SUSTAINABILITY ACCOUNTING STANDARD
INFRASTRUCTURE SECTOR

ELECTRIC UTILITIES

Sustainability Accounting Standard

Sustainable Industry Classification System™ (SICS™) #IF0101

Prepared by the
Sustainability Accounting Standards Board®

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Provisional Standard

ELECTRIC UTILITIES

Sustainability Accounting Standard

About SASB

The Sustainability Accounting Standards Board (SASB) provides sustainability accounting standards for use by publicly-listed corporations in the U.S. in disclosing material sustainability information for the benefit of investors and the public. SASB standards are designed for disclosure in mandatory filings to the Securities and Exchange Commission (SEC), such as the Form 10-K and 20-F. SASB is an independent 501(c)3 non-profit organization. Through 2016, SASB is developing standards for 79 industries in 10 sectors.

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INTRODUCTION

Purpose & Structure

This document contains the SASB Sustainability Accounting Standard (SASB Standard) for the Electric Utilities industry.

SASB Sustainability Accounting Standards are comprised of **(1) disclosure guidance and (2) accounting standards on sustainability topics** for use by U.S. and foreign public companies in their annual filings (Form 10-K or 20-F) with the U.S. Securities and Exchange Commission (SEC). To the extent relevant, SASB Standards may also be applicable to other periodic mandatory filings with the SEC, such as the Form 10-Q, Form S-1, and Form 8-K.

SASB Standards identify sustainability topics at an industry level, which may constitute material information—depending on a company's specific operating context—for a company within that industry. SASB Standards are intended to provide guidance to company management, which is ultimately responsible for determining which information is material and should therefore be included in its Form 10-K or 20-F and other periodic SEC filings.

SASB Standards provide companies with standardized sustainability metrics designed to communicate performance on industry level sustainability topics. When making disclosure on sustainability topics, companies can use SASB Standards to help ensure that disclosure is standardized and therefore decision-useful, relevant, comparable, and complete.

SASB Standards are intended to constitute "suitable criteria" as defined by AT 101.23-.32[1] and referenced in AT 701[2] as having the following attributes:

- *Objectivity*—Criteria should be free from bias.
- *Measurability*—Criteria should permit reasonably consistent measurements, qualitative or quantitative, of subject matter.
- *Completeness*—Criteria should be sufficiently complete so that those relevant factors that would alter a conclusion about subject matter are not omitted.
- *Relevance*—Criteria should be relevant to the subject matter.

Industry Description

The Electric Utilities industry is made up of companies that generate electricity; build, own, and operate transmission and/or distribution (T&D) lines; and sell electricity. Utilities generate electricity from a number of different sources, commonly including coal, natural gas, nuclear energy, hydropower, and renewable energy. The industry comprises companies operating in both regulated and deregulated energy markets. Companies with a monopoly over all elements of the value chain operate in regulated markets that are highly structured. In deregulated markets, company structures can be disparate, with generation usually split from T&D, which gives customers a choice between power producers. In some markets, transmission is also deregulated, leaving regulated

[1] http://pcaobus.org/Standards/Attestation/Pages/AT101.aspx#at_101_fn7
[2] http://pcaobus.org/Standards/Attestation/Pages/AT701.aspx

utilities to operate only distribution lines. Regulated utilities have a unique business model in which they accept oversight from their state utilities commission on their pricing mechanisms and their allowed return on equity, among other types of regulation, in exchange for their license to operate as a monopoly. Electric utilities are also required to provide universally accessible and highly reliable service while balancing the protection of human life and the environment. While U.S.-listed electric utility companies include a few large companies based outside the U.S., the majority are U.S.-based and operate mainly in U.S. markets.

Note: The SASB standard for the Electric Utilities industry covers activities related only to electricity provision and not to natural gas provision. Some utilities may operate in both electricity and natural gas markets. Utilities undertaking activities related to natural gas sourcing and distribution should also consider the separate SASB standard for the Gas Utilities industry (IF0102).

Guidance for Disclosure of Sustainability Topics in SEC Filings

1. Industry-Level Sustainability Topics

For the Electric Utilities industry, SASB has identified the following sustainability disclosure topics:

- Greenhouse Gas Emissions & Energy Resource Planning
- Air Quality
- Coal Ash Management
- Water Management
- Community Impacts of Project Siting
- Workforce Health & Safety
- End-Use Efficiency & Demand
- Nuclear Safety & Emergency Management
- Grid Resiliency
- Management of the Legal & Regulatory Environment

2. Company-Level Determination and Disclosure of Material Sustainability Topics

Sustainability disclosures are governed by the same laws and regulations that govern disclosures by securities issuers generally. According to the U.S. Supreme Court, a fact is material if, in the event such fact is omitted from a particular disclosure, there is "a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the 'total mix' of the information made available."[3, 4]

SASB has attempted to identify those sustainability topics that are reasonably likely to have a material effect on the financial condition or operating performance of companies within each SICS industry. SASB recognizes, however, that each company is ultimately responsible for determining what information should be disclosed within the context of Regulation S-K and other guidance.

[3] TSC Industries v. Northway, Inc., 426 U.S. 438 (1976).
[4] C.F.R. 229.303(Item 303)(a)(3)(ii).

Regulation S-K, which sets forth certain disclosure requirements associated with Form 10-K and other SEC filings, requires companies, among other things, to describe in the Management's Discussion and Analysis of Financial Condition and Results of Operations (MD&A) section of Form 10-K "any known trends or uncertainties that have had or that the registrant reasonably expects will have a material favorable or unfavorable impact on net sales or revenues or income from continuing operations. If the registrant knows of events that will cause a material change in the relationship between costs and revenues (such as known future increases in costs of labor or materials or price increases or inventory adjustments), the change in the relationship shall be disclosed."

Furthermore, instructions to Item 303 state that the MD&A "shall focus specifically on material events and uncertainties known to management that would cause reported financial information not to be necessarily indicative of future operating results or of future financial condition."[2]

The SEC has provided guidance for companies to use in determining whether a trend or uncertainty should be disclosed. The two-part assessment prescribed by the SEC, based on probability and magnitude, can be applied to the topics included within this standard:

- First, a company is not required to make disclosure about a known trend or uncertainty if its management determines that such trend or uncertainty is not reasonably likely to occur.
- Second, if a company's management cannot make a reasonable determination of the likelihood of an event or uncertainty, then disclosure is required unless management determines that a material effect on the registrant's financial condition or results of operation is not reasonably likely to occur.

3. Sustainability Accounting Standard Disclosures in Form 10-K

a. Management's Discussion and Analysis

For purposes of comparability and usability, companies should consider making disclosure on sustainability topics in the MD&A, in a sub-section titled "**Sustainability Accounting Standards Disclosures**."[5]

b. Other Relevant Sections of Form 10-K

In addition to the MD&A section, it may be relevant for companies to disclose sustainability information in other sections of Form 10-K, including, but not limited to:

- **Description of business**—Item 101 of Regulation S-K requires a company to provide a description of its business and its subsidiaries. Item 101(c)(1)(xii) expressly requires disclosure regarding certain costs of complying with environmental laws:

[5] SEC [Release Nos. 33-8056; 34-45321; FR-61] Commission Statement about Management's Discussion and Analysis of Financial Condition and Results of Operations: "We also want to remind registrants that disclosure must be both useful and understandable. That is, management should provide the most relevant information and provide it using language and formats that investors can be expected to understand. Registrants should be aware also that investors will often find information relating to a particular matter more meaningful if it is disclosed in a single location, rather than presented in a fragmented manner throughout the filing."

Appropriate disclosure also shall be made as to the material effects that compliance with Federal, State, and local provisions which have been enacted or adopted regulating the discharge of materials into the environment, or otherwise relating to the protection of the environment, may have upon the capital expenditures, earnings and competitive position of the registrant and its subsidiaries.

- **Legal proceedings**—Item 103 of Regulation S-K requires companies to describe briefly any material pending or contemplated legal proceedings. Instructions to Item 103 provide specific disclosure requirements for administrative or judicial proceedings arising from laws and regulations that target discharge of materials into the environment or that are primarily for the purpose of protecting the environment.
- **Risk factors**—Item 503(c) of Regulation S-K requires filing companies to provide a discussion of the most significant factors that make an investment in the registrant speculative or risky, clearly stating the risk and specifying how a particular risk affects the particular filing company.

c. Rule 12b-20

Securities Act Rule 408 and Exchange Act Rule 12b-20 require a registrant to disclose, in addition to the information expressly required by law or regulation, "such further material information, if any, as may be necessary to make the required statements, in light of the circumstances under which they are made, not misleading."

More detailed guidance on disclosure of material information related to sustainability topics can be found in the **SASB Conceptual Framework**, available for download via http://www.sasb.org/approach/conceptual-framework/.

Guidance on Accounting for Sustainability Topics

For each sustainability topic included in the Electric Utilities industry Sustainability Accounting Standard, SASB identifies accounting metrics.

SASB recommends that each company consider using these sustainability accounting metrics when preparing disclosures on the sustainability topics identified herein.

As appropriate—and consistent with Rule 12b-20[6]—when disclosing a sustainability topic identified by this Standard, companies should consider including a narrative description of any material factors necessary to ensure completeness, accuracy, and comparability of the data reported. Where not addressed by the specific accounting metrics, but relevant, the registrant should discuss the following, related to the topic:

- The registrant's **strategic approach** to managing performance on material sustainability issues;
- The registrant's **relative performance** with respect to its peers;
- The **degree of control** the registrant has;

[6] SEC Rule 12b-20: "In addition to the information expressly required to be included in a statement or report, there shall be added such further material information, if any, as may be necessary to make the required statements, in the light of the circumstances under which they are made, not misleading."

- Any **measures the registrant has undertaken** or **plans to undertake** to improve performance; and
- Data for the registrant's **last three completed fiscal years** (when available).

SASB recommends that registrants use SASB Standards specific to their primary industry as identified in the Sustainable Industry Classification System (SICS™). If a registrant generates significant revenue from multiple industries, SASB recommends that it also consider sustainability topics that SASB has identified for those industries and disclose the associated SASB accounting metrics.

In disclosing to SASB Standards, it is expected that registrants disclose with the same level of rigor, accuracy, and responsibility as they apply to all other information contained in their SEC filings.

Users of the SASB Standards

The SASB Standards are intended to provide guidance for companies that engage in public offerings of securities registered under the Securities Act of 1933 (the Securities Act) and those that issue securities registered under the Securities Exchange Act of 1934 (the Exchange Act),[7] for use in SEC filings, including, without limitation, annual reports on Form 10-K (Form 20-F for foreign issuers), quarterly reports on Form 10-Q, current reports on Form 8-K, and registration statements on Forms S-1 and S-3. Disclosure with respect to the SASB Standards is not required or endorsed by the SEC or other entities governing financial reporting, such as FASB, GASB, or IASB.

Scope of Disclosure

Unless otherwise specified, SASB recommends:

- That a registrant disclose on sustainability issues and metrics for itself and for entities that are consolidated for financial reporting purposes as defined by accounting principles generally accepted in the United States for consistency with other accompanying information within SEC filings;[8]
- That for consolidated entities, disclosures be made, and accounting metrics calculated, for the whole entity, regardless of the size of the minority interest; and
- That information from unconsolidated entities not be included in the computation of SASB accounting metrics. A registrant should disclose, however, information about unconsolidated entities to the extent that the registrant considers the information necessary for investors to understand the effect of sustainability topics on the company's financial condition or operating performance (typically, this disclosure would be limited to risks and opportunities associated with these entities).

[7] Registration under the Securities Exchange Act of 1934 is required (1) for securities to be listed on a national securities exchange such as the New York Stock Exchange, the NYSE Amex, and the NASDAQ Stock Market or (2) if (A) the securities are equity securities and are held by more than 2,000 persons (or 500 persons who are not accredited investors) and (B) the company has more than $10 million in assets.
[8] See US GAAP consolidation rules (Section 810).

Reporting Format

Use of Financial Data

In instances where accounting metrics, activity metrics, and technical protocols in this standard incorporate financial data (e.g., revenues, cost of sales, expenses recorded and disclosed for fines, etc.), such financial data shall be prepared in accordance with the accounting principles generally accepted in the United States of America ("US GAAP") and be consistent with the corresponding financial data reported within the registrant's SEC filings. Should accounting metrics, activity metrics and technical protocols in this standard incorporate disclosure of financial data that is not prepared in accordance with US GAAP, the registrant shall disclose such information in accordance with the SEC Regulation G.

Activity Metrics and Normalization

SASB recognizes that normalizing accounting metrics is important for the analysis of SASB disclosures.

SASB recommends that a registrant disclose any basic business data that may assist in the accurate evaluation and comparability of disclosure, to the extent that they are not already disclosed in the Form 10-K (e.g., revenue, EBITDA, etc.).

Such data—termed "activity metrics"—may include high-level business data such as total number of employees, quantity of products produced or services provided, number of facilities, or number of customers. It may also include industry-specific data such as plant capacity utilization (e.g., for specialty chemical companies), number of transactions (e.g., for Internet media and services companies), hospital bed days (e.g., for health care delivery companies), or proven and probable reserves (e.g., for oil and gas exploration and production companies).

Activity metrics disclosed should:

- Convey contextual information that would not otherwise be apparent from SASB accounting metrics.
- Be deemed generally useful for an investor relying on SASB accounting metrics in performing their own calculations and creating their own ratios.
- Be explained and consistently disclosed from period to period to the extent they continue to be relevant. However, a decision to make a voluntary disclosure in one period does not obligate a continuation of that disclosure if it is no longer relevant or if a better metric becomes available.[9]

[9] *Improving Business Reporting: Insights into Enhancing Voluntary Disclosures*, FASB Business Reporting Research Project, January 29, 2001.

Where relevant, SASB recommends specific activity metrics that—at a minimum—should accompany SASB accounting metric disclosures.

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Number of (1) residential and (2) commercial customers served[10]	Quantitative	Number	IF0101-A
Length of transmission and distribution lines[11]	Quantitative	Kilometers (km)	IF0101-B
Total electricity generated, percentage by major energy source, percentage in regulated markets[12]	Quantitative	Megawatt-hours (MWh), Percentage (%)	IF0101-C

Units of Measure

Unless specified, disclosures should be reported in International System of Units (SI units).

Uncertainty

SASB recognizes that there may be inherent uncertainty when disclosing certain sustainability data and information. This may be related to variables such as the reliance on data from third-party reporting systems and technologies, or the unpredictable nature of climate events. Where uncertainty around a particular disclosure exists, SASB recommends that the registrant should consider discussing its nature and likelihood.

Estimates

SASB recognizes that scientifically based estimates, such as the reliance on certain conversion factors or the exclusion of *de minimis* values, may occur for certain quantitative disclosures. Where appropriate, SASB does not discourage the use of such estimates. When using an estimate for a particular disclosure, SASB expects that the registrant discuss its nature and substantiate its basis.

Timing

Unless otherwise specified, disclosure shall be for the registrant's fiscal year.

[10] Note to **IF0101-A**—The number of customers served for each category shall be considered as the number of meters billed for both residential and commercial customers.
[11] Note to **IF0101-B**—The length of transmission and distribution lines shall be calculated on a circuit-kilometer basis, where a circuit-kilometer is defined as the total length of circuits, regardless of conductors used per circuit.
[12] Note to **IF0101-C**—Generation should be disclosed by each of the following major energy sources: coal, natural gas, nuclear, hydropower, other renewables, petroleum, and other gases. The scope includes owned and/or operated assets.

Limitations

There is no guarantee that SASB Standards address all sustainability impacts or opportunities associated with a sector, industry, or company, and therefore, a company must determine for itself the topics—sustainability-related or otherwise—that warrant discussion in its SEC filings.

Disclosure under SASB Standards is voluntary. It is not intended to replace any legal or regulatory requirements that may be applicable to user operations. Where such laws or regulations address legal or regulatory topics, disclosure under SASB Standards is not meant to supersede those requirements. Disclosure according to SASB Standards shall not be construed as demonstration of compliance with any law, regulation, or other requirement.

SASB Standards are intended to be aligned with the principles of materiality enforced by the SEC. However, SASB is not affiliated with or endorsed by the SEC or other entities governing financial reporting, such as FASB, GASB, or IASB.

Forward-Looking Statements

Disclosures on sustainability topics can involve discussion of future trends and uncertainties related to the registrant's operations and financial condition, including those influenced by external variables (e.g., environmental, social, regulatory, and political). Companies making such disclosures should familiarize themselves with the safe harbor provisions of Section 27A of the Securities Act and Section 21E of the Exchange Act, which preclude civil liability for material misstatements or omissions in such statements if the registrant takes certain steps, including, among other things, identifying the disclosure as "forward-looking" and accompanying such disclosure with "meaningful cautionary statements identifying important factors that could cause actual results to differ materially from those in the forward-looking statements."

The following sections contain the disclosure guidance associated with each accounting metric such as guidance on definitions, scope, accounting, compilation, and presentation.

The term "shall" is used throughout this document to indicate those elements that reflect requirements of the Standard. The terms "should" and "may" are used to indicate guidance, which, although not required, provides a recommended means of disclosure.

Table 1. Sustainability Disclosure Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Greenhouse Gas Emissions & Energy Resource Planning	(1) Gross global Scope 1 emissions, (2) percentage covered under emissions-limiting regulations, and (3) percentage covered under emissions-reporting regulations	Quantitative	Metric tons (t) CO_2-e, Percentage (%)	IF0101-01
	Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emission-reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	IF0101-02
	(1) Number of customers served in markets subject to renewable portfolio standards (RPS) and (2) percentage fulfillment of RPS target by market[13]	Quantitative	Number, Percentage (%)	IF0101-03
Air Quality	Air emissions of the following pollutants: NO_x (excluding N_2O), SO_x, particulate matter (PM_{10}), Pb, and Hg; percentage of each in or near areas of dense population	Quantitative	Metric tons (t), Percentage (%)	IF0101-04
Water Management	(1) Total water withdrawn and (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	Quantitative	Cubic Meters (m^3), Percentage (%)	IF0101-05
	Number of incidents of non-compliance with water quality and/or quantity permits, standards, and regulations	Quantitative	Number	IF0101-06
	Discussion of water management risks and description of strategies and practices to mitigate those risks	Discussion and Analysis	n/a	IF0101-07
Coal Ash Management	Amount of coal combustion residuals (CCR) generated, percentage recycled	Quantitative	Metric tons (t), Percentage (%)	IF0101-08
	Total number of coal combustion residual (CCR) impoundments and number by EPA Hazard Potential Classification, broken down by EPA structural integrity assessment	Quantitative	Number	IF0101-09
Community Impacts of Project Siting	Number of projects requiring environmental or social modification, percentage of modifications resulting from formal public interventions or protests[14]	Quantitative	Number, Percentage (%)	IF0101-10
	Discussion of community engagement processes to identify and mitigate concerns regarding project environmental and community impacts	Discussion and Analysis	n/a	IF0101-11

[13] Note to **IF0101-03**—The registrant shall discuss its operations in markets with RPS regulations or where regulations are emerging, including whether it is meeting its regulatory obligations, whether regulations require future increases to the registrant's renewable energy portfolio, and strategies to maintain compliance with emerging regulations.

[14] Note to **IF0101-10**—The registrant shall discuss modifications that relate to significant projects such as those with large transmission or generation capacity.

Table 1. Sustainability Disclosure Topics & Accounting Metrics (cont.)

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Workforce Health & Safety	(1) Total recordable injury rate (TRIR), (2) fatality rate, and (3) near miss frequency rate (NMFR)	Quantitative	Rate	IF0101-12
End-Use Efficiency & Demand	Percentage of electric load served by smart grid technology[15]	Quantitative	Percentage (%) by Megawatt-Hours (MWh)	IF0101-13
	Customer electricity savings from efficiency measures by market[16]	Quantitative	Megawatt-Hours (MWh)	IF0101-14
Nuclear Safety & Emergency Management	Total number of nuclear power units, broken down by Nuclear Regulatory Commission (NRC) Action Matrix Column	Quantitative	Number	IF0101-15
	Discussion of efforts to manage nuclear safety and emergency preparedness	Discussion and Analysis	n/a	IF0101-16
Grid Resiliency	Number of incidents of non-compliance with North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection standards	Quantitative	Number	IF0101-17
	(1) System Average Interruption Duration Index (SAIDI), (2) System Average Interruption Frequency Index (SAIFI), and (3) Customer Average Interruption Duration Index (CAIDI), inclusive of major event days[17]	Quantitative	Minutes, Number	IF0101-18
Management of the Legal & Regulatory Environment	Discussion of policies and processes to identify and manage potential ethical violations resulting from interactions with utility commissions	Discussion and Analysis	n/a	IF0101-19
	Amount of legal and regulatory fines and settlements associated with allegations of violations resulting from interactions with utility commissions[18]	Quantitative	U.S. Dollars ($)	IF0101-20
	Discussion of positions on the regulatory and political environment related to environmental and social factors and description of efforts to manage risks and opportunities presented	Discussion and Analysis	n/a	IF0101-21

[15] Note to **IF0101-13**—The registrant shall discuss the opportunities and challenges associated with the development and operations of a smart grid.
[16] Note to **IF0101-14**—The registrant shall discuss customer efficiency regulations relevant to each market in which it operates.
[17] Note to **IF0101-18**—The registrant shall discuss notable service disruptions such as those that affected a significant number of customers or disruptions of extended duration.
[18] Note to **IF0101-20**—The registrant shall briefly describe the nature, context, and corrective action taken as a result of the fine and/or settlement.

Greenhouse Gas Emissions & Energy Resource Planning

Description

Electric utilities represent the largest source of greenhouse gas (GHG) emissions in the U.S. economy. These emissions, mainly carbon dioxide, methane, and nitrous oxide, are mostly by-products of fossil fuels combustion. The T&D segments of the Electric Utilities industry are responsible for a negligible amount of its emissions. Electric utility companies could face significant operating and capital expenditures for mitigating GHG emissions as environmental regulations become increasingly stringent. While many of these costs can be passed on to a utility's customers, some power generators, especially in deregulated markets, may not be able to recoup these costs. Companies can reduce GHG emissions from electricity generation mainly through careful planning of their infrastructure investments to ensure an energy mix capable of meeting the emissions requirements set forth by regulations and by implementing industry-leading technologies and processes. Being proactive in cost-effectively reducing GHG emissions can create a competitive advantage for companies and mitigate unanticipated regulatory compliance costs. Failure to properly estimate capital-expenditure needs and permitting costs, or other difficulties in reducing GHG emissions, could result in significant negative impacts on returns in the future in the form of asset write-downs, costs of obtaining carbon credits, or unexpected increases in operating and capital expenditures. Regulatory emphasis on this issue will likely only increase over the coming decades, as exemplified by the international emissions-reduction agreements made at the 21st session of the United Nations Conference of the Parties that took place in late 2015.

Accounting Metrics

IF0101-01. (1) Gross global Scope 1 emissions, (2) percentage covered under emissions-limiting regulations, and (3) percentage covered under emissions-reporting regulations

.01 The registrant shall disclose gross global Scope 1 greenhouse gas (GHG) emissions to the atmosphere of the seven GHGs covered under the Kyoto Protocol (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride).

- Emissions of all gases shall be disclosed in metric tons of carbon dioxide equivalents (CO_2-e), calculated in accordance with published 100-year time horizon global warming potential (GWP) factors. To date, the preferred source for GWP factors is the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (2013).

- Gross emissions are GHGs emitted to the atmosphere before accounting for any GHG reduction activities, offsets, or other adjustments for activities in the reporting period that have reduced or compensated for emissions.

- Disclosure corresponds to section CC8.2 of the Carbon Disclosure Project (CDP) Questionnaire (2015) and REQ-04 of the Climate Disclosure Standards Board (CDSB) Framework for reporting environmental information & natural capital (2015).

    - The registrant shall consider the CDP Climate Change Questionnaire a normative reference, thus any updates made year-on-year shall be considered updates to this guidance.

.02 Scope 1 emissions are defined and shall be calculated according to the methodology contained in the World Resources Institute and the World Business Council on Sustainable Development (WRI/WBCSD) in *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard,* Revised Edition, March 2004 (hereafter, the "GHG Protocol").

- These emissions include direct emissions of GHGs from stationary or mobile sources that include, but are not limited to, electricity generation, electricity transmission and distribution equipment (i.e., high-voltage circuit breakers, switch gear, and transformers), and transportation (i.e., marine, road, or rail).

- Acceptable calculation methodologies include those that refer to the GHG Protocol as the basic reference but may provide additional industry or regionally specific guidance, where examples include, but are not limited to:

  - IPIECA's Petroleum Industry Guidelines for reporting GHG emissions, 2nd edition, 2011

  - India GHG Inventory Programme

  - ISO 14064-1

- The registrant may choose to disclose the methodology or methodologies used to collect and calculate Scope 1 emissions.

.03 GHG emission data shall be consolidated according to the approach with which the registrant consolidates its financial reporting data, which is generally aligned with:

- The Financial Control approach defined by the GHG Protocol and referenced by the *CDP Guidance for companies reporting on climate change on behalf of investors & supply chain members 2015* (hereafter, the "CDP Guidance").[19]

- The approach detailed in REQ-07, "Organisational boundary," of the CDSB Framework (2015).[20]

.04 The registrant shall disclose the percentage of its emissions that are covered under a regulatory program that is intended to limit or reduce GHG emissions, such as the European Union Emissions Trading Scheme (E.U. ETS), Quebec Cap-and-Trade (Draft Bill 42 of 2009), California Cap-and-Trade (California Global Warming Solutions Act), or other regulatory programs.

- Regulatory programs include cap-and-trade schemes, carbon tax/fee systems, and other emissions control (e.g., command-and-control approach) and permit-based mechanisms.

[19] "An organization has financial control over an operation if it has the ability to direct the financial and operating policies of the operation with a view to gaining economic benefits from its activities. Generally an organization has financial control over an operation for GHG accounting purposes if the operation is treated as a group company or subsidiary for the purposes of financial consolidation." *Guidance for companies reporting on climate change on behalf of investors & supply chain members 2013,* p. 95.
[20] This is based on the requirements of International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) on consolidation and equity accounting and is consistent with how information relating to entities within a group or interest in joint ventures/associates would be included on consolidated financial statements, as per the CDSB *Climate Change Reporting Framework*.

- Disclosure shall exclude emissions covered under voluntary trading systems and reporting-based regulations (e.g., the U.S. Environmental Protection Agency (EPA) Greenhouse Gas Reporting Program).

.05 The registrant shall disclose the percentage of its emissions that are covered under emissions reporting-based regulations (e.g., the U.S. EPA Greenhouse Gas Reporting Program)

- Emissions-reporting regulations are defined as regulations that demand the disclosure of data to authorities and/or to the public, but for which there is no limit, cost, target, or controls on the amount of emissions generated.

.06 The registrant should discuss any change in its emissions from the previous fiscal year, such as if the change was due to emissions reductions, divestment, acquisition, mergers, changes in output, and/or changes in calculation methodology.

.07 In the case that current reporting of GHG emissions to the CDP or other entities (e.g., a national regulatory disclosure program) differs in terms of the methodology, calculation (e.g., different GWP factors), scope, and/or consolidation approach used, the registrant may disclose those emissions. However, primary disclosure shall be according to the guidelines described above.

.08 The registrant should discuss the calculation methodology for its emissions disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.

.09 The registrant should consult the most recent version of each document referenced in this standard at the time disclosure occurs.

IF0101-02. Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emission-reduction targets, and an analysis of performance against those targets

.10 The registrant shall discuss the following, where relevant:

- The scope, such as whether strategies, plans, and/or reduction targets pertain differently to different business units, geographies, or emissions sources;

- Whether strategies, plans, and/or reduction targets are related to or associated with an emissions disclosure (reporting) or reduction program (e.g., E.U. ETS, Quebec Cap-and-Trade (Draft Bill 42 of 2009), California Cap-and-Trade (California Global Warming Solutions Act), etc.), including regional, national, international, or sectoral programs; and

- The activities and investments required to achieve the plans and any risks or limiting factors that might affect achievement of the plans and/or targets.

.11 For emission-reduction targets, the registrant shall disclose:

- The percentage of emissions within the scope of the reduction plan;
- The percentage reduction from the base year;
  - The base year is the first year against which emissions are evaluated toward the achievement of the target.
- Whether the target is absolute or intensity based, and the metric denominator if it is an intensity-based target;
- The timelines for the reduction activity, including the start year, the target year, and the base year. Disclosure shall be limited to activities that were ongoing (active) or reached completion during the fiscal year; and
- The mechanism(s) for achieving the target, such as low-carbon electricity generation, energy efficiency measures, demand-response programs, energy conservation initiatives, etc. Where necessary, the registrant shall discuss any circumstances in which the target base year emissions have been, or may be, recalculated retrospectively or the target base year has been reset.

.12 Disclosure corresponds with:

- CDSB Framework REQ-01, "Management's environmental policies, strategy and targets."
- CDP Questionnaire (2015) CC3, "Targets and Initiatives."

.13 Relevant initiatives to discuss may include, but are not limited to, energy efficiency efforts, demand-response programs, and development of renewable energy portfolios consistent with the IPCC Fifth Assessment Report: Climate Change 2014: Working Group III: Mitigation of Climate Change.

.14 The registrant may choose to discuss its involvement in green power markets, including the number of customers served and corresponding electricity generated, where:

- Green power markets are defined as an optional utility service that allows customers the opportunity to support a greater level of utility company investment in renewable energy technologies.

.15 If the registrant chooses to discuss green power markets, it should disclose instances where the use of green power markets are required by state renewable portfolio standards.

IF0101-03. (1) Number of customers served in markets subject to renewable portfolio standards (RPS) and (2) percentage fulfillment of RPS target by market

.16 The registrant shall disclose the number of customers it serves located in markets subject to renewable portfolio standards (RPS), where:

- An RPS is defined as a regulatory mandate to increase production of electricity from renewable resources such as wind, solar, biomass, and other alternatives to fossil and nuclear electric power generation.

.17 The scope of disclosure is limited to those markets with established RPSs that regulate the registrant's operations.

.18 Relevant state RPSs include those listed through the National Conference of State Legislatures (here). Examples include, but are not limited to:

- California Public Utilities Code Section 399.11-399.32
- Massachusetts General Laws Part I Title II Chapter 25A Section 11F
- New York Case 03-E-0188
- Texas Utilities Code Title 2 Subtitle B Chapter 39 Subchapter z Section 39.904

.19 The registrant shall disclose its fulfillment of RPS targets as a percentage on a sales (in megawatt hours) weighted basis.

.20 The registrant shall calculate its percentage fulfillment of RPS targets for each of the markets it serves as the amount of renewable electricity sold (in megawatt hours) in markets with RPS regulations divided by the amount of renewable electricity (in megawatt hours) that would need to be sold to achieve the registrant's target compliance obligation set forth through the relevant RPS regulations, where:

- Markets are defined as those operations that are subject to distinct public utility regulatory oversight.

.21 The registrant should disclose the number of customers it serves that are located in markets where RPSs are voluntary, including a disclosure of the percentage fulfillment of voluntary RPSs.

Note to **IF0101-03**

.22 The registrant shall discuss its operations in markets with RPS regulations or where regulations are emerging, including whether it is meeting its regulatory obligations, whether regulations require future increases to the registrant's renewable energy portfolio, and strategies to maintain compliance with emerging regulations.

.23 In this discussion, the registrant should consider the implications of non-RPS regulations on current and future RPS regulations, including any impacts associated with the EPA's Clean Power Plan.

.24 Where the registrant does not meet its current RPS obligations or may be at risk of not being able to meet future RPS regulations, the registrant should include a discussion of:

- The reasons for not meeting RPS regulations;
- The number of customers for whom RPS standards are not met or likely not to be met; and
- Any punitive fines or settlements stemming from failure to meet RPS regulations.

Air Quality

Description

Fuel combustion in electricity-generation operations generates hazardous air pollutants (HAPs), criteria air pollutants (CAPs), and volatile organic compounds (VOCs). HAPs, CAPs, and VOCs have more localized but nonetheless significant human health and environmental impacts compared with those of GHGs. The most common and impactful are nitrogen oxides (excluding nitrous oxide), sulfur oxide, particulate matter (PM_{10}), lead, and mercury. They are regulated by the U.S. Environmental Protection Agency under the Clean Air Act, as well as by state and local agencies, creating significant regulatory risks for electricity generators. Regulatory and legal risk is higher for those utilities operating near large communities. A utility's energy-generation mix is the best indicator of its relative risk related to air quality. Harmful air emissions from operations may result in regulatory penalties that affect extraordinary expenses, higher regulatory compliance costs, and new capital expenditures to install best-in-class control technology (in some cases, such expenditures can be prohibitive to the continuation of a facility). Companies can manage air quality concerns through both internal actions to reduce emissions and effectively working with regulators to establish priorities and to comprehensively incorporate risks into short- and long-term capital planning.

Accounting Metrics

IF0101-04. Air emissions of the following pollutants: NO_x (excluding N_2O), SO_x, particulate matter (PM_{10}), Pb, and Hg; percentage of each in or near areas of dense population

.25 The registrant shall disclose its emissions of air pollutants (in metric tons) that are released to the atmosphere as a result of its activities:

- Direct air emissions from stationary or mobile sources including, but not limited to, electricity generation, electricity transmission and distribution equipment (i.e., high voltage circuit breakers, switch gear, and transformers), and transportation (i.e., marine, road, or rail).

.26 The registrant shall disclose emissions released to the atmosphere by emissions type. Substances include:

- Oxides of nitrogen (including NO and NO_2 and excluding N_2O), reported as NO_x.
- Oxides of sulfur (SO_2 and SO_3), reported as SO_x.
- Particulate matter (PM_{10}), reported as the sum of PM_{10}, where:
  - PM_{10} is defined according to 40 CFR Part 51 as particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers, including both condensable and filterable particulate matter.
- Mercury and mercury compounds, reported as Hg.
- Lead and lead compounds, reported as Pb.

.27 This scope does not include CO_2, CH_4, and N_2O, which are disclosed in IF0101-01 as Scope 1 GHG emissions.

.28 Air emissions data shall be consolidated according to the approach with which the registrant consolidates its financial reporting data, which is aligned with the consolidation approach used for IF0101-01.

.29 The registrant shall disclose the percentage of its NO_x, SO_x, PM_{10}, Pb, and Hg emissions from its production facilities that are located in or near areas of dense population, which are defined as urbanized areas according to U.S. Census Bureau definitions contained in Federal Register, Vol. 76. No. 164. (August 24, 2011).

- Generally, these include urbanized areas with populations greater than 50,000.
- A list of urbanized areas based on census results from 2010 is available here.

.30 The scope of disclosure includes production facilities that are located in a census tract or block considered to be in an urbanized area or within 49 kilometers of an urbanized area.[21]

.31 For production facilities located outside of the U.S., the registrant shall use available census data to determine whether the facility is located in an urbanized area as defined by the U.S. Census Bureau.

- In the absence of available or accurate census data, the registrant should use international population density data available from the Columbia University/NASA Socioeconomic Data and Applications Center's (SEDAC) Gridded Population of the World (GPW), v3.

.32 The registrant should discuss the calculation methodology for its emissions disclosure, such as whether data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.

[21] The 49-kilometer radius is based on the methodology set forth in the EPA's Office of Pollution Prevention and Toxics User's Manual for RSEI, Version 2.3.4., December 2015: "RSEI calculates air concentrations at hypothetical "receptors" located within a circle with a radius of 49 km surrounding each facility."

Water Management

Description

Electricity generation is the most water-intensive industry in the U.S., using water mainly for cooling purposes. The industry is facing increasing water-related supply and regulatory risks, creating serious potential for stranded assets. Power plants may increasingly not be able to operate at their full capacity, or at all, because of region-specific water constraints, as water supplies tighten in different regions and electricity generation, agriculture, and municipal use compete for water supplies in the coming decade. The availability of water is a key factor to consider when calculating the future value of many electricity-generating assets and for evaluating existing proposals for new generation sources. Heightened water scarcity due to factors such as increasing consumption and reduced supplies as a result of climate change, which could result in more frequent or intense droughts, could prompt regulatory authorities to limit companies' ability to withdraw necessary amounts of water, especially in regions with high baseline water stress. Furthermore, companies must contend with the growing regulations related to the significant biodiversity impacts that such large withdrawals can cause. To mitigate risks, companies can both invest in more efficient water-usage systems for existing plants and place strategic priority on assessing long-term water availability, as well as water-related biodiversity risks, when siting new power plants.

Accounting Metrics

IF0101-05. (1) Total water withdrawn and (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress

.33 The registrant shall disclose the amount of water (in thousands of cubic meters) that was withdrawn from all sources, where:

- Water sources include surface water (including water from wetlands, rivers, lakes, and oceans), groundwater, rainwater collected directly and stored by the registrant, wastewater obtained from other entities, municipal water supplies, or supply from other water utilities.

.34 The registrant may choose to disclose portions of its supply by source if, for example, significant portions of withdrawals are from non-freshwater sources, where:

- Fresh water may be defined according to the local statutes and regulations where the registrant operates. Where there is no regulatory definition, fresh water shall be considered to be water that has a solids (TDS) concentration of less than 1000 mg/l per the Water Quality Association definition.

- Water obtained from a water utility in compliance with U.S. National Primary Drinking Water Regulations can be assumed to meet the definition of fresh water.

.35 The registrant shall disclose the amount of water (in thousands of cubic meters) that was consumed in its operations, where water consumption is defined as:

- Water that evaporates during withdrawal, usage, and discharge;
- Water that is directly or indirectly incorporated into the registrant's product or service; and
- Water that does not otherwise return to the same catchment area from which it was withdrawn, such as water returned to another catchment area or the sea.

.36 The registrant shall analyze all of its operations for water risks and identify activities that withdraw and consume water in locations with High (40–80%) or Extremely High (>80%) Baseline Water Stress as classified by the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly accessible online here).

.37 The registrant shall disclose its water withdrawn in locations with High or Extremely High Baseline Water Stress as a percentage of the total water withdrawn.

.38 The registrant shall disclose its water consumed in locations with High or Extremely High Baseline Water Stress as a percentage of the total water consumed.

IF0101-06. Number of incidents of non-compliance with water quality and/or quantity permits, standards, and regulations

.39 The registrant shall disclose the total number of instances of non-compliance, including violations of a technology-based standard and exceedances of a quality-based standard.

.40 The scope of disclosure includes incidents governed by federal, state, and local statutory permits and regulations including, but not limited to, the appropriate use of aquatic impingement or entrainment related technologies, discharge of a hazardous substance, violation of pretreatment requirements (when discharging to applicable publicly owned treatment works), maximum temperature-limit exceedance, exceedance of a groundwater standard, effluent limit exceedances (such as Water Quality Based Effluent Limit), and/or water withdrawal exceedances.

.41 An incident of non-compliance shall be disclosed regardless of whether it resulted in an enforcement action (e.g., fine, warning letter, etc.).

.42 An incident of non-compliance shall be disclosed regardless of the measurement methodology or frequency. These include violations:

- For continuous discharges, limitations, standards, and prohibitions that are generally expressed as maximum daily, weekly, and monthly averages.
- For non-continuous discharges, limitations that are generally expressed in terms of total mass, maximum rate of discharge, frequency, and mass or concentration of specified pollutants.

IF0101-07. Discussion of water management risks and description of strategies and practices to mitigate those risks

.43 The registrant shall discuss its risks associated with water withdrawals, water consumption, and discharge of water to the environment and describe how it manages these risks.

