned or emergency corrective activities by all utility employees and contractors working for the utility after discovery of an unplanned service disruption.
- 3 The scope of disclosure is limited to water operations and services (i.e., wastewater and stormwater services are excluded).
- 4 The entity may separately disclose the number of disruptions that were intentionally planned or scheduled by the entity, the number of customers affected, and the duration of those disruptions.

Note to **IF-WU-450a.3**

- 1 The entity shall discuss notable service disruptions such as those that affected a significant number of customers or those of extended duration.
- 2 For such disruptions, the entity should provide:
 - 2.1 Description and cause of the service disruptions;
 - 2.2 The costs associated with the service disruptions;

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- 2.3 Actions taken to mitigate the potential for future service disruptions; and
- 2.4 Any other significant outcomes (e.g., legal proceedings).

IF-WU-450a.4. Description of efforts to identify and manage risks and opportunities related to the impact of climate change on distribution and wastewater infrastructure

- 1 The entity shall describe its efforts to identify and manage risks and opportunities associated with the impact of climate change on its water distribution and wastewater infrastructure.
 - 1.1 Risks include, among others, threats to the entity's physical infrastructure as a consequence of climate change-related events (e.g., rising sea levels, increasing storm intensity, and impacts of drought) that could result in service disruption(s).
 - 1.2 Opportunities include the need for infrastructure improvements within the entity's current service area and the opportunity to expand its services through the water infrastructure.
- 2 The entity shall describe how it identifies and prioritizes the potential for risks to, and vulnerabilities of, its water distribution and wastewater infrastructure.
 - 2.1 Relevant risks and vulnerabilities to describe include, but are not limited to, those relating to the age, geographic location, and physical qualities of the entity's distribution infrastructure.
 - 2.2 Relevant efforts to discuss include involvement in climate change adaptation and mitigation programs, ~~including the U.S. Environmental Protection Agency's (EPA) Creating Resilient Water Utilities.~~
- 3 The entity shall describe its efforts to manage the risks and opportunities associated with its water distribution and wastewater infrastructure, including, but not limited to, infrastructure development, current storm tracking, global gridded climate models, and the use of redundant systems to assure service continuity.
- 4 The scope of disclosure includes all water, wastewater, and stormwater operations and services.
 - 4.1 The entity may break out its disclosures by water, wastewater and/or stormwater services.
- 5 The entity may describe its efforts to manage risks and opportunities associated with its distribution network in the context of the rate case and rate making political environment, including the effects on the entity's ability to expand, maintain, and enhance the resiliency of its distribution network.