.44 The registrant shall discuss, where applicable, risks to the availability of adequate, clean water resources.

- Relevant information to provide includes, but is not limited to:
  - Environmental constraints, such as operating in water-stressed regions, drought, concerns of aquatic impingement or entrainment, interannual or seasonal variability, and risks due to the impact of climate change.
  - External constraints, such as volatility in water costs, stakeholder perceptions and concerns related to water withdrawals (e.g., those from local communities, non-governmental organizations, and regulatory agencies), direct competition with and impact from the actions of other users (commercial and municipal), restrictions to withdrawals due to regulations, and constraints on the registrant's ability to obtain and retain water rights or permits.
  - How risks may vary by withdrawal source, including wetlands, rivers, lakes, oceans, groundwater, rainwater, municipal water supplies, or supply from other water utilities.

.45 The registrant shall discuss, where applicable, risks associated with its discharge of wastewater.

- Relevant information to provide includes, but is not limited to:
  - Environmental constraints, such as the ability to maintain compliance with regulations focused on the quality of effluent discharged to the environment, and the ability to maintain control over the temperature of water discharges
  - External constraints, such as increased liability and/or reputational risks, restrictions to discharges and/or increased operating costs due to regulation, stakeholder perceptions and concerns related to water discharges (e.g., those from local communities, non-governmental organizations, and regulatory agencies), and the ability to obtain discharge rights or permits.
  - How risks may vary by discharges to different sources, including wetlands, rivers, lakes, oceans, groundwater, rainwater, municipal water supplies, or other water utilities.

.46 The registrant should include a discussion of the potential impacts that these risks may have on its operations and the timeline over which such risks are expected to manifest.

- Impacts may include, but are not limited to, those associated with costs, revenues, liabilities, continuity of operations, and reputation.

.47 The registrant shall provide a description of its short-term and long-term strategy or plan to manage these risks, including the following, where relevant:

- Any water management targets it has set, and an analysis of performance against those targets.
    - Water management targets can include water management goals that the registrant prioritizes to manage its risks and opportunities associated with water withdrawal, consumption, or discharge.
    - Targets can include, but are not limited to, those associated with reducing aquatic impingements, reducing water withdrawals, reducing water consumption, reducing water discharges, and improving the quality of water discharges.
- The scope of its strategy, plans, or targets, such as whether they pertain differently to different business units, geographies, or water-consuming operational processes.
- The activities and investments required to achieve the plans and targets, and any risks or limiting factors that might affect achievement of the plans and/or targets.

.48 For water management targets, the registrant shall additionally disclose:

- The percentage reduction or improvement from the base year, where:
    - The base year is the first year against which water management targets are evaluated toward the achievement of the target.
- Whether the target is absolute or intensity based, and the metric denominator if it is an intensity-based target.
- The timelines for the water management plans, including the start year, the target year, and the base year.
- The mechanism(s) for achieving the target, including:
    - Efficiency efforts, such as the use of water recycling and/or closed-loop systems;
    - Product innovations such as redesigning products or services to require less water;
    - Process and equipment innovations, such as those that enable the reduction of aquatic impingements or entrainments;
    - Use of tools and technologies (e.g., the World Wildlife Fund Water Risk Filter, WRI/WBCSD Global Water Tool, and Water Footprint Network Footprint Assessment Tool) to analyze water use, risk, and opportunities; and
    - Collaborations or programs in place with the community or other organizations.

.49 Disclosure of strategies, plans, and targets shall be limited to activities that were ongoing (active) or reached completion during the fiscal year.

.50 The registrant shall discuss whether its water management practices result in any additional lifecycle impacts or tradeoffs in its organization, including tradeoffs in land use, energy production, and greenhouse gas (GHG) emissions, and why the registrant chose these practices despite lifecycle tradeoffs.

Additional Resources

GRI-Global Reporting Initiative (GRI G4)
CDP 2015 Water Questionnaire
CEO Water Mandate
Global Water Footprint Assessment Standard

Coal Ash Management

Description

Electricity generators must safely dispose of the hazardous by-products of their operations. Coal ash is a major source of waste that can have a significant effect on company value in the power-generation segment. This issue will affect companies differently, depending on the extent to which they generate electricity from coal. Coal ash is one of the largest industrial waste streams in the U.S. It contains heavy metal contaminants that have been associated with different cancers and other serious diseases, especially when they leach into groundwater. Coal ash can have beneficial uses when recycled or reused, such as in the creation of fly ash concrete or wallboard, creating revenue opportunities for electric utilities. Safe handling of coal ash, location of coal ash impoundments in areas where their potential to cause harm to human life or the environment is limited, strong monitoring and containment of coal ash, and the sale for beneficial uses of coal ash are important strategies to reduce regulatory compliance costs as well as penalties for non-compliance. There can be significant litigation and/or remediation costs if the coal ash leaches into the surrounding environment.

Accounting Metrics

IF0101-08. Amount of coal combustion residuals (CCR), percentage recycled

.51 The amount of coal combustion residuals (CCR) from operations shall be calculated in metric tons, where:

- CCRs are defined according to the Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities as that material generated from the combustion of coal, including solid fuels classified as anthracite, bituminous, subbituminous, and lignite, for the purpose of generating steam in order to power a generator to produce electricity or electricity and other thermal energy by electric utilities and independent power producers.

- CCR includes fly ash, bottom ash, boiler slag, and flue gas desulfurization materials.

.52 The percentage recycled shall be calculated as the weight (in metric tons) of CCR that was reused or reclaimed, plus the weight recycled (through treatment or processing) by the registrant, plus the amount sent externally for further recycling, divided by the total weight of CCR generated from operations, where:

- CCR material is recycled if it meets the definition of beneficial use set forth in the EPA's Disposal of Coal Combustion Residuals from Electric Utilities Final Rule, where beneficial use includes:

  - The CCR material used must provide a functional benefit (e.g., CCR in concrete increases the durability of concrete and CCR as a soil amendment adjusts the pH of soil to promote plant growth).

  - The CCR substitutes for the use of a virgin material, conserving natural resources that would otherwise need to be obtained through practices, such as extraction (e.g., CCR used in road bed replaces quarried aggregate or other industrial materials).

- The CCR materials meet product and regulatory specifications and are not being used in excess quantities of product or regulatory specifications (e.g., the field applications of CCR materials do not exceed the scientifically supported quantities required for enhancing soil properties and/or crop yields).

IF0101-09. Total number of coal combustion residual (CCR) impoundments and number by EPA Hazard Potential Classification, broken down by EPA structural integrity assessment

.53 The registrant shall disclose the total number of coal combustion residual (CCR) impoundments, where:

- CCR impoundments are defined as those surface impoundments containing residuals of coal combustion, where:
  - A surface impoundment is defined, according to 40 CFR 257.2, as a facility or part of a facility that is a natural topographic depression, human-made excavation, or diked area formed primarily of earthen materials (although it may be lined with human-made materials) that is designed to hold an accumulation of liquid wastes or wastes containing free liquids and that is not an injection well.
- The scope of disclosure includes those CCR impoundments that the registrant currently owns and/or operates and those CCR impoundments that are inactive and/or closed, but for which the registrant retains oversight and/or financial responsibility.

.54 The registrant shall disclose the number of impoundments for each Hazard Potential Classification, broken down by structural integrity assessment rating, where:

- The EPA Hazard Potential Classifications, consistent with the Federal Emergency Management Agency's (FEMA) Hazard Potential Classification System for Dams, define the potential for loss of life or damage resulting from a dam failure, where classifications include High Hazard Potential, Significant Hazard Potential, Low Hazard Potential, and Less Than Low Hazard Potential.
  - High Hazard Potential includes dams where failure or misoperation will probably cause loss of human life. A listing of High Hazard Potential units can be found here.
  - Significant Hazard Potential includes dams where failure or misoperation would not result in probable loss of human life, but could cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns.
  - Low Hazard Potential includes dams where failure or misoperation would not result in probable loss of human life and economic and/or environmental losses would be of low magnitude.
  - Less Than Low Hazard Potential includes dams that do not pose high, significant, or low hazard potential.

- The EPA structural integrity rating defines the expected performance of dams under applicable loading circumstances (static, hydraulic, and seismic), where ratings include Satisfactory, Fair, Poor, and Unsatisfactory.
    - Satisfactory is defined as those dams where acceptable performance is expected under all required loading circumstances and no existing or potential safety deficiencies are recognized.
    - Fair is defined as those dams where acceptable performance is expected under all required loading circumstances, yet minor deficiencies may exist that require remedial action and/or secondary studies or investigations.
    - Poor is defined as those dams where a safety deficiency is recognized for a required loading circumstance, remedial action is required, and further critical studies or investigations may be needed.
    - Unsatisfactory is defined as those dams, considered unsafe, where a deficiency is recognized that requires immediate or emergency remedial action.

.55 Where state, local, or internal assessments determine the hazard potential and/or structural integrity to be at higher risk of impact and/or failure than that determined by the EPA, the registrant shall disclose the more conservative (i.e., higher risk) classification and/or rating.

.56 Where EPA regulations are not enforced, the registrant shall disclose a breakdown of CCR impoundments by hazard potential and structural integrity according to local regulations or internally developed assessments.

.57 The registrant should summarize and disclose CCR impoundments in the following table format:

	Less Than Low Hazard Potential	Low Hazard Potential	Significant Hazard Potential	High Hazard Potential
Satisfactory				
Fair				
Poor				
Unsatisfactory				

Additional References

For guidance on the "legitimate recycling" of hazardous waste, see 40 CFR 260.43.

Coal Combustion Residuals Impoundment Assessment Reports

Community Impacts of Project Siting

Description

New power-generation plants and the expansion of existing ones can have significant land requirements. New transmission lines, especially those necessitated by the relatively remote locations of solar and wind farms, also require significant land rights. Placement decisions and effective engagement with stakeholders in the project area can have a significant impact on the amount of time it takes to bring a project to fruition. A utility's choice of energy generation can have a significant effect on the amount of community pushback it receives—the negligible air pollution of renewables can make certain communities more amenable to such plants than to higher-polluting coal plants; conversely, certain stakeholders may be concerned about the aesthetics or impact on property values of a wind farm or transmission line in their community. Many projects require environmental and social impact assessments as part of the regulatory approval process. The more effectively a company can present the benefits of the project to relevant stakeholders and address potential community concerns, the faster projects are likely to be initiated and the company can start earning revenue. Uncertainty surrounding a company's ability to gain and maintain land-use permits and eminent domain rights (which allow utilities to take private property for public use) can increase a company's risk profile and, subsequently, its capital costs.

Accounting Metrics

IF0101-10. Number of projects requiring environmental or social modification, percentage of modifications resulting from formal public interventions or protests

.58 The registrant shall disclose the number of projects requiring modifications associated with environmental or social impacts (hereafter "modifications"), where:

- Projects are defined as the siting, development, and/or expansion of new and/or existing transmission, distribution, and generation assets.

- A permit and/or license shall be considered modified when the issuing agency requires modification to or mitigation of the proposed project in order to grant approval of the permit or license. Examples of modifications associated with environmental or social impacts include, but are not limited to:

    - Mitigated Action Plans (MAP) prepared by the U.S. Department of Energy (DOE) (a listing is available here) and modifications required by environmental impact statements or environmental impact assessments in accordance with the National Environmental Policy Act (NEPA);

    - Modifications required by state or local regulations such as Mitigated Negative Declarations (MND), established by the California Public Utilities Commission (CPUC); or

    - Mitigation required by an environmental impact report as established through the California Environmental Quality Act (CEQA), New York State Environmental Quality Review Act (SEQRA), Massachusetts Environmental Policy Act (MEPA), or other relevant state regulations, as appropriate.

.59 The scope of disclosure includes projects with modifications that are currently pending permit application decisions as well as permit applications that required modifications and were closed (i.e., approved or rejected) during the fiscal year, where:

- Permit applications include, but are not limited to, those associated with land use, zoning, emissions, effluents, and property interests at the federal, state, or local levels.

.60 The scope of disclosure does not include applications that the registrant intends to submit but has not yet submitted.

.61 The registrant shall calculate the percentage of projects that require modifications resulting from formal public interventions or protests as the number of projects for which modifications were required during the fiscal year as a result of formal public interventions or protests divided by the total number of projects for which modifications were or are required.

.62 Formal public interventions or protests are defined by the relevant federal, state, or local law, but are generally considered to be instances where an administrative law judge is required to preside over an evidentiary proceeding brought forth by interested parties, where:

- Parties are defined by the relevant federal, state, or local law, but are generally considered to be the applicant and those persons or organizations legally permitted to intervene or protest in an application proceeding.

.63 Relevant federal and state laws governing the intervention process include, but are not limited to:

- Florida Power Plant Siting Act
- New York Public Service Law: Article VII
- Massachusetts Rules for the Conduct of Adjudicatory Proceedings
- California Public Utilities Commission General Order Number 131-D
- United States 18 CFR 385

.64 The scope of disclosure shall include those projects with open applications to which the registrant is a party, including projects overseen by the registrant directly or through joint venture, but not including project applications to which the registrant is not a party.

.65 The registrant should discuss any modifications or abandonments of projects during the current year as required by applications closed during a prior period or through the course of the current year.

Note to **IF0101-10**

.66 The registrant shall discuss modifications that relate to significant projects such as those with large transmission or generation capacity.

.67 For such projects, the registrant shall provide:

- A description of the project and the related modifications required.
- The total generation or transmission capacity (in megawatts) affected by modifications, including whether the initial capacity was reduced, the location and siting altered, and any other mitigation techniques and technologies required.
- The cost to remedy modifications and/or public interventions.

IF0101-11. Discussion of community engagement processes to identify and mitigate concerns regarding project environmental and community impacts

.68 The registrant shall discuss its process for engaging communities in which it operates to identify concerns regarding the environmental and social impacts associated with its existing or proposed projects, where:

- Environmental impacts may include ecological impacts of construction, air emissions, risk of avian deaths, and other relevant land-use impacts.
- Community impacts may include, but are not limited to, property value, visual aesthetics, rights of way, and human health and safety.

.69 The registrant shall discuss the following, where relevant:

- Its strategy to obtain necessary rights of way including, where necessary, its use of eminent domain and its efforts to address any associated landowner and community concerns.
- Its community engagement processes for the various stages of permitting, construction, and commissioning, such as the siting and pre-permit application stage, the initial permit review stage, the subsequent review and public comment stages (e.g., public comments on environmental impact statements), the stages during construction, and throughout the operating life of its assets.
- Its policy to undertake self-initiated environmental and/or social impact assessments and mitigation efforts.
- The environmental and community impacts specifically addressed through its engagement processes.
- Its efforts to avoid and/or mitigate environmental and/or community impacts either before siting and permitting, through the course of permitting, and/or during its ongoing operations, including, as appropriate, a discussion on the use of Safe Harbor Agreements, habitat protection and restoration, use of rights-of-way for multiple uses, and meetings with impacted communities.
- The risks and opportunities associated with its projects, including, but not limited to, permit delays, project modifications, expanded infrastructure, and increased energy reliability.

- The underlying references for its procedures, such as codes, guidelines, standards, or regulations, and whether these were developed by the registrant, an industry organization, a third-party organization (e.g., a non-governmental organization), a governmental agency, or some combination of these groups.

- Its community engagement activities for the period under reporting and the projects that such activities relate to.

Additional References

Electric Power Research Institute: Electric Transmission Rights-of-Way Uses and Risks

Workforce Health & Safety

Description

Employees of electric utilities face numerous hazards in the construction and maintenance of electric distribution and transmission lines, as well as with the various means of electricity generation. Many of these employees work for extended periods at great heights and face electrocution risks. While the industry has made significant strides in safety improvements, significant risks and opportunities remain for further improvements. The nature of the industry, as both a societally granted monopoly and a necessary part of modern life, means that the actions of electric utilities receive significant public and regulatory scrutiny. Companies need to maintain a culture of safety to ensure good working conditions for their workers, ensure strong operational productivity, and manage potential risks of regulatory penalties

Accounting Metrics

IF0101-12. (1) Total recordable injury rate (TRIR), (2) fatality rate, and (3) near miss frequency rate (NMFR)

.70 Registrants whose workforce is entirely U.S.-based shall disclose its total recordable injury rate (TRIR) and fatality rate as calculated and reported in the Occupational Safety and Health Administration's (OSHA) Form 300.

- OSHA guidelines provide details on determining whether an event is a recordable occupational incident and definitions for exemptions for incidents that occur in the work environment but are not occupational.

- The scope of disclosure shall include those workers involved in the development and maintenance of transmission, distribution, and generation facilities (e.g., linemen and construction workers) but shall exclude those workers in corporate and administrative positions.

.71 Registrants whose workforce includes non-U.S.-based employees shall calculate their TRIR and fatality rate according to the U.S. Bureau of Labor Statistics (BLS) guidance and/or using the BLS calculator.

.72 The registrant shall disclose its TRIR and fatality rate for all employees, including direct full-time employees, contract employees, and seasonal and migrant employees.

.73 The scope includes all employees, domestic and foreign.

.74 Rates shall be calculated as: (statistic count / total hours worked)*200,000.

.75 The registrant shall disclose its near miss frequency rate (NMFR), where a near miss is defined as an incident in which no property or environmental damage or personal injury occurred, but where damage or personal injury easily could have occurred but for a slight circumstantial shift.

- The registrant should refer to organizations such as the National Safety Council (NSC) for guidance on implementing near miss reporting.
- The registrant should disclose its process for classifying, identifying, and reporting near miss incidents.

End-Use Efficiency & Demand

Description

Energy efficiency is a low-lifecycle-cost method to reduce GHG emissions, as less electricity needs to be generated to provide the same end-use energy services. Utilities can partake in a wide range of activities to promote energy efficiency and conservation among their customers: offering rebates for energy-efficient appliances, weatherizing customers' homes, educating customers on energy-saving methods, offering incentives to customers to curb electricity use during times of peak demand ("demand response"), and investing in technology, such as smart meters, that allows customers to track their energy usage, among many other strategies. These efforts, which save consumers money, can also manifest in lowered operating costs for electric utilities, because they can reduce peak demand. Furthermore, depending on the sentiment of the utilities commission in a company's region, energy efficiency can be a regulatory priority before new builds are considered.

How an electric utility stands to gain or lose from this trend toward GHG mitigation is significantly predicated on its regulatory environment. Traditional rate structures generally do not give electric utilities an incentive for energy efficiency, and further, they may economically suffer from reductions in customer demand. This is increasingly driving electric utilities, and their regulators and customers, to pursue alternative ratemaking. Such alternative rate design often "decouples" utility revenues from customer consumption, and may also build in explicit incentives for successful utility performance in terms of end-use efficiency and demand reductions. Overall, companies whose strategic plan strives to reduce their downside risks from demand fluctuations, gain adequate and timely returns on needed efficiency investments, and lower costs through efficiency initiatives are more likely to be well positioned to earn stronger risk-adjusted returns over the long term.

Accounting Metrics

IF0101-13. Percentage of electric load served by smart grid technology

.76 The registrant shall disclose the percentage of is electric load (in megawatt hours) served by smart grid technology, where:

- An electric load is considered to be served by smart grid technology when the technology enables one or more of the distinguishing characteristics set forth in the Energy Independence Act of 2007, where:
  - Examples of smart grid technologies include, but are not limited to, demand-response systems, distribution automation, smart inverters, advanced metering equipment, and other smart home and intelligent building control products.
- According to the Energy Independence Act of 2007, distinguishing characteristics of the smart grid include:
  - Increased use of digital information and control technology to improve reliability, security, and efficiency of the electric grid;

- Deployment and integration of distributed resources and generation, including renewable resources;
- Development and incorporation of demand-response programs, demand-side resources, and energy efficiency resources;
- Deployment of ''smart'' technologies for metering, communications concerning grid operations and status, and distribution automation;
- Deployment and integration of advanced electricity storage and peak-shaving technologies, including plug-in electric and hybrid electric vehicles and thermal-storage air conditioning; and
- Provision to consumers of timely information and control options.

- A smart grid is defined, consistent with the National Institute of Standards and Technology (NIST) Smart Grid Interoperability Standards, as a modernized grid that enables bidirectional flows of energy and uses two-way communication and control capabilities that will lead to an array of new functionalities and applications.

.77 The percentage of load served by smart grid technology shall be calculated as the total amount of energy load (in megawatt hours) served by smart grid technology divided by the total amount of energy load (in megawatt hours), where:

- The electric load served by smart grid technology is defined as the amount of electricity delivered to the registrant's customers that incorporates the use of smart grid technologies to meet the electricity demand of the consumer.

.78 The registrant may choose to discuss the type of smart grid technology through which its electric load is served, the customer types that are utilizing the technology (e.g., residential, commercial, or industrial), whether technologies are owned by the utility or the customer, and any plans for further integration of smart grid capabilities.

Note to **IF0101-13**

.79 The registrant shall discuss the opportunities and challenges associated with the development and operations of a smart grid, including, where relevant:

- Demand-response and end-user efficiency opportunities (e.g., smoothing of the demand curve, increased cost-effective electric generation, improved incorporation of distributed generation, and increased generation and transmission efficiency).
- Political and deployment challenges (e.g., opposition to smart grid development, disparate degrees of technology deployment, and economic dis-incentives).

IF0101-14. Customer electricity savings from efficiency measures by market

.80 The registrant shall disclose the total amount of electricity savings delivered to customers (in megawatt hours) from energy efficiency measures during the fiscal year for each of its markets, where:

- Markets are defined as those operations that are subject to distinct public utility regulatory oversight.

.81 Electricity savings shall be defined according to the gross savings approach as the changes in energy consumption and/or demand that results from program-related actions taken by participants in an efficiency program, regardless of why they participated.

- The registrant should list those markets where it reports electricity savings on a net electricity savings basis and thus may be different from the figures disclosed here, where:

.82 Net electricity savings are defined as changes in consumption that are specifically attributable to an energy efficiency program and that would not have happened in the absence of the program.

.83 Electricity 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, where examples of state regulations include, but are not limited to:

- California Public Utility Commission (CPUC) Decision 09-09-047
- New York Case 07-M-0458
- Public Utility Commission of Texas (PUCT) Substantive Rule 25.181

.84 Where state or local regulations do not exist, the registrant shall calculate energy savings consistent with the measurement and verification methods outlined by the Department of Energy's (DOE) Federal Energy Management Program (FEMP) M&V Guidelines: Measurement and Verification for Federal Energy Projects, Version 4.0.

.85 The registrant shall consider the FEMP M&V Guidelines and state regulations as normative references, thus any updates made year-on-year shall be considered updates to this guidance.

.86 The scope of electricity savings from efficiency measures includes savings delivered directly by the registrant and, where regulations provide, savings substantiated through purchases of efficiency savings credits.

- For any savings from efficiency measures delivered directly by the registrant, any efficiency savings credits must be retained (i.e., not sold) and retired on behalf of the registrant in order for the registrant to claim them delivered electricity savings.

- For efficiency savings credits purchased, the agreement must explicitly include and convey that credits be retained and retired on behalf of the registrant in order for the registrant to claim them.

.87 Relevant regulations governing efficiency savings credits include:

- Nevada Regulation of Public Utilities Chapter 704
- Connecticut House Bill 7432
- Pennsylvania Act 129

Note to **IF0101-14**

.88 The registrant shall discuss regulations related to customer efficiency measures for each of its relevant markets, including:

- The amount or percentage of electricity savings from efficiency measures required by regulations for each market.
- Instances of non-compliance with electricity savings obligations.
- In such instances, the registrant shall disclose the difference between the energy savings delivered and the amount required by the regulation.
- Electricity savings delivered that exceed those required by regulations and that resulted in the registrant receiving energy efficiency performance incentives, including the U.S. dollar value of any such incentives.

.89 Relevant energy-efficiency regulations include, but are not limited to:

- Massachusetts Department of Public Utilities Three Year Energy Efficiency Plan 15-160 to 15-169
- CPUC Decision 14-10-046
- Texas Senate Bill 1125
- Illinois Power Agency Act 220 ILCS 5/8-103

.90 The registrant shall discuss the forms of policy by each market that allow for or incentivize energy efficiency, including a discussion of the benefits, challenges, and financial impacts associated with such regulations.

.91 Relevant policy mechanisms to discuss include, but are not limited to:

- Deferral decoupling
- Current period decoupling

- Single fixed variable rates
- Lost revenue adjustments
- Energy efficiency feebates

.92 For markets lacking regulations that allow for or incentivize energy efficiency, the registrant shall discuss its stance on and efforts to manage risks and opportunities relating to such regulation.

.93 The registrant should discuss any efforts to meet regulations through incentives it has developed for its customers that promote end-use efficiency, including, but not limited to, dynamic pricing, energy efficiency rebates, and other measures to subsidize customer energy efficiency.

Additional References

Massachusetts Technical Reference Manual for Estimating Savings from Energy Efficiency Measures

Energy Division & Program Administrator Energy Efficiency Evaluation, Measurement and Verification Plan Version 5

New York Standard Approach for Estimating Energy Savings from Energy Efficiency Programs

Texas Deemed Savings, Installation & Efficiency Standards

Further information regarding state regulations on energy efficiency measures can be found through the American Council for an Energy-Efficient Economy's State Scorecard Rank.

Nuclear Safety & Emergency Management

Description

Nuclear incidents, while exceedingly rare, can have significant human and environmental consequences. Owners of nuclear power plants in the U.S. have operated for decades without a major public safety incident. They carry private insurance and enjoy significantly limited liability, as part of the Price-Anderson Act, if an incident were to occur. However, owners of nuclear energy generation plants still face related risks—even if the probability is small, the outcome of a nuclear accident would be serious and is difficult to predict. Utilities could face a loss of their license to operate, either entirely or in the operation of nuclear plants. The latter would hurt a company's competitive position and make it more difficult to meet GHG emission standards. Furthermore, failure to comply with the Nuclear Regulatory Commission's safety rules can be extremely expensive to nuclear power operators; in extreme circumstances it can make the continued operation of the plant uneconomical. As a result of significant financial repercussions both from ongoing safety compliance as well as the materialization of tail risk incidents, utilities that own or operate nuclear plants need to be vigilant in the safety upgrades of their facilities. They also need to maintain robust emergency preparedness training for their staff and a strong safety culture. These measures can reduce the probability that accidents will occur and enable a company to detect and respond to such incidents effectively.

Accounting Metrics

IF0101-15. Total number of nuclear power units, broken down by Nuclear Regulatory Commission (NRC) Action Matrix Column

.94 The registrant shall disclose the total number of nuclear power units that it owns and/or operates, where:

- A nuclear power unit is defined, consistent with 10 CFR 50, as a nuclear reactor and associated equipment necessary for electric power generation, including those structures, systems, and components required to provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public.

.95 The registrant shall provide a breakdown of nuclear power units that it owns and/or operates by Nuclear Regulatory Commission (NRC) Action Matrix Column.

.96 Relevant Action Matrix Columns include, in order of increasing significance:

- Licensee Response Column
- Regulatory Response Column
- Degraded Cornerstone Column
- Multiple/Repetitive Degraded Cornerstone Column
- Unacceptable Performance Column

IF0101-16. Discussion of efforts to manage nuclear safety and emergency preparedness

.97 The registrant shall discuss its efforts to manage nuclear safety and emergency preparedness, including its efforts to identify, report, and asses initiating events and event sequences relating to nuclear safety and emergency preparedness, where:

- Initiating events are defined, consistent with 10 CFR 63, as natural or human-induced events that cause an event sequence.
- An event sequence is defined as a series of actions and/or occurrences within the natural and engineered components of a geologic repository operations area that could potentially lead to exposure of individuals to radiation. An event sequence includes one or more initiating events and associated combinations of repository system component failures, including those produced by the action or inaction of operating personnel.
- Disclosure may focus broadly on nuclear safety and emergency management systems, but shall specifically address the systems in place to avoid and manage initiating events, accidents, emergencies, and incidents that could have catastrophic impacts on human health, the local community, and the environment.

.98 The registrant shall discuss how it manages nuclear safety and emergency preparedness, such as through training, rules and guidelines (and their enforcement), implementation of emergency plans (consistent with those developed in accordance with 10 CFR 50.47), and use of technology.

.99 The registrant shall discuss its efforts to create and maintain a culture of nuclear safety and emergency preparedness, including its alignment with the Nuclear Regulatory Commission's (NRC) Safety Culture Policy Statement and efforts to institute the traits of a positive safety culture, where the traits of a positive safety culture include:

- Leadership safety values and actions
- Problem identification and resolution
- Personal accountability
- Work process
- Continuous learning
- Environment for raising concerns
- Effective safety communications
- Respectful work environment
- Questioning attitude

.100 The registrant may choose to discuss implementation of the Institute of Nuclear Power Operations (INPO) Principles for a Strong Nuclear Safety Culture and/or the International Atomic Energy Agency's (IAEA) Best Practices in the Utilization and Dissemination of Operating Experience at Nuclear Power Plants.

Grid Resiliency

Description

Electricity is critical for the continued function of most elements of modern life, from medicine to finance, creating a high societal expectation of continuous service. There are potentially high societal costs from major disruptions to the electricity infrastructure. Disruptions can be caused by extreme weather events, natural disasters, and cyber-attacks. As the frequency and severity of extreme weather events associated with climate change continues to increase, all segments of electric utilities companies, and especially major T&D operations, will face increasing physical threats to their infrastructure. This could result in frequent or significant service disruptions, outages, and the need to upgrade or repair damaged or compromised equipment. The increased usage of smart grid technology has several benefits, including strengthening the resiliency of the grid to extreme weather events. However, this technology can make the grid more vulnerable to cyber-attacks, as it provides hackers more entryways into infrastructure systems. Agents in foreign governments are already known to have infiltrated the cybersecurity of the grid, causing concern and heightened scrutiny from the highest levels of the U.S. government. Companies need to implement strategies that minimize the probability and magnitude of impacts from extreme weather events and cyber-attacks. They can remain competitive in the face of increasing external competition by actively submitting compelling rate cases to improve the reliability, resilience, and quality of their infrastructure.

Accounting Metrics

IF0101-17 Number of incidents of non-compliance with North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection standards

.101 The registrant shall disclose the total number of instances of non-compliance with the North American Electric Reliability Corporation (NERC) Critical Infrastructure (CIP) standards.

.102 The scope of disclosure includes the following nine NERC CIP standards as mandated by Section 215 of the Federal Power Act:

- CIP-001: Covers sabotage reporting;
- CIP-002: Requires the identification and documentation of the Critical Cyber Assets associated with the Critical Assets that support the reliable operation of the Bulk Electric System;
- CIP-003: Requires that responsible entities have minimum security management controls in place to protect Critical Cyber Assets;
- CIP-004: Requires that personnel with authorized cyber or unescorted physical access to Critical Cyber Assets, including contractors and service vendors, have an appropriate level of personnel risk assessment, training, and security awareness;
- CIP-005: Requires the identification and protection of the Electronic Security Perimeters inside which all Critical Cyber Assets reside, as well as all access points on the perimeter;

- CIP-006: Addresses implementation of a physical security program for the protection of Critical Cyber Assets;
- CIP-007: Requires responsible entities to define methods, processes, and procedures for securing those systems determined to be Critical Cyber Assets, as well as the other (non-critical) Cyber Assets within the Electronic Security Perimeters;
- CIP-008: Ensures the identification, classification, response, and reporting of cybersecurity incidents related to Critical Cyber Assets; and
- CIP-009: Ensures that recovery plans are put in place for Critical Cyber Assets and that these plans follow established business continuity and disaster recovery techniques and practices.

.103 A database of NERC CIP non-compliances can be found here.

IF0101-18. (1) System Average Interruption Duration Index (SAIDI), (2) System Average Interruption Frequency Index (SAIFI), and (3) Customer Average Interruption Duration Index (CAIDI), inclusive of major event days

.104 The registrant shall disclose its System Average Interruption Duration Index (SAIDI) in minutes, where:

- The SAIDI is defined as the total duration of an interruption for the average customer during the period under reporting.

.105 The registrant shall calculate its SAIDI as the total number of customers interrupted multiplied by the duration of interruptions (i.e., restoration time) divided by the total number of customers served, written as $\Sigma(r_i * N_i) / N_T$, where:

- Σ = Summation function
- r_i = Restoration time, in minutes
- N_i = Total number of customers interrupted
- N_T = Total number of customers served

.106 The registrant shall disclose its System Average Interruption Frequency Index (SAIFI), where:

- SAIFI is defined as the average number of times that a system customer experiences an outage during the period under reporting.

.107 The registrant shall calculate its SAIFI as the total number of customers interrupted divided by the total number of customers served, written as $\Sigma(N_i) / N_T$, where:

- Σ = Summation function
- N_i = Total number of customers interrupted
- N_T = Total number of customers served

.108 The registrant shall disclose its Customer Average Interruption Duration Index (CAIDI), where:

- The CAIDI is defined as the average amount of time required to restore service once an outage has occurred.

.109 The registrant shall calculate its CAIDI as the total number of customers interrupted multiplied by the duration of interruptions (i.e., restoration time) divided by the sum of the number of customers interrupted, written as $\Sigma(r_i * N_i) / \Sigma(N_i)$, where:

- Σ = Summation function
- r_i = Restoration time, in minutes
- N_i = Total number of customers interrupted

.110 The registrant shall disclose its SAIDI, SAIFI, and CAIDI inclusive of major event days, where:

- Major event days are defined, according to IEEE Std 1366, as days in which the daily SAIDI exceeds a threshold value, T_{MED}, where T_{MED} is calculated as follows:
  - The registrant should collect values of daily SAIDI for five sequential years, ending on the last day of the last complete reporting period. If fewer than five years of historical data are available, use all of the available historical data.
  - If any day in the data set has a value of zero for SAIDI, replace it with the lowest non-zero SAIDI value in the data set. (This permits taking the logarithm of every day.)
  - Take the natural logarithm (ln) of each daily SAIDI value in the data set.
  - Find α (Alpha), the average of the logarithms (also known as the logaverage) of the data set.
  - Find β (Beta), the standard deviation of the logarithms (also known as the log-standard deviation) of the data set.
  - Compute the major event day threshold, T_{MED}, using the equation: $T_{MED} = e^{(\alpha+2.5\beta)}$.
  - Any day with daily SAIDI greater than the threshold value T_{MED} that occurs during the subsequent reporting period is a major event day.

Note to **IF0101-18**

.111 The registrant shall discuss notable service disruptions such as those that affected a significant number of customers or disruptions of extended duration.

.112 For such disruptions, the registrant should provide:

- Description and cause of the service disruption;
- The total generation or transmission capacity (in megawatts) and population affected by the disruption;
- The costs (in U.S. dollars) associated with the service disruption;
- Actions taken to mitigate the potential for future service interruptions; and
- Any other significant outcomes (e.g., legal proceedings or related fatalities).

Management of the Legal & Regulatory Environment

Description

Utilities regularly engage with their regulators through rate cases, and though they do not have total control over policy outcomes, they do have a significant voice in federal and state energy policies. While the electric utility business model is designed to provide predictable returns, the traditional business model may benefit from evolving beyond its traditional role in the market to continue to meet these investor expectations. Perceived risks to the traditional business model, including distributed generation and the evolving policy environment around GHG emissions (which incentivizes or puts pressure on companies to invest in renewable and alternative energy generation and energy efficiency), incentivizes action by all types of stakeholders, including utilities themselves, to evolve into a structure more precisely designed for the 21st century. In some jurisdictions, the role of utilities in the economy's energy infrastructure and the very nature of their regulation are being reframed. Under this evolving policy environment, utilities in each jurisdiction will have to engage with regulators and policymakers to ensure that regulation rewards actions that are in the long-term best interest of society as well as companies' shareholders. A company's policy stance on renewable energy, distributed generation, energy efficiency, and other key emerging trends can influence the achievement of economy-wide GHG emissions reduction, improved health outcomes, and the affordability and reliability of electricity service for consumers. In the short term, policy outcomes that favor financial returns for utilities at the expense of societal benefits might prevail in some areas. However, examples from other industries and markets indicate that over time, policy corrections to achieve societal benefits could result in unanticipated costs and limitations on companies that might be detrimental to their long-term financial performance. Furthermore, in their close relationships with regulators, electric utility companies need to have strong internal controls and governance procedures to ensure that they do not violate legal requirements around the nature of these interactions.

Accounting Metrics

IF0101-19. Discussion of policies and processes to identify and manage potential ethical violations resulting from interactions with utility commissions

.113 The registrant shall discuss the policies and processes it has established to identify and prevent potential ethical violations resulting from interactions with utility commissions where:

- Ethical violations are considered those instances where the registrant or the registrant's employee(s) are found to be out of compliance with codes of conduct and ethics as promulgated through regulations or through the registrant's internal framework.

- Relevant policies to discuss include, but are not limited to, board oversight of interactions with regulators (including oversight of political contributions), linking executive compensation to regulatory compliance, and programs to protect whistleblowers.

- Relevant processes include, but are not limited to, training programs for employees that interact with utility commission representatives, audits of interactions with utility commission representatives, and engagement with the public throughout the regulatory decision-making process.

.114 The registrant shall describe any corrective actions it has implemented as a result of incidents arising from ethical violations with a utility commission. This may include, but is not limited to, specific changes to the utility's oversight of employee-utility commission engagement, efforts to preemptively identify potential ethical dilemmas, and educational programs for employees.

IF0101-20. Amount of legal and regulatory fines and settlements associated with allegations of violations resulting from interactions with utility commissions

.115 The registrant shall disclose the amount (excluding legal fees) of all fines and settlements associated with allegations of violations resulting from interactions with utility commissions such as those related to enforcement of U.S. laws and regulations on ex parte communications, utility rate making, overcharging, and crediting customers, including violations of the U.S. Federal Power Act and relevant state-level utility commission acts, among others.

.116 Disclosure shall include administrative judge decisions (e.g., bench decisions, recommended decisions, final decisions, etc.), civil actions (e.g., civil judgment, settlements, or regulatory penalties), and criminal actions (e.g., criminal judgment, penalties, or restitutions) taken by any entity (government, businesses, or individuals).

.117 The scope of disclosure is limited to those instances brought forth by customers and/or regulators alleging that the registrant violated U.S. federal regulations and/or relevant state-level utility commission acts in its course of business.

Note to **IF0101-20**

.118 The registrant shall briefly describe the nature (e.g., guilty plea, deferred agreement, or non-prosecution agreement) and context (e.g., overcharging due to improper rate case formulation, ex parte communications, rate commitments, etc.) of fines and settlements.

.119 The registrant shall estimate and disclose any additional or other financial impacts associated with the allegations, including settlements that resulted in rate reductions, denied revenue increases, customer credits, or other financial impacts.

.120 The registrant shall describe any corrective actions it has implemented as a result of each incident. This may include, but is not limited to, specific changes in billing processes, rate-making, or public communications and commitments.

IF0101-21. Discussion of positions on the regulatory and political environment related to environmental and social factors and description of efforts to manage risks and opportunities presented

.121 The registrant shall identify risks and opportunities it faces related to legislation, regulation, rulemaking, actions of individual politicians, and the overall political environment (hereafter referred to collectively as "regulatory and political environment") related to environmental and social factors.

- The scope shall include existing, emerging, and known future risks and opportunities.

- The scope shall include risks and opportunities that may exist within the U.S. at the local, state, and federal level.

- The registrant may discuss risks and opportunities in international markets.

- The regulatory and political environment related to environmental and social factors include, but is not limited to, those related to non-greenhouse gas emissions, greenhouse gas emissions, distributed generation, cyber security, and grid infrastructure development.

.122 Relevant risks include, but are not limited to, risk of increased compliance costs, risk of policy reversal (e.g., risks associated with changes to Clean Air Act), risk of loss of financial incentives (e.g., reduction or elimination of energy efficiency performance incentives), risk to reputation due to registrant's stance and actions related to the regulatory and political environment, risk that the regulatory and political environment may not be aligned with long-term strategy, and risk of misalignment with the expectations of customers, investors, and other stakeholders.

.123 Relevant opportunities include, but are not limited to, improved financial conditions (e.g., through approval of infrastructure enhancement, etc.), improved community relations due to the registrant's stance and actions related to the regulatory and political environment, and other benefits due to alignment of the regulatory and political environment with the registrant's long-term strategy.

.124 For each risk and opportunity associated with the regulatory and political environment the registrant has identified, it shall disclose:

- For specific pieces of legislation, regulation, or candidates, whether its position is of support or opposition.

- For general environmental and social topics such as clean air and water, energy/nuclear, and other topics associated with the general lobbying issue codes defined by the Lobbying Disclosure Act of 1995, a description of the type of regulation or legislation that it supports or opposes.

.125 The registrant shall discuss its efforts to manage risks and opportunities associated with each aspect of the regulatory and political environment it has identified in IF0101-18.117-.120 where relevant efforts to discuss include the use of each of the following:

- Direct lobbying, defined according to the Internal Revenue Service (IRS) as the attempt to influence a legislative body through communication with a member or employee of a legislative body, or with a government official who participates in formulating legislation.

- Grass roots lobbying, defined according to the IRS as the attempt to influence legislation by attempting to affect the opinion of the public with respect to the legislation and encouraging the audience to take action with respect to the legislation.

- Direct or indirect contributions or expenditures in support of, or opposition to, a candidate for public office or a ballot measure.

- Any payments made to trade associations or tax-exempt entities that may be used (where permitted) for lobbying, to make campaign contributions, or to otherwise exert influence on a political campaign or ballot measure.

    - The scope includes political organizations, classified under Section 527 of the Internal Revenue Code, that seek to influence the "selection, nomination, election, or appointment of any individual to Federal, State, or local public office or office in a political organization, or the election of Presidential electors."

    - The scope includes advocacy organizations, commonly classified as social welfare organizations under Section 501(c)(4) of the Internal Revenue Code.

- Other interactions with regulators and regulatory agencies, such as through legislative testimony or employment of former members of Congress or regulatory agencies and other public servants.

- Any direct or indirect political expenditure (one-time or recurring) that must be reported to the Federal Election Commission (FEC), the Internal Revenue Service (IRS), or a state disclosure agency.

.126 In addition to its efforts to influence the regulatory and political environment, the registrant shall discuss its overall strategy to manage risks and opportunities associated with each aspect of the regulatory and political environment it has identified.

.127 With respect to the emerging or potential future regulatory and political environment, the registrant shall discuss its view of:

- Which outcome is most likely to come to fruition;

- The likelihood the outcome will occur (i.e., a qualitative assessment of certainty or uncertainty);

- The time horizon over which it expects the outcome to occur; and

- The expected magnitude of the impact (e.g., a one-time, acute impact on costs, an ongoing moderate impact on rate structure, etc.).

.128 The registrant should describe whether its stance may align with or differ from its peers, other companies, and the official stance of its industry organization(s) and discuss any relevant reasons for alignment or divergence.

.129 The registrant may choose to disclose the total amount of political spending and a list of the recipients, which includes:

- Any direct or indirect contributions or expenditures in support of, or opposition to, a candidate for public office or a ballot measure.

- Any payments made to trade associations or tax-exempt entities that are used to influence a political campaign (including advocacy organizations, commonly classified as social welfare organizations under Section 501(c)(4) of the Internal Revenue Code, or business leagues, chambers of commerce, boards of trade, and similar organizations classified under Section 501(c)(6) of the Internal Revenue Code).

- Any direct or indirect political expenditure (one-time or recurring) that must be reported to the FEC, the IRS, or a state disclosure agency.

- Any direct or indirect contributions to registered lobbyists or lobbying organizations, including contributions made to trade organizations that contribute to political lobbying efforts.

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SUSTAINABILITY ACCOUNTING STANDARD
INFRASTRUCTURE SECTOR

GAS UTILITIES

Sustainability Accounting Standard

Sustainable Industry Classification System™ (SICS™) #IF0102

Prepared by the
Sustainability Accounting Standards Board®

March 2016
Provisional Standard

GAS UTILITIES

Sustainability Accounting Standard

About SASB

The Sustainability Accounting Standards Board (SASB) provides sustainability accounting standards for use by publicly-listed corporations in the U.S. in disclosing material sustainability information for the benefit of investors and the public. SASB standards are designed for disclosure in mandatory filings to the Securities and Exchange Commission (SEC), such as the Form 10-K and 20-F. SASB is an independent 501(c)3 non-profit organization. Through 2016, SASB is developing standards for 79 industries in 10 sectors.

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INTRODUCTION

Purpose & Structure

This document contains the SASB Sustainability Accounting Standard (SASB Standard) for the Gas Utilities industry.

SASB Sustainability Accounting Standards are comprised of **(1) disclosure guidance and (2) accounting standards on sustainability topics** for use by U.S. and foreign public companies in their annual filings (Form 10-K or 20-F) with the U.S. Securities and Exchange Commission (SEC). To the extent relevant, SASB Standards may also be applicable to other periodic mandatory filings with the SEC, such as the Form 10-Q, Form S-1, and Form 8-K.

SASB Standards identify sustainability topics at an industry level, which may constitute material information—depending on a company's specific operating context—for a company within that industry. SASB Standards are intended to provide guidance to company management, which is ultimately responsible for determining which information is material and should therefore be included in its Form 10-K or 20-F and other periodic SEC filings.

SASB Standards provide companies with standardized sustainability metrics designed to communicate performance on industry level sustainability topics. When making disclosure on sustainability topics, companies can use SASB Standards to help ensure that disclosure is standardized and therefore decision-useful, relevant, comparable, and complete.

SASB Standards are intended to constitute "suitable criteria" as defined by AT 101.23-.32[1] and referenced in AT 701[2] as having the following attributes:

- *Objectivity*—Criteria should be free from bias.
- *Measurability*—Criteria should permit reasonably consistent measurements, qualitative or quantitative, of subject matter.
- *Completeness*—Criteria should be sufficiently complete so that those relevant factors that would alter a conclusion about subject matter are not omitted.
- *Relevance*—Criteria should be relevant to the subject matter.

Industry Description

The Gas Utilities industry is made up of gas distribution and marketing companies. Gas distribution involves operating local, low-pressure pipes to transfer natural gas from larger transmission pipes to end users. Gas marketing companies are gas brokers that aggregate natural gas into quantities that fit the needs of their different customers and then deliver it, generally through other companies' transmission and distribution lines. A relatively smaller portion of this industry is involved in propane gas distribution, therefore this standard focuses on natural gas distribution. Both types of gas are commonly used for heating and cooking by residential, commercial, and industrial customers. In structurally regulated markets, the utility is granted a full monopoly over the distribution and sale of natural gas. A state utilities commission must approve the rates utilities charge to avoid the abuse of

[1] http://pcaobus.org/Standards/Attestation/Pages/AT101.aspx#at_101_fn7
[2] http://pcaobus.org/Standards/Attestation/Pages/AT701.aspx

their monopoly position. In deregulated markets, distribution and marketing are legally separated and customers have a choice of which company to buy their gas from. In this case, a utility is guaranteed a monopoly only over distribution and is legally required to transmit all gas equitably along its pipes for a fixed fee. While U.S.-listed gas utility companies include a few large companies based outside the U.S., the majority are U.S.-based and operate mainly in U.S. markets.

Note: The SASB Gas Utilities industry does not include gas transmission companies that transport highly pressurized natural gas over long distances from the wellhead. Gas transmission companies are included in the Oil & Gas—Midstream industry (NR0102) in the Non-Renewable Resources sector. Furthermore, this brief does not address electric utilities. Separate SASB standards are available for electric utilities (IF0101) and should be used to the extent that gas utilities also operate electric utilities.

Guidance for Disclosure of Sustainability Topics in SEC Filings

1. Industry-Level Sustainability Topics

For the Gas Utilities industry, SASB has identified the following sustainability disclosure topics:

- End-Use Efficiency
- Operational Safety, Emergency Preparedness, and Response

2. Company-Level Determination and Disclosure of Material Sustainability Topics

Sustainability disclosures are governed by the same laws and regulations that govern disclosures by securities issuers generally. According to the U.S. Supreme Court, a fact is material if, in the event such fact is omitted from a particular disclosure, there is "a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the 'total mix' of the information made available."[3, 4]

SASB has attempted to identify those sustainability topics that are reasonably likely to have a material effect on the financial condition or operating performance of companies within each SICS industry. SASB recognizes, however, that each company is ultimately responsible for determining what information should be disclosed within the context of Regulation S-K and other guidance.

Regulation S-K, which sets forth certain disclosure requirements associated with Form 10-K and other SEC filings, requires companies, among other things, to describe in the Management's Discussion and Analysis of Financial Condition and Results of Operations (MD&A) section of Form 10-K "any known trends or uncertainties that have had or that the registrant reasonably expects will have a material favorable or unfavorable impact on net sales or revenues or income from continuing operations. If the registrant knows of events that will cause a material change

[3] TSC Industries v. Northway, Inc., 426 U.S. 438 (1976).
[4] C.F.R. 229.303(Item 303)(a)(3)(ii).

in the relationship between costs and revenues (such as known future increases in costs of labor or materials or price increases or inventory adjustments), the change in the relationship shall be disclosed."

Furthermore, instructions to Item 303 state that the MD&A "shall focus specifically on material events and uncertainties known to management that would cause reported financial information not to be necessarily indicative of future operating results or of future financial condition."[2]

The SEC has provided guidance for companies to use in determining whether a trend or uncertainty should be disclosed. The two-part assessment prescribed by the SEC, based on probability and magnitude, can be applied to the topics included within this standard:

- First, a company is not required to make disclosure about a known trend or uncertainty if its management determines that such trend or uncertainty is not reasonably likely to occur.

- Second, if a company's management cannot make a reasonable determination of the likelihood of an event or uncertainty, then disclosure is required unless management determines that a material effect on the registrant's financial condition or results of operation is not reasonably likely to occur.

3. Sustainability Accounting Standard Disclosures in Form 10-K

a. Management's Discussion and Analysis

For purposes of comparability and usability, companies should consider making disclosure on sustainability topics in the MD&A, in a sub-section titled "**Sustainability Accounting Standards Disclosures**."[5]

b. Other Relevant Sections of Form 10-K

In addition to the MD&A section, it may be relevant for companies to disclose sustainability information in other sections of Form 10-K, including, but not limited to:

- **Description of business**—Item 101 of Regulation S-K requires a company to provide a description of its business and its subsidiaries. Item 101(c)(1)(xii) expressly requires disclosure regarding certain costs of complying with environmental laws:

Appropriate disclosure also shall be made as to the material effects that compliance with Federal, State and local provisions which have been enacted or adopted regulating the discharge of materials into the environment, or otherwise relating to the protection of the environment, may have upon the capital expenditures, earnings and competitive position of the registrant and its subsidiaries.

- **Legal proceedings**—Item 103 of Regulation S-K requires companies to describe briefly any material pending or contemplated legal proceedings. Instructions to Item 103 provide specific disclosure requirements for administrative or judicial proceedings arising from laws and regulations that target

[5] SEC [Release Nos. 33-8056; 34-45321; FR-61] Commission Statement about Management's Discussion and Analysis of Financial Condition and Results of Operations: "We also want to remind registrants that disclosure must be both useful and understandable. That is, management should provide the most relevant information and provide it using language and formats that investors can be expected to understand. Registrants should be aware also that investors will often find information relating to a particular matter more meaningful if it is disclosed in a single location, rather than presented in a fragmented manner throughout the filing."

discharge of materials into the environment or that are primarily for the purpose of protecting the environment.

- **Risk factors**—Item 503(c) of Regulation S-K requires filing companies to provide a discussion of the most significant factors that make an investment in the registrant speculative or risky, clearly stating the risk and specifying how a particular risk affects the particular filing company.

c. Rule 12b-20

Securities Act Rule 408 and Exchange Act Rule 12b-20 require a registrant to disclose, in addition to the information expressly required by law or regulation, "such further material information, if any, as may be necessary to make the required statements, in light of the circumstances under which they are made, not misleading."

More detailed guidance on disclosure of material sustainability topics can be found in the **SASB Conceptual Framework**, available for download via http://www.sasb.org/approach/conceptual-framework/.

Guidance on Accounting for Sustainability Topics

For each sustainability topic included in the Gas Utilities industry Sustainability Accounting Standard, SASB identifies accounting metrics.

SASB recommends that each company consider using these sustainability accounting metrics when preparing disclosures on the sustainability topics identified herein.

As appropriate—and consistent with Rule 12b-20[6]—when disclosing a sustainability topic identified by this Standard, companies should consider including a narrative description of any material factors necessary to ensure completeness, accuracy, and comparability of the data reported. Where not addressed by the specific accounting metrics, but relevant, the registrant should discuss the following, related to the topic:

- The registrant's **strategic approach** to managing performance on material sustainability issues;
- The registrant's **relative performance** with respect to its peers;
- The **degree of control** the registrant has;
- Any **measures the registrant has undertaken** or **plans to undertake** to improve performance; and
- Data for the registrant's **last three completed fiscal years** (when available).

SASB recommends that registrants use SASB Standards specific to their primary industry as identified in the Sustainable Industry Classification System (SICS™). If a registrant generates significant revenue from multiple

[6] SEC Rule 12b-20: "In addition to the information expressly required to be included in a statement or report, there shall be added such further material information, if any, as may be necessary to make the required statements, in the light of the circumstances under which they are made, not misleading."

industries, SASB recommends that it also consider sustainability topics that SASB has identified for those industries and disclose the associated SASB accounting metrics.

In disclosing to SASB Standards, it is expected that registrants disclose with the same level of rigor, accuracy, and responsibility as they apply to all other information contained in their SEC filings.

Users of the SASB Standards

The SASB Standards are intended to provide guidance for companies that engage in public offerings of securities registered under the Securities Act of 1933 (the Securities Act) and those that issue securities registered under the Securities Exchange Act of 1934 (the Exchange Act),[7] for use in SEC filings, including, without limitation, annual reports on Form 10-K (Form 20-F for foreign issuers), quarterly reports on Form 10-Q, current reports on Form 8-K, and registration statements on Forms S-1 and S-3. Disclosure with respect to the SASB Standards is not required or endorsed by the SEC or other entities governing financial reporting, such as FASB, GASB, or IASB.

Scope of Disclosure

Unless otherwise specified, SASB recommends:

- That a registrant disclose on sustainability issues and metrics for itself and for entities that are consolidated for financial reporting purposes as defined by accounting principles generally accepted in the United States for consistency with other accompanying information within SEC filings;[8]
- That for consolidated entities, disclosures be made, and accounting metrics calculated, for the whole entity, regardless of the size of the minority interest; and
- That information from unconsolidated entities not be included in the computation of SASB accounting metrics. A registrant should disclose, however, information about unconsolidated entities to the extent that the registrant considers the information necessary for investors to understand the effect of sustainability topics on the company's financial condition or operating performance (typically, this disclosure would be limited to risks and opportunities associated with these entities).

Reporting Format

Use of Financial Data

In instances where accounting metrics, activity metrics, and technical protocols in this standard incorporate financial data (e.g., revenues, cost of sales, expenses recorded and disclosed for fines, etc.), such financial data shall be prepared in accordance with the accounting principles generally accepted in the United States of America ("US GAAP") and be consistent with the corresponding financial data reported within the registrant's SEC filings. Should accounting metrics, activity metrics and technical protocols in this standard incorporate disclosure of financial data

[7] Registration under the Securities Exchange Act of 1934 is required (1) for securities to be listed on a national securities exchange such as the New York Stock Exchange, the NYSE Amex, and the NASDAQ Stock Market or (2) if (A) the securities are equity securities and are held by more than 2,000 persons (or 500 persons who are not accredited investors) and (B) the company has more than $10 million in assets.
[8] See US GAAP consolidation rules (Section 810).

that is not prepared in accordance with US GAAP, the registrant shall disclose such information in accordance with the SEC Regulation G.

Activity Metrics and Normalization

SASB recognizes that normalizing accounting metrics is important for the analysis of SASB disclosures.

SASB recommends that a registrant disclose any basic business data that may assist in the accurate evaluation and comparability of disclosure, to the extent that they are not already disclosed in the Form 10-K (e.g., revenue, EBITDA, etc.).

Such data—termed "activity metrics"—may include high-level business data such as total number of employees, quantity of products produced or services provided, number of facilities, or number of customers. It may also include industry-specific data such as plant capacity utilization (e.g., for specialty chemical companies), number of transactions (e.g., for Internet media and services companies), hospital bed days (e.g., for health care delivery companies), or proven and probable reserves (e.g., for oil and gas exploration and production companies).

Activity metrics disclosed should:

- Convey contextual information that would not otherwise be apparent from SASB accounting metrics.
- Be deemed generally useful for an investor relying on SASB accounting metrics in performing their own calculations and creating their own ratios.
- Be explained and consistently disclosed from period to period to the extent they continue to be relevant. However, a decision to make a voluntary disclosure in one period does not obligate a continuation of that disclosure if it is no longer relevant or if a better metric becomes available.[9]

Where relevant, SASB recommends specific activity metrics that—at a minimum—should accompany SASB accounting metric disclosures.

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Number of (1) residential and (2) commercial customers served[10]	Quantitative	Number	IF0102-A
Amount of natural gas delivered, percentage delivered to (1) residential customers, (2) commercial customers, (3) industrial customers, and (4) transferred to a third-party	Quantitative	Million British Thermal Units (MMBtu), Percentage (%)	IF0102-B
Length of distribution pipelines[11]	Quantitative	Kilometers (km)	IF0102-C

[9] *Improving Business Reporting: Insights into Enhancing Voluntary Disclosures*, FASB Business Reporting Research Project, January 29, 2001.
[10] Note to **IF0102-A**—The number of customers served for each category shall be considered as the number of meters billed for both residential and commercial customers.
[11] Note to **IF0102-C**—The scope of this metric is limited to distribution pipelines. Transportation activities should be considered for disclosure in NR0102: Oil & Gas Midstream. A distribution pipeline is defined according to 49 CFR 192.3 as a pipeline other than a gathering or transmission line.

Units of Measure

Unless specified, disclosures should be reported in International System of Units (SI units).

Uncertainty

SASB recognizes that there may be inherent uncertainty when disclosing certain sustainability data and information. This may be related to variables such as the reliance on data from third-party reporting systems and technologies, or the unpredictable nature of climate events. Where uncertainty around a particular disclosure exists, SASB recommends that the registrant should consider discussing its nature and likelihood.

Estimates

SASB recognizes that scientifically based estimates, such as the reliance on certain conversion factors or the exclusion of *de minimis* values, may occur for certain quantitative disclosures. Where appropriate, SASB does not discourage the use of such estimates. When using an estimate for a particular disclosure, SASB expects that the registrant discuss its nature and substantiate its basis.

Timing

Unless otherwise specified, disclosure shall be for the registrant's fiscal year.

Limitations

There is no guarantee that SASB Standards address all sustainability impacts or opportunities associated with a sector, industry, or company, and therefore, a company must determine for itself the topics—sustainability-related or otherwise—that warrant discussion in its SEC filings.

Disclosure under SASB Standards is voluntary. It is not intended to replace any legal or regulatory requirements that may be applicable to user operations. Where such laws or regulations address legal or regulatory topics, disclosure under SASB Standards is not meant to supersede those requirements. Disclosure according to SASB Standards shall not be construed as demonstration of compliance with any law, regulation, or other requirement.

SASB Standards are intended to be aligned with the principles of materiality enforced by the SEC. However, SASB is not affiliated with or endorsed by the SEC or other entities governing financial reporting, such as FASB, GASB, or IASB.

Forward-Looking Statements

Disclosures on sustainability topics can involve discussion of future trends and uncertainties related to the registrant's operations and financial condition, including those influenced by external variables (e.g., environmental, social, regulatory, and political). Companies making such disclosures should familiarize themselves with the safe harbor provisions of Section 27A of the Securities Act and Section 21E of the Exchange Act, which preclude civil liability for material misstatements or omissions in such statements if the registrant takes certain steps, including,

among other things, identifying the disclosure as "forward-looking" and accompanying such disclosure with "meaningful cautionary statements identifying important factors that could cause actual results to differ materially from those in the forward-looking statements."

The following sections contain the disclosure guidance associated with each accounting metric such as guidance on definitions, scope, accounting, compilation, and presentation.

The term "shall" is used throughout this document to indicate those elements that reflect requirements of the Standard. The terms "should" and "may" are used to indicate guidance, which, although not required, provides a recommended means of disclosure.

Table 1. Sustainability Disclosure Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
End-Use Efficiency	Customer gas savings from efficiency measures by market[12]	Quantitative	Million British Thermal Units (MMBtu)	IF0102-01
Operational Safety, Emergency Preparedness, and Response	Number of (1) reportable pipeline incidents, (2) Corrective Action Orders (CAO), and (3) Notices of Probable Violation (NOPV)[13]	Quantitative	Number	IF0102-02
	Average response time for gas emergencies	Quantitative	Minutes	IF0102-03
	Percentage of distribution pipeline that is (1) cast and/or wrought iron and (2) unprotected steel	Quantitative	Percentage (%) by kilometers (km)	IF0102-04
	Discussion of management systems used to integrate a culture of safety and emergency preparedness throughout project lifecycles	Discussion and Analysis	n/a	IF0102-05

[12] Note to **IF0102-01**—The registrant shall discuss customer efficiency measures that are required by regulations for each of its relevant markets.

[13] Note to **IF0102-02—**The registrant shall discuss notable incidents such as those that affected a significant number of customers, created extended disruptions to service, or resulted in serious injury or death.

End-Use Efficiency

Description

Natural gas produces fewer Greenhouse Gas (GHG) emissions than other fossil fuels. Its expanded use in the economy is therefore a key strategy for many governments and regulators striving to reduce GHG emissions. Despite the relatively lower emissions, however, the natural gas value chain still produces meaningful levels of GHGs overall. As policymakers and regulators look to address climate change, efficient consumption of natural gas will be an important theme over the long term. There is a wide-range of activity that utilities can partake in to promote energy efficiency among their customers, including offering rebates for energy-efficient appliances, weatherizing customers' homes, and educating customers on energy saving methods. How a gas utility stands to gain or lose from the trend toward GHG mitigation is significantly predicated on its regulatory environment. Traditional rate structures generally do not give gas utilities an incentive for energy efficiency and, further, they may economically suffer from reductions in customer demand. This is increasingly driving gas utilities, and their regulators and customers, to pursue alternative ratemaking. Such alternative rate design often "decouples" utility revenues from customer consumption and may also build in explicit incentives for successful utility performance in terms of end-use efficiency and demand reductions. Overall, companies whose strategic plan includes efficiency initiatives that strive to reduce downside risks from demand fluctuations, gain returns on needed investments, and lower costs are more likely to be well positioned to earn stronger risk-adjusted returns over the long term.

Accounting Metrics

IF0102-01. Customer gas savings from efficiency measures by market

.01 The registrant shall disclose the total amount of gas savings delivered to customers, in million British thermal units (MMBtu) from energy efficiency measures during the fiscal year by each of its markets, where:

- Markets are defined as those operations that are subject to distinct public utility regulatory oversight.

.02 Gas savings shall be defined according to the gross savings approach as the changes in energy consumption and/or demand that results from program-related actions taken by participants in an efficiency program, regardless of why they participated.

- The registrant should list those markets where it reports gas savings on a net savings basis and thus may be different from the figures disclosed here, where:
  - Net gas savings are defined as changes in consumption that are specifically attributable to an energy efficiency program, that would not otherwise have happened in the absence of the program

.03 Gas 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, where examples of state regulations include, but are not limited to:

- California Public Utility Commission (CPUC) Decision 09-09-047

- New York Case 07-M-0458
- Minnesota Statutes 216B.241

.04 Where state or local regulations do not exist, the registrant shall calculate gas savings consistent with the measurement and verification methods outlined by the Department of Energy's (DOE) Federal Energy Management Program (FEMP) M&V Guidelines: Measurement and Verification for Federal Energy Projects, Version 4.0.

.05 The registrant shall consider the FEMP M&V Guidelines and state regulations as normative references, thus any updates made year-on-year shall be considered updates to this guidance.

.06 The scope of gas savings from efficiency measures includes savings delivered directly by the registrant and, where regulations provide, savings substantiated by purchases of efficiency savings credits.

- For any savings from efficiency measures delivered directly by the registrant, any efficiency savings credits must be retained (i.e., not sold) and retired on behalf of the registrant in order for the registrant to claim them as delivered gas savings.
- For efficiency savings credits that are purchased, the agreement must explicitly include and convey that credits be retained and retired on behalf of the registrant in order for the registrant to claim them.

.07 Relevant regulations governing efficiency savings credits include:

- Nevada Regulation of Public Utilities Chapter 704
- Connecticut House Bill 7432

.08 The registrant shall consider guidance on regulations as a normative reference, thus any updates made year-on-year shall be considered updates to this guidance.

Note to **IF0102-01**

.09 The registrant shall discuss customer efficiency measures that are required by regulations for each of its relevant markets, including a discussion of:

- The amount or percentage of gas savings from efficiency measures required by regulations for each market.
- Instances of noncompliance with gas savings obligations.
  - In such instances the registrant shall disclose the difference between the gas savings delivered and the amount required by the regulation.

- Gas savings delivered that exceed those required by regulations and that resulted in the registrant receiving energy efficiency performance incentives, including the U.S. dollar value of any such incentives.

.10 Relevant regulations include, but are not limited to:

- Massachusetts Department of Public Utilities Three Year Energy Efficiency Plan 15-160 to 15-169
- CPUC Decision 14-10-046
- Minnesota Statutes 216B.241
- Illinois Public Act 096-0033

.11 The registrant shall discuss the policy mechanisms in place for each market that allows for or incentivizes energy efficiency, including a discussion of the benefits, challenges, and financial impacts associated with such mechanisms.

.12 Relevant policy mechanisms to discuss include, but are not limited to:

- Deferral decoupling
- Current period decoupling
- Single fixed variable rates
- Lost revenue adjustments
- Energy efficiency feebates

.13 The registrant should discuss incentives it has developed for its customers that promote end-use efficiency, including, but not limited to, energy efficiency rebates and other measures to subsidize customer energy efficiency.

Operational Safety, Emergency Preparedness, and Response

Description

Operating a vast network of pipelines requires a complex, structured approach to inspections and maintenance to prevent emergency situations like accidents or leaks. Without proper inspection, maintenance, and retrofitting, having an aging or otherwise neglected pipeline infrastructure increases the likelihood of incidents such as combustion, resulting in fires or explosions. Unprotected steel and cast iron pipelines are more susceptible to leaks than newer lined steel or plastic piping. In many parts of the country, concerns about aging infrastructure have caused companies in the industry to look for ways to expedite the replacement approval process, especially in cases where pipelines are located near densely populated areas. Accidents, particularly fatal accidents, can result in claims of negligence against companies, leading to costly court battles and fines. Employee training and promoting a culture of safety, alongside investments in sophisticated technology that allows for the cost-effective monitoring of leaks, are vital resources in helping companies manage the risk of escaping natural gas igniting and causing bodily harm and infrastructure and property damage.

Accounting Metrics

IF0102-02. Number of (1) reportable pipeline incidents, (2) Corrective Action Orders (CAO), and (3) Notices of Probable Violation (NOPV)

.14 The registrant shall disclose the number of U.S. Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) reportable pipeline incidents, where:

- Reportable incidents are defined as events that involve a release of gas from a pipeline and that result in one or more of the following consequences: a death or personal injury necessitating in-patient hospitalization; estimated property damage of $50,000 or more, including losses to the operator, losses to others, or both, but excluding the cost of gas lost; an unintentional estimated gas loss of three million cubic feet or more; or an event that is significant in the judgment of the operator, consistent with the definition provided in 49 CFR 191.

.15 The registrant shall disclose the number of PHMSA Corrective Action Orders (CAO) received, where:

- A CAO is issued when a particular pipeline facility is found to be hazardous to life, property, or the environment. A corrective action may include suspended or restricted use of the facility, physical inspection, testing, repair, replacement, or other appropriate action, consistent with the definition provided by 49 CFR 190.233.

.16 The registrant shall disclose the number of Notices of Probable Violation (NOPV) received, where:

- An NOPV is defined as the beginning of an enforcement proceeding that contains a statement of the provisions of the laws, regulations, or orders that the respondent is alleged to have violated and a statement of the evidence upon which the allegations are based, consistent with the definition provided in 49 CFR 190.207.

Note to **IF0102-02**

.17 The registrant shall discuss notable incidents such as those that affected a significant number of customers, created extended disruptions to service, or resulted in a PHMSA "serious incident," where:

- PHMSA serious incidents are defined as incidents that resulted in a fatality or an injury requiring in-patient hospitalization.

.18 For such incidents, the registrant should provide:

- A description and cause of the incident;
- The total population affected by the incident;
- The costs (in U.S. dollars) associated with the incident;
- Actions taken to mitigate the potential for future service interruptions; and
- Any other significant outcomes (e.g., legal proceedings, serious injuries, and/or fatalities).

IF0102-03. Average response time for gas emergencies

.19 The registrant shall disclose the average response time (in minutes) to gas emergencies, where:

- Gas emergencies shall be defined, consistent with 49 CFR 192.615, as instances in which gas is detected inside or near a building, a fire is located near or directly involving a pipeline facility, an explosion occurs near or directly involving a pipeline facility, a natural disaster occurs, or any other instance that the registrant or regulators deem to require immediate response.

.20 The average response time is calculated as the total sum of time taken to appropriately respond to gas emergencies divided by the number of emergencies, where:

- Appropriate responses to gas emergencies are defined by the registrant's emergency plans, developed in accordance with 49 CFR 192.615.

.21 The registrant may choose to discuss its gas emergency response plans, the influence of regulations and service-area geographies on such plans, and the resulting implications for its average response time to gas emergencies.

IF0102-04. Percentage of distribution pipeline that is (1) cast and/or wrought iron and (2) unprotected steel

.22 The registrant shall disclose the percentage, by length (in kilometers), of its natural gas pipelines that are (1) cast and/or wrought iron and (2) unprotected steel, where:

- A distribution pipeline is defined according to 49 CFR 192.3 as a pipeline other than a gathering or transmission line, where:
  - A gathering line is defined as a pipeline that transports gas from a current production facility to a transmission line or main; and
  - A transmission line is defined as a pipeline, other than a gathering line, that (1) transports gas from a gathering line or storage facility to a distribution center, storage facility, or large-volume customer that is not downstream from a distribution center; (2) operates at a hoop stress of 20 percent or more of the specified minimum yield strength (SMYS); or (3) transports gas within a storage field.
- Cast and/or wrought iron is defined as iron that is heated to its melting point and poured into molds and cannot be molded or screwed.
- Unprotected steel is defined as steel with no form of corrosion protection.

.23 The percentage of cast and/or wrought iron distribution pipelines shall be calculated as the total length (in kilometers) of cast and/or wrought iron pipelines that the registrant owns or operates divided by the total length (in kilometers) of distribution pipelines that the registrant owns or operates.

.24 The percentage of unprotected steel distribution pipelines shall be calculated as the total length (in kilometers) of unprotected steel pipelines that the registrant owns or operates divided by the total length (in kilometers) of distribution pipelines that the registrant owns or operates.

.25 The registrant may choose to discuss its pipeline replacement rates, its use of polyethylene pipes, or other efforts to reduce fugitive emissions and leaks and improve the safety of its distribution pipelines.

IF0102-05. Discussion of management systems used to integrate a culture of safety and emergency preparedness throughout project lifecycles

.26 The registrant shall discuss the management systems it has used to integrate a culture of safety and emergency preparedness throughout project lifecycles.

.27 Discussion shall include how the registrant integrates a culture of safety and emergency preparedness throughout its project lifecycles, such as through training, oversight of workforce, rules and guidelines for communicating risks, and use of technology.

.28 The registrant shall discuss its approach to assuring and maintaining its pipeline operators are qualified or supervised when performing a covered task, including ongoing reviews of operator qualifications, assurance that unqualified workers are properly supervised, and efforts to maintain a sufficient number of qualified pipeline operators, where:

- Pipeline operators are defined as those people who engage in the transportation of gas, consistent with 49 CFR 192.3.
- A pipeline operator is considered qualified to perform covered tasks when the individual has been evaluated, can perform the assigned covered task, and can recognize and react to abnormal operating conditions, consistent with the definition provided by 49 CFR 192.803.
    - A covered task is defined, consistent with 49 CFR 192.801, as an activity, identified by the operator, that is performed on a pipeline facility, is an operations or maintenance task, is performed as a requirement of maintaining Minimum Federal Safety Standards, and affects the operation or integrity of a pipeline.

.29 The registrant shall include efforts to mitigate risks and promote emergency preparedness, such as coordinating with third parties (e.g., sewer line and buried power line developers), performing timely pipeline inspections, repairing aging infrastructure, and maintaining current pipeline operator certifications.

.30 Disclosure may focus broadly on safety and emergency management systems, but shall specifically address operations in High Consequence Areas and the systems to avoid and manage emergencies, accidents, and incidents that could have catastrophic impacts on human health, the local community, and the environment.

.31 The project lifecycle includes, at a minimum, pipeline construction, operations, and maintenance.

Additional References

National Association of Pipeline Safety Representatives: Compendium of State Pipeline Safety Requirements & Initiatives Providing Increased Public Safety Levels compared to Code of Federal Regulations.

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SUSTAINABILITY ACCOUNTING STANDARD
INFRASTRUCTURE SECTOR

WATER UTILITIES

Sustainability Accounting Standard

Sustainable Industry Classification System™ (SICS™) #IF0103

Prepared by the
Sustainability Accounting Standards Board®

March 2016
Provisional Standard

WATER UTILITIES

Sustainability Accounting Standard

About SASB

The Sustainability Accounting Standards Board (SASB) provides sustainability accounting standards for use by publicly-listed corporations in the U.S. in disclosing material sustainability information for the benefit of investors and the public. SASB standards are designed for disclosure in mandatory filings to the Securities and Exchange Commission (SEC), such as the Form 10-K and 20-F. SASB is an independent 501(c)3 non-profit organization. Through 2016, SASB is developing standards for 79 industries in 10 sectors.

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Table of Contents

INTRODUCTION

Purpose & Structure

This document contains the SASB Sustainability Accounting Standard (SASB Standard) for the Water Utilities industry.

SASB Sustainability Accounting Standards are comprised of **(1) disclosure guidance and (2) accounting standards on sustainability topics** for use by U.S. and foreign public companies in their annual filings (Form 10-K or 20-F) with the U.S. Securities and Exchange Commission (SEC). To the extent relevant, SASB Standards may also be applicable to other periodic mandatory filings with the SEC, such as the Form 10-Q, Form S-1, and Form 8-K.

SASB Standards identify sustainability topics at an industry level, which may constitute material information—depending on a company's specific operating context—for a company within that industry. SASB Standards are intended to provide guidance to company management, which is ultimately responsible for determining which information is material and should therefore be included in its Form 10-K or 20-F and other periodic SEC filings.

SASB Standards provide companies with standardized sustainability metrics designed to communicate performance on industry level sustainability topics. When making disclosure on sustainability topics, companies can use SASB Standards to help ensure that disclosure is standardized and therefore decision-useful, relevant, comparable, and complete.

SASB Standards are intended to constitute "suitable criteria" as defined by AT 101.23 -.32[1] and referenced in AT 701[2], as having the following attributes:

- *Objectivity*—Criteria should be free from bias.
- *Measurability*—Criteria should permit reasonably consistent measurements, qualitative or quantitative, of subject matter.
- *Completeness*—Criteria should be sufficiently complete so that those relevant factors that would alter a conclusion about subject matter are not omitted.
- *Relevance*—Criteria should be relevant to the subject matter.

Industry Description

Companies in the Water Utilities 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, government customers, and businesses. Wastewater systems collect and treat wastewater, including sewage, graywater, industrial waste fluids, and storm water runoff, before discharging the resulting effluent back into the environment. The majority of water systems in the U.S. are government-owned.

[1] http://pcaobus.org/Standards/Attestation/Pages/AT101.aspx
[2] http://pcaobus.org/Standards/Attestation/Pages/AT701.aspx

Publicly listed companies in the industry include both small U.S. domestic utilities and large global companies; however, the majority of companies operate entirely within the U.S.

Note: The Sustainability Industry Classification System (SICS) excludes water services that fall into the category of infrastructure design and development from its definition of the Water Utilities industry; instead, these companies fall within the Engineering & Construction Services (IF0301) industry.

Guidance for Disclosure of Sustainability Topics in SEC Filings

1. Industry-Level Sustainability Topics

For the Water Utilities industry, SASB has identified the following sustainability disclosure topics:

- Energy Management
- Effluent Quality Management
- Water Scarcity
- Drinking Water Quality
- Fair Pricing & Access
- End-Use Efficiency
- Distribution Network Efficiency
- Network Resiliency & Impacts of Climate Change

2. Company-Level Determination and Disclosure of Material Sustainability Topics

Sustainability disclosures are governed by the same laws and regulations that govern disclosures by securities issuers generally. According to the U.S. Supreme Court, a fact is material if, in the event such fact is omitted from a particular disclosure, there is "a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the 'total mix' of the information made available."[3,4]

SASB has attempted to identify those sustainability topics that are reasonably likely to have a material effect on the financial condition or operating performance of companies within each SICS industry. SASB recognizes, however, that each company is ultimately responsible for determining what information should be disclosed within the context of Regulation S-K and other guidance.

Regulation S-K, which sets forth certain disclosure requirements associated with Form 10-K and other SEC filings, requires companies, among other things, to describe in the Management's Discussion and Analysis of Financial Condition and Results of Operations (MD&A) section of Form 10-K "any known trends or uncertainties that have had or that the registrant reasonably expects will have a material favorable or unfavorable impact on net sales or revenues or income from continuing operations. If the registrant knows of events that will cause a material change in the relationship between costs and revenues (such as known future increases in costs of labor or materials or price increases or inventory adjustments), the change in the relationship shall be disclosed."

[3] TSC Industries v. Northway, Inc., 426 U.S. 438 (1976).
[4] C.F.R. 229.303(Item 303)(a)(3)(ii).

Furthermore, Instructions to Item 303 state that the MD&A "shall focus specifically on material events and uncertainties known to management that would cause reported financial information not to be necessarily indicative of future operating results or of future financial condition."[2]

The SEC has provided guidance for companies to use in determining whether a trend or uncertainty should be disclosed. The two-part assessment prescribed by the SEC, based on probability and magnitude, can be applied to the topics included within this standard:

- First, a company is not required to make disclosure about a known trend or uncertainty if its management determines that such trend or uncertainty is not reasonably likely to occur.

- Second, if a company's management cannot make a reasonable determination of the likelihood of an event or uncertainty, then disclosure is required unless management determines that a material effect on the registrant's financial condition or results of operation is not reasonably likely to occur.

3. Sustainability Accounting Standard Disclosures in Form 10-K

a. Management's Discussion and Analysis

For purposes of comparability and usability, companies should consider making disclosure on sustainability topics in the MD&A, in a sub-section titled "**Sustainability Accounting Standards Disclosures**."[5]

b. Other Relevant Sections of Form 10-K

In addition to the MD&A section, it may be relevant for companies to disclose sustainability information in other sections of Form 10-K, including, but not limited to:

- **Description of business**—Item 101 of Regulation S-K requires a company to provide a description of its business and its subsidiaries. Item 101(c)(1)(xii) expressly requires disclosure regarding certain costs of complying with environmental laws:

Appropriate disclosure also shall be made as to the material effects that compliance with Federal, State, and local provisions which have been enacted or adopted regulating the discharge of materials into the environment, or otherwise relating to the protection of the environment, may have upon the capital expenditures, earnings and competitive position of the registrant and its subsidiaries.

- **Legal proceedings**—Item 103 of Regulation S-K requires companies to describe briefly any material pending or contemplated legal proceedings. Instructions to Item 103 provide specific disclosure requirements for administrative or judicial proceedings arising from laws and regulations that target discharge of materials into the environment or that are primarily for the purpose of protecting the environment.

[5] SEC [Release Nos. 33-8056; 34-45321; FR-61] Commission Statement about Management's Discussion and Analysis of Financial Condition and Results of Operations: "We also want to remind registrants that disclosure must be both useful and understandable. That is, management should provide the most relevant information and provide it using language and formats that investors can be expected to understand. Registrants should be aware also that investors will often find information relating to a particular matter more meaningful if it is disclosed in a single location, rather than presented in a fragmented manner throughout the filing."

- **Risk factors**—Item 503(c) of Regulation S-K requires filing companies to provide a discussion of the most significant factors that make an investment in the registrant speculative or risky, clearly stating the risk and specifying how a particular risk affects the particular filing company.

c. Rule 12b-20

Securities Act Rule 408 and Exchange Act Rule 12b-20 require a registrant to disclose, in addition to the information expressly required by law or regulation, "such further material information, if any, as may be necessary to make the required statements, in light of the circumstances under which they are made, not misleading."

More detailed guidance on disclosure of sustainability topics can be found in the **SASB Conceptual Framework**, available for download via http://www.sasb.org/approach/conceptual-framework/.

Guidance on Accounting for Sustainability Topics

For each sustainability topic included in the Water Utilities industry Sustainability Accounting Standard, SASB identifies accounting metrics.

SASB recommends that each company consider using these sustainability accounting metrics when preparing disclosures on the sustainability topics identified herein;

As appropriate—and consistent with Rule 12b-20[6]—when disclosing a sustainability topic identified by this Standard, companies should consider including a narrative description of any material factors necessary to ensure completeness, accuracy, and comparability of the data reported. Where not addressed by the specific accounting metrics, but relevant, the registrant should discuss the following, related to the topic:

- The registrant's **strategic approach** to managing performance on material sustainability issues;
- The registrant's **relative performance** with respect to its peers;
- The **degree of control** the registrant has;
- Any **measures the registrant has undertaken** or **plans to undertake** to improve performance; and
- Data for the registrant's **last three completed fiscal years** (when available).

SASB recommends that registrants use SASB Standards specific to their primary industry as identified in the Sustainable Industry Classification System (SICS™). If a registrant generates significant revenue from multiple industries, SASB recommends that it also consider sustainability topics that SASB has identified for those industries and disclose the associated SASB accounting metrics.

[6] SEC Rule 12b-20: "In addition to the information expressly required to be included in a statement or report, there shall be added such further material information, if any, as may be necessary to make the required statements, in the light of the circumstances under which they are made, not misleading."

In disclosing to SASB Standards, it is expected that registrants disclose with the same level of rigor, accuracy, and responsibility as they apply to all other information contained in their SEC filings.

Users of the SASB Standards

The SASB Standards are intended to provide guidance for companies that engage in public offerings of securities registered under the Securities Act of 1933 (the Securities Act) and those that issue securities registered under the Securities Exchange Act of 1934 (the Exchange Act),[7] for use in SEC filings, including, without limitation, annual reports on Form 10-K (Form 20-F for foreign issuers), quarterly reports on Form 10-Q, current reports on Form 8-K, and registration statements on Forms S-1 and S-3. Disclosure with respect to the SASB Standards is not required or endorsed by the SEC or other entities governing financial reporting, such as FASB, GASB, or IASB.

Scope of Disclosure

Unless otherwise specified, SASB recommends:

- That a registrant disclose on sustainability issues and metrics for itself and for entities that are consolidated for financial reporting purposes as defined by accounting principles generally accepted in the United States for consistency with other accompanying information within SEC filings;[8]
- That for consolidated entities, disclosures be made, and accounting metrics calculated, for the whole entity, regardless of the size of the minority interest; and
- That information from unconsolidated entities not be included in the computation of SASB accounting metrics. A registrant should disclose, however, information about unconsolidated entities to the extent that the registrant considers the information necessary for investors to understand the effect of sustainability topics on the company's financial condition or operating performance (typically, this disclosure would be limited to risks and opportunities associated with these entities).

Reporting Format

Activity Metrics and Normalization

SASB recognizes that normalizing accounting metrics is important for the analysis of SASB disclosures.

SASB recommends that a registrant disclose any basic business data that may assist in the accurate evaluation and comparability of disclosure, to the extent that they are not already disclosed in the Form 10-K (e.g., revenue, EBITDA, etc.).

[7] Registration under the Securities Exchange Act of 1934 is required (1) for securities to be listed on a national securities exchange such as the New York Stock Exchange, the NYSE Amex, and the NASDAQ Stock Market or (2) if (A) the securities are equity securities and are held by more than 2,000 persons (or 500 persons who are not accredited investors) and (B) the company has more than $10 million in assets.
[8] See US GAAP consolidation rules (Section 810).

Such data—termed "activity metrics"—may include high-level business data such as total number of employees, quantity of products produced or services provided, number of facilities, or number of customers. It may also include industry-specific data such as plant capacity utilization (e.g., for specialty chemical companies), number of transactions (e.g., for Internet media and services companies), hospital bed days (e.g., for health care delivery companies), or proven and probable reserves (e.g., for oil and gas exploration and production companies).

Activity metrics disclosed should:

- Convey contextual information that would not otherwise be apparent from SASB accounting metrics.
- Be deemed generally useful for an investor relying on SASB accounting metrics in performing their own calculations and creating their own ratios.
- Be explained and consistently disclosed from period to period to the extent they continue to be relevant. However, a decision to make a voluntary disclosure in one period does not obligate a continuation of that disclosure if it is no longer relevant or if a better metric becomes available.[9]

Where relevant, SASB recommends specific activity metrics that—at a minimum—should accompany SASB accounting metric disclosures.

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Number of (1) residential and (2) commercial customers served[10]	Quantitative	Number	IF0103-A
Volume of water delivered and percentage purchased from a third party[11]	Quantitative	Cubic meters (m^3), Percentage (%)	IF0103-B
Average volume of wastewater treated per day	Quantitative	Cubic meters (m^3) per day	IF0103-C
Length of transportation and distribution lines	Quantitative	Kilometers (km)	IF0103-D

Use of Financial Data

In instances where accounting metrics, activity metrics, and technical protocols in this standard incorporate financial data (e.g., revenues, cost of sales, expenses recorded and disclosed for fines, etc.), such financial data shall be prepared in accordance with the accounting principles generally accepted in the United States of America ("US GAAP") and be consistent with the corresponding financial data reported within the registrant's SEC filings. Should accounting metrics, activity metrics and technical protocols in this standard incorporate disclosure of financial data

[9] *Improving Business Reporting: Insights into Enhancing Voluntary Disclosures*, FASB Business Reporting Research Project, January 29, 2001.

[10] Note to **IF0103-A**—The number of customers served shall be defined, consistent with the American Water Works Association (AWWA) Benchmarking Performance Indicators for Water and Wastewater Utilities: 2013 Survey Data and Analyses Report, 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.

[11] Note to **IF0103-B**—The amount of water delivered includes drinking water, industrial process water, and recycled water.

that is not prepared in accordance with US GAAP, the registrant shall disclose such information in accordance with the SEC Regulation G.

Units of Measure

Unless specified, disclosures should be reported in International System of Units (SI units).

Uncertainty

SASB recognizes that there may be inherent uncertainty when disclosing certain sustainability data and information. This may be related to variables such as the reliance on data from third-party reporting systems and technologies, or the unpredictable nature of climate events. Where uncertainty around a particular disclosure exists, SASB recommends that the registrant should consider discussing its nature and likelihood.

Estimates

SASB recognizes that scientifically based estimates, such as the reliance on certain conversion factors or the exclusion of *de minimis* values, may occur for certain quantitative disclosures. Where appropriate, SASB does not discourage the use of such estimates. When using an estimate for a particular disclosure, SASB expects that the registrant discuss its nature and substantiate its basis.

Timing

Unless otherwise specified, disclosure shall be for the registrant's fiscal year.

Limitations

There is no guarantee that SASB Standards address all sustainability impacts or opportunities associated with a sector, industry, or company, and therefore, a company must determine for itself the topics—sustainability-related or otherwise—that warrant discussion in its SEC filings.

Disclosure under SASB Standards is voluntary. It is not intended to replace any legal or regulatory requirements that may be applicable to user operations. Where such laws or regulations address legal or regulatory topics, disclosure under SASB Standards is not meant to supersede those requirements. Disclosure according to SASB Standards shall not be construed as demonstration of compliance with any law, regulation, or other requirement.

SASB Standards are intended to be aligned with the principles of materiality enforced by the SEC. However, SASB is not affiliated with or endorsed by the SEC or other entities governing financial reporting, such as FASB, GASB, or IASB.

Forward-looking Statements

Disclosures on sustainability topics can involve discussion of future trends and uncertainties related to the registrant's operations and financial condition, including those influenced by external variables (e.g., environmental,

social, regulatory, and political). Companies making such disclosures should familiarize themselves with the safe harbor provisions of Section 27A of the Securities Act and Section 21E of the Exchange Act, which preclude civil liability for material misstatements or omissions in such statements if the registrant takes certain steps, including, among other things, identifying the disclosure as "forward-looking" and accompanying such disclosure with "meaningful cautionary statements identifying important factors that could cause actual results to differ materially from those in the forward-looking statements."

The following sections contain the disclosure guidance associated with each accounting metric such as guidance on definitions, scope, accounting, compilation, and presentation.

The term "shall" is used throughout this document to indicate those elements that reflect requirements of the Standard. The terms "should" and "may" are used to indicate guidance, which, although not required, provides a recommended means of disclosure.

Table 1. Sustainability Disclosure Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Energy Management	Total energy consumed, percentage grid electricity, percentage renewable	Quantitative	Gigajoules (GJ), Percentage (%)	IF0103-01
Effluent Quality Management	Number of incidents of non-compliance with water effluent quality permits, standards, and regulations	Quantitative	Number	IF0103-02
	Discussion of strategies to manage effluents of emerging concern	Discussion and Analysis	n/a	IF0103-03
Water Scarcity	Total fresh water sourced from regions with High or Extremely High Baseline Water Stress and percentage purchased from a third party	Quantitative	Cubic meters (m^3), Percentage (%)	IF0103-04
	Volume of recycled water delivered	Quantitative	Cubic meters (m^3)	IF0103-05
	Discussion of strategies to manage risks associated with the quality and availability of water resources	Discussion and Analysis	n/a	IF0103-06
Drinking Water Quality	Number of (1) acute health-based, (2) non-acute health-based, and (3) non-health-based drinking water violations[12]	Quantitative	Number	IF0103-07
	Discussion of strategies to manage drinking water contaminants of emerging concern	Discussion and Analysis	n/a	IF0103-08
Fair Pricing & Access	Number of formal customer complaints regarding pricing of and/or access to water received, percentage withdrawn	Quantitative	Number, Percentage (%)	IF0103-09
	Discussion of how considerations of fair pricing and access are integrated into determinations of rate structures	Discussion and Analysis	n/a	IF0103-10

[12] Note to **IF0103-07**—The registrant shall discuss notable violations such as U.S. Environmental Protection Agency (EPA) Tier 1 events, those that affected a significant number of customers, or those of extended duration.

Table 1. Sustainability Disclosure Topics & Accounting Metrics (cont.)

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
End-Use Efficiency	Customer water savings from efficiency measures by market[13]	Quantitative	Cubic meters (m^3)	IF0103-11
Distribution Network Efficiency	Water pipe replacement rate[14]	Quantitative	Rate	IF0103-12
	Volume of non-revenue real water losses	Quantitative	Cubic meters (m^3)	IF0103-13
Network Resiliency & Impacts of Climate Change	Water treatment capacity located in FEMA Special Flood Hazard Areas or foreign equivalent	Quantitative	Cubic meters (m^3) per day	IF0103-14
	Volume of sanitary sewer overflows (SSO), percentage recovered	Quantitative	Cubic meters (m^3), Percentage (%)	IF0103-15
	(1) Number of service disruptions, (2) population affected, and (3) average duration[15]	Quantitative	Number, Minutes	IF0103-16
	Discussion of efforts to identify and manage risks and opportunities related to the impact of climate change on the distribution network	Discussion and Analysis	n/a	IF0103-17

[13] Note to **IF0101-11**—The registrant shall discuss customer efficiency measures that are required by regulations for each of its relevant markets.
[14] Note to **IF0103-12**—The registrant shall discuss the use of and challenges associated with planned and corrective maintenance in its distribution system.
[15] Note to **IF0103-16**—The registrant shall discuss notable service disruptions such as those that affected a significant population or those of extended duration.

Energy Management

Description

Companies in the Water Utilities 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.

Accounting Metrics

IF0103-01. Total energy consumed, percentage grid electricity, percentage renewable

.01 The registrant shall disclose total energy consumption from all sources as an aggregate figure in gigajoules or their multiples.

- The scope includes energy purchased from sources external to the organization or produced by the organization itself (self-generated).
- The scope includes only energy consumed by entities owned or controlled by the organization.
- The scope includes energy from all sources including direct fuel usage, purchased electricity, and heating, cooling, and steam energy.

.02 In calculating energy consumption from fuels and biofuels, the registrant 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).

.03 The registrant shall disclose purchased grid electricity consumption as a percentage of its total energy consumption.

.04 The registrant shall disclose renewable energy consumption as a percentage of its total energy consumption.

.05 The scope of renewable energy includes renewable fuel the registrant consumes and renewable energy the registrant directly produces, purchases through a renewable power purchase agreement (PPA) that explicitly includes renewable energy certificates (RECs), purchases through a Green-e Energy Certified utility or supplier program, or for which Green-e Energy Certified RECs are paired with grid electricity.

- For any renewable electricity generated on-site, any RECs must be retained (i.e., not sold) and retired on behalf of the registrant in order for the registrant to claim them as renewable energy.
- For renewable PPAs, the agreement must explicitly include and convey that RECs be retained or replaced and retired on behalf of the registrant in order for the registrant to claim them as renewable energy.
- The renewable portion of the electricity grid mix that is outside of the control or influence of the registrant is excluded from disclosure.[16]
- Renewable energy is defined as energy from sources that are replenished at a rate greater than or equal to their rate of depletion, consistent with U.S. Environmental Protection Agency (EPA) definitions, such as geothermal, wind, solar, hydro, and biomass.

.06 For the purposes of this disclosure, the scope of renewable energy from hydro and biomass sources is limited to the following:

- Energy from hydro sources that are certified by the Low Impact Hydropower Institute or that are eligible for a state Renewable Portfolio Standard.
- 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 renewables" according to the Green-e Energy National Standard Version 2.5 (2014), and materials that are eligible for a state Renewable Portfolio Standard.

.07 The registrant 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 kWh to gigajoules (for energy data including electricity from solar or wind energy).

[16] SASB recognizes that RECs reflect the environmental attributes of renewable energy that have been introduced to the grid.

Effluent Quality Management

Description

Water and wastewater treatment facilities produce effluent that poses potential environmental and human health risks. Effluent includes residuals and solids that consist of chemicals used in the treatment process and contaminants removed from raw water or wastewater inputs. Treated effluent is discharged from facilities into surface water or pumped into groundwater. Potential environmental impacts vary depending on the treatment and disposal process. Additionally, consumers and regulators are becoming increasingly concerned by substances including endocrine-disrupting chemicals (EDCs), which wastewater treatment facilities do not typically address. As a result of the environmental risks associated with effluent, treatment facilities are subject to extensive environmental regulations intended to control and monitor their impact. As public and regulatory scrutiny of effluent quality increases with new concerns about substances of emerging concern, companies will need to innovate and ensure that effluent is not harmful to the environment or human health. Effluent discharges exceeding maximum limits can result in significant regulatory penalties, and frequent episodes may jeopardize a utility's social license to operate. Companies can actively manage financial impacts through infrastructure and equipment planning, maintenance, and operations, as well as the deployment of appropriately trained and experienced labor.

Accounting Metrics

IF0103-02. Number of incidents of non-compliance with water effluent quality permits, standards, and regulations

.08 The registrant shall disclose the total number of instances of non-compliance with water effluent permits, standards, and regulations, including violations of a technology-based standard and exceedances of a quality-based standard, where:

- The scope of disclosure includes incidents governed by federal, state, and local statutory permits and regulations including, but not limited to, the discharge of a hazardous substance, failure to monitor wastewater effluent, and effluent limit exceedances (e.g., waste load allocation or whole effluent toxicity).

- For purpose of this disclosure, violations of the Safe Drinking Water Act (SDWA) and violations of other drinking water quality standards shall be limited to non-compliance with effluent requirements such as those relating to combined filter effluent requirements set forth in 40 CFR 141.550-.553.

.09 An incident of non-compliance shall be disclosed regardless of whether it resulted in an enforcement action (e.g., fine, warning letter, etc.).

.10 An incident of non-compliance shall be disclosed regardless of the measurement methodology or frequency. These include violations:

- For continuous discharges, limitations, standards, and prohibitions that are generally expressed as maximum daily, weekly, and monthly averages.
- For non-continuous discharges, limitations that are generally expressed in terms of total mass, maximum rate of discharge, frequency, and mass or concentration of specified pollutants.

IF0103-03. Discussion of strategies to manage effluents of emerging concern

.11 The registrant shall discuss its strategy and approach to managing effluents that may be of emerging human health and/or environmental concern to the public, regulators, and/or others (e.g., non-governmental organizations, scientific researchers, etc.), where:

- Effluents of emerging concern may include, but are not limited to, those identified by the EPA in Treating Contaminants of Emerging Concern, such as residuals of pharmaceuticals, personal care products, flame retardants, detergents, pesticides, hormones, and other compounds including those that disrupt the endocrine system.

.12 The registrant shall describe its approach to managing effluents of emerging concern including whether management is characterized by a hazard-based, risk-based, or other approach, where:

- A hazard-based approach to effluent management is defined as the process of identifying and managing the usage of effluents based on the inherent human-health and environmental toxicological characteristics of effluent ingredients, including specific exposure routes (e.g., oral, dermal, or inhalation) and dosages (amounts) of a substance it takes to cause an adverse effect.[17]
- A risk-based approach to effluent management is defined as managing the usage of effluents based on the integration of effluent hazard information with an assessment of effluent exposure (i.e., route, frequency, duration, and magnitude) to assess the probability and magnitude of harm to a given population(s) arising from exposure to a chemical, given attendant uncertainties.[18]
- Other approaches may include the usage of hazard-based and risk-based approaches depending on the effluent in question, product category, business segment, operating region, and/or intended product user.

.13 Relevant actions to discuss include the practices employed to determine and monitor effluents of emerging concern, including a discussion of the contaminants of emerging concern in the effluent stream that are currently being monitored and any thresholds the registrant may have developed for acceptable concentrations of such effluents.

[17] Definition adapted from "Environmental Health Criteria 222 | Biomarkers In Risk Assessment: Validity And Validation," International Programme on Chemical Safety (IPCS), World Health Organization, 2001 and "Understanding Risk and Hazard When it Comes to Chemicals," American Chemistry Council, accessed March 15, 2016, http://chemicalsafetyfacts.org/understanding-risk/.
[18] Ibid.

.14 Relevant wastewater treatment processes include, but are not limited to, conventional wastewater treatment and advanced wastewater treatment technologies such as granular activated carbon, ozonation, advanced oxidation, membrane treatment, and/or investments in research and development of treatment technologies or methods for emerging contaminants.

.15 The registrant shall discuss the risks and/or opportunities associated with the potential for emerging contaminants to come under effluent regulations.

- Relevant information to provide includes, but is not limited to:
  - Identification of the emerging contaminants the registrant anticipates may come under regulation in the future;
  - Current ability to treat and/or manage such contaminants;
  - Risks (e.g., potential for fines, challenges to community relations, and cost associated with compliance); and
  - Opportunities (e.g., potential for infrastructure expansions and new treatment methods to be covered by rates).

Water Scarcity

Description

Water supply systems obtain raw water from groundwater or surface water sources. Water supplies may either be accessed directly or purchased from a third party, often a government entity. Raw water purchases account for water supply systems' single largest expense. Drought, overconsumption by customers, water contamination, and ecosystem health 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 scarcity may also lead to increases in the price of purchased water, which could result in a higher cost of revenue. Companies are able to mitigate water shortfall risks through diversification of water supplies, sustainable withdrawal levels, technological and infrastructure improvements, and, potentially, rate structures.

Accounting Metrics

IF0103-04. Total fresh water sourced from regions with High or Extremely High Baseline Water Stress and percentage purchased from a third party

.17 The registrant shall disclose the amount of fresh water (in thousands of cubic meters) that was sourced from regions with High or Extremely High Baseline Water Stress.

- Water sources include surface water (including water from wetlands, rivers, and lakes), groundwater, or water suppled from other water utilities.
- Fresh water may be defined according to the local statutes and regulations where the registrant operates. Where there is no regulatory definition, fresh water shall be considered to be water that has a solids (TDS) concentration of less than 1000 mg/l per the Water Quality Association definition.
- Water obtained from a water utility in compliance with U.S. National Primary Drinking Water Regulations can be assumed to meet the definition of fresh water.

.18 The registrant shall analyze all of its operations for water risks and identify the amount of water sourced from locations with High (40–80%) or Extremely High (>80%) Baseline Water Stress as classified by the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly accessible online here).

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

IF0103-05. Volume of recycled water delivered

.20 The registrant shall disclose the volume (in cubic meters) of water it has recycled and delivered to its customers.

.21 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:

- 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.
  - Water recycled for potable reuse shall be treated to the standards established through the Safe Drinking Water Act.
- Non-potable reuse, such as recreational landscape irrigation, agricultural reuse, industrial process reuse, and environmental reuse (e.g., wetland enhancement and groundwater recharge).

.22 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:

- California State Water Resources Control Board: Regulations Related to Recycled Water;
- Florida Administrative Code Chapter 62-610 and Chapter 62-600; and
- Arizona Administrative Code Title 18, Chapter 11, Article 3: Reclaimed Water Quality Standards.

.23 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 EPA's 2012 Guidelines for Water Reuse.

IF0103-06. Discussion of strategies to manage risks associated with the quality and availability of water resources

.24 The registrant shall discuss its risks associated with the quality and availability of water resources, including a description of its strategies to manage such risks.

.25 The registrant shall discuss, where applicable, risks to the availability of adequate, clean water sources.

- Relevant information to provide includes, but is not limited to:
  - Environmental constraints, such as water resources in water-stressed regions, drought, interannual or seasonal variability, risks due to the impact of climate change, and any impacts associated with contaminated sources.
  - External constraints, such as stakeholder perceptions and concerns related to water sources (e.g., those from local communities, non-governmental organizations, and regulatory agencies),

restrictions to water delivery due to regulations, and constraints on the registrant's ability to obtain and retain water rights, permits, and allocations through purchase agreements.

  - How risks may vary by water source, including wetlands, rivers, lakes, oceans, groundwater, rainwater, municipal water supplies, or supply from other water utilities.

.26 The registrant shall include a discussion of the potential impacts that these risks may have on its operations and the timeline over which such risks are expected to manifest.

- Impacts may include, but are not limited to, those associated with costs, revenues, liabilities, continuity of operations, access to water, and reputation.

.27 The registrant shall provide a description of its short-term and long-term strategy or plans to manage these risks, including the following, where relevant:

- 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.

- 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, mandated water-use restrictions, etc.).

- 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.

- The efforts to secure and retain reliable long-term water supplies through senior water rights, permits, and/or allocations, including the registrant's ability to secure water (e.g., through purchase from a third party) should it not be able to retain sufficient allocations.

.28 Disclosure of strategies, plans, and infrastructure investments shall be limited to activities that were ongoing (active) or reached completion during the fiscal year.

.29 The registrant 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 registrant chose these practices despite lifecycle tradeoffs.

Additional Resources

WateReuse: State Policy and Regulations

Drinking Water Quality

Description

Companies in the Water Utilities industry must ensure that water conforms to regulations, is in line with customer expectations, and is reliably delivered. In order to protect human health and safeguard company value, companies must protect water sources from contamination, reducing treatment processes and costs. Comprehensive treatment processes are designed, developed, and maintained to meet water quality standards, while the finished water output is routinely monitored for compliance and safety. Natural events, such as forest fires and flooding, can also impact the quality of water sources. Overall, companies invest significant resources to consistently deliver safe drinking water to customers. Failure to provide water of adequate quality may result in regulatory fines, litigation, increased operating costs or capital expenditures, reputational risk, and asset or business seizure.

Accounting Metrics

IF0103-07. Number of (1) acute health-based, (2) non-acute health-based, and (3) non-health-based drinking water violations

.30 The registrant shall disclose the total number of instances of acute, Tier 1 drinking water non-compliance, including violations of a treatment technique-based standard and exceedances of a quality-based standard, where:

- Tier 1 violations are defined, according to 40 CFR 141.201, as those violations of the national primary drinking water regulations (NPDWR) that require public notice and have significant potential to have serious adverse effects on human health as a result of short-term exposure.

.31 The registrant shall disclose the total number of instances of non-acute, Tier 2 drinking water non-compliance, including violations of a treatment technique-based standard and exceedances of a quality-based standard, where:

- Tier 2 violations are defined, according to 40 CFR 141.201, as those violations of the NPDWR that requiring public notice and have potential to have serious adverse effects on human health.

.32 The scope of disclosure for both acute and non-acute health-based drinking water violations includes incidents governed by federal, state, and local statutory permits and regulations including, but not limited to, maximum contaminant level (MCL) violations, maximum residual distribution level (MRDL) violations, or treatment technique (TT) violations.

.33 The registrant shall report instances of non-conformance with the World Health Organization (WHO) Guidelines for Drinking-water Quality for jurisdictions where U.S. Federal, state, or local regulations do not apply.

.34 The registrant shall disclose the total number of instances of non-health-based, Tier 3 non-compliance, including violations of monitoring, reporting, or other non-health-based standards, where:

- Tier 3 violations are defined according to 40 CFR 141.201 as those violations of the NPDWR not included in Tier 1 and Tier 2 that require public notice but are not considered to have a direct impact on human health (e.g., failing to take a required sample on time).
- The scope of disclosure includes incidents governed by federal, state, and local statutory permits and regulations including, but not limited to, water quality testing violations, timely reporting of water quality results, and public communication violations.

Note to **IF0103-07**

.35 The registrant shall discuss those acute health-based violations (Tier 1) such as those that affected a significant number of customers or those of extended duration.

.36 For such violations, the registrant should provide:

- Description and cause of the violation;
- The population affected by the disruption;
- The costs (in U.S. dollars) associated with resolving the violation;
- Actions taken to mitigate potential for future violations; and
- Any other significant outcomes (e.g., legal proceedings or related fatalities).

.37 The registrant shall discuss efforts to maintain compliance with emerging federal, state, and local regulations, including any opportunities and/or challenges it determines such regulations may present.

IF0103-08. Discussion of strategies to manage drinking water contaminants of emerging concern

.38 The registrant shall discuss its strategy and approach to managing drinking water contaminants that are not subject to maximum contaminant level (MCL), maximum residual distribution level (MRDL), or treatment technique (TT) regulations at the present time but may be of emerging human health and/or environmental concern to the public, regulators, and/or others (e.g., non-governmental organizations, scientific researchers, etc.), where:

- Drinking water contaminants of emerging concern include, but are not limited to, residuals of pharmaceuticals, personal care products, pesticides, detergents, hormones, and other compounds, including those that disrupt the endocrine system.

.39 The registrant shall describe its approach to identifying and managing drinking water contaminants of emerging concern including whether management is characterized by a hazard-based, risk-based, or other approach, where:

- A hazard-based approach to contaminant management is defined as the process of identifying and managing the prevalence of contaminants based on the inherent human-health and environmental toxicological characteristics of contaminants, including specific exposure routes (e.g., oral, dermal, or inhalation) and dosages (amounts) of a substance it takes to cause an adverse effect.[19]

- A risk-based approach to contaminant management is defined as managing the prevalence of contaminants based on the integration of contaminant hazard information with an assessment of exposure (i.e., route, frequency, duration, and magnitude) to assess the probability and magnitude of harm to a given population(s) arising from exposure to a contaminant, given attendant uncertainties.[20]

- Other approaches may include the usage of hazard-based and risk-based approaches depending on the contaminant in question, product category, business segment, operating region, and/or intended product user.

.40 Relevant actions to discuss include the practices employed to determine and monitor contaminants of emerging concern, including a discussion of the contaminants of emerging concern that are currently being monitored, whether such contaminants are included in the Environmental Protection Agency's (EPA) Contaminant Candidate List 3 (CCL3) or the Draft Contaminant Candidate List 4 (CCL4), and any thresholds the registrant may have internally developed for acceptable concentrations of such contaminants.

- The registrant shall consider guidance such as the CCL as normative references, thus any updates made year-on-year shall be considered updates to this guidance.

.41 Relevant drinking water treatment processes and strategies include, but are not limited to, conventional drinking water treatment and advanced drinking water treatment technologies, such as granular activated carbon, ozonation, ultraviolet disinfection, membrane treatment, and/or investments in research and development of treatment technologies or methods for emerging contaminants.

.42 The registrant shall discuss its monitoring practices associated with the EPA's Unregulated Contaminant Monitoring Rule (UCMR), including efforts to reliably detect contaminants and collect occurrence data.

- The registrant may choose to discuss its communication to customers regarding monitoring efforts and occurrence data associated with the EPA's Unregulated Contaminant Monitoring Rule (UCMR).

[19] Definition adapted from "Environmental Health Criteria 222 | Biomarkers In Risk Assessment: Validity And Validation," International Programme on Chemical Safety (IPCS), World Health Organization, 2001 and "Understanding Risk and Hazard When it Comes to Chemicals," American Chemistry Council, accessed March 15, 2016, http://chemicalsafetyfacts.org/understanding-risk/.
[20] Ibid.

.43 The registrant shall discuss the risks and/or opportunities associated with the potential for emerging contaminants to come under maximum contaminant level (MCL), maximum residual distribution level (MRDL), or treatment technique (TT) regulations.

- Relevant information to provide includes, but is not limited to:
  - Identification of the emerging contaminants most likely to come under regulation;
  - Current ability to treat and/or manage such contaminants; and
  - Risks (e.g., potential for fines) and opportunities (e.g., potential for infrastructure expansions to be covered by rates).

Fair Pricing & Access

Description

Reliable access to clean water is commonly viewed as a basic human right. Fair and affordable pricing is a component of this right. Thus, structuring water rates in a way that the community perceives to be fair is critical to the value of water utility companies. Companies that are able to work with regulators to implement rate structures that increase levels of community acceptance are likely to find greater opportunities in the U.S. and around the world—especially in light of the underfunded nature of water infrastructure. Water utilities that use rate mechanisms that inhibit access to water, or that are prohibitively expensive to low-income populations, may see community opposition. In extreme situations community opposition can lead to privatization. Companies must ensure fair pricing and access, as well as rates that can adequately fund infrastructure in the long term, provide safe drinking water and adequate wastewater treatment, and collect an adequate return on capital.

Accounting Metrics

IF0103-09. Number of formal customer complaints regarding pricing of and/or access to water received, percentage withdrawn

.44 The registrant shall disclose the number of formal customer complaints it received during the fiscal year regarding its price structures and/or access to and availability of its water supply.

.45 Formal customer complaints shall be considered as those instances in which customers have brought forth a complaint that involves an evidentiary proceeding before a public utility commission (PUC), administrative law judge (ALJ), or other PUC moderator, which may be available through public databases such as:

- A database of formal customer complaints maintained by the Pennsylvania PUC, available here.
- A database of formal proceedings maintained by the California PUC, available here.
- A database of consumer complaints maintained by the New York Department of Public Services, available here.

.46 The registrant shall calculate the percentage of formal customer complaints withdrawn as the total number of customer complaints that were withdrawn divided by the total number of customer complaints it received, where:

- Withdrawn complaints are defined as those complaints that were withdrawn by the customer or dismissed by the PUC or ALJ.

.47 The registrant should disclose any complaints made during the prior period and withdrawn during the current period as well as complaints made during the current period that are not resolved at the date of reporting.

IF0103-10. Discussion of how considerations of fair pricing and access are integrated into determinations of rate structures

.48 The registrant shall discuss how considerations of fair pricing and access are integrated into the development and design of the rate structure determination for the registrant's market-based and regulated operations.

.49 The registrant shall discuss how rate changes compare currently and over time with the inflation rate and the Consumer Price Index (CPI), including if and how such indicators impact the rate-making process.

- Current CPI data can be accessed from the U.S. Department of Labor (DOL) here.

.50 The registrant shall discuss whether the development of rate structures occurs through rate cases made to a public utility commission, contract negotiations, or other rate-setting mechanisms.

.51 The registrant shall discuss the basic framework of the various rate structures (e.g., increasing block rates, seasonal rates, water surcharges, uniform rate structure, flat-fee rates, etc.) it employs or is subject to, the number of customers associated with each rate structure, and how the rate structure affects the registrant's ability to deliver fair prices and access to its customers.

.52 Relevant rate structure implications on fair pricing and access include, but are not limited to, constraints on or allowances for the registrant's ability to deliver assistance to low-income customers, expand and maintain infrastructure, and implement water conservation strategies.

End-Use Efficiency

Description

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.

Accounting Metrics

IF0103-11. Customer water savings from efficiency measures by market

.53 The registrant shall disclose the total volume of water savings (in cubic meters) from water efficiency measures installed or otherwise supported by the registrant during the fiscal year for each of its markets, where:

- Markets are defined as those operations that are subject to distinct public utility regulatory oversight.

.54 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.

- The registrant should list those markets where it reports water savings on a net savings basis and thus may be different from the figures disclosed here, where:
  - 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.

.55 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:

- California Public Utilities Commission Decision 07-12-050.

.56 Where state or local regulations do not exist, the registrant 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).

.57 The registrant 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.

Note to **IF0103-11**

.58 The registrant shall discuss customer efficiency measures that are required by regulations for each of its relevant markets, including a discussion of:

- The amount or percentage of water savings from efficiency measures required by regulations for each market.
- Instances of non-compliance with water savings obligations.
  - In such instances, the registrant shall disclose the difference between the water savings delivered and the amount required by the regulation.
- Water savings delivered that exceed those required by regulations that resulted in the registrant receiving energy efficiency performance incentives, including the U.S. dollar value of any such incentives.

.59 Relevant regulations include, but are not limited to:

- The California Water Conservation Act of 2009.

.60 The registrant shall discuss 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.

.61 Relevant policy mechanisms to discuss include, but are not limited to:

- Deferral decoupling;
- Current period decoupling;
- Single fixed variable rates;
- Lost revenue adjustments; and
- Water efficiency feebates.

.62 The registrant should discuss 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.

.63 The registrant may choose to discuss voluntary initiatives, such as the EPA's WaterSense program, that it has engaged in to manage end-user water efficiency.

Distribution Network Efficiency

Description

Water and wastewater companies develop, maintain, and operate complex interconnected infrastructure networks that include pipelines, canals, reservoirs, and pump stations. Significant volumes of water are lost in the distribution network (called non-revenue water, since it is distributed volume of water that is not reflected in customer billings). This water is lost primarily because of infrastructure failures like leaking pipes and service connections. Non-revenue real water losses may negatively impact financial performance, can 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 O&M 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.

Accounting Metrics

IF0103-12. Water pipe replacement rate

.64 The registrant shall disclose its water pipe replacement rate for the distribution system(s) that it owns and/or operates, where:

- 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.

.65 The registrant shall calculate the water pipe replacement rate as the total length (in kilometers) of pipe replaced during the fiscal year divided by the total length (in kilometers) of water pipes in its distribution network.

Note to **IF0103-12**

.66 The registrant shall discuss the use of and challenges associated with planned and corrective maintenance in its distribution system, where:

- Corrective maintenance is defined, consistent with the AWWA Benchmarking Performance Indicators for Water and Wastewater Utilities: 2013 Survey Data and Analyses Report (here after referred to as the 2013 Benchmarking Survey), as all maintenance undertaken after asset failure.

- Planned maintenance is defined, consistent with the AWWA 2013 Benchmarking Survey, as all regular maintenance activities undertaken in advance of asset failure.

.67 Relevant challenges to discuss include, but are not limited to, the impacts of corrosion and soil properties on pipe materials (e.g., cast iron, ductile iron, polyvinyl chloride, wood, etc.), the registrant's ability to finance maintenance and replacement through rate adjustments, and the age of the current distribution network.

IF0103-13. Volume of non-revenue real water losses

.68 The registrant shall disclose the amount, in cubic meters, of real water losses from the distribution system, where:

- Real losses are defined, consistent with the American Water Works Association (AWWA) Water Audits and Loss Control Program, Fourth Edition (here after referred to as the M36 Manual), as the physical water losses 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.

- The registrant shall consider guidance such as the AWWA's M36 Manual as normative references, thus any updates made year-on-year shall be considered updates to this guidance.

.69 The registrant shall calculate the amount of real losses according to federal, state, or local regulations where such loss occurs. Relevant guidance includes, but is not limited to:

- California Senate Bill 555;

- Texas Water Code Section 16.012; and

- Georgia Senate Bill 370.

.70 Where federal, state, or local regulations do not exist, the registrant shall calculate the amount of real losses according to voluntary initiatives, where relevant guidance includes, but is not limited to:

- The AWWA M36 Manual.

.71 The registrant should disclose the technique(s) it employs to measure non-revenue water from real losses and the amount calculated according to each technique it employs.

Network Resiliency & Impacts of Climate Change

Description

Climate change is likely to create business uncertainty for companies in the Water Utilities industry 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.

Accounting Metrics

IF0103-14. Water treatment capacity located in FEMA Special Flood Hazard Areas or foreign equivalent

.72 The registrant shall disclose the capacity, in cubic meters per day, of its water treatments facilities that are located in special flood hazard areas, where:

- U.S. Federal Emergency Management Agency (FEMA) Special Flood Hazard Areas (SFHA) are defined as land areas covered by the floodwaters of the base flood on National Flood Insurance Program (NFIP) maps. An SFHA is an area where the NFIP's floodplain management regulations must be enforced and where the mandatory purchase of flood insurance applies. SFHAs include 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. Examples of SFHAs include coastal floodplains, floodplains along major rivers, and areas subject to flooding from ponding in low-lying areas.

- The scope of disclosure includes U.S.-based facilities that are designated by FEMA as SFHAs, as well as non-U.S.-based facilities.

- For non-U.S.-based facilities that fall outside of the scope of FEMA, the foreign equivalent is an area that will be inundated by a flood event that has a one-percent chance of being equaled or exceeded in any given year (i.e., the 100-year floodplain).

IF0103-15. Volume of sanitary sewer overflows (SSO), percentage recovered

.73 The registrant shall disclose the volume, in cubic meters, of sanitary sewer overflows (SSO) originating from sewer systems under the registrant's operational control, where:

- 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.

.74 The volume of SSOs shall be calculated according to the methodologies used for regulatory reporting in the corresponding jurisdiction.

- Where regulations do not require reporting of SSOs, the registrant shall disclose the calculation methodology or combination of methodologies used, where relevant methodologies include, but are not limited to:
  - Duration and flow rate comparison method;
  - Upstream lateral connections method; and
  - Continuous flow metering.

.75 The registrant shall report the percentage recovered as the volume, in cubic meters, of sewage discharged to the environment that was recovered divided by the total amount of sewage discharged to the environment through SSOs, where:

- The recovered volume is defined as the amount of sewage discharged that was captured and returned to the sanitary sewer system or private lateral or collection system.

.76 The volume of SSOs recovered shall be calculated according to the methodologies used for regulatory reporting in the corresponding jurisdiction.

- Where regulations do not require reporting the recovery of SSOs, the registrant shall disclose the calculation methodology or combination of methodologies used, where relevant methodologies include, but are not limited to:
  - Measured volume method; and
  - Visual estimation method.

.77 Relevant state databases listing SSOs include, but are not limited to:

- Maryland Reported Sewer Overflow Database;
- California SSO Incident Map; and
- Michigan Event Discharge Information.

.78 The registrant should discuss programs and initiatives, including those programs overseen by state and local governments and those developed internally by the registrant, that it is involved in to reduce the number and volume of SSOs and its efforts to mitigate any such occurrences.

IF0103-16. (1) Number of service disruptions, (2) population affected, and (3) average duration

.79 The registrant shall disclose the number of disruptions to its drinking water supply services, the total population affected by such disruptions, and the average duration of a disruption, where:

- A service disruption shall be defined according to local regulations where the disruption occurred.
- 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 (dishwashing, showering, laundry washing, toilet flushing etc.) are maintained.
- The total population affected is defined as those people who experienced service disruptions.
- The average duration of a disruption shall be calculated as the total duration (in minutes) of service disruptions divided by the number of service disruptions, where:
  - The duration of a disruption is defined, consistent with the American Water Works Association (AWWA) Benchmarking Performance Indicators for Water and Wastewater Utilities: 2013 Survey Data and Analyses Report, 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.

.80 The scope of disclosure shall be limited to those disruptions that were not planned or scheduled and those disruptions exceeding the scheduled duration of disruption, where:

- 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 registrant has provided a minimum of 24 hours advance notification.

.81 The registrant should separately disclose the number of disruptions that were intentionally planned or scheduled by the registrant, the size of the population affected, and the duration of those disruptions.

Note to **IF0103-16**

.82 The registrant shall discuss notable service disruptions such as those that affected a significant population or those of extended duration.

.83 For such disruptions, the registrant should provide:

- Description and cause of the service disruptions;
- The costs (in U.S. dollars) associated with the service disruptions;
- Actions taken to mitigate the potential for future service disruptions; and
- Any other significant outcomes (e.g., legal proceedings, related fatalities).

IF0103-17. Discussion of efforts to identify and manage risks and opportunities related to the impact of climate change on the distribution network

.84 The registrant shall discuss its efforts to identify and manage risks and opportunities associated with the impact of climate change on the distribution network, where:

- Risks include, among others, threats to the registrant'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).
- Opportunities include the need for infrastructure improvements within the registrant's current service area and the opportunity to expand its services through the water infrastructure.

.85 The registrant shall describe how it identifies and prioritizes the potential for risks to, and vulnerabilities of, its distribution network.

- Relevant risks and vulnerabilities to discuss include, but are not limited to, those relating to the age, geographic location, and physical qualities of the registrant's distribution infrastructure.
- Relevant efforts to discuss include involvement in climate change adaptation and mitigation programs, including the U.S. EPA Climate Ready Water Utility Initiative.

.86 The registrant shall describe its efforts to manage the risks and opportunities associated with its distribution network including, but not limited to, infrastructure development, current storm tracking, global gridded climate models, and the use of redundant systems to assure service continuity.

.87 The registrant may choose to discuss 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 registrant's ability to expand, maintain, and enhance the resiliency of its distribution network.

Additional Resources

Sewer Spill Estimation Guide: A Guide to Estimating Sanitary Sewer Overflow (SSO) Volumes
City of Pacifica Overflow Emergency response Plan

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WASTE MANAGEMENT

Sustainability Accounting Standard

Sustainable Industry Classification System™ (SICS™) #IF0201

Prepared by the
Sustainability Accounting Standards Board®

March 2016
Provisional Standard

WASTE MANAGEMENT

Sustainability Accounting Standard

About SASB

The Sustainability Accounting Standards Board (SASB) provides sustainability accounting standards for use by publicly-listed corporations in the U.S. in disclosing material sustainability information for the benefit of investors and the public. SASB standards are designed for disclosure in mandatory filings to the Securities and Exchange Commission (SEC), such as the Form 10-K and 20-F. SASB is an independent 501(c)3 non-profit organization. Through 2016, SASB is developing standards for 79 industries in 10 sectors.

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INTRODUCTION

Purpose & Structure

This document contains the SASB Sustainability Accounting Standard (SASB Standard) for the Waste Management industry.

SASB Sustainability Accounting Standards are comprised of **(1) disclosure guidance and (2) accounting standards on sustainability topics** for use by U.S. and foreign public companies in their annual filings (Form 10-K or 20-F) with the U.S. Securities and Exchange Commission (SEC). To the extent relevant, SASB Standards may also be applicable to other periodic mandatory filings with the SEC, such as the Form 10-Q, Form S-1, and Form 8-K.

SASB Standards identify sustainability topics at an industry level, which may constitute material information—depending on a company's specific operating context—for a company within that industry. SASB Standards are intended to provide guidance to company management, which is ultimately responsible for determining which information is material and should therefore be included in its Form 10-K or 20-F and other periodic SEC filings.

SASB Standards provide companies with standardized sustainability metrics designed to communicate performance on industry level sustainability topics. When making disclosure on sustainability topics, companies can use SASB Standards to help ensure that disclosure is standardized and therefore decision-useful, relevant, comparable, and complete.

SASB Standards are intended to constitute "suitable criteria" as defined by AT 101.23 -. 32[1] and referenced in AT 701[2], as having the following attributes:

- *Objectivity*—Criteria should be free from bias.
- *Measurability*—Criteria should permit reasonably consistent measurements, qualitative or quantitative, of subject matter.
- *Completeness*—Criteria should be sufficiently complete so that those relevant factors that would alter a conclusion about subject matter are not omitted.
- *Relevance*—Criteria should be relevant to the subject matter.

Industry Description

The Waste Management industry includes companies that collect, store, dispose of, recycle, or treat various forms of waste from residential, commercial, and industrial clients. Types of waste include municipal solid waste, hazardous waste, recyclable materials, and compostable or organic materials. Certain industry players also provide environmental engineering and consulting services, mostly to large industrial clients. Major companies are vertically integrated, providing a range of services from collection to landfilling to recycling, while others provide specialized

[1] http://pcaobus.org/Standards/Attestation/Pages/AT101.aspx#at_101_fn7
[2] http://pcaobus.org/Standards/Attestation/Pages/AT701.aspx

services such as treating medical and industrial wastes. Most U.S.-listed companies in the industry operate exclusively within the U.S., while some companies have broadened their activities internationally.

Guidance for Disclosure of Sustainability Topics in SEC Filings

1. Industry-Level Sustainability Topics

For the Waste Management industry, SASB has identified the following sustainability disclosure topics:

- Greenhouse Gas Emissions
- Air Quality
- Fleet Fuel Management
- Management of Leachate & Hazardous Waste
- Workforce Health & Safety
- Labor Relations
- Recycling & Resource Recovery

2. Company-Level Determination and Disclosure of Material Sustainability Topics

Sustainability disclosures are governed by the same laws and regulations that govern disclosures by securities issuers generally. According to the U.S. Supreme Court, a fact is material if, in the event such fact is omitted from a particular disclosure, there is "a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the 'total mix' of the information made available."[3,4]

SASB has attempted to identify those sustainability topics that are reasonably likely to have a material effect on the financial condition or operating performance of companies within each SICS industry. SASB recognizes, however, that each company is ultimately responsible for determining what information should be disclosed within the context of Regulation S-K and other guidance.

Regulation S-K, which sets forth certain disclosure requirements associated with Form 10-K and other SEC filings, requires companies, among other things, to describe in the Management's Discussion and Analysis of Financial Condition and Results of Operations (MD&A) section of Form 10-K "any known trends or uncertainties that have had or that the registrant reasonably expects will have a material favorable or unfavorable impact on net sales or revenues or income from continuing operations. If the registrant knows of events that will cause a material change in the relationship between costs and revenues (such as known future increases in costs of labor or materials or price increases or inventory adjustments), the change in the relationship shall be disclosed."

Furthermore, Instructions to Item 303 state that the MD&A "shall focus specifically on material events and uncertainties known to management that would cause reported financial information not to be necessarily indicative of future operating results or of future financial condition."[2]

[3] TSC Industries v. Northway, Inc., 426 U.S. 438 (1976).
[4] C.F.R. 229.303(Item 303)(a)(3)(ii).

The SEC has provided guidance for companies to use in determining whether a trend or uncertainty should be disclosed. The two-part assessment prescribed by the SEC, based on probability and magnitude, can be applied to the topics included within this standard:

- First, a company is not required to make disclosure about a known trend or uncertainty if its management determines that such trend or uncertainty is not reasonably likely to occur.

- Second, if a company's management cannot make a reasonable determination of the likelihood of an event or uncertainty, then disclosure is required unless management determines that a material effect on the registrant's financial condition or results of operation is not reasonably likely to occur.

3. Sustainability Accounting Standard Disclosures in Form 10-K

a. Management's Discussion and Analysis

For purposes of comparability and usability, companies should consider making disclosure on sustainability topics in the MD&A, in a sub-section titled "**Sustainability Accounting Standards Disclosures**."[5]

b. Other Relevant Sections of Form 10-K

In addition to the MD&A section, it may be relevant for companies to disclose sustainability information in other sections of Form 10-K, including, but not limited to:

- **Description of business**—Item 101 of Regulation S-K requires a company to provide a description of its business and its subsidiaries. Item 101(c)(1)(xii) expressly requires disclosure regarding certain costs of complying with environmental laws:

Appropriate disclosure also shall be made as to the material effects that compliance with Federal, State and local provisions which have been enacted or adopted regulating the discharge of materials into the environment, or otherwise relating to the protection of the environment, may have upon the capital expenditures, earnings and competitive position of the registrant and its subsidiaries.

- **Legal proceedings**—Item 103 of Regulation S-K requires companies to describe briefly any material pending or contemplated legal proceedings. Instructions to Item 103 provide specific disclosure requirements for administrative or judicial proceedings arising from laws and regulations that target discharge of materials into the environment or that are primarily for the purpose of protecting the environment.

- **Risk factors**—Item 503(c) of Regulation S-K requires filing companies to provide a discussion of the most significant factors that make an investment in the registrant speculative or risky, clearly stating the risk and specifying how a particular risk affects the particular filing company.

[5] SEC [Release Nos. 33-8056; 34-45321; FR-61] Commission Statement about Management's Discussion and Analysis of Financial Condition and Results of Operations: "We also want to remind registrants that disclosure must be both useful and understandable. That is, management should provide the most relevant information and provide it using language and formats that investors can be expected to understand. Registrants should be aware also that investors will often find information relating to a particular matter more meaningful if it is disclosed in a single location, rather than presented in a fragmented manner throughout the filing."

c. Rule 12b-20

Securities Act Rule 408 and Exchange Act Rule 12b-20 require a registrant to disclose, in addition to the information expressly required by law or regulation, "such further material information, if any, as may be necessary to make the required statements, in light of the circumstances under which they are made, not misleading."

More detailed guidance on disclosure of material sustainability topics can be found in the **SASB Conceptual Framework**, available for download via http://www.sasb.org/approach/conceptual-framework/.

Guidance on Accounting for Sustainability Topics

For each sustainability topic included in the Waste Management industry Sustainability Accounting Standard, SASB identifies accounting metrics.

SASB recommends that each company consider using these sustainability accounting metrics when preparing disclosures on the sustainability topics identified herein;

As appropriate—and consistent with Rule 12b-20[6]—when disclosing a sustainability topic identified by this Standard, companies should consider including a narrative description of any material factors necessary to ensure completeness, accuracy, and comparability of the data reported. Where not addressed by the specific accounting metrics, but relevant, the registrant should discuss the following, related to the topic:

- The registrant's **strategic approach** to managing performance on material sustainability issues;
- The registrant's **relative performance** with respect to its peers;
- The **degree of control** the registrant has;
- Any **measures the registrant has undertaken** or **plans to undertake** to improve performance; and
- Data for the registrant's **last three completed fiscal years** (when available).

SASB recommends that registrants use SASB Standards specific to their primary industry as identified in the Sustainable Industry Classification System (SICS™) . If a registrant generates significant revenue from multiple industries, SASB recommends that it also consider sustainability topics that SASB has identified for those industries and disclose the associated SASB accounting metrics.

In disclosing to SASB Standards, it is expected that registrants disclose with the same level of rigor, accuracy, and responsibility as they apply to all other information contained in their SEC filings.

[6] SEC Rule 12b-20: "In addition to the information expressly required to be included in a statement or report, there shall be added such further material information, if any, as may be necessary to make the required statements, in the light of the circumstances under which they are made, not misleading."

Users of the SASB Standards

The SASB Standards are intended to provide guidance for companies that engage in public offerings of securities registered under the Securities Act of 1933 (the Securities Act) and those that issue securities registered under the Securities Exchange Act of 1934 (the Exchange Act),[7] for use in SEC filings, including, without limitation, annual reports on Form 10-K (Form 20-F for foreign issuers), quarterly reports on Form 10-Q, current reports on Form 8-K, and registration statements on Forms S-1 and S-3. Disclosure with respect to the SASB Standards is not required or endorsed by the SEC or other entities governing financial reporting, such as FASB, GASB, or IASB.

Scope of Disclosure

Unless otherwise specified, SASB recommends:

- That a registrant disclose on sustainability issues and metrics for itself and for entities that are consolidated for financial reporting purposes as defined by accounting principles generally accepted in the United States for consistency with other accompanying information within SEC filings;[8]
- That for consolidated entities, disclosures be made, and accounting metrics calculated, for the whole entity, regardless of the size of the minority interest; and
- That information from unconsolidated entities not be included in the computation of SASB accounting metrics. A registrant should disclose, however, information about unconsolidated entities to the extent that the registrant considers the information necessary for investors to understand the effect of sustainability topics on the company's financial condition or operating performance (typically, this disclosure would be limited to risks and opportunities associated with these entities).

Reporting Format

Use of Financial Data

In instances where accounting metrics, activity metrics, and technical protocols in this standard incorporate financial data (e.g., revenues, cost of sales, expenses recorded and disclosed for fines, etc.), such financial data shall be prepared in accordance with the accounting principles generally accepted in the United States of America ("US GAAP") and be consistent with the corresponding financial data reported within the registrant's SEC filings. Should accounting metrics, activity metrics and technical protocols in this standard incorporate disclosure of financial data that is not prepared in accordance with US GAAP, the registrant shall disclose such information in accordance with the SEC Regulation G.

[7] Registration under the Securities Exchange Act of 1934 is required (1) for securities to be listed on a national securities exchange such as the New York Stock Exchange, the NYSE Amex, and the NASDAQ Stock Market or (2) if (A) the securities are equity securities and are held by more than 2,000 persons (or 500 persons who are not accredited investors) and (B) the company has more than $10 million in assets.
[8] See US GAAP consolidation rules (Section 810).

Activity Metrics and Normalization

SASB recognizes that normalizing accounting metrics is important for the analysis of SASB disclosures.

SASB recommends that a registrant disclose any basic business data that may assist in the accurate evaluation and comparability of disclosure, to the extent that they are not already disclosed in the Form 10-K (e.g., revenue, EBITDA, etc.).

Such data—termed "activity metrics"—may include high-level business data such as total number of employees, quantity of products produced or services provided, number of facilities, or number of customers. It may also include industry-specific data such as plant capacity utilization (e.g., for specialty chemical companies), number of transactions (e.g., for Internet media and services companies), hospital bed days (e.g., for health care delivery companies), or proven and probable reserves (e.g., for oil and gas exploration and production companies).

Activity metrics disclosed should:

- Convey contextual information that would not otherwise be apparent from SASB accounting metrics.
- Be deemed generally useful for an investor relying on SASB accounting metrics in performing their own calculations and creating their own ratios.
- Be explained and consistently disclosed from period to period to the extent they continue to be relevant. However, a decision to make a voluntary disclosure in one period does not obligate a continuation of that disclosure if it is no longer relevant or if a better metric becomes available.[9]

Where relevant, SASB recommends specific activity metrics that—at a minimum—should accompany SASB accounting metric disclosures.

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Number of customers by category: (1) municipal, (2) commercial, (3) industrial, (4) residential, and (5) other[10]	Quantitative	Number	IF0201-A
Vehicle fleet size	Quantitative	Number	IF0201-B
Number of (1) landfills, (2) transfer stations, (3) recycling centers (4) composting centers, (5) incinerators, and (6) all other facilities[11]	Quantitative	Number	IF0201-C
Amount of materials managed by customer category (1) municipal, (2) commercial, (3) industrial, (4) residential, and (5) other[12]	Quantitative	Metric tons (t)	IF0201-D

[9] *Improving Business Reporting: Insights into Enhancing Voluntary Disclosures*, FASB Business Reporting Research Project, January 29, 2001.
[10] Note to **IF0201-A**—The scope of "residential" shall only include those residential customers that have direct contracts with the registrant. For the purposes of this disclosure, residential customers serviced through contracts with a municipality shall be considered in the "municipal" category.
[11] Note to **IF0201-C**—Landfills include landfills that are active and landfills owned by the company that are closed. The scope of "all other facilities" excludes corporate offices.
[12] Note to **IF0201-D**—"Managed" is defined as the handling of discarded materials, whether those materials are treated or not. The scope of "residential" shall only include those residential customers that have direct contracts with the registrant. For the purposes of this disclosure, residential customers serviced through contracts with a municipality shall be considered in the "municipal" category.

Units of Measure

Unless specified, disclosures should be reported in International System of Units (SI units).

Uncertainty

SASB recognizes that there may be inherent uncertainty when disclosing certain sustainability data and information. This may be related to variables such as the reliance on data from third-party reporting systems and technologies, or the unpredictable nature of climate events. Where uncertainty around a particular disclosure exists, SASB recommends that the registrant should consider discussing its nature and likelihood.

Estimates

SASB recognizes that scientifically based estimates, such as the reliance on certain conversion factors or the exclusion of *de minimis* values, may occur for certain quantitative disclosures. Where appropriate, SASB does not discourage the use of such estimates. When using an estimate for a particular disclosure, SASB expects that the registrant discuss its nature and substantiate its basis.

Timing

Unless otherwise specified, disclosure shall be for the registrant's fiscal year.

Limitations

There is no guarantee that SASB Standards address all sustainability impacts or opportunities associated with a sector, industry, or company, and therefore, a company must determine for itself the topics—sustainability-related or otherwise—that warrant discussion in its SEC filings.

Disclosure under SASB Standards is voluntary. It is not intended to replace any legal or regulatory requirements that may be applicable to user operations. Where such laws or regulations address legal or regulatory topics, disclosure under SASB Standards is not meant to supersede those requirements. Disclosure according to SASB Standards shall not be construed as demonstration of compliance with any law, regulation, or other requirement.

SASB Standards are intended to be aligned with the principles of materiality enforced by the SEC. However, SASB is not affiliated with or endorsed by the SEC or other entities governing financial reporting, such as FASB, GASB, or IASB.

Forward-looking Statements

Disclosures on sustainability topics can involve discussion of future trends and uncertainties related to the registrant's operations and financial condition, including those influenced by external variables (e.g., environmental, social, regulatory, and political). Companies making such disclosures should familiarize themselves with the safe harbor provisions of Section 27A of the Securities Act and Section 21E of the Exchange Act, which preclude civil liability for material misstatements or omissions in such statements if the registrant takes certain steps, including,

among other things, identifying the disclosure as "forward-looking" and accompanying such disclosure with "meaningful cautionary statements identifying important factors that could cause actual results to differ materially from those in the forward-looking statements."

The following sections contain the disclosure guidance associated with each accounting metric such as guidance on definitions, scope, accounting, compilation, and presentation.

The term "shall" is used throughout this document to indicate those elements that reflect requirements of the Standard. The terms "should" and "may" are used to indicate guidance, which, although not required, provides a recommended means of disclosure.

Table 1. Sustainability Disclosure Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Greenhouse Gas Emissions	(1) Gross global Scope 1 emissions, (2) percentage covered under emissions-limiting regulation, and (3) percentage covered under emissions-reporting regulation	Quantitative	Metric tons (t) CO_2-e, Percentage (%)	IF0201-01
	Total landfill gas generated, percentage flared, percentage used for energy	Quantitative	Million British Thermal Units (MMBtu), Percentage (%)	IF0201-02
	Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emission-reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	IF0201-03
Air Quality	Air emissions of the following pollutants: NO_x (excluding N_2O), SO_x, non-methane volatile organic compounds (NMVOCs), and hazardous air pollutants (HAPs)	Quantitative	Metric tons (t)	IF0201-04
	Number of facilities in or near areas of dense population	Quantitative	Number	IF0201-05
	Number of incidents of non-compliance associated with air emissions	Quantitative	Number	IF0201-06
Fleet Fuel Management	Fleet fuel consumed, percentage renewable	Quantitative	Gigajoules, Percentage (%)	IF0201-07
	Percentage of alternative energy vehicles in fleet	Quantitative	Percentage (%)	IF0201-08
Management of Leachate & Hazardous Waste	Total Toxic Release Inventory (TRI) releases, percentage released to water	Quantitative	Metric tons (t), Percentage (%)	IF0201-09
	Number of corrective actions implemented for landfill releases	Quantitative	Number	IF0201-10
	Number of incidents of non-compliance associated with environmental impacts	Quantitative	Number	IF0201-11

Table 1. Sustainability Disclosure Topics & Accounting Metrics (cont.)

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Workforce Health & Safety	(1) Total recordable injury rate (TRIR), (2) fatality rate, and (3) near miss frequency rate (NMFR) for (a) direct employees and (b) contract employees	Quantitative	Rate	IF0201-12
	Safety Measurement System BASIC percentiles for: (1) Unsafe Driving, (2) Hours-of-Service Compliance, (3) Driver Fitness, (4) Controlled Substances/Alcohol, (5) Vehicle Maintenance, and (6) Hazardous Materials Compliance	Quantitative	Percentile (%)	IF0201-13
	Number of vehicle accidents and incidents	Quantitative	Number	IF0201-14
Labor Relations	Percentage of active workforce covered under collective bargaining agreements	Quantitative	Percentage (%)	IF0201-15
	Number and duration of strikes and lockouts[13]	Quantitative	Number, Days	IF0201-16
Recycling & Resource Recovery	Amount of waste incinerated, percentage hazardous, percentage used for energy recovery	Quantitative	Metric tons (t), Percentage (%)	IF0201-17
	Percentage of customers receiving (1) recycling and (2) composting services, by customer type	Quantitative	Percentage (%)	IF0201-18
	Amount of material (1) recycled and (2) composted	Quantitative	Metric tons (t)	IF0201-19
	Amount of electronic waste collected, percentage recovered through recycling	Quantitative	Metric tons (t), Percentage (%)	IF0201-20

[13] Note to **IF0201-16**—The registrant shall describe the reason for each work stoppage (as stated by labor), the impact on production, and any corrective actions taken as a result.

Greenhouse Gas Emissions

Description

Landfill gas (LFG) is a significant anthropogenic contributor to global greenhouse gas (GHG) emissions because it contains highly potent methane, whose emissions are limited by federal regulations. Given its potency, federal regulations limit LFG emissions. Many states also mandate monitoring and collection of LFG, including California, under its Assembly Bill 32. LFG emissions can be reduced through a variety of control technologies that require significant capital expenditure: LFG-collection-efficiency improvements, LFG-control devices, and increased methane oxidization. Methane collected through LFG capture systems can be combusted in a flare, an engine, or a turbine to dramatically reduce the overall toxicity and potency of raw LFG. LFG capture is particularly important for owners and operators of large landfills that have been the target of regulation. LFG emissions pose a regulatory risk for the industry, with potential impacts on operational costs and capital expenditures. There is also the potential for revenue generation through the sale of natural gas and the ability to lower fuel purchases by using processed LFG to power operations. Performance on this issue can affect a company's ability to secure new permits and renew existing ones, which can have an impact on revenue.

Accounting Metrics

IF0201-01. (1) Gross global Scope 1 emissions, (2) percentage covered under emissions-limiting regulation, and (3) percentage covered under emissions-reporting regulation

.01 The registrant shall disclose gross global Scope 1 greenhouse gas (GHG) emissions to the atmosphere of the seven GHGs covered under the Kyoto Protocol (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride).

- Emissions of all gases shall be disclosed in metric tons of carbon dioxide equivalents (CO_2-e), calculated in accordance with published 100-year time horizon global warming potential (GWP) factors. To date, the preferred source for GWP factors is the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (2013).

- Gross emissions are GHGs emitted to the atmosphere before accounting for any GHG reduction activities, offsets, or other adjustments for activities in the reporting period that have reduced or compensated for emissions.

- Disclosure corresponds to section CC8.2 of the Carbon Disclosure Project (CDP) Questionnaire (2015) and REQ-04 of the Climate Disclosure Standards Board (CDSB) Framework for reporting environmental information & natural capital (2015).

    - The registrant shall consider the CDP Climate Change Questionnaire a normative reference, thus any updates made year-on-year shall be considered updates to this guidance.

.02 Scope 1 emissions are defined by the World Resources Institute and the World Business Council on Sustainable Development (WRI/WBCSD) in *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard,* Revised Edition, March 2004 (hereafter, the "GHG Protocol").

- These emissions include direct emissions of GHGs from stationary or mobile sources that include, but are not limited to, waste-to-energy, landfill gas, and transportation (i.e., marine, road, or rail).

- Acceptable calculation methodologies include those that refer to the GHG Protocol as the basic reference but may provide additional industry or regionally specific guidance, where examples include, but are not limited to:

  - India GHG Inventory Programme

  - ISO 14064-1

- The registrant may choose to disclose the methodology or methodologies used to collect and calculate Scope 1 emissions.

.03 GHG emission data shall be consolidated according to the approach with which the registrant consolidates its financial reporting data, which is generally aligned with:

- The Financial Control approach defined by the GHG Protocol and referenced by the *CDP Guidance for companies reporting on climate change on behalf of investors & supply chain members 2015* (hereafter, the "CDP Guidance").[14]

- The approach detailed in REQ-07, "Organisational boundary," of the CDSB Framework (2015).[15]

.04 The registrant shall disclose the percentage of its emissions that are covered under a regulatory program that is intended to limit or reduce GHG emissions, such as the European Union Emissions Trading Scheme (E.U. ETS), Quebec Cap-and-Trade (Draft Bill 42 of 2009), California Cap-and-Trade (California Global Warming Solutions Act), New Source Performance Standards and Emissions Guidelines for Municipal Solid Waste Landfills, or other regulatory programs.

- Regulatory programs include cap-and-trade schemes, carbon tax/fee systems, and other emissions control (e.g., command-and-control approach) and permit-based mechanisms.

- Disclosure shall exclude emissions covered under voluntary trading systems and disclosure-based regulations (e.g., the U.S. Environmental Protection Agency (EPA) Greenhouse Gas Reporting Program).

[14] "An organization has financial control over an operation if it has the ability to direct the financial and operating policies of the operation with a view to gaining economic benefits from its activities. Generally an organization has financial control over an operation for GHG accounting purposes if the operation is treated as a group company or subsidiary for the purposes of financial consolidation." *Guidance for companies reporting on climate change on behalf of investors & supply chain members 2013,* p. 95.
[15] This is based on the requirements of International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) on consolidation and equity accounting and is consistent with how information relating to entities within a group or interest in joint ventures/associates would be included on consolidated financial statements, as further detailed in CDSB *Proposals for Boundary Setting in Mainstream Reports*.

.05 The registrant shall disclose the percentage of its emissions that are covered under emissions reporting-based regulations (e.g., The U.S. EPA Greenhouse Gas Reporting Program).

- Emissions reporting regulations are defined as regulations that demand the disclosure of data to authorities and/or to the public, but for which there is no limit, cost, target, or controls on the amount of emissions generated.

.06 The registrant should discuss any change in its emissions from the previous fiscal year, such as if the change was due to emissions reductions, divestment, acquisition, mergers, changes in output, and/or changes in calculation methodology.

.07 In the case that current reporting of GHG emissions to the CDP or other entities (e.g., a national regulatory disclosure program) differs in terms of the methodology, calculation (e.g., different GWP factors), scope, and/or consolidation approach used, the registrant may disclose those emissions. However, primary disclosure shall be according to the guidelines described above.

.08 The registrant should discuss the calculation methodology for its emissions disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.

.09 The registrant should consult the most recent version of each document referenced in this standard at the time disclosure occurs.

IF0201-02. Total landfill gas generated, percentage flared, percentage used for energy

.10 The registrant shall disclose the total amount, in millions of British Thermal Units (MMBtu) of landfill gas generated from its owned or operated facilities, where:

- Landfill gas is defined, consistent with 40 CFR 98.6, as gas produced as a result of anaerobic decomposition of waste materials in the landfill.

.11 The registrant shall use the calculation methodology in 40 CFR 98.340-348 Subpart HH to calculate the amount of landfill gas generated, the percentage flared, and the percentage used for energy.

.12 The registrant shall calculate the percentage of landfill gas that was flared as the total amount, in MMBtu, of landfill gas that was flared divided by the total amount of landfill gas generated, where:

- Flared landfill gas includes gas that is flared through air injection and is defined, consistent with 40 CFR 98.6, as gas that is combusted through the use of an open flame with combustion air provided by uncontrolled ambient air around the flame and/or air that is blown into the flare to induce complete combustion.

.13 The registrant shall calculate the percentage of landfill gas used for energy as the amount, in MMBtu, of landfill gas that was captured and used for energy divided by the total amount of landfill gas generated, where:

- Landfill gas used for energy includes gas that is combusted for use in on-site energy or heat production, conveyed through pipelines for off-site combustion, and any other on-site or off-site use as a fuel.

.14 In calculating energy generated from landfill gas, the registrant shall use higher heating values (HHV), also known as gross calorific values (GCV), which are directly measured or taken from the U.S. EPA's *Landfill Gas Energy: A Guide to Developing and Implementing Greenhouse Gas Reduction Programs*.

IF0201-03. Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emission-reduction targets, and an analysis of performance against those targets

.15 The registrant shall discuss the following, where relevant:

- The scope, such as whether strategies, plans, and/or reduction targets pertain differently to different business units, geographies, or emissions sources;

- Whether strategies, plans, and/or reduction targets are related to or associated with an emissions disclosure (reporting) or reduction program (e.g., E.U. ETS, Quebec Cap-and-Trade (Draft Bill 42 of 2009), California Cap-and-Trade (California Global Warming Solutions Act), etc.), including regional, national, international, or sectoral programs; and

- The activities and investments required to achieve the plans, and any risks or limiting factors that might affect achievement of the plans and/or targets.

.16 For emission-reduction targets, the registrant shall disclose:

- The percentage of emissions within the scope of the reduction plan;

- The percentage reduction from the base year;

    - The base year is the first year against which emissions are evaluated toward the achievement of the target.

- Whether the target is absolute or intensity based, and the metric denominator if it is an intensity-based target;

- The timelines for the reduction activity, including the start year, the target year, and the base year. Disclosure shall be limited to activities that were ongoing (active) or reached completion during the fiscal year; and

- The mechanism(s) for achieving the target, such as landfill gas flaring, landfill gas-to-energy projects, vehicle efficiency measures and/or programs, etc. Where necessary, the registrant shall discuss any circumstances in which the target base year emissions have been, or may be, recalculated retrospectively or where the target base year has been reset.

.17 Disclosure corresponds with:

- CDSB Framework REQ-01, "Management's environmental policies, strategy and targets."
- CDP Questionnaire (2015) CC3, "Targets and Initiatives."

.18 Relevant initiatives to discuss may include, but are not limited to, landfill gas-to-energy projects, vehicle efficiency programs, and diversion of organics from landfills (e.g., composting), consistent with the IPCC Fourth Assessment Report: Climate Change 2007: Working Group III: Mitigation of Climate Change.

Air Quality

Description

Air pollution is the presence of air contaminants in such quantities and duration that they can be injurious to humans, animals, plants, or property. It also includes contaminants that interfere with enjoyment of life or property. Therefore, odors and toxic gases, such as those emitted from landfills, landfill fires, waste incinerators, and waste treatment plants, are considered air pollution. The financial impacts from excessive air emissions vary depending on the specific location of operations and the prevailing air emissions regulations, but they can include capital expenditures, increased operating costs, fines, and lawsuits from affected communities. Human health impacts and financial consequences of poor air-quality management are likely to be exacerbated by the proximity of waste management facilities to communities. Active management of air pollutants and odors—through technological and process improvements—can therefore mitigate regulatory exposure and the associated future costs of compliance from increasingly stringent air-quality regulations, help companies secure and maintain permits, and protect their license to operate.

Accounting Metrics

IF0201-04. Air emissions of the following pollutants: NO_x (excluding N_2O), SO_x, non-methane volatile organic compounds (NMVOCs), and hazardous air pollutants (HAPs)

.19 The registrant shall disclose its emissions of air pollutants (in metric tons) that are released to the atmosphere as a result of its activities, including:

- Direct air emissions from point and non-point sources that include, but are not limited to, decomposition of organic material, combustion of waste, and transportation (i.e., marine, road, or rail).

.20 The registrant shall disclose emissions released to the atmosphere by emissions type. Substances include:

- Oxides of nitrogen (including NO and NO_2 and excluding N_2O) reported as NO_x.
- Oxides of sulfur (SO_2 and SO_3) reported as SO_x.
- Non-methane volatile organic compounds (NMVOCs), defined as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and methane, that participates in atmospheric photochemical reactions, except those designated by the U.S. EPA as having negligible photochemical reactivity.
    - Where regional and national definitions supersede EPA regulations, such as EC Directive 1999/13/EC and Schedule 1 of the Canadian Environmental Protection Act 1999, the registrant may refer to the relevant regulations on NMVOCs.
- Hazardous air pollutants (HAPs) are defined by the EPA as those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects, birth defects, or adverse environmental effects, and are listed here.

.21 This scope does not include CO_2, CH_4, and N_2O, which are disclosed in IF0201-01 as Scope 1 GHG emissions.

.22 Air emissions data shall be consolidated according to the approach with which the registrant consolidates its financial reporting data, which is aligned with the consolidation approach used for IF0201-01.

.23 The registrant should discuss the calculation methodology for its emissions disclosure, such as whether data are from Emissions Factors used in the EPA document AP-42, "Compilation of Air Pollutant Emission Factors," EPA Landfill Gas Emissions Model (LandGEM), engineering and mass-balance equations, or continuous emissions monitoring systems (CEMS).

IF0201-05. Number of facilities in or near areas of dense population

.24 Areas of dense population are defined as urbanized areas according to U.S. Census Bureau definitions contained in Federal Register, Vol. 76. No. 164 (August 24, 2011).

- Generally, these include urbanized areas with populations greater than 50,000.
- A list of urbanized areas based on census results from 2010 is available here.

.25 The scope of facilities includes landfills (both active and closed) and incinerators owned or operated by the registrant that are located in a census tract or block considered to be in an urbanized area or within 5 kilometers of an urbanized area.

.26 For facilities located outside of the U.S., the registrant shall use available census data to determine whether the facility is located in an urbanized area as defined by the U.S. Census Bureau.

- In the absence of available or accurate census data, the registrant should use international population density data available from the Columbia University/NASA Socioeconomic Data and Applications Center's (SEDAC) Gridded Population of the World (GPW), v3.

IF0201-06. Number of incidents of non-compliance associated with air emissions

.27 The registrant shall disclose the total number of instances of non-compliance associated with air emissions, including violations of a technology-based standard and exceedances of a quality-based standard.

.28 The scope of disclosure includes incidents governed by federal, state, and local statutory permits and regulations including, but not limited to, the Clean Air Act and the Resource Conservation and Recovery Act (RCRA) and other federal, state, or local air quality legislation on odor, ozone precursors, and non-methane organic compounds produced by landfills.

.29 The scope of disclosure includes incidents of non-compliance associated with odor.

.30 An incident of non-compliance shall be disclosed regardless of whether it resulted in an enforcement action (e.g., fine, warning letter, etc.).

.31 Violations, regardless of their measurement methodology or frequency, shall be disclosed. These include:

- For continuous emissions, limitations, standards, and prohibitions that are generally expressed as maximum daily, weekly, and monthly averages.
- For non-continuous emissions, limitations that are generally expressed in terms of frequency, total mass, maximum rate of discharge, and mass or concentrations of specified pollutants.
- False or inaccurate reporting.
- Failure to obtain permits.

Fleet Fuel Management

Description

Many companies in the Waste Management industry own and operate large vehicle fleets for waste collection and transfer. The fuel consumption of vehicle fleets is a significant industry expense, both in terms of operating costs and associated capital expenditures. Fossil fuel consumption can contribute to environmental impacts, including climate change and pollution. These environmental impacts have the potential to affect waste management companies through regulatory exposure and the competitiveness of new contract proposals. Hedging fuel purchases is a common tool used to manage fleet-fuel risks; however, more and more waste management companies are upgrading to more fuel-efficient fleets or switching to natural gas vehicles. A cleaner-burning fleet may also be seen as more favorable by communities living near waste management facilities with heavy traffic.

Accounting Metrics

IF0201-07. Fleet fuel consumed, percentage renewable

.32 The registrant shall disclose total fuel consumption by fleet vehicles as an aggregate figure in gigajoules or their multiples.

- The scope includes fuel consumed by vehicles owned or operated by the registrant.

.33 Fuel consumption shall be based on actual fuel consumed (i.e., not based on design parameters).

.34 Acceptable methods for calculating fuel consumption include adding fuel purchases, landfill gas, and fuel generation during the year to beginning inventory at the start of the year, less any fuel inventory at the end of the year, or tracking fuel consumption by vehicle or through expense reports.

.35 The registrant shall disclose renewable fuel consumption as a percentage of its total fuel consumption.

- Renewable fuel is defined, consistent with the EPA's Renewable Fuel Standard (40 CFR Section 80.1401), as a fuel that meets the following requirements:
  - Fuel that is produced from renewable biomass.
  - Fuel that is used to replace or reduce the quantity of fossil fuel present in a transportation fuel, heating oil, or jet fuel.
  - Fuel that has lifecycle greenhouse gas (GHG) emissions that are at least 20 percent less than baseline lifecycle GHG emissions, unless the fuel is exempt from this requirement pursuant to § 80.1403.
- Fuels that qualify for Renewable Identification Numbers (RINs) under the EPA Renewable Fuel Standard are included in the scope of renewable energy.

.36 In calculating energy consumption from fuels and biofuels, the registrant shall use higher heating values (HHV), also known as gross calorific values (GCV), which are directly measured or taken from the IPCC, the U.S. DOE, or the U.S. EIA.

.37 The registrant shall apply conversion factors consistently for all data reported under this disclosure, such as the use of HHVs for fuel usage (including biofuels).

IF0201-08. Percentage of alternative energy vehicles in fleet

.38 Alternative energy vehicles are defined by the Energy Policy Act and Natural Defense Authorization Act of 2008 as vehicles powered by biodiesel, denatured alcohol, electricity, hydrogen, methanol, mixtures containing up to 85 percent methanol or denatured ethanol, natural gas, and propane (liquefied petroleum gas). Alternative energy vehicles also include any vehicle achieving a significant reduction in petroleum consumption, advanced lean burn technology vehicles, fuel cell vehicles, and hybrid electric vehicles.

.39 The registrant shall disclose the percentage as the number of alternative energy vehicles in its fleet divided by the total number of vehicles in its fleet.

Management of Leachate & Hazardous Waste

Description

Companies operating landfills are required to manage and reduce risks of potential ecological impacts, including those caused by leachate and hazardous waste. Poor management of landfills and other disposal sites can lead to contamination of the soil, groundwater, and other nearby water bodies. To mitigate risks to the environment and the health of local communities, companies must effectively contain and manage leachate, as well as hazardous waste. Companies that are unable to manage these risks are likely to receive regulatory penalties, lose brand value, worsen future business prospects, and face lawsuits.

Accounting Metrics

IF0201-09. Total Toxic Release Inventory (TRI) releases, percentage released to water

.40 The registrant shall report its total toxic release inventory (TRI) in metric tons, where:

- A release is defined, consistent with 40 CFR 372.3, as any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including abandonment or discarding of barrels, containers, and other closed receptacles) of any toxic chemical, where:
  - A toxic chemical includes any chemical or chemical category listed in 40 CFR 372.65 or foreign equivalent, including at a minimum the "Short Chemical List" established by the Organization for Economic Co-operation and Development (OECD) through Guidance Document on Elements of a PRTR: Part I.

.41 The registrant shall calculate the percentage released to water as the amount, in metric tons, of TRI releases to water divided by the total amount of TRI releases

.42 The scope of disclosure is limited to those facilities owned or operated by the registrant that are covered under the reporting requirements of the EPA's TRI regulations, or foreign equivalent, where covered facilities must:

- Have 10 or more full time employees;
- Be regulated as an RCRA subtitle C Solid Waste Landfill or otherwise required to report its TRI per 40 CFR 372.23; and
- Manufacture, process, or otherwise use a toxic chemical in excess of an applicable threshold set forth in 40 CFR 372.

.43 The registrant shall calculate its total TRI and the percentage released to water consistent with the estimation methodologies employed to report its TRI information to the EPA.

.44 The registrant should discuss the calculation methodology for its emissions disclosure, such as if data are from estimates of waste treatment efficiencies, actual operating data, engineering calculations, mass balance calculations, etc.

IF0201-10. Number of corrective actions implemented for landfill releases

.45 The registrant shall disclose the number of corrective actions for landfill releases it has conducted at its facilities, where corrective actions are defined as control and cleanup of landfill releases of constituents detected at a statistically significant level above the established background level (as defined in Appendix I of 40 CFR Part 258) to achieve the groundwater protection standards in 40 CFR Part § 258.50 Subpart E—Ground-Water Monitoring and Corrective Action.

.46 The scope of disclosure includes corrective actions implemented for active landfills and closed landfills.

.47 The scope of disclosure includes corrective actions for Subtitle C landfills as defined in 40 CFR Part § 258.50 Subpart E—Ground-Water Monitoring and Corrective Action for municipal solid waste landfills and Subtitle D landfills as defined in 40 CFR Part § 264.100—Corrective Action Program.

IF0201-11. Number of incidents of non-compliance associated with environmental impacts

.48 The registrant shall disclose the total number of instances of non-compliance, including violations of a technology-based standard and exceedances of a quality-based standard.

.49 The scope of disclosure includes incidents associated with the environment, such as those related to enforcement of U.S. laws and regulations on ground and surface water contamination; hazardous waste transport, containment, or disposal; leachate treatment, transport, containment, or disposal; and public disclosure of contamination events, including violations of the U.S. Clean Water Act and the RCRA, among others.

.50 The scope of disclosure excludes instances of non-compliance associated with air pollution and odor, which are covered in IF0201-06.

.51 An incident of non-compliance shall be disclosed regardless of whether it resulted in an enforcement action (e.g., fine, warning letter, etc.).

.52 Violations, regardless of their measurement methodology or frequency, shall be disclosed. These include:

- For continuous emissions, limitations, standards, and prohibitions that are generally expressed as maximum daily, weekly, and monthly averages.
- For non-continuous emissions, limitations that are generally expressed in terms of frequency, total mass, maximum rate of discharge, and mass or concentrations of specified pollutants.
- False or inaccurate reporting.
- Failure to obtain permits.

Workforce Health & Safety

Description

The industry's hazardous working conditions mean that safety is critical to waste management operations, and accidents can have a great impact on workers. The Waste Management industry has higher fatality rates than most industries. Fatalities and other injuries are due primarily to transportation incidents, contact with objects and equipment, and exposure to harmful substances. Additionally, temporary workers may be at higher risk because of a lack of training or industry experience. Poor health and safety records can result in fines and penalties and an increase in regulatory compliance costs from more stringent oversight. Waste management companies must ensure that facilities and vehicles are operated with the highest safety standards and that the number of injuries and accidents is minimized through a strong safety culture. Companies that develop proactive safety management plans and training requirements for their employees and contractors, including conducting regular audits, are likely to improve safety records and minimize the chance of safety-related financial repercussions.

Accounting Metrics

IF0201-12. (1) Total recordable injury rate (TRIR), (2) fatality rate, and (3) near frequency rate (NMFR) for (a) direct employees and (b) contract employees

.53 Registrants whose workforce is entirely U.S.-based shall disclose their total recordable injury rate (TRIR) and fatality rate as calculated and reported in the Occupational Safety and Health Administration's (OSHA) Form 300.

- OSHA guidelines provide details on determining whether an event is a recordable occupational incident and definitions for exemptions for incidents that occur in the work environment but are not occupational.

.54 Registrants whose workforce includes non-U.S.-based employees shall calculate their TRIR and fatality rate according to the U.S. Bureau of Labor Statistics guidance and/or using the U.S. Bureau of Labor Statistics calculator.

.55 The registrant shall disclose its near miss frequency rate (NMFR) for all employees that do not operate company vehicles as their main job function, where a near miss is defined as an incident in which no property or environmental damage or personal injury occurred, but where damage or personal injury easily could have occurred but for a slight circumstantial shift.

- The scope of NMFR is limited to employees who do not operate company vehicles as their main job function. Employees who operate vehicles as their main job function include, but are not limited to, those classified under the following EEO-1 job titles:
  - Motor Vehicle Operators, All Other (EEO-1 code 53-3099)
  - Driver/Sales Workers (EEO-1 code 53-3031)

- Heavy and Tractor-Trailer Truck Drivers (EEO-1 code 53-3032)
- Light Truck or Delivery Services Drivers (EEO-1 code 53-3033)

- The registrant should refer to organizations such as the National Safety Council (NSC) for guidance on implementing near miss reporting.
- The registrant should disclose its process for classifying, identifying, and reporting near miss incidents.

.56 The registrant shall disclose its TRIR, fatality rate, and NMFR for each of the following employee categories:

- Direct employees, defined as those employees on the registrant's payroll, whether they are labor, executive, hourly, salary, part-time, seasonal, or migrant workers.
- Contract employees, defined as those who are not on the registrant's payroll, but who are supervised by the registrant on a day-to-day basis, including independent contractors and those employed by third parties (e.g., temp agencies, labor brokers, etc.).

.57 The scope includes all employees, domestic and foreign.

.58 Rates shall be calculated as: (statistic count / total hours worked)*200,000.

- The rate for seasonal and migrant employees is calculated as [(seasonal employees statistic count + migrant employees statistic count) / (seasonal employees total hours worked + migrant employees hours worked)]*200,000.

IF0201-13. Safety Measurement System BASIC percentiles for: (1) Unsafe Driving, (2) Hours-of-Service Compliance, (3) Driver Fitness, (4) Controlled Substances/Alcohol, (5) Vehicle Maintenance, and (6) Hazardous Materials Compliance

.59 The registrant shall disclose the percentile score calculated by the Federal Motor Carrier Safety Administration (FMCSA) Safety Measurement System (SMS) for the following Behavior Analysis and Safety Improvement Categories (BASICs):

- Unsafe Driving
- Hours-of-Service (HOS) Compliance
- Driver Fitness
- Controlled Substances/Alcohol
- Vehicle Maintenance
- Hazardous Materials (HM) Compliance

.60 The registrant shall disclose its percentile in each BASIC for the month ending the most recent fiscal year.

.61 The registrant may choose to discuss its percentile in relation to FMCSA's Intervention Thresholds, which are as follows:

BASIC category	Intervention Thresholds		
	Passenger	HM	General
Unsafe Driving, HOS Compliance	≥50%	≥60%	≥65%
Driver Fitness, Controlled Substances/Alcohol, Vehicle Maintenance	≥65%	≥75%	≥80%
HM Compliance	≥80%	≥80%	≥80%

IF0201-14. Number of vehicle accidents and incidents

.62 The registrant shall disclose the total aggregate number of vehicle accidents and incidents involving its direct and/or contracted employees during hours of employment, where:

- Direct employees are defined as those employees on the registrant's payroll, whether they are labor, executive, hourly, salary, part-time, seasonal, or migrant workers.
- Contract employees are defined as those who are not on the registrant's payroll, but who are supervised by the registrant on a day-to-day basis, including independent contractors and those employed by third parties (e.g., temp agencies, labor brokers, etc.).

.63 An accident is defined, consistent with 49 CFR 390.50, as an occurrence involving a commercial motor vehicle operating on a highway in interstate or intrastate commerce that results in:

- A fatality;
- Bodily injury to a person who, as a result of the injury, immediately receives medical treatment away from the scene of the accident; or
- One or more motor vehicles incurring disabling damage as a result of the accident, requiring the motor vehicle(s) to be transported away from the scene by a tow truck or other motor vehicle.

.64 An accident does not include:

- An occurrence involving only boarding and alighting from a stationary motor vehicle; or
- An occurrence involving only the loading or unloading of cargo.

.65 An incident is defined as any event involving a licensed motor vehicle while on business use that results in an OSHA-recordable injury, vehicle damage, or other property damage.

Labor Relations

Description

Organized labor plays an important role in the Waste Management industry. Many workers are covered under collective bargaining agreements that protect workers' rights and establish wages. High unionization rates leave waste management companies vulnerable to shutdowns and delays due to worker strikes if labor concerns are not addressed effectively. Proper management of and communication around issues such as worker pay and working conditions can prevent conflicts with workers that could lead to extended strikes, which can slow or shut down operations and create reputational risk. Waste management companies need a long-term perspective on managing workers, including their pay and benefits, in a way that protects workers' rights and enhances their productivity while ensuring the financial sustainability of a company's operations.

Accounting Metrics

IF0201-15. Percentage of active workforce covered under collective bargaining agreements

.66 The registrant shall indicate the percentage of employees in the active workforce who were covered under collective bargaining agreements during any part of the fiscal year, where:

- Active workforce is defined as the maximum number of unique employees employed at any time during the fiscal year.
- Collective bargaining agreements are defined, consistent with the U.S. Department of Labor (DOL) definition, as a mechanism or tool of negotiation by which a union has a collective interest in negotiations to the benefit of several employees.

IF0201-16. Number and duration of strikes and lockouts

.67 The registrant shall disclose the number of work stoppages and the total duration, in worker days idle, of work stoppages involving 1,000 or more workers and lasting one full shift or longer, consistent with the Bureau of Labor Statistics definition of "major work stoppages."

- Worker days idle is calculated as the product of days idle and number of workers involved.

.68 The scope of disclosure includes work stoppage due to disputes between labor and management, including strikes and lockouts.

Note to **IF0201-16**

.69 The registrant shall describe the reason for each work stoppage (as stated by labor), the impact on production, and any corrective actions taken as a result.

Recycling & Resource Recovery

Description

Recycling, reuse, composting, and incineration are general methods of diverting waste from landfills. Landfill diversion can mitigate some of the environmental impacts of landfills and reduce the need for landfill expansion. Additionally, waste management companies play a critical role in the circular economy by separating and recovering reusable materials such as paper, glass, metal, organic materials, and electronic waste. Pressures from new regulations, customer demand, and the increasing costs of extracting virgin materials are initiating the move toward a circular economy. As a result, waste management companies are facing a decrease in the amount of landfilled waste and an expanding recycling market. Cradle-to-cradle approaches initiated by other industries in the economy have the potential to break down if the recovery and recycling infrastructure or its technologies do not exist. Companies that provide recycling and other resource recovery services will be better able to address changing consumer needs, thereby positioning themselves for revenue growth while playing a critical role in reducing the environmental impact of the wider economy.

Accounting Metrics

IF0201-17. Amount of waste incinerated, percentage hazardous, percentage used for energy recovery

.70 The registrant shall disclose the amount, in metric tons, of waste incinerated at its owned or operated facilities, where:

- Incineration is defined, consistent with 40 CFR 240, as the controlled process in which combustible solid, liquid, or gaseous wastes are burned and changed into noncombustible gases.
- Waste includes both solid waste, as defined by 40 CFR 261.2, and hazardous waste, as defined by 40 CFR 261.3.

.71 The registrant shall calculate the percentage of hazardous waste incinerated as the total amount, in metric tons, of hazardous waste that was incinerated divided by the total amount of waste incinerated.

.72 The registrant shall calculate the percentage of waste incinerated that was used for energy recovery as the total amount, in metric tons, of waste incinerated for energy recovery at its owned or operated facilities divided by the total amount of waste incinerated, where:

- Energy recovery is defined, consistent with 40 CFR 60, as the process of recovering thermal energy from combustion for useful purposes including, but not limited to, steam generation or process heating.

.73 For the purpose of this disclosure, waste incinerated for energy recovery shall include recovery from both solid and hazardous wastes.

.74 The registrant should disclose the technologies (e.g., mass burn facilities, modular systems, refuse-derived fuel systems, etc.) and practices employed in the incineration of waste.

IF0201-18. Percentage of customers receiving (1) recycling and (2) composting services, by customer type

.75 The registrant shall disclose the percentage of its customers by customer category that receive recycling or composting services, where customer categories include:

- Municipal
- Commercial
- Industrial
- Residential, where scope of "residential" shall only include those residential customers that have direct contracts with the registrant. For the purposes of this disclosure, residential customers serviced through contracts with a municipality shall be considered in the "municipal" category.
- All other customers

.76 Recycling programs are considered to be those operations whereby the registrant collects, transports, or otherwise partakes in the process of recycling materials, where:

- The process of recycling includes that of solid and hazardous materials.
- The recycling of solid materials, consistent with the definition provided in 40 CFR 261.2, results in materials that are:
  - Used or reused as ingredients in an industrial process to make a product, provided the materials are not being reclaimed;
  - Used or reused as effective substitutes for commercial products; or
  - Returned to the original process from which they are generated without first being reclaimed or land-disposed. The material must be returned as a substitute for feedstock materials. In cases where the original process to which the material is returned is a secondary process, the materials must be managed such that there is no placement on the land.
- The recycling of hazardous materials, consistent with the definition provided in 40 CFR 240.43, results in materials that:
  - Contribute valuable ingredients to a product or intermediate;
  - Replace a catalyst or carrier in the recycling process;
  - Are the source of a valuable constituent recovered in the recycling process; or
  - Are used as an effective substitute for a commercial product.

.77 For the purposes of this disclosure, waste to energy (WTE) shall be included in the scope of recycled material. WTE includes the conversion of non-recyclable waste materials into useable heat, electricity, or fuel through a variety of processes, including combustion, gasification, pyrolization, anaerobic digestion, and landfill gas (LFG) recovery.

.78 The registrant should discuss the types of recycling it offers, such as single-stream and multi-stream services, including the number of customers served by each.

.79 The registrant shall disclose the number of customers served through its composting programs.

.80 Compost is defined by the U.S. Compost Council as the product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.

.81 Compost is defined by applicable state laws where the registrant operates.

.82 Natural decay of organic solid waste under uncontrolled conditions is not included in the scope of composting.

IF0201-19. Amount of material (1) recycled and (2) composted

.83 The registrant shall disclose the amount, in metric tons, of material that it collected for recycling.

.84 Material collected for recycling includes both solid materials, as defined according to 40 CFR 241.2, and hazardous materials, defined according to 40 CFR 260.10.

.85 Recycled solid materials, consistent with the definition provided in 40 CFR 261.2, include those materials that are:

- Used or reused as ingredients in an industrial process to make a product, provided the materials are not being reclaimed;
- Used or reused as effective substitutes for commercial products;
- Returned to the original process from which they are generated without first being reclaimed or land-disposed. The material must be returned as a substitute for feedstock materials. In cases where the original process to which the material is returned is a secondary process, the materials must be managed such that there is no placement on the land; or
- Used in a manner that constitutes disposal or used to produce products that are applied to the land; burned for energy recovery, used to produce a fuel, or contained in fuels; or accumulated speculatively.

.86 Recycled hazardous materials, consistent with the definition provided in 40 CFR 240.43, include those materials that:

- Contribute valuable ingredients to a product or intermediate;

- Replace a catalyst or carrier in the recycling process;
- Are the source of a valuable constituent recovered in the recycling process; or
- Are used as an effective substitute for a commercial product.

.87 For the purposes of this disclosure, WTE shall be included in the scope of recycled material. WTE includes the conversion of non-recyclable waste materials into useable heat, electricity, or fuel through a variety of processes, including combustion, gasification, pyrolization, anaerobic digestion, and LFG recovery.

.88 The registrant shall disclose the amount, in metric tons, of material that it composted.

.89 Compost is defined by the U.S. Compost Council as the product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.

.90 Compost is defined by applicable state laws where the registrant operates.

.91 Natural decay of organic solid waste under uncontrolled conditions is not included in the scope of composting.

IF0201-20. Amount of electronic waste collected, percentage recovered through recycling

.92 The registrant shall disclose the amount, in metric tons, of electronic waste collected, where:

- Electronic waste includes waste from electronic products such as computers, televisions, phones, stereos, copiers, and fax machines, among others.

.93 The registrant shall calculate the percentage of materials recovered through recycling as the amount, in metric tons, of materials recovered from electronic waste divided by the total amount of electronic waste collected.

.94 Recycled materials, consistent with the definition provided in 40 CFR 261.2, include those materials that are:

- Used or reused as ingredients in an industrial process to make a product, provided the materials are not being reclaimed;
- Used or reused as effective substitutes for commercial products;
- Returned to the original process from which they are generated without first being reclaimed or land-disposed. The material must be returned as a substitute for feedstock materials. In cases where the original process to which the material is returned is a secondary process, the materials must be managed such that there is no placement on the land; or
- Used in a manner that constitutes disposal or used to produce products that are applied to the land; burned for energy recovery, used to produce a fuel, or contained in fuels; or accumulated speculatively.

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SUSTAINABILITY ACCOUNTING STANDARD
INFRASTRUCTURE SECTOR

ENGINEERING & CONSTRUCTION SERVICES

Sustainability Accounting Standard

Sustainable Industry Classification System™ (SICS™) #IF0301

Prepared by the
Sustainability Accounting Standards Board®

March 2016
Provisional Standard

ENGINEERING & CONSTRUCTION SERVICES

Sustainability Accounting Standard

About SASB

The Sustainability Accounting Standards Board (SASB) provides sustainability accounting standards for use by publicly-listed corporations in the U.S. in disclosing material sustainability information for the benefit of investors and the public. SASB standards are designed for disclosure in mandatory filings to the Securities and Exchange Commission (SEC), such as the Form 10-K and 20-F. SASB is an independent 501(c)3 non-profit organization. Through 2016, SASB is developing standards for 79 industries in 10 sectors.

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INTRODUCTION

Purpose & Structure

This document contains the SASB Sustainability Accounting Standard (SASB Standard) for the Engineering & Construction Services industry.

SASB Sustainability Accounting Standards are comprised of **(1) disclosure guidance and (2) accounting standards on sustainability topics** for use by U.S. and foreign public companies in their annual filings (Form 10-K or 20-F) with the U.S. Securities and Exchange Commission (SEC). To the extent relevant, SASB Standards may also be applicable to other periodic mandatory filings with the SEC, such as the Form 10-Q, Form S-1, and Form 8-K.

SASB Standards identify sustainability topics at an industry level, which may constitute material information—depending on a company's specific operating context—for a company within that industry. SASB Standards are intended to provide guidance to company management, which is ultimately responsible for determining which information is material and should therefore be included in its Form 10-K or 20-F and other periodic SEC filings.

SASB Standards provide companies with standardized sustainability metrics designed to communicate performance on industry level sustainability topics. When making disclosure on sustainability topics, companies can use SASB Standards to help ensure that disclosure is standardized and therefore decision-useful, relevant, comparable, and complete.

SASB Standards are intended to constitute "suitable criteria" as defined by AT 101.23 -. 32[1] and referenced in AT 701[2], as having the following attributes:

- *Objectivity*—Criteria should be free from bias.
- *Measurability*—Criteria should permit reasonably consistent measurements, qualitative or quantitative, of subject matter.
- *Completeness*—Criteria should be sufficiently complete so that those relevant factors that would alter a conclusion about subject matter are not omitted.
- *Relevance*—Criteria should be relevant to the subject matter.

Industry Description

The Engineering & Construction Services industry provides design, consulting, contracting, construction, engineering, and other related services that support various building and infrastructure projects. The industry is made up of four major segments: Infrastructure Construction, Non-Residential Building Construction, Engineering Services, and Building Sub-contractors and Construction-related Professional Services. The Infrastructure Construction segment includes companies that design and/or build infrastructure projects such as power plants, dams, oil and gas pipelines, refineries, highways, bridges, tunnels, railways, ports, airports, waste treatment plants, water networks, and stadiums. The Non-Residential Building Construction segment includes companies that design

[1] http://pcaobus.org/Standards/Attestation/Pages/AT101.aspx#at_101_fn7
[2] http://pcaobus.org/Standards/Attestation/Pages/AT701.aspx

and/or build industrial and commercial facilities such as factories, warehouses, data centers, offices, hotels, hospitals, universities, and retail spaces like malls. The Engineering Services segment includes companies that provide specialized architectural and engineering services such as design and development of feasibility studies for many of the project types listed above. Finally, the Building Sub-contractors and other Construction-related Professional Services segment includes smaller companies that provide ancillary services such as carpentry, electrical, plumbing, painting, waterproofing, landscaping, interior design, and building inspection. The industry's customers include infrastructure owners and developers in the public and private sectors. Large companies in this industry operate and generate revenue globally and typically specialize in multiple segments.

Guidance for Disclosure of Sustainability Topics in SEC Filings

1. Industry-Level Sustainability Topics

For the Engineering & Construction Services industry, SASB has identified the following sustainability disclosure topics:

- Environmental Impacts of Project Development
- Structural Integrity & Safety
- Workforce Health & Safety
- Climate Impacts of Business Mix
- Lifecycle Impacts of Buildings & Infrastructure
- Business Ethics & Bidding Integrity

2. Company-Level Determination and Disclosure of Material Sustainability Topics

Sustainability disclosures are governed by the same laws and regulations that govern disclosures by securities issuers generally. According to the U.S. Supreme Court, a fact is material if, in the event such fact is omitted from a particular disclosure, there is "a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the 'total mix' of the information made available."[3,4]

SASB has attempted to identify those sustainability topics that are reasonably likely to have a material effect on the financial condition or operating performance of companies within each SICS industry. SASB recognizes, however, that each company is ultimately responsible for determining what information should be disclosed within the context of Regulation S-K and other guidance.

Regulation S-K, which sets forth certain disclosure requirements associated with Form 10-K and other SEC filings, requires companies, among other things, to describe in the Management's Discussion and Analysis of Financial Condition and Results of Operations (MD&A) section of Form 10-K "any known trends or uncertainties that have had or that the registrant reasonably expects will have a material favorable or unfavorable impact on net sales or revenues or income from continuing operations. If the registrant knows of events that will cause a material change

[3] TSC Industries v. Northway, Inc., 426 U.S. 438 (1976).
[4] C.F.R. 229.303(Item 303)(a)(3)(ii).

in the relationship between costs and revenues (such as known future increases in costs of labor or materials or price increases or inventory adjustments), the change in the relationship shall be disclosed."

Furthermore, Instructions to Item 303 state that the MD&A "shall focus specifically on material events and uncertainties known to management that would cause reported financial information not to be necessarily indicative of future operating results or of future financial condition."[2]

The SEC has provided guidance for companies to use in determining whether a trend or uncertainty should be disclosed. The two-part assessment prescribed by the SEC, based on probability and magnitude, can be applied to the topics included within this standard:

- First, a company is not required to make disclosure about a known trend or uncertainty if its management determines that such trend or uncertainty is not reasonably likely to occur.

- Second, if a company's management cannot make a reasonable determination of the likelihood of an event or uncertainty, then disclosure is required unless management determines that a material effect on the registrant's financial condition or results of operation is not reasonably likely to occur.

3. Sustainability Accounting Standard Disclosures in Form 10-K

a. Management's Discussion and Analysis

For purposes of comparability and usability, companies should consider making disclosure on sustainability topics in the MD&A, in a sub-section titled "**Sustainability Accounting Standards Disclosures**."[5]

b. Other Relevant Sections of Form 10-K

In addition to the MD&A section, it may be relevant for companies to disclose sustainability information in other sections of Form 10-K, including, but not limited to:

- **Description of business**—Item 101 of Regulation S-K requires a company to provide a description of its business and its subsidiaries. Item 101(c)(1)(xii) expressly requires disclosure regarding certain costs of complying with environmental laws:

Appropriate disclosure also shall be made as to the material effects that compliance with Federal, State and local provisions which have been enacted or adopted regulating the discharge of materials into the environment, or otherwise relating to the protection of the environment, may have upon the capital expenditures, earnings and competitive position of the registrant and its subsidiaries.

- **Legal proceedings**—Item 103 of Regulation S-K requires companies to describe briefly any material pending or contemplated legal proceedings. Instructions to Item 103 provide specific disclosure requirements for administrative or judicial proceedings arising from laws and regulations that target

[5] SEC [Release Nos. 33-8056; 34-45321; FR-61] Commission Statement about Management's Discussion and Analysis of Financial Condition and Results of Operations: "We also want to remind registrants that disclosure must be both useful and understandable. That is, management should provide the most relevant information and provide it using language and formats that investors can be expected to understand. Registrants should be aware also that investors will often find information relating to a particular matter more meaningful if it is disclosed in a single location, rather than presented in a fragmented manner throughout the filing."

discharge of materials into the environment or that are primarily for the purpose of protecting the environment.

- **Risk factors**—Item 503(c) of Regulation S-K requires filing companies to provide a discussion of the most significant factors that make an investment in the registrant speculative or risky, clearly stating the risk and specifying how a particular risk affects the particular filing company.

c. Rule 12b-20

Securities Act Rule 408 and Exchange Act Rule 12b-20 require a registrant to disclose, in addition to the information expressly required by law or regulation, "such further material information, if any, as may be necessary to make the required statements, in light of the circumstances under which they are made, not misleading."

More detailed guidance on disclosure of material sustainability topics can be found in the **SASB Conceptual Framework**, available for download via http://www.sasb.org/approach/conceptual-framework/.

Guidance on Accounting for Sustainability Topics

For each sustainability topic included in the Engineering & Construction Services industry Sustainability Accounting Standard, SASB identifies accounting metrics.

SASB recommends that each company consider using these sustainability accounting metrics when preparing disclosures on the sustainability topics identified herein;

As appropriate—and consistent with Rule 12b-20[6]—when disclosing a sustainability topic identified by this Standard, companies should consider including a narrative description of any material factors necessary to ensure completeness, accuracy, and comparability of the data reported. Where not addressed by the specific accounting metrics, but relevant, the registrant should discuss the following, related to the topic:

- The registrant's **strategic approach** to managing performance on material sustainability issues;
- The registrant's **relative performance** with respect to its peers;
- The **degree of control** the registrant has;
- Any **measures the registrant has undertaken** or **plans to undertake** to improve performance; and
- Data for the registrant's **last three completed fiscal years** (when available).

SASB recommends that registrants use SASB Standards specific to their primary industry as identified in the Sustainable Industry Classification System (SICS™). If a registrant generates significant revenue from multiple

[6] SEC Rule 12b-20: "In addition to the information expressly required to be included in a statement or report, there shall be added such further material information, if any, as may be necessary to make the required statements, in the light of the circumstances under which they are made, not misleading."

industries, SASB recommends that it also consider sustainability topics that SASB has identified for those industries and disclose the associated SASB accounting metrics.

In disclosing to SASB Standards, it is expected that registrants disclose with the same level of rigor, accuracy, and responsibility as they apply to all other information contained in their SEC filings.

Users of the SASB Standards

The SASB Standards are intended to provide guidance for companies that engage in public offerings of securities registered under the Securities Act of 1933 (the Securities Act) and those that issue securities registered under the Securities Exchange Act of 1934 (the Exchange Act),[7] for use in SEC filings, including, without limitation, annual reports on Form 10-K (Form 20-F for foreign issuers), quarterly reports on Form 10-Q, current reports on Form 8-K, and registration statements on Forms S-1 and S-3. Disclosure with respect to the SASB Standards is not required or endorsed by the SEC or other entities governing financial reporting, such as FASB, GASB, or IASB.

Scope of Disclosure

Unless otherwise specified, SASB recommends:

- That a registrant disclose on sustainability issues and metrics for itself and for entities that are consolidated for financial reporting purposes as defined by accounting principles generally accepted in the United States for consistency with other accompanying information within SEC filings;[8]
- That for consolidated entities, disclosures be made, and accounting metrics calculated, for the whole entity, regardless of the size of the minority interest; and
- That information from unconsolidated entities not be included in the computation of SASB accounting metrics. A registrant should disclose, however, information about unconsolidated entities to the extent that the registrant considers the information necessary for investors to understand the effect of sustainability topics on the company's financial condition or operating performance (typically, this disclosure would be limited to risks and opportunities associated with these entities).

Reporting Format

Use of Financial Data

In instances where accounting metrics, activity metrics, and technical protocols in this standard incorporate financial data (e.g., revenues, cost of sales, expenses recorded and disclosed for fines, etc.), such financial data shall be prepared in accordance with the accounting principles generally accepted in the United States of America ("US

[7] Registration under the Securities Exchange Act of 1934 is required (1) for securities to be listed on a national securities exchange such as the New York Stock Exchange, the NYSE Amex, and the NASDAQ Stock Market or (2) if (A) the securities are equity securities and are held by more than 2,000 persons (or 500 persons who are not accredited investors) and (B) the company has more than $10 million in assets.
[8] See US GAAP consolidation rules (Section 810).

GAAP") and be consistent with the corresponding financial data reported within the registrant's SEC filings. Should accounting metrics, activity metrics and technical protocols in this standard incorporate disclosure of financial data that is not prepared in accordance with US GAAP, the registrant shall disclose such information in accordance with the SEC Regulation G.

Activity Metrics and Normalization

SASB recognizes that normalizing accounting metrics is important for the analysis of SASB disclosures.

SASB recommends that a registrant disclose any basic business data that may assist in the accurate evaluation and comparability of disclosure, to the extent that they are not already disclosed in the Form 10-K (e.g., revenue, EBITDA, etc.).

Such data—termed "activity metrics"—may include high-level business data such as total number of employees, quantity of products produced or services provided, number of facilities, or number of customers. It may also include industry-specific data such as plant capacity utilization (e.g., for specialty chemical companies), number of transactions (e.g., for Internet media and services companies), hospital bed days (e.g., for health care delivery companies), or proven and probable reserves (e.g., for oil and gas exploration and production companies).

Activity metrics disclosed should:

- Convey contextual information that would not otherwise be apparent from SASB accounting metrics.
- Be deemed generally useful for an investor relying on SASB accounting metrics in performing their own calculations and creating their own ratios.
- Be explained and consistently disclosed from period to period to the extent they continue to be relevant. However, a decision to make a voluntary disclosure in one period does not obligate a continuation of that disclosure if it is no longer relevant or if a better metric becomes available.[9]

Where relevant, SASB recommends specific activity metrics that—at a minimum—should accompany SASB accounting metric disclosures.

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Number of active projects[10]	Quantitative	Number	IF0301-A
Number of commissioned projects[11]	Quantitative	Number	IF0301-B
Total backlog[12]	Quantitative	U.S. dollars ($)	IF0301-C

[9] *Improving Business Reporting: Insights into Enhancing Voluntary Disclosures*, FASB Business Reporting Research Project, January 29, 2001.
[10] Note to **IF0301-A**—Active projects are defined as buildings and infrastructure construction projects currently under development by the registrant, including, but not limited to, the design and construction stages. Active projects exclude projects that were commissioned during the fiscal year.
[11] Note to **IF0301-B**—Commissioned projects are defined as projects that were completed and deemed ready for service during the fiscal year. The scope of commissioned projects shall only include construction projects.
[12] Note to **IF0301-C**—Backlog is defined as the value of projects not completed, or is defined by the registrant, consistent with existing public disclosure of backlog. The scope includes all backlog (domestic, international, public, and private) for construction projects and all

Units of Measure

Unless specified, disclosures should be reported in International System of Units (SI units).

Uncertainty

SASB recognizes that there may be inherent uncertainty when disclosing certain sustainability data and information. This may be related to variables such as the reliance on data from third-party reporting systems and technologies, or the unpredictable nature of climate events. Where uncertainty around a particular disclosure exists, SASB recommends that the registrant should consider discussing its nature and likelihood.

Estimates

SASB recognizes that scientifically based estimates, such as the reliance on certain conversion factors or the exclusion of *de minimis* values, may occur for certain quantitative disclosures. Where appropriate, SASB does not discourage the use of such estimates. When using an estimate for a particular disclosure, SASB expects that the registrant discuss its nature and substantiate its basis.

Timing

Unless otherwise specified, disclosure shall be for the registrant's fiscal year.

Limitations

There is no guarantee that SASB Standards address all sustainability impacts or opportunities associated with a sector, industry, or company, and therefore, a company must determine for itself the topics—sustainability-related or otherwise—that warrant discussion in its SEC filings.

Disclosure under SASB Standards is voluntary. It is not intended to replace any legal or regulatory requirements that may be applicable to user operations. Where such laws or regulations address legal or regulatory topics, disclosure under SASB Standards is not meant to supersede those requirements. Disclosure according to SASB Standards shall not be construed as demonstration of compliance with any law, regulation, or other requirement.

SASB Standards are intended to be aligned with the principles of materiality enforced by the SEC. However, SASB is not affiliated with or endorsed by the SEC or other entities governing financial reporting, such as FASB, GASB, or IASB.

Forward-looking Statements

Disclosures on sustainability topics can involve discussion of future trends and uncertainties related to the registrant's operations and financial condition, including those influenced by external variables (e.g., environmental, social, regulatory, and political). Companies making such disclosures should familiarize themselves with the safe

other projects undertaken by the company including engineering, architecture and design, installation, planning, consulting, and repair and maintenance, among others.

harbor provisions of Section 27A of the Securities Act and Section 21E of the Exchange Act, which preclude civil liability for material misstatements or omissions in such statements if the registrant takes certain steps, including, among other things, identifying the disclosure as "forward-looking" and accompanying such disclosure with "meaningful cautionary statements identifying important factors that could cause actual results to differ materially from those in the forward-looking statements."

The following sections contain the disclosure guidance associated with each accounting metric such as guidance on definitions, scope, accounting, compilation, and presentation.

The term "shall" is used throughout this document to indicate those elements that reflect requirements of the Standard. The terms "should" and "may" are used to indicate guidance, which, although not required, provides a recommended means of disclosure.

Table 1. Sustainability Disclosure Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Environmental Impacts of Project Development	Number of incidents of non-compliance with environmental permits, standards, and regulations	Quantitative	Number	IF0301-01
	Discussion of processes to assess and manage environmental risks associated with project design, siting, and construction	Discussion and Analysis	n/a	IF0301-02
Structural Integrity & Safety	Amount of defect- and safety-related rework expenses	Quantitative	U.S. Dollars ($)	IF0301-03
	Amount of legal and regulatory fines and settlements associated with defect- and safety-related incidents[13]	Quantitative	U.S. Dollars ($)	IF0301-04
Workforce Health & Safety	(1) Total recordable injury rate (TRIR) and (2) fatality rate for (a) direct employees and (b) contract employees	Quantitative	Rate	IF0301-05
Climate Impacts of Business Mix	Backlog for (1) hydrocarbon-related projects and (2) renewable energy projects	Quantitative	U.S. Dollars ($)	IF0301-06
	Amount of backlog cancellations associated with hydrocarbon-related projects	Quantitative	U.S. Dollars ($)	IF0301-07
	Backlog for non-energy projects associated with climate change mitigation	Quantitative	U.S. Dollars ($)	IF0301-08
Lifecycle Impacts of Buildings & Infrastructure	Number of (1) commissioned projects certified to a multi-attribute sustainability standard and (2) active projects seeking such certification	Quantitative	Number	IF0301-09
	Description of process to incorporate operational-phase energy and water efficiency considerations into project planning and design	Discussion and Analysis	n/a	IF0301-10

[13] Note to **IF0301-04**—Disclosure shall include a description of fines and settlements and corrective actions implemented in response to events.

Table 1. Sustainability Disclosure Topics & Accounting Metrics (cont.)

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Business Ethics & Bidding Integrity	(1) Number of active projects and (2) backlog in countries that have the 20 lowest rankings in Transparency International's Corruption Perception Index[14]	Quantitative	Number, U.S. Dollars ($)	IF0301-11
	Amount of legal and regulatory fines and settlements associated with charges of (1) bribery or corruption and (2) anti-competitive practices[15]	Quantitative	U.S. Dollars ($)	IF0301-12
	Description of policies and practices for prevention of (1) corruption and bribery and (2) anti-competitive behavior in the project bidding processes	Discussion and Analysis	n/a	IF0301-13

[14] Note to **IF0301-11**—The registrant shall provide a brief description of its approach to managing ethical risks specific to the countries referenced above where the registrant has active projects and/or backlog.
[15] Note to **IF0301-12**—Disclosure shall include a description of fines and settlements and corrective actions implemented in response to events.

Environmental Impacts of Project Development

Description

Infrastructure construction projects help improve economic and social development; however, they can also pose risks to the local environment and surrounding communities. Industry activities can disrupt local ecosystems through biodiversity impacts, emissions into the air, water discharges, natural resource consumption, waste generation, and the use of hazardous chemicals. In particular, construction companies perform clearing, grading, and excavation activities and may generate harmful waste during project construction. Effectively assessing environmental impacts prior to construction may help mitigate unforeseen issues that can raise operational and capital costs. In some cases, environmental concerns and/or local community pushback can result in project delays and, in extreme cases, project cancellations, which may impact a company's profitability and growth opportunities. A failure to comply with environmental regulations during construction can result in costly fines and damage a company's reputation. Rigorous environmental impact assessments can provide an understanding of a project's potential environmental impacts and the mitigation activities that are necessary before it begins. Likewise, proper management of environmental risks during project construction can reduce regulatory oversight and/or community pushback. By assessing environmental considerations up front, as well as continuing to evaluate them during project development, construction and engineering companies may be better prepared to mitigate the potential environmental issues and possible financial impacts that may occur.

Accounting Metrics

IF0301-01. Number of incidents of non-compliance with environmental permits, standards, and regulations

.01 The registrant shall disclose the total number of instances of non-compliance associated with the environment, including, but not limited to, violations of permits or regulations associated with waste, air quality and/or emissions, water discharges, water withdrawal exceedances, effluent limit exceedances (such as waste load allocation), violation of wastewater pretreatment requirements, oil or hazardous substance spills, land use, and endangered species, among others.

.02 The scope of disclosure includes incidents governed by federal, state, and local statutory permits and regulations.

.03 The scope includes incidents of non-compliance received by the registrant and by subcontractors under the registrant's direct supervision.

.04 An incident of non-compliance shall be disclosed regardless of whether it resulted in an enforcement action (e.g., fine, warning letter, etc.).

.05 An incident of non-compliance, regardless of the measurement methodology or frequency, shall be disclosed. These include violations for one-time violations, continuous discharges, and non-continuous discharges.

IF0301-02. Discussion of processes to assess and manage environmental risks associated with project design, siting, and construction

.06 The registrant shall describe the processes it employs to assess and manage the environmental risks associated with project siting, design and construction, where:

- The scope includes project stages associated with siting, design and construction that the registrant is officially involved with through contractual responsibility.
    - The scope of project stages associated with siting, design, and construction includes, but is not limited to, feasibility studies, proposals, design and planning, subcontractor procurement, and construction.

.07 The registrant shall describe the due diligence practices it employs to assess the environmental risks of projects, where relevant due diligence practices include environmental impact assessments and stakeholder engagement practices.

- Relevant items to discuss include practices to assess the baseline environmental considerations of the project site, feasible environmentally preferable alternatives for the project, local legal requirements, the protection of biodiversity, use of renewable natural resources, use of hazardous substances, and efficient production, delivery and use of energy, among others.

.08 The registrant should discuss its approach to categorizing the severity of environmental risk for its projects, including how it determines if a project has heightened environmental risk.

.09 The registrant shall describe the operational practices it employs to the minimize environmental impacts during project siting, design, and construction, which may include, but are not limited to, waste management, reducing biodiversity impacts, emissions to air, discharges to water, natural resource consumption, and hazardous chemical usage.

.10 The registrant shall discuss its approach to operating in compliance with all applicable environmental regulations.

- Relevant items to discuss include employee training on relevant regulations and cleanup procedures, quality control processes on project sites, internal mechanisms for reporting and following up on environmental incidents, and maintenance and reporting of accurate data, among others.

.11 The registrant shall discuss its approach to managing projects that have heightened environmental and/or social due diligence requirements or are expected to have significant adverse environmental and/or social impacts, including additional measures or policies it employs.

- An example of a project type that has heightened environmental and/or social impacts are "Category A" projects categorized by the International Finance Corporation (IFC).

.12 The registrant shall discuss the use of codes, guidelines, and standards to assess and minimize environmental impacts of project siting, design, and construction, where applicable. Relevant codes, guidelines, and standards may include, but are not limited to:

- The Equator Principles;
- United Nations Development Programme's Performance Standards on Environmental and Social Sustainability;
- United Nations Global Compact's Environmental Principles;
- International Finance Corporation's Environmental and Social Performance Standards and Guidance Notes;
- Institute for Sustainable Infrastructure's (ISI) Envision® rating system;
- International Organization for Standardization (ISO) environmental standards;
- U.S. Green Building Council's LEED® certification; and
- BREEAM.

.13 Where applicable and relevant, the registrant shall describe differences between policies and practices for its different operating regions, project types, business segments, etc.

Structural Integrity & Safety

Description

Whether providing engineering, design, architectural, consulting, inspection, construction, or maintenance services, companies in this industry have a professional responsibility to ensure the safety and integrity of their work. Errors and inadequate quality in building and infrastructure project design and construction can cause significant personal injury, loss of property value, and economic harm. Companies that perform poorly on structural integrity and safety can therefore face potentially high costs due to redesign and/or repair work and legal liabilities, as well as reputational damage that could hurt growth prospects. Moreover, building and infrastructure project design and construction must increasingly contemplate potential climate change impacts, which may affect the structural integrity of projects and the safety of the general public. Compliance with minimum applicable codes and standards may not be sufficient in certain circumstances, especially if the frequency and severity of climate-change-related events increases as expected. Meeting or setting new industry standards for quality and establishing internal control procedures to address potential design issues, including those resulting from climate risks, are practices that can help companies reduce these risks.

Accounting Metrics

IF0301-03. Amount of defect- and safety-related rework expenses

.14 The registrant shall disclose the total amount of rework costs incurred, in U.S. dollars, including costs associated with labor, materials, design, equipment, and subcontractors, where:

- Rework is defined, consistent with the Construction Industry Institute's definition, as activities in the field that have to be done more than once in the field or activities that remove work previously installed as part of the project.
- For the purposes of this disclosure, the scope of rework costs excludes costs resulting from client- or project-owner-driven modifications including, but not limited to, change orders, revisions to scope, or revisions to design.

.15 The registrant should discuss projects with significant rework costs relative to actual or projected total project costs. Relevant context to provide may include, but is not limited to:

- Root causes of rework;
- Corrective actions implemented; and
- Financial impacts to company.

IF0301-04. Amount of legal and regulatory fines and settlements associated with defect- and safety-related incidents

.16 The registrant shall disclose the amount in U.S. dollars (excluding legal fees) of all fines or settlements associated with defect- and safety-related incidents and allegations.

.17 Disclosure shall include civil actions (e.g., civil judgment, settlements, or regulatory penalties) and criminal actions (e.g., criminal judgment, penalties, or restitutions) taken by any entity (government, businesses, or individuals).

.18 The registrant should discuss incidents that resulted in significant fines and settlements. Relevant context to provide may include, but is not limited to:

- Root causes of the incident;
- Corrective actions implemented; and
- Financial impacts to company.

Note to **IF0301-04**

.19 The registrant shall briefly describe the nature (e.g., guilty plea, deferred agreement, non-prosecution agreement) and context (e.g., negligence) of fines and settlements.

.20 The registrant shall describe any corrective actions it has implemented as a result of each incident. This may include, but is not limited to, specific changes in operations such as management, processes, products, services, business partners, training, technology, or processes for internal investigations for malpractice or negligence.

Workforce Health & Safety

Description

Construction, maintenance, and repair services and other on-site activities require a substantial amount of manual labor. Compared with those in other industries, the Engineering & Construction Services industry has some of the highest fatality rates, as powered-haulage and heavy machinery accidents, fall accidents, exposure to hazardous chemicals, and other unique and potentially dangerous situations can lead to worker and contractor fatalities or injuries. Additionally, temporary workers may be at a higher risk due to lack of training or industry experience. Failing to protect worker health and safety can result in fines and penalties; very serious incidents can lead to acute, one-time extraordinary expenses and contingent liabilities from legal and/or regulatory actions. In addition, health and safety incidents can result in project delays and downtime that raise projects costs and lower profitability. Companies that seek to properly train both permanent and temporary employees and build a strong safety culture could reduce their risk profile while potentially gaining a competitive advantage in new project bids and proposals as a result of strong workforce health and safety track records.

Accounting Metrics

IF0301-05. (1) Total recordable injury rate (TRIR) and (2) fatality rate for (a) direct employees and (b) contract employees

.21 Registrants whose workforce is entirely U.S.-based shall disclose their total recordable injury rate (TRIR) and fatality rate, as calculated and reported in Occupational Safety and Health Administration (OSHA) Form 300.

- OSHA guidelines provide details for the determination of whether an event is a recordable occupational incident as well as definitions for exemptions for incidents that occur in the work environment, but are not occupational.

.22 Registrants whose workforce includes non-U.S.-based employees shall calculate their TRIR according to the U.S. Bureau of Labor Statistics guidance and/or using the U.S. Bureau of Labor Statistics calculator.

.23 The registrant shall disclose its TRIR separately for its direct employees and contract employees, where:

- Direct employees are all employees on the registrant's payroll, whether they are labor, executive, hourly, salary, part-time, seasonal, or migrant workers.

- Contract employees are those who are not on the registrant's payroll, but who are supervised by the registrant on a day-to-day basis, including independent contractors and those employed by third parties (e.g., temp agencies, labor brokers, etc.).

.24 The scope includes domestic and foreign employees.

.25 The scope of excludes corporate employees.

.26 Rates shall be calculated as: (statistic count / total hours worked) * 200,000.

Climate Impacts of Business Mix

Description

The Engineering & Construction Services industry works with clients in industries that are exposed to potentially disruptive climate regulation. Construction projects may have significant positive or negative direct and indirect impacts on GHG emissions after finalization and when they are in their use-phase. Projects that are likely to contribute to GHG emissions include those in the energy, oil and gas, and other extractive industries, as well as those that are likely to mitigate emissions, such as mass transit systems, carbon capture and storage, and renewable and alternative energy projects. Several companies in the industry generate a substantial share of revenues and profits from clients in carbon-intensive industries and whose capital expenditures may be at risk from evolving climate regulations. Downside risks may manifest through project delays, cancellations, and diminished long-term revenue-growth opportunities. On the other hand, companies that specialize in infrastructure projects for clients in industries that help with GHG mitigation could develop competitive advantages as they continue to focus on these growing markets. As the industry and its customers continue to operate within an uncertain business environment and face increasing environmental and regulatory requirements, assessing and communicating the risks and opportunities associated with climate change on a company's backlog and growth opportunities can be helpful for investors in assessing the overall impact of climate change on the business.

Accounting Metrics

IF0301-06. Backlog for (1) hydrocarbon-related projects and (2) renewable energy projects

.27 The registrant shall disclose the amount of backlog, in U.S. dollars, associated with hydrocarbon-related projects.

- Backlog is defined by the registrant, consistent with existing public disclosure of order backlog.
- The registrant shall exclude from its calculation any amount of an order backlog cancellation that re-enters order backlog during the same fiscal year as a result of a project owner's successful re-planning of the project.
- The scope of hydrocarbon-related projects includes any type of project directly associated with the hydrocarbon value chain, including, but not limited to: hydrocarbon exploration, extraction, development, production, transportation, infrastructure services, infrastructure maintenance, power generation, and downstream services.

.28 The registrant shall disclose the amount of backlog associated with renewable energy projects.

- Renewable energy is defined as energy from sources that are replenished at a rate greater than or equal to their rate of depletion, consistent with U.S. EPA definitions, such as geothermal, wind, solar, hydro, and biomass.

.29 The scope includes all projects undertaken by the company, including engineering, architecture and design, construction, installation, planning, consulting, and repair and maintenance, among others.

.30 The registrant may choose to provide a discussion of the sustainability implications of backlog in oil, gas, and or coal projects and/or non-renewable power generation projects, including, but not limited to, project descriptions, categorizations by resource type, expected sustainability impacts, and risks related to project completion and/or conversion to revenue.

.31 If the registrant's backlog in non-renewable power generation projects is associated with natural gas power generation projects, the registrant may choose to provide supplemental disclosures describing this proportion of backlog and the sustainability impacts of such projects relative to alternatives or baseline scenarios.

IF0301-07. Amount of backlog cancellations associated with hydrocarbon-related projects

.32 The registrant shall disclose the amount of its total backlog, in U.S. dollars, associated with hydrocarbon-related projects of any type that was subject to cancellation during the fiscal year for any reason, where:

- Backlog is defined by the registrant, consistent with its existing public disclosure of backlog.
- Backlog cancellations are defined as the amount of backlog canceled, reduced, terminated, deferred such that it no longer meets the registrant's definition of backlog, or removed from the backlog for any reason other than conversion to revenue or foreign exchange rate fluctuations.
    - Backlog cancellations include those that occur for any reason, including, but not limited to, a customer's failure to obtain necessary project permitting or financing, a customer's voluntary project cancellation, and reduction in project scope due to financial constraints.
- Hydrocarbon-related projects are defined as any project directly related to the production, servicing, transportation, or consumption of hydrocarbons for use in the energy value chain. Examples include, but are not limited to, any project directly associated with oil, gas, or coal production, transportation, refining, and fossil fuel-based electricity generation.

.33 The scope excludes backlog cancellations associated with decommissioning projects.

.34 The registrant may choose to discuss specific backlog cancellations, including the root cause and corrective actions taken to prevent future backlog cancellations.

.35 The scope includes all projects undertaken by the company, including engineering, architecture and design, construction, installation, planning, consulting, and repair and maintenance, among others.

IF0301-08. Backlog for non-energy projects associated with climate change mitigation

.36 The registrant shall disclose the amount of backlog for non-energy projects associated with climate change mitigation, where non-energy projects are defined as projects that are not directly associated with the energy value chain that are motivated by, or undertaken in response to, climate change mitigation.

- Climate change mitigation is defined by the Intergovernmental Panel on Climate Change (IPCC) as an anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases (GHG).

- The scope of disclosure shall only include projects that are significantly motivated by, or undertaken in response to, climate change mitigation. Such climate change mitigation is not required to be the primary project motivation, but it must be a significant motivating factor for project development and implementation.

- Examples of projects that may be included in the numerator include, but are not limited to: mass transportation systems; alternative, low-carbon transportation systems; carbon capture and storage; fossil fuel-related decommissioning projects; and energy efficiency infrastructure retrocommissionings.

- The scope of disclosure shall only include projects that provide significant climate change mitigation relative to a baseline scenario, or baseline emissions, defined as the GHG emissions that may occur without project implementation.

    - The registrant may use or reference all or part of the "European Investment Bank Induced GHG Footprint" methodology for assessing relative emissions (including absolute emissions and/or baseline emissions).

    - The registrant may use alternative methodologies or proprietary methodologies for assessing climate change mitigation.

- The scope of disclosure shall exclude all backlog directly associated with the energy value chain and motived by energy efficiency, which may be equivalent to backlog included in IF0301-06, with the exception of fossil fuel-related decommissioning projects.

    - The energy value chain includes conventional energy projects, including upstream projects (energy exploration and production), midstream projects (transportation and storage, pipeline, gathering, and treating and processing), and downstream projects (refining and industrial, commercial, and residential uses of energy) as well as renewable energy projects, including manufacturing, installation, and maintenance of solar panels and wind turbines, among other renewable energy technologies, and energy-efficiency projects.

.37 The registrant shall divide the amount of backlog for non-energy projects associated with climate change mitigation, in U.S. dollars, by total backlog, in U.S. dollars.

- Backlog is defined by the registrant, consistent with its existing public disclosure of backlog.

.38 If the sum of the three percentages above does not equate to 100% of the registrant's backlog associated with energy projects, the registrant shall disclose the cause of the discrepancy.

.39 The registrant may choose to exclude backlog associated with decommissioning projects.

.40 The scope includes all projects undertaken by the company, including engineering, architecture and design, construction, installation, planning, consulting, and repair and maintenance, among others.

Lifecycle Impacts of Buildings & Infrastructure

Description

Buildings and major infrastructure projects are among the largest users of natural resources in the economy; during construction, these materials include iron and steel products, cement, concrete, bricks, drywall, wallboards, glass, insulation, fixtures, doors, and cabinetry, among others. Once finished, and during their daily use, these projects often consume significant amounts of resources in the form of energy and water (for a discussion on direct environmental impacts from project construction see the "Environmental Impacts of Project Development" topic above). Therefore, the sourcing of construction materials and the everyday use of buildings and infrastructure can contribute to direct and indirect GHG emissions, global and/or local resource constraints, water stress, and negative human health outcomes. Client and regulatory pressures to develop a sustainable built environment are contributing to the growth of markets intended to reduce the lifecycle impacts of buildings and infrastructure projects. In response, various international sustainable building and infrastructure certification schemes have been developed to assess, among other aspects, a project's energy and water efficiency, impacts on human health, and the use of sustainable construction and building materials. As a result, multiple opportunities are being created for industries in the value chain—from suppliers that can provide such materials, to companies in the Engineering & Construction Services industry that can provide sustainability-oriented project design, consulting, and construction services. Such services can provide a competitive advantage and revenue growth opportunities as client demand for economically advantageous sustainable projects increases and related regulations evolve. Companies unable to integrate such considerations in their services stand to lose market share in the long term.

Accounting Metrics

IF0301-09. Number of (1) commissioned projects certified to a multi-attribute sustainability standard and (2) active projects seeking such certification

.41 The registrant shall disclose the number of projects commissioned during the fiscal year that were certified to a third-party multi-attribute sustainability standard.

- The scope of disclosure includes buildings (such as residential, commercial and retail, government, healthcare, offices, etc.) and other infrastructure projects (such as transportation, oil and gas, electrical grid, renewable energy, water supply distribution, water treatment, etc.).

- The scope includes projects in which the registrant has a direct role in design, engineering, procurement and/or construction of the building or infrastructure project.

.42 Third-party sustainability standards shall be considered within the scope of disclosure if, at a minimum, they address the following aspects of building or infrastructure design and construction:

- Energy efficiency;
- Water conservation;
- Material and resource efficiency; and
- Indoor environmental quality.

.43 The scope of third-party multi-attribute sustainability standards includes, but is not limited to, the following: LEED®, BREEAM®, Green Globes®, and Institute for Sustainable Infrastructure's (ISI) Envision® rating system.

.44 The registrant shall disclose the number of active projects that were seeking certification to a multi-attribute sustainability standard during the fiscal year.

- The scope of disclosure includes all active buildings and infrastructure projects currently under development, including, but not limited to, those in the design and construction stages. Active projects exclude projects that were commissioned during the fiscal year.

.45 The registrant shall disclose the sustainability standard(s) to which commissioned buildings and infrastructure projects are certified or seeking certification.

.46 The registrant may choose to discuss sustainability standards or guidelines that it implements into its building and infrastructure project design and construction that are not third-party verified.

IF0301-10. Description of process to incorporate operational-phase energy and water efficiency considerations into project planning and design

.47 The registrant shall provide a description of the process it uses to incorporate operational-phase energy and water efficiency considerations into project planning and design, where:

- Operational-phase energy and water efficiency considerations are solutions aimed at reducing and optimizing operational use of energy and water, including water collection and reuse designs, repair and retrofits, improved insulation and material use, shading devices, alternative energy procurement, and use of energy- and water-efficient devices and lighting, among other efficiency solutions.

.48 Relevant information to disclose includes, but is not limited to:

- The actions taken to incorporate such considerations, such as design solutions, technological solutions, material use, modeling of energy and water use, etc.;

- The geographic markets where the registrant operates in, including current and expected future energy-efficiency and water-efficiency regulations, and potential constraints on water and/or energy resources, and stakeholder demands in those markets.

- Whether these energy- and water-efficiency solutions serve as competitive advantages in project bids and proposals, and how the registrant communicates performance, including any perceived competitive advantages, to project owners; and

- How the registrant communicates long-term cost-benefit analyses to project owners or developers, including the potential savings from energy efficiency projects based on past performance of energy-efficiency projects.

.49 The registrant shall discuss its approach to assessing risks associated with operational-phase energy- and water-efficiency considerations, including internal policies, practices, and procedures.

.50 The registrant shall discuss the use of codes, guidelines, and standards that address operational-phase energy and water efficiency, where applicable.

- The registrant should discuss how its energy- and water-efficiency efforts exceed building code requirements.

.51 The scope of project planning and design processes excludes codes, guidelines, and standards covered under IF0301-02, which cover the registrant's environmental impacts during project construction/execution.

Business Ethics & Bidding Integrity

Description

Companies in the industry face risks associated with bribery, corruption, and anti-competitive practices. This is due to several factors, including the global operations of many companies; the need to manage multiple local agents and subcontractors; the magnitude of the contracts involved in building large facilities and infrastructure projects; and the competitive process necessary to secure contracts with private and public entities, which may at times require dealing with corrupt third parties. Violations of anti-bribery laws, such as paying corrupt government officials in order to gain project contracts, and unethical bidding practices, such as complementary bidding (submitting an artificially high or unacceptable bid for a contract that a bidder does not intend to win) and bid-pooling (coordinating to split contracts and assure each bidder is awarded a certain amount of work) can result in investigations by authorities in multiple jurisdictions, as well as large fines and settlement costs. Moreover, companies with poor track records can be barred from working on future projects, resulting in lost revenue. Developing an ethical culture through employee training, effective governance structures, and internal controls is critical for companies to retain their social license to operate.

Accounting Metrics

IF0301-11. (1) Number of active projects and (2) backlog in countries that have the 20 lowest rankings in Transparency International's Corruption Perception Index

.52 The registrant shall disclose the number of active projects located in the countries with the 20 lowest rankings in Transparency International's Corruption Perception Index (CPI).

.53 Active projects are defined as buildings and infrastructure projects currently under development by the registrant, including, but not limited to, those in the design and construction stages. Active projects exclude projects that were commissioned during the fiscal year.

.54 The scope includes all projects undertaken by the company, including engineering, architecture and design, construction, installation, planning, consulting, and repair and maintenance, among others.

.55 The registrant shall disclose the amount of backlog, in U.S. dollars, for projects located in the countries with the 20 lowest rankings in Transparency International's CPI.

- Backlog is defined by the registrant, consistent with its existing public disclosure of backlog.

.56 The 20 lowest numerical ranks shall be used to generate the scope of countries; therefore, due to the fact that multiple countries share many ranks, the scope may include more than 20 countries.

.57 The registrant shall use the most current version of the CPI via Transparency International's publicly accessible website.

.58 The registrant may choose to provide discussion around active projects or backlog that are located in countries with low rankings in the index but that present low business ethics risks. The registrant may choose to provide similar discussion for operations located in countries that do not have one of the 20 lowest rankings in the index but that present unique or high business ethics risks.

Note to **IF0301-11**

.59 The registrant shall provide a brief description of its approach to managing ethical risks specific to the countries referenced above where the registrant has active projects and/or backlog.

IF0301-12. Amount of legal and regulatory fines and settlements associated with charges of (1) bribery or corruption and (2) anti-competitive practices

.60 The registrant shall disclose the amount (excluding legal fees) of all fines or settlements associated with incidents relating to bribery and corruption, including, but not limited to, violations of the Foreign Corrupt Practices Act of 1977 (FCPA) (15 U.S.C. § 78dd-1, et seq.).

.61 The registrant shall disclose the amount (excluding legal fees) of all fines or settlements associated with anti-competitive behavior, such as those related to enforcement of U.S. laws and regulations on price-fixing, conflicts of interest, antitrust behavior (e.g., exclusivity contracts), or services that limit competition, including violations of the Sherman Antitrust Act of 1890 and the Clayton Antitrust Act of 1914.

- The scope of anti-competitive behavior includes complementary bidding, defined as the practice of submitting an artificially high or unacceptable bid for a contract that the bidder does not intend to win. Complimentary bidding is also referred to as "cover bidding," "cover pricing," and "courtesy bidding."

- The scope of anti-competitive behavior includes bid-pooling, defined as the practice of coordinating to split contracts and assure each bidder is awarded a certain amount of work.

.62 Disclosure shall include civil actions (e.g., civil judgment, settlements, or regulatory penalties) and criminal actions (e.g., criminal judgment, penalties, or restitutions) taken by any entity (government, businesses, or individuals).

Note to **IF0301-12**

.63 The registrant shall briefly describe the nature (e.g., guilty plea, deferred agreement, or non-prosecution agreement) and context (e.g., bribing an official, etc.) of fines and settlements.

.64 The registrant shall describe any corrective action it has implemented as a result of each incident. This may include, but is not limited to, specific changes in operations, management, processes, products, business partners, training, or technology.

IF0301-13. Description of policies and practices for prevention of (1) corruption and bribery and (2) anti-competitive behavior in the project bidding processes

.65 The registrant shall discuss its management system and due diligence procedures for assessing and managing corruption and bribery risks and anti-competitive practices internally its project bidding and approval processes as well as those associated with business partners in its value chain.

- Corruption and bribery includes practices relating to the abuse of entrusted power for personal gain, including payments to foreign government officials to assist in obtaining or retaining business.
- Anti-competitive behavior includes practices relating to conflicts of interest, accuracy of data, fraud, price-fixing, antitrust behavior (e.g., exclusivity contracts), complementary bidding, bid-pooling, and other practices that limit competition.
    - Complementary bidding is defined as the practice of submitting an artificially high or unacceptable bid for a contract that the bidder does not intend to win. Complimentary bidding is also referred to as "cover bidding," "cover pricing," and "courtesy bidding."
    - Bid-pooling is defined as the practice of coordinating to split contracts and assure each bidder is awarded a certain amount of work.
- Relevant business partners in the value chain include customers, suppliers, contractors, and subcontractors.

.66 Relevant aspects of a management system may include employee awareness programs, anti-corruption policies, training, internal mechanisms for reporting and following up on suspected violations, and implementation of codes of ethics as well as investigations, enforcement, and disciplinary procedures relating to:

- Management of conflicts of interest, including mitigation and transparency of potential or perceived conflicts;
- Maintenance and reporting of accurate data;
- Protection of confidential business information, including accuracy, retention, and destruction of business records and documents;
- Avoidance of corruption, including identification of suspicious activities and implementation of whistleblower protection programs;
- Privacy guidelines and security clearances for gaining access to sensitive and classified data;
- Employee training on relevant regulations;
- Mechanisms for internal reporting about violations or concerns regarding business ethics or compliance; and
- Disciplinary actions for violations of business ethics policies.

.67 The registrant may choose to discuss the implementation of one or more of the following in its value chain:

- Key Organization for Economic Co-operation and Development (OECD) guidelines;
- International Chamber of Commerce (ICC): Rules of Conduct against Extortion and Bribery;
- Transparency International: Business Principles for Countering Bribery;
- United Nations Global Compact: 10th Principle, and
- World Economic Forum (WEF): Partnering Against Corruption Initiative (PACI).

.68 The registrant may choose to discuss compliance with industry best practices, including codes of conduct and codes of ethics, as a measure of its management approach to ensuring quality of work and professional integrity.

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SUSTAINABILITY ACCOUNTING STANDARD
INFRASTRUCTURE SECTOR

HOME BUILDERS

Sustainability Accounting Standard

Sustainable Industry Classification System™ (SICS™) #IF0401

Prepared by the
Sustainability Accounting Standards Board®

March 2016
Provisional Standard

HOME BUILDERS

Sustainability Accounting Standard

About SASB

The Sustainability Accounting Standards Board (SASB) provides sustainability accounting standards for use by publicly-listed corporations in the U.S. in disclosing material sustainability information for the benefit of investors and the public. SASB standards are designed for disclosure in mandatory filings to the Securities and Exchange Commission (SEC), such as the Form 10-K and 20-F. SASB is an independent 501(c)3 non-profit organization. Through 2016, SASB is developing standards for 79 industries in 10 sectors.

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INTRODUCTION

Purpose & Structure

This document contains the SASB Sustainability Accounting Standard (SASB Standard) for the Home Builders industry.

SASB Sustainability Accounting Standards are comprised of **(1) disclosure guidance and (2) accounting standards on sustainability topics** for use by U.S. and foreign public companies in their annual filings (Form 10-K or 20-F) with the U.S. Securities and Exchange Commission (SEC). To the extent relevant, SASB Standards may also be applicable to other periodic mandatory filings with the SEC, such as the Form 10-Q, Form S-1, and Form 8-K.

SASB Standards identify sustainability topics at an industry level, which may constitute material information—depending on a company's specific operating context—for a company within that industry. SASB Standards are intended to provide guidance to company management, which is ultimately responsible for determining which information is material and should therefore be included in its Form 10-K or 20-F and other periodic SEC filings.

SASB Standards provide companies with standardized sustainability metrics designed to communicate performance on industry level sustainability topics. When making disclosure on sustainability topics, companies can use SASB Standards to help ensure that disclosure is standardized and therefore decision-useful, relevant, comparable, and complete.

SASB Standards are intended to constitute "suitable criteria" as defined by AT 101.23 -. 32[1] and referenced in AT 701[2], as having the following attributes:

- *Objectivity*—Criteria should be free from bias.
- *Measurability*—Criteria should permit reasonably consistent measurements, qualitative or quantitative, of subject matter.
- *Completeness*—Criteria should be sufficiently complete so that those relevant factors that would alter a conclusion about subject matter are not omitted.
- *Relevance*—Criteria should be relevant to the subject matter.

Industry Description

The Home Builders industry is comprised of companies that develop new homes and residential communities. Development efforts generally include the acquisition of land, site preparation, the construction of homes, and home sales. The majority of industry activity is focused on the development and sale of single-family homes, which are typically part of company-designed residential communities. A smaller segment is centered on townhomes, condominiums, multi-family housing, and mixed-use development. Many companies in the industry offer financing services to individual homebuyers. The industry is fragmented, as there are a large number of developers of all sizes operating across the U.S., generally in a relatively narrow set of targeted geographical markets. Listed companies

[1] http://pcaobus.org/Standards/Attestation/Pages/AT101.aspx#at_101_fn7
[2] http://pcaobus.org/Standards/Attestation/Pages/AT701.aspx

tend to be significantly larger, and more integrated than the numerous privately held home builders. The vast majority of industry activity for U.S.-listed companies is located in the U.S.

Guidance for Disclosure of Sustainability Topics in SEC Filings

1. Industry-Level Sustainability Topics

For the Home Builders industry, SASB has identified the following sustainability disclosure topics:

- Land Use & Ecological Impacts
- Workforce Health & Safety
- Design for Resource Efficiency
- Community Impacts of New Developments
- Climate Change Adaptation

2. Company-Level Determination and Disclosure of Material Sustainability Topics

Sustainability disclosures are governed by the same laws and regulations that govern disclosures by securities issuers generally. According to the U.S. Supreme Court, a fact is material if, in the event such fact is omitted from a particular disclosure, there is "a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the 'total mix' of the information made available."[3,4]

SASB has attempted to identify those sustainability topics that are reasonably likely to have a material effect on the financial condition or operating performance of companies within each SICS industry. SASB recognizes, however, that each company is ultimately responsible for determining what information should be disclosed within the context of Regulation S-K and other guidance.

Regulation S-K, which sets forth certain disclosure requirements associated with Form 10-K and other SEC filings, requires companies, among other things, to describe in the Management's Discussion and Analysis of Financial Condition and Results of Operations (MD&A) section of Form 10-K "any known trends or uncertainties that have had or that the registrant reasonably expects will have a material favorable or unfavorable impact on net sales or revenues or income from continuing operations. If the registrant knows of events that will cause a material change in the relationship between costs and revenues (such as known future increases in costs of labor or materials or price increases or inventory adjustments), the change in the relationship shall be disclosed."

Furthermore, Instructions to Item 303 state that the MD&A "shall focus specifically on material events and uncertainties known to management that would cause reported financial information not to be necessarily indicative of future operating results or of future financial condition."[2]

[3] TSC Industries v. Northway, Inc., 426 U.S. 438 (1976).
[4] C.F.R. 229.303(Item 303)(a)(3)(ii).

The SEC has provided guidance for companies to use in determining whether a trend or uncertainty should be disclosed. The two-part assessment prescribed by the SEC, based on probability and magnitude, can be applied to the topics included within this standard:

- First, a company is not required to make disclosure about a known trend or uncertainty if its management determines that such trend or uncertainty is not reasonably likely to occur.

- Second, if a company's management cannot make a reasonable determination of the likelihood of an event or uncertainty, then disclosure is required unless management determines that a material effect on the registrant's financial condition or results of operation is not reasonably likely to occur.

3. Sustainability Accounting Standard Disclosures in Form 10-K

a. Management's Discussion and Analysis

For purposes of comparability and usability, companies should consider making disclosure on sustainability topics in the MD&A, in a sub-section titled "**Sustainability Accounting Standards Disclosures**."[5]

b. Other Relevant Sections of Form 10-K

In addition to the MD&A section, it may be relevant for companies to disclose sustainability information in other sections of Form 10-K, including, but not limited to:

- **Description of business**—Item 101 of Regulation S-K requires a company to provide a description of its business and its subsidiaries. Item 101(c)(1)(xii) expressly requires disclosure regarding certain costs of complying with environmental laws:

Appropriate disclosure also shall be made as to the material effects that compliance with Federal, State and local provisions which have been enacted or adopted regulating the discharge of materials into the environment, or otherwise relating to the protection of the environment, may have upon the capital expenditures, earnings and competitive position of the registrant and its subsidiaries.

- **Legal proceedings**—Item 103 of Regulation S-K requires companies to describe briefly any material pending or contemplated legal proceedings. Instructions to Item 103 provide specific disclosure requirements for administrative or judicial proceedings arising from laws and regulations that target discharge of materials into the environment or that are primarily for the purpose of protecting the environment.

- **Risk factors**—Item 503(c) of Regulation S-K requires filing companies to provide a discussion of the most significant factors that make an investment in the registrant speculative or risky, clearly stating the risk and specifying how a particular risk affects the particular filing company.

[5] SEC [Release Nos. 33-8056; 34-45321; FR-61] Commission Statement about Management's Discussion and Analysis of Financial Condition and Results of Operations: "We also want to remind registrants that disclosure must be both useful and understandable. That is, management should provide the most relevant information and provide it using language and formats that investors can be expected to understand. Registrants should be aware also that investors will often find information relating to a particular matter more meaningful if it is disclosed in a single location, rather than presented in a fragmented manner throughout the filing."

c. Rule 12b-20

Securities Act Rule 408 and Exchange Act Rule 12b-20 require a registrant to disclose, in addition to the information expressly required by law or regulation, "such further material information, if any, as may be necessary to make the required statements, in light of the circumstances under which they are made, not misleading."

More detailed guidance on disclosure of sustainability topics can be found in the **SASB Conceptual Framework**, available for download via http://www.sasb.org/approach/conceptual-framework/.

Guidance on Accounting for Sustainability Topics

For each sustainability topic included in the Home Builders Industry Sustainability Accounting Standard, SASB identifies accounting metrics.

SASB recommends that each company consider using these sustainability accounting metrics when preparing disclosures on the sustainability topics identified herein;

As appropriate—and consistent with Rule 12b-20[6]—when disclosing a sustainability topic identified by this Standard, companies should consider including a narrative description of any material factors necessary to ensure completeness, accuracy, and comparability of the data reported. Where not addressed by the specific accounting metrics, but relevant, the registrant should discuss the following, related to the topic:

- The registrant's **strategic approach** to managing performance on material sustainability issues;
- The registrant's **relative performance** with respect to its peers;
- The **degree of control** the registrant has;
- Any **measures the registrant has undertaken** or **plans to undertake** to improve performance; and
- Data for the registrant's **last three completed fiscal years** (when available).

SASB recommends that registrants use SASB Standards specific to their primary industry as identified in the Sustainable Industry Classification System (SICS™). If a registrant generates significant revenue from multiple industries, SASB recommends that it also consider sustainability topics that SASB has identified for those industries and disclose the associated SASB accounting metrics.

In disclosing to SASB Standards, it is expected that registrants disclose with the same level of rigor, accuracy, and responsibility as they apply to all other information contained in their SEC filings.

[6] SEC Rule 12b-20: "In addition to the information expressly required to be included in a statement or report, there shall be added such further material information, if any, as may be necessary to make the required statements, in the light of the circumstances under which they are made, not misleading."

Users of the SASB Standards

The SASB Standards are intended to provide guidance for companies that engage in public offerings of securities registered under the Securities Act of 1933 (the Securities Act) and those that issue securities registered under the Securities Exchange Act of 1934 (the Exchange Act),[7] for use in SEC filings, including, without limitation, annual reports on Form 10-K (Form 20-F for foreign issuers), quarterly reports on Form 10-Q, current reports on Form 8-K, and registration statements on Forms S-1 and S-3. Disclosure with respect to the SASB Standards is not required or endorsed by the SEC or other entities governing financial reporting, such as FASB, GASB, or IASB.

Scope of Disclosure

Unless otherwise specified, SASB recommends:

- That a registrant disclose on sustainability issues and metrics for itself and for entities that are consolidated for financial reporting purposes as defined by accounting principles generally accepted in the United States for consistency with other accompanying information within SEC filings;[8]
- That for consolidated entities, disclosures be made, and accounting metrics calculated, for the whole entity, regardless of the size of the minority interest; and
- That information from unconsolidated entities not be included in the computation of SASB accounting metrics. A registrant should disclose, however, information about unconsolidated entities to the extent that the registrant considers the information necessary for investors to understand the effect of sustainability topics on the company's financial condition or operating performance (typically, this disclosure would be limited to risks and opportunities associated with these entities).

Reporting Format

Use of Financial Data

In instances where accounting metrics, activity metrics, and technical protocols in this standard incorporate financial data (e.g., revenues, cost of sales, expenses recorded and disclosed for fines, etc.), such financial data shall be prepared in accordance with the accounting principles generally accepted in the United States of America ("US GAAP") and be consistent with the corresponding financial data reported within the registrant's SEC filings. Should accounting metrics, activity metrics and technical protocols in this standard incorporate disclosure of financial data that is not prepared in accordance with US GAAP, the registrant shall disclose such information in accordance with the SEC Regulation G.

[7] Registration under the Securities Exchange Act of 1934 is required (1) for securities to be listed on a national securities exchange such as the New York Stock Exchange, the NYSE Amex, and the NASDAQ Stock Market or (2) if (A) the securities are equity securities and are held by more than 2,000 persons (or 500 persons who are not accredited investors) and (B) the company has more than $10 million in assets.
[8] See US GAAP consolidation rules (Section 810).

Activity Metrics and Normalization

SASB recognizes that normalizing accounting metrics is important for the analysis of SASB disclosures.

SASB recommends that a registrant disclose any basic business data that may assist in the accurate evaluation and comparability of disclosure, to the extent that they are not already disclosed in the Form 10-K (e.g., revenue, EBITDA, etc.).

Such data—termed "activity metrics"—may include high-level business data such as total number of employees, quantity of products produced or services provided, number of facilities, or number of customers. It may also include industry-specific data such as plant capacity utilization (e.g., for specialty chemical companies), number of transactions (e.g., for Internet media and services companies), hospital bed days (e.g., for health care delivery companies), or proven and probable reserves (e.g., for oil and gas exploration and production companies).

Activity metrics disclosed should:

- Convey contextual information that would not otherwise be apparent from SASB accounting metrics.
- Be deemed generally useful for an investor relying on SASB accounting metrics in performing their own calculations and creating their own ratios.
- Be explained and consistently disclosed from period to period to the extent they continue to be relevant. However, a decision to make a voluntary disclosure in one period does not obligate a continuation of that disclosure if it is no longer relevant or if a better metric becomes available.[9]

Where relevant, SASB recommends specific activity metrics that—at a minimum—should accompany SASB accounting metric disclosures.

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Number of controlled lots[10]	Quantitative	Number	IF0401-A
Number of homes delivered[11]	Quantitative	Number	IF0401-B
Number of active selling communities[12]	Quantitative	Number	IF0401-C

[9] *Improving Business Reporting: Insights into Enhancing Voluntary Disclosures*, FASB Business Reporting Research Project, January 29, 2001.
[10] Note to **IF0401-A**—Controlled lots include those that are either directly owned or contractually available for ownership through option contracts or the equivalent as of the last day of the fiscal year.
[11] Note to **IF0401-B**—Homes include single-family dwelling units whether detached, attached, or part of multi-family residential buildings.
[12] Note to **IF0401-C**—Active selling communities include those communities or developments open for sales with at least five homes or lots remaining to sell as of the last day of the fiscal year.

Units of Measure

Unless specified, disclosures should be reported in International System of Units (SI units).

Uncertainty

SASB recognizes that there may be inherent uncertainty when disclosing certain sustainability data and information. This may be related to variables such as the reliance on data from third-party reporting systems and technologies, or the unpredictable nature of climate events. Where uncertainty around a particular disclosure exists, SASB recommends that the registrant should consider discussing its nature and likelihood.

Estimates

SASB recognizes that scientifically based estimates, such as the reliance on certain conversion factors or the exclusion of *de minimis* values, may occur for certain quantitative disclosures. Where appropriate, SASB does not discourage the use of such estimates. When using an estimate for a particular disclosure, SASB expects that the registrant discuss its nature and substantiate its basis.

Timing

Unless otherwise specified, disclosure shall be for the registrant's fiscal year.

Limitations

There is no guarantee that SASB Standards address all sustainability impacts or opportunities associated with a sector, industry, or company, and therefore, a company must determine for itself the topics—sustainability-related or otherwise—that warrant discussion in its SEC filings.

Disclosure under SASB Standards is voluntary. It is not intended to replace any legal or regulatory requirements that may be applicable to user operations. Where such laws or regulations address legal or regulatory topics, disclosure under SASB Standards is not meant to supersede those requirements. Disclosure according to SASB Standards shall not be construed as demonstration of compliance with any law, regulation, or other requirement.

SASB Standards are intended to be aligned with the principles of materiality enforced by the SEC. However, SASB is not affiliated with or endorsed by the SEC or other entities governing financial reporting, such as FASB, GASB, or IASB.

Forward-looking Statements

Disclosures on sustainability topics can involve discussion of future trends and uncertainties related to the registrant's operations and financial condition, including those influenced by external variables (e.g., environmental, social, regulatory, and political). Companies making such disclosures should familiarize themselves with the safe harbor provisions of Section 27A of the Securities Act and Section 21E of the Exchange Act, which preclude civil liability for material misstatements or omissions in such statements if the registrant takes certain steps, including,

among other things, identifying the disclosure as "forward-looking" and accompanying such disclosure with "meaningful cautionary statements identifying important factors that could cause actual results to differ materially from those in the forward-looking statements."

The following sections contain the disclosure guidance associated with each accounting metric such as guidance on definitions, scope, accounting, compilation, and presentation.

The term "shall" is used throughout this document to indicate those elements that reflect requirements of the Standard. The terms "should" and "may" are used to indicate guidance, which, although not required, provides a recommended means of disclosure.

Table 1. Sustainability Disclosure Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Land Use & Ecological Impacts	Number of (1) lots and (2) homes delivered on redevelopment sites	Quantitative	Number	IF0401-01
	Number of (1) lots and (2) homes delivered in regions with High or Extremely High Baseline Water Stress	Quantitative	Number	IF0401-02
	Amount of legal and regulatory fines and settlements associated with environmental regulations[13]	Quantitative	U.S. Dollars ($)	IF0401-03
	Description of process to integrate environmental considerations into site selection, site design, and site development and construction	Discussion and Analysis	n/a	IF0401-04
Workforce Health & Safety	(1) Total recordable injury rate (TRIR) and (2) fatality rate for (a) direct employees and (b) contract employees	Quantitative	Rate	IF0401-05
Design for Resource Efficiency	(1) Number of homes that obtained a certified HERS® Index Score and (2) average score	Quantitative	Number, Index score	IF0401-06
	Percentage of installed water fixtures certified to EPA WaterSense® specifications	Quantitative	Percentage (%)	IF0401-07
	Number of homes delivered certified to a multi-attribute green building standard	Quantitative	Number	IF0401-08
	Discussion of risks and opportunities related to incorporating resource efficiency into home design and description of how benefits are communicated to customers	Discussion and Analysis	n/a	IF0401-09
Community Impacts of New Developments	Discussion of how proximity and access to infrastructure and community services affect site selection and development decisions	Discussion and Analysis	n/a	IF0401-10
	Number of (1) lots and (2) homes delivered on infill sites	Quantitative	Number	IF0401-11
	(1) Number of homes delivered in compact developments and (2) average density	Quantitative	Number	IF0401-12

[13] Note to **IF0401-03**—Disclosure shall include a description of fines and settlements and corrective actions implemented in response to events.

Table 1. Sustainability Disclosure Topics & Accounting Metrics (cont.)

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Climate Change Adaptation	Number of lots located in FEMA Special Flood Hazard Areas or foreign equivalent	Quantitative	Number	IF0401-13
	Description of climate change risk exposure analysis, degree of systematic portfolio exposure, and strategies for mitigating risks	Discussion and Analysis	n/a	IF0401-14

Land Use & Ecological Impacts

Description

Home builders face challenges directly related to the ecological impacts of development activities. Developments often take place on previously undeveloped land, and companies must manage the ecosystem disruption of construction activities, as well as the regulations and permitting processes that accompany "greenfield" land development. Regardless of the siting decisions companies make, industry development activities generally carry risks related to land and water contamination, mismanagement of waste, and excessive strain on water resources during the construction and use phases. Violation of environmental regulations can result in costly fines and delays that decrease financial returns while potentially harming reputations. Companies with repeated violations or track records of prior activities with excessive ecological impacts may find it difficult to receive approval from local communities for new developments, thereby decreasing future revenue and market share. Companies that concentrate development efforts in water-stressed regions may see further challenges to permitting approvals, and also face risks related to land or home depreciation because of water shortage concerns. Environmental quality control procedures, smart growth strategies (including a focus on redevelopment sites), and conservation strategies may help ensure compliance with environmental laws and mitigate risks.

Accounting Metrics

IF0401-01. Number of (1) lots and (2) homes delivered on redevelopment sites

.01 The registrant shall disclose the number of controlled lots that are located on redevelopment sites, where:

- The scope of controlled lots includes all lots owned or contractually available for ownership through option contracts, other types of contracts, or the equivalent.

.02 The registrant shall disclose the number of homes delivered that were constructed on redevelopment sites.

- Homes shall include single-family dwelling units, whether detached, attached, or part of multi-family residential buildings.

.03 Redevelopment sites shall include brownfield and greyfield sites, and shall include sites that meet state or local designations for such terms.

- In the absence of state or local definitions, the following definitions shall be used:
  - Redevelopment sites are defined as sites that were previously developed, including the replacement, remodeling, or reuse of existing structures to accommodate new development.
  - Brownfield sites are defined by the U.S. Environmental Protection Agency (EPA), as "With certain legal exclusions and additions, real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant."

    - Greyfield sites are defined by the National Association of Home Builders (NAHB) Green Home Building Guidelines as, "any site previously developed with at least 50% of the surface area covered with impervious material."

- The scope of redevelopment sites excludes undeveloped infill sites but includes infill sites to the extent that such sites meet the above definitions of redevelopment, brownfield, or greyfield sites.

IF0401-02. Number of (1) lots and (2) homes delivered in regions with High or Extremely High Baseline Water Stress

.04 The registrant shall disclose the number of controlled lots located in regions with High or Extremely High Baseline Water Stress as classified by the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly accessible online here).

- The scope of controlled lots includes all lots owned or contractually available for ownership through option contracts, other types of contracts, or the equivalent.

.05 The registrant shall disclose the number of homes delivered in regions with High or Extremely High Baseline Water Stress.

- Homes shall include single-family dwelling units whether detached, attached, or part of multi-family residential buildings.

IF0401-03. Amount of legal and regulatory fines and settlements associated with environmental regulations

.06 The registrant shall disclose the amount (excluding legal fees) of all fines or settlements associated with environmental regulations, such as those related to enforcement of U.S. laws and regulations on ground- and surface-water contamination; hazardous waste transport, containment, or disposal; air emissions; and public disclosure of contamination events, including violations of the U.S. Clean Water Act and the Resource Conservation and Recovery Act (RCRA), among others.

.07 Disclosure shall include civil actions (e.g., civil judgment, settlements, or regulatory penalties) and criminal actions (e.g., criminal judgment, penalties, or restitutions) taken by any entity (government, businesses, or individuals).

Note to **IF0401-03**

.08 The registrant shall briefly describe the nature (e.g., guilty plea, deferred agreement, or non-prosecution agreement) and context (e.g., environmental contamination, hazardous waste mismanagement, etc.) of fines and settlements.

.09 The registrant shall describe any corrective actions it has implemented as a result of each incident. This may include, but is not limited to, specific changes in subcontractor oversight, capital deployment, or public communications.

IF0401-04. Description of process to integrate environmental considerations into site selection, site design, and site development and construction

.10 The registrant shall provide a description of its process used to integrate environmental considerations into site selection, design, and development, where:

- Environmental considerations include ecological impacts, biodiversity impacts, emissions to air, discharges to water, slope disturbance, soil disturbance and erosion, storm water management, waste management, natural resource consumption, and hazardous chemical usage.

.11 The registrant shall discuss its approach to assessing risks associated with environmental considerations and related internal policies, practices, and procedures for managing those risks.

.12 The registrant shall provide a discussion of its approach to the following aspects of site selection:

- The process used to assess the level of ecological sensitivity of sites under consideration for acquisition or development, and how such assessments are incorporated into acquisition and development decisions.

    - Relevant aspects include the use of site classifications (e.g., greenfield, greyfield, brownfield, and/or infill sites) in decision making processes, such as.

.13 The registrant shall provide a discussion of its approach to the following aspects of site design:

- The process used to design sites in order to minimize ecological impacts, including management of slope disturbance, soil disturbance and erosion, storm water, waste, and wildlife habitat impacts.

.14 The registrant shall provide a discussion of its approach to the following aspects of site development and construction:

- The process used to minimize ecological impacts during construction, including management of construction and demolition waste, runoff, soil disturbance and erosion, and hazardous materials.

.15 The registrant shall discuss the use of codes, guidelines, and standards that address lot selection and design as well as construction, where applicable. Relevant codes, guidelines, and standards may include, but are not limited to:

- NAHB Model Green Home Building Guidelines, Section 1, "Lot Design, Preparation, and Development;"

- The U.S. Green Building Council's LEED® BD+C: Homes, v4, "Site selection;"

- LEED® BD+C: Homes, v4, "Construction activity pollution prevention;" and

- 2012 ICC 700 National Green Building Standard, "Incentives for Development and Lot Design."

Workforce Health & Safety

Description

Home construction requires a significant amount of manual labor from company employees and subcontractors. Site excavation and home construction activities are physically demanding, exposing workers to risks from falls and heavy machinery, and resulting in relatively high injury and fatality rates. Home builders recognize that worker injuries and fatalities have internal and external costs that can significantly impact the results of their operations and their social license to operate. Impacts include fines, penalties, worker compensation costs, regulatory compliance costs from more stringent oversight, higher insurance premiums, and project delays and downtime. To avoid such costs, companies can foster a culture of safety by developing proactive safety management plans, training employees and contractors, and conducting regular audits.

Accounting Metrics

IF0401-05. (1) Total recordable injury rate (TRIR) and (2) fatality rate for (a) direct employees and (b) contract employees

.16 Registrants whose workforce is entirely U.S.-based shall disclose their total recordable injury rate (TRIR) and fatality rate as calculated and reported in Occupational Safety and Health Administration (OSHA) Form 300.

- OSHA guidelines provide details for the determination of whether an event is a recordable occupational incident as well as definitions for exemptions for incidents that occur in the work environment, but are not occupational.

.17 Registrants whose workforce includes non-U.S.-based employees shall calculate their TRIR according to the U.S. Bureau of Labor Statistics guidance and/or using the U.S. Bureau of Labor Statistics calculator.

.18 The registrant shall disclose its TRIR separately for its direct employees and for contract employees, where:

- Direct employees are all those employees on the registrant's payroll, whether they are labor, executive, hourly, salary, part-time, seasonal, or migrant workers.

- Contract employees are employees who are not on the registrant's payroll, but who are supervised by the registrant on a day-to-day basis, including independent contractors and those employed by third parties (e.g., temp agencies, labor brokers, etc.).

.19 The scope includes all employees, domestic and foreign.

.20 Rates shall be calculated as: (statistic count / total hours worked) * 200,000.

Design for Resource Efficiency

Description

Residential buildings, when occupied, consume significant amounts of energy and water. Companies in the Home Builders industry can improve the resource efficiency of homes over their lifecycle through sustainable design practices and choice of materials. Energy-saving products and techniques such as designing homes for efficient heating and cooling can help to reduce dependence on energy, whether it comes from the electric grid or onsite fuel combustion. These measures, which are intended to improve the resource efficiency of homes, can decrease the costs of home ownership through lower utility bills. Water saving features such as low-flow faucets alleviates strain on local communities, while likely also lowering costs. Homebuyer awareness of the importance of the energy and water efficiency, and the availability of third-party programs intended to assess the resource efficiency and overall sustainability performance of homes, indicate the potential for companies to increase demand in their target market, thereby increasing revenue. Effectively applying resource efficiency design principles in a cost-effective manner may serve as a competitive advantage, especially when companies are successful in systematically educating customers on the long-term benefits of these homes.

Accounting Metrics

IF0401-06. (1) Number of homes that obtained a certified HERS® Index Score and (2) average score

.21 The registrant shall disclose the number of homes that obtained a certified HERS® Index Score, or an equivalent standardized home energy rating in non-U.S. markets, during the fiscal year.

- Homes shall include single-family dwelling units, whether detached, attached, or part of multi-family residential buildings.

.22 The registrant shall disclose the simple average score of all homes that obtained a certified HERS® Index Score.

- The simple average shall be calculated as the sum of all scores associated with homes that obtained a certified HERS® Index Score during the fiscal year divided by the number of homes with a certified HERS® Index Score.

.23 The scope of disclosure includes all homes that are or were controlled by the registrant, regardless of the stage of construction and the stage within the sales cycle.

.24 The registrant may additionally disclose the number of homes delivered that are certified to ENERGY STAR® for Homes.

IF0401-07. Percentage of installed water fixtures certified to EPA WaterSense® specifications

.25 The percentage shall be calculated as the number of water fixtures installed during the fiscal year that were certified to the U.S. EPA WaterSense® specifications divided by the total number of water fixtures installed.

- A water fixture is defined as a device used for the distribution of water or a device that consumes water.

- The scope of disclosure includes water fixtures that are within an eligible WaterSense® product category. Examples of product categories include bathroom sink faucets and accessories, showerheads, toilets, urinals, irrigation controllers, and pre-rinse spray valves.

.26 The scope includes all water fixtures installed in homes that are or were controlled by the registrant, regardless of the stage of construction, the stage within the sales cycle, or the entity that performed such installations.

IF0401-08. Number of homes delivered certified to a multi-attribute green building standard

.27 The registrant shall disclose the number of homes delivered that were certified to a third-party multi-attribute sustainability standard designed for homes.

- The scope includes all homes delivered during the fiscal year.

.28 The scope of third-party multi-attribute sustainability standards includes, but is not limited to, the following: ICC 700 National Green Building Standard, LEED® for Homes, and Environments For Living Certified Green®.

.29 Third-party sustainability standards designed for homes shall be considered within the scope of disclosure if, at a minimum, they address the following aspects of new home design and construction:

- Energy efficiency;

- Water conservation;

- Material and resource efficiency;

- Indoor environmental quality; and

- Owner education.

.30 The registrant shall disclose the sustainability standard(s) to which its homes are certified.

.31 The registrant may choose to discuss sustainability standards or guidelines that it implements in its home design and construction processes that are not third-party verified.

IF0401-09. Discussion of risks and opportunities related to incorporating resource efficiency into home design and description of how benefits are communicated to customers

.32 The registrant shall discuss the risks and/or opportunities associated with its approach to integrating environmental considerations into home design, including, where relevant:

- Opportunities to achieve sales price premiums, capture target market demand, and establish competitive advantages by producing homes with market-leading energy efficiency and water efficiency.
- Risks of failing to achieve adequate returns on investments made in technology, and market demand to improve the sustainability performance of homes or earn sustainability certifications.
- Risks to market demand associated with the registrant's failure to evolve its design approach at the same pace as its peers, resulting in the production of underperforming homes in terms of energy efficiency, water efficiency, and indoor environmental quality.
- Risks associated with the ability to cost-effectively build homes that meet evolving building codes.

.33 The registrant shall describe its strategy to measure and communicate energy efficiency and water efficiency performance improvements to homes, including:

- Measurement of homeowner benefits related to energy and water efficiency, including performance audits, certifications, standards, guidelines, and use of projected energy and water costs and savings relative to a baseline.
- Communication of the benefits of resource efficiency to prospective home buyers, including the benefits of resource efficiency performance and certifications, projected energy and water costs and savings, and the integration of resource efficiency into sales and marketing.

.34 The registrant may provide an analysis of such price increases relative to the cost of improvements in, and third-party certifications of, energy efficiency, water efficiency, and indoor environmental quality. Analysis may additionally include target return rates compared to realized return rates of improvements.

Community Impacts of New Developments

Description

Community and urban planning gives home builders the opportunity to thoughtfully design new residential developments in a way that benefits their customers as well as the pre-existing surrounding community. New home development can bring economic growth and workforce opportunities while moderating cost of living growth, and can provide communities with safe, vibrant, family-oriented neighborhoods. Companies can strive to improve communities' environmental and social impacts by providing access to public transportation and/or not overburdening existing transportation or utilities infrastructure, providing access to green spaces, developing mixed-use spaces, and creating more walkable communities. These strategies can help increase the overall demand for and selling prices of homes, as well as reduce the risks related to permitting and community or stakeholder opposition. When companies use development strategies that inadequately integrate their new communities into the pre-existing surrounding communities, they risk insufficient sales prices, excessive costs related to infrastructure needs and assessments, and permitting approvals and community acceptance for future developments.

Accounting Metrics

IF0401-10. Discussion of how proximity and access to infrastructure and community services affect site selection and development decisions

.35 The registrant shall discuss its approach to integrating considerations of proximity and access to existing public infrastructure into its site selection and development decisions, where relevant aspects include, but are not limited to:

- Whether the registrant prioritizes development proximate to roads, public transportation, or alternative forms of transportation;
- How the registrant assesses the adequacy of existing infrastructure, including roads, public transportation, electricity grids, and water and wastewater networks; and
- How the registrant factors regional infrastructure expansion plans into its decision-making process.

.36 The registrant shall discuss its approach to integrating proximity and ease of access to services and economic centers into its site selection and development decisions, where:

- Access to services and economic centers includes the physical distance, available modes of transportation, and cost and ease of transportation to commercial, business, health, and educational centers and facilities.
- Relevant disclosures may include:
  - How the registrant uses mixed-use development, if applicable, to meet customer demands;

- Whether the registrant uses proximity tools, including, but not limited to, Walk Score® in assessing proximity and ease of access to services and economic centers.

.37 Where relevant, the registrant shall discuss:

- How its approach may vary by market in the integration of such considerations (including geographical market or target market demographics);
- The development lifecycle stage at which considerations are integrated; and
- Risks and opportunities associated with the integration of such considerations.

.38 The registrant shall describe its use of third-party standards to incorporate best practices for site selection and development to optimize transportation effectiveness and access to services, including NAHB Model Green Home Building Guidelines, ICC 700 National Green Building Standard, and LEED® for Homes.

IF0401-11. Number of (1) lots and (2) homes delivered on infill sites

.39 The registrant shall disclose the number of controlled lots that are located on infill sites, where:

- The scope of controlled lots includes all lots owned or contractually available for ownership through option contracts, other types of contracts, or the equivalent.

.40 The registrant shall disclose the number of homes delivered that were constructed on infill sites.

- Homes shall include single-family dwelling units, whether detached, attached, or part of multi-family residential buildings.

.41 Infill sites shall include sites that meet state or local designations for the term.

- In the absence of state or local definitions, infill sites are defined by the NAHB Green Home Building Guidelines, as "vacant or underutilized lots of land, served by existing physical installations such as roads, power lines, sewer and water, and other infrastructure."
- The scope of infill sites excludes redevelopment, brownfield, and greyfield sites.

IF0401-12. (1) Number of homes delivered in compact developments and (2) average density

.42 The registrant shall disclose the number of homes delivered that are located in compact developments.

- Homes shall include single-family dwelling units, whether detached, attached, or part of multi-family residential buildings.

.43 The definition of a compact development is aligned with that described by the National Association of Home Builders in "An Introduction to Compact Development," including the three sub-categories of cluster development, mixed-use development, and traditional neighborhood development.

.44 The registrant shall calculate the average density of compact developments using the net neighborhood residential dwelling density, where:

- The average density shall be calculated as the total number of residential units in all compact developments divided by the net residential site area of all compact developments.
    - A net residential site area is defined as the total land area devoted to residential facilities, which is aligned with "Density Measures: A Review and Analysis"[14] and "Measuring Density: Working Definitions for Residential Density and Building Intensity."[15]
- The scope of residential units includes all planned, under-construction, or completed residential units in the compact development, regardless of the stage of completion or ownership.

[14] Ernest R. Alexander, "Density Measures: A Review and Analysis," *Journal of Architectural and Planning Research*, Vol. 10, No. 3, Autumn 1993, pp. 181-202.
[15] Ann Forsyth, "Measuring Density: Working Definitions for Residential Density and Building Intensity," *Design Center for American Urban Landscape*, No. 8, July 2003.

Climate Change Adaptation

Description

The impacts of climate change, including extreme weather events and changing climate patterns, may impact the markets companies select to develop homes and residential communities. Companies with business models that incorporate ongoing assessments of climate change risks, and adapt to such risks, are likely to more effectively grow company value over the long-term, partially through reductions in risk. More specifically, strategies focused on home development activities in floodplains and coastal regions that are exposed to inclement weather have increased needs for their business models to adapt to climate change, especially considering long-term challenges like flood insurance rates, the financial stability of government-subsidized flood insurance programs, permitting approvals, and financing stipulations. Rising climate risks and the increasing cost of occupying properties in volatile regions may translate into reduced long-term demand, land value depreciation, and concerns over understated long-term costs of home ownership. Additionally, companies that build developments in water stressed regions risk losing land value, and may face problems with permitting approvals. The active assessment of climate change risks and a holistic view long-term homebuyer demand may enable companies to successfully adapt to such risks.

Accounting Metrics

IF0401-13. Number of lots located in FEMA Special Flood Hazard Areas or foreign equivalent

.46 The registrant shall disclose the total number of lots that are located in special flood hazard areas, where:

- FEMA Special Flood Hazard Areas (SFHA) are defined as land areas covered by the floodwaters of the base flood on National Flood Insurance Program (NFIP) maps. An SFHA is an area where the NFIP's floodplain management regulations must be enforced and where the mandatory purchase of flood insurance applies. SFHAs include 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. Examples of SFHAs include coastal floodplains, floodplains along major rivers, and areas subject to flooding from ponding in low-lying areas.

- The scope of disclosure includes lots located in the U.S. that are designated by FEMA as SFHAs as well as lots located outside of the U.S.

- For non-U.S. lots that fall outside of the scope of FEMA, the foreign equivalent of SFHAs are areas that will be inundated by a flood event that has a one-percent chance of being equaled or exceeded in any given year (i.e., the 100-year floodplain).

.47 The scope of lots includes all lots owned or contractually available for ownership through option contracts or other types of contracts.

.48 The registrant may disclose its risk perception and potential impacts resulting from reclassification of FEMA SFHAs, including the risk of expansion of such areas into lots controlled by the registrant or its active selling communities.

IF0401-14. Description of climate change risk exposure analysis, degree of systematic portfolio exposure, and strategies for mitigating risks

.49 The registrant shall discuss the risks and/or opportunities that are presented to its business by climate change scenarios, including, where relevant:

- Identification of the risks presented by climate change, including, but not limited to, availability of water, extreme weather events, evolving regulation and legislation, home permitting processes, timelines and approvals, and impacts to local economies and infrastructure.

- Discussion of the scenarios used to determine the risks and opportunities presented by climate change, including, but not limited to, the New Policies Scenario, 450 Scenario, and Current Policies Scenario, as established by the International Energy Agency in its annual World Energy Outlook.

- The timeline over which such risks and opportunities are expected to manifest.

.50 The registrant shall discuss efforts to assess and monitor the impacts of climate change and related strategies to alleviate and/or adapt to any risks and/or utilize any opportunities, where:

- Alleviation strategies include, but are not limited to, site selection and the incorporation of climate or weather models into such analysis; site selection as it pertains to water scarcity; the strategy and timing of lot acquisitions, permitting, construction, and sales; the use of sales and purchase agreement clauses addressing risks to the registrant; and insurance.

- Adaptation strategies include, but are not limited to, lot design, home design for physical resiliency, contingency plans, and maximizing energy and water efficiency of homes.

.51 The registrant shall discuss its strategy related to the use of physical measures to manage climate change risk (e.g., floodplain avoidance, home design for physical resiliency, etc.) and/or financial mechanisms to manage these risks (e.g., the use of insurance, option contracts on lots, etc.).

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SUSTAINABILITY ACCOUNTING STANDARD
INFRASTRUCTURE SECTOR

REAL ESTATE OWNERS, DEVELOPERS & INVESTMENT TRUSTS

Sustainability Accounting Standard

Sustainable Industry Classification System™ (SICS™) #IF0402

Prepared by the
Sustainability Accounting Standards Board®

March 2016
Provisional Standard

REAL ESTATE OWNERS, DEVELOPERS & INVESTMENT TRUSTS

Sustainability Accounting Standard

About SASB

The Sustainability Accounting Standards Board (SASB) provides sustainability accounting standards for use by publicly-listed corporations in the U.S. in disclosing material sustainability information for the benefit of investors and the public. SASB standards are designed for disclosure in mandatory filings to the Securities and Exchange Commission (SEC), such as the Form 10-K and 20-F. SASB is an independent 501(c)3 non-profit organization. Through 2016, SASB is developing standards for 79 industries in 10 sectors.

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INTRODUCTION

Purpose & Structure

This document contains the SASB Sustainability Accounting Standard (SASB Standard) for the Real Estate Owners, Developers & Investment Trusts industry.

SASB Sustainability Accounting Standards are comprised of **(1) disclosure guidance and (2) accounting standards on sustainability topics** for use by U.S. and foreign public companies in their annual filings (Form 10-K or 20-F) with the U.S. Securities and Exchange Commission (SEC). To the extent relevant, SASB Standards may also be applicable to other periodic mandatory filings with the SEC, such as the Form 10-Q, Form S-1, and Form 8-K.

SASB Standards identify sustainability topics at an industry level, which may constitute material information—depending on a company's specific operating context—for a company within that industry. SASB Standards are intended to provide guidance to company management, which is ultimately responsible for determining which information is material and should therefore be included in its Form 10-K or 20-F and other periodic SEC filings.

SASB Standards provide companies with standardized sustainability metrics designed to communicate performance on industry level sustainability topics. When making disclosure on sustainability topics, companies can use SASB Standards to help ensure that disclosure is standardized and therefore decision-useful, relevant, comparable, and complete.

SASB Standards are intended to constitute "suitable criteria" as defined by AT 101.23 -. 32[1] and referenced in AT 701[2], as having the following attributes:

- *Objectivity*—Criteria should be free from bias.
- *Measurability*—Criteria should permit reasonably consistent measurements, qualitative or quantitative, of subject matter.
- *Completeness*—Criteria should be sufficiently complete so that those relevant factors that would alter a conclusion about subject matter are not omitted.
- *Relevance*—Criteria should be relevant to the subject matter.

Industry Description

The Real Estate Owners, Developers & Investment Trusts industry (the "Real Estate industry") is composed of companies that own, develop, and generally operate income-producing real estate assets. Companies in this industry are commonly structured as real estate investment trusts (REITs) and operate in a wide range of segments within the real estate industry, including residential, retail, office, health care, industrial, and hotel properties. REITs typically focus on the direct ownership of real estate assets, thereby providing investors with the opportunity to obtain real estate exposure without direct asset ownership and management. Although REITs are often

[1] http://pcaobus.org/Standards/Attestation/Pages/AT101.aspx#at_101_fn7
[2] http://pcaobus.org/Standards/Attestation/Pages/AT701.aspx

concentrated in one segment of the real estate industry, many REITs are diversified through investment in multiple property types.

For tax purposes, real estate companies in the U.S. often prefer to be structured as REITs. To be classified as a REIT, companies must maintain most of their assets in real estate, derive most income from these assets, and distribute a minimum threshold of their annual taxable income to shareholders as dividends, among other requirements. Most U.S.-listed companies in the industry operate exclusively within the U.S., while some companies have broadened their real estate portfolio exposure internationally.

Guidance for Disclosure of Sustainability Topics in SEC Filings

1. Industry-Level Sustainability Topics

For the Real Estate Owners, Developers, & Investment Trusts industry, SASB has identified the following sustainability disclosure topics:

- Energy Management
- Water Management
- Management of Tenant Sustainability Impacts
- Climate Change Adaptation

2. Company-Level Determination and Disclosure of Material Sustainability Topics

Sustainability disclosures are governed by the same laws and regulations that govern disclosures by securities issuers generally. According to the U.S. Supreme Court, a fact is material if, in the event such fact is omitted from a particular disclosure, there is "a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the 'total mix' of the information made available."[3,4]

SASB has attempted to identify those sustainability topics that are reasonably likely to have a material effect on the financial condition or operating performance of companies within each SICS industry. SASB recognizes, however, that each company is ultimately responsible for determining what information should be disclosed within the context of Regulation S-K and other guidance.

Regulation S-K, which sets forth certain disclosure requirements associated with Form 10-K and other SEC filings, requires companies, among other things, to describe in the Management's Discussion and Analysis of Financial Condition and Results of Operations (MD&A) section of Form 10-K "any known trends or uncertainties that have had or that the registrant reasonably expects will have a material favorable or unfavorable impact on net sales or revenues or income from continuing operations. If the registrant knows of events that will cause a material change in the relationship between costs and revenues (such as known future increases in costs of labor or materials or price increases or inventory adjustments), the change in the relationship shall be disclosed."

[3] TSC Industries v. Northway, Inc., 426 U.S. 438 (1976).
[4] C.F.R. 229.303(Item 303)(a)(3)(ii).

Furthermore, Instructions to Item 303 state that the MD&A "shall focus specifically on material events and uncertainties known to management that would cause reported financial information not to be necessarily indicative of future operating results or of future financial condition."[2]

The SEC has provided guidance for companies to use in determining whether a trend or uncertainty should be disclosed. The two-part assessment prescribed by the SEC, based on probability and magnitude, can be applied to the topics included within this standard:

- First, a company is not required to make disclosure about a known trend or uncertainty if its management determines that such trend or uncertainty is not reasonably likely to occur.

- Second, if a company's management cannot make a reasonable determination of the likelihood of an event or uncertainty, then disclosure is required unless management determines that a material effect on the registrant's financial condition or results of operation is not reasonably likely to occur.

3. Sustainability Accounting Standard Disclosures in Form 10-K

a. Management's Discussion and Analysis

For purposes of comparability and usability, companies should consider making disclosure on sustainability topics in the MD&A, in a sub-section titled "**Sustainability Accounting Standards Disclosures**."[5]

b. Other Relevant Sections of Form 10-K

In addition to the MD&A section, it may be relevant for companies to disclose sustainability information in other sections of Form 10-K, including, but not limited to:

- **Description of business**—Item 101 of Regulation S-K requires a company to provide a description of its business and its subsidiaries. Item 101(c)(1)(xii) expressly requires disclosure regarding certain costs of complying with environmental laws:

Appropriate disclosure also shall be made as to the material effects that compliance with Federal, State and local provisions which have been enacted or adopted regulating the discharge of materials into the environment, or otherwise relating to the protection of the environment, may have upon the capital expenditures, earnings and competitive position of the registrant and its subsidiaries.

- **Legal proceedings**—Item 103 of Regulation S-K requires companies to describe briefly any material pending or contemplated legal proceedings. Instructions to Item 103 provide specific disclosure requirements for administrative or judicial proceedings arising from laws and regulations that target discharge of materials into the environment or that are primarily for the purpose of protecting the environment.

[5] SEC [Release Nos. 33-8056; 34-45321; FR-61] Commission Statement about Management's Discussion and Analysis of Financial Condition and Results of Operations: "We also want to remind registrants that disclosure must be both useful and understandable. That is, management should provide the most relevant information and provide it using language and formats that investors can be expected to understand. Registrants should be aware also that investors will often find information relating to a particular matter more meaningful if it is disclosed in a single location, rather than presented in a fragmented manner throughout the filing."

- **Risk factors**—Item 503(c) of Regulation S-K requires filing companies to provide a discussion of the most significant factors that make an investment in the registrant speculative or risky, clearly stating the risk and specifying how a particular risk affects the particular filing company.

c. Rule 12b-20

Securities Act Rule 408 and Exchange Act Rule 12b-20 require a registrant to disclose, in addition to the information expressly required by law or regulation, "such further material information, if any, as may be necessary to make the required statements, in light of the circumstances under which they are made, not misleading."

More detailed guidance on disclosure of material sustainability topics can be found in the **SASB Conceptual Framework**, available for download via http://www.sasb.org/approach/conceptual-framework/.

Guidance on Accounting for Sustainability Topics

For each sustainability topic included in the Real Estate Owners, Developers & Investment Trusts Industry Sustainability Accounting Standard, SASB identifies accounting metrics.

SASB recommends that each company consider using these sustainability accounting metrics when preparing disclosures on the sustainability topics identified herein;

As appropriate—and consistent with Rule 12b-20[6]—when disclosing a sustainability topic identified by this Standard, companies should consider including a narrative description of any material factors necessary to ensure completeness, accuracy, and comparability of the data reported. Where not addressed by the specific accounting metrics, but relevant, the registrant should discuss the following, related to the topic:

- The registrant's **strategic approach** to managing performance on material sustainability issues;
- The registrant's **relative performance** with respect to its peers;
- The **degree of control** the registrant has;
- Any **measures the registrant has undertaken** or **plans to undertake** to improve performance; and
- Data for the registrant's **last three completed fiscal years** (when available).

SASB recommends that registrants use SASB Standards specific to their primary industry as identified in the Sustainable Industry Classification System (SICS™). If a registrant generates significant revenue from multiple industries, SASB recommends that it also consider sustainability topics that SASB has identified for those industries and disclose the associated SASB accounting metrics.

[6] SEC Rule 12b-20: "In addition to the information expressly required to be included in a statement or report, there shall be added such further material information, if any, as may be necessary to make the required statements, in the light of the circumstances under which they are made, not misleading."

In disclosing to SASB Standards, it is expected that registrants disclose with the same level of rigor, accuracy, and responsibility as they apply to all other information contained in their SEC filings.

Users of the SASB Standards

The SASB Standards are intended to provide guidance for companies that engage in public offerings of securities registered under the Securities Act of 1933 (the Securities Act) and those that issue securities registered under the Securities Exchange Act of 1934 (the Exchange Act),[7] for use in SEC filings, including, without limitation, annual reports on Form 10-K (Form 20-F for foreign issuers), quarterly reports on Form 10-Q, current reports on Form 8-K, and registration statements on Forms S-1 and S-3. Disclosure with respect to the SASB Standards is not required or endorsed by the SEC or other entities governing financial reporting, such as FASB, GASB, or IASB.

Scope of Disclosure

Unless otherwise specified, SASB recommends:

- That a registrant disclose on sustainability issues and metrics for itself and for entities that are consolidated for financial reporting purposes as defined by accounting principles generally accepted in the United States for consistency with other accompanying information within SEC filings;[8]
- That for consolidated entities, disclosures be made, and accounting metrics calculated, for the whole entity, regardless of the size of the minority interest; and
- That information from unconsolidated entities not be included in the computation of SASB accounting metrics. A registrant should disclose, however, information about unconsolidated entities to the extent that the registrant considers the information necessary for investors to understand the effect of sustainability topics on the company's financial condition or operating performance (typically, this disclosure would be limited to risks and opportunities associated with these entities).

Reporting Format

Use of Financial Data

In instances where accounting metrics, activity metrics, and technical protocols in this standard incorporate financial data (e.g., revenues, cost of sales, expenses recorded and disclosed for fines, etc.), such financial data shall be prepared in accordance with the accounting principles generally accepted in the United States of America ("US GAAP") and be consistent with the corresponding financial data reported within the registrant's SEC filings. Should accounting metrics, activity metrics and technical protocols in this standard incorporate disclosure of financial data

[7] Registration under the Securities Exchange Act of 1934 is required (1) for securities to be listed on a national securities exchange such as the New York Stock Exchange, the NYSE Amex, and the NASDAQ Stock Market or (2) if (A) the securities are equity securities and are held by more than 2,000 persons (or 500 persons who are not accredited investors) and (B) the company has more than $10 million in assets.
[8] See US GAAP consolidation rules (Section 810).

that is not prepared in accordance with US GAAP, the registrant shall disclose such information in accordance with the SEC Regulation G.

Activity Metrics and Normalization

SASB recognizes that normalizing accounting metrics is important for the analysis of SASB disclosures.

SASB recommends that a registrant disclose any basic business data that may assist in the accurate evaluation and comparability of disclosure, to the extent that they are not already disclosed in the Form 10-K (e.g., revenue, EBITDA, etc.).

Such data—termed "activity metrics"—may include high-level business data such as total number of employees, quantity of products produced or services provided, number of facilities, or number of customers. It may also include industry-specific data such as plant capacity utilization (e.g., for specialty chemical companies), number of transactions (e.g., for Internet media and services companies), hospital bed days (e.g., for health care delivery companies), or proven and probable reserves (e.g., for oil and gas exploration and production companies).

Activity metrics disclosed should:

- Convey contextual information that would not otherwise be apparent from SASB accounting metrics.
- Be deemed generally useful for an investor relying on SASB accounting metrics in performing their own calculations and creating their own ratios.
- Be explained and consistently disclosed from period to period to the extent they continue to be relevant. However, a decision to make a voluntary disclosure in one period does not obligate a continuation of that disclosure if it is no longer relevant or if a better metric becomes available.[9]

[9] *Improving Business Reporting: Insights into Enhancing Voluntary Disclosures*, FASB Business Reporting Research Project, January 29, 2001.

Where relevant, SASB recommends specific activity metrics that—at a minimum—should accompany SASB accounting metric disclosures.

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Number of assets, by property subsector[10]	Quantitative	Number	IF0402-A
Leasable floor area, by property subsector[11]	Quantitative	Square feet (ft^2)	IF0402-B
Percentage of indirectly managed assets, by property subsector[12]	Quantitative	Percentage (%) by floor area (ft^2)	IF0402-C
Average occupancy rate, by property subsector[13]	Quantitative	Percentage (%)	IF0402-D

Units of Measure

Unless specified, disclosures should be reported in International System of Units (SI units).

Uncertainty

SASB recognizes that there may be inherent uncertainty when disclosing certain sustainability data and information. This may be related to variables such as the reliance on data from third-party reporting systems and technologies, or the unpredictable nature of climate events. Where uncertainty around a particular disclosure exists, SASB recommends that the registrant should consider discussing its nature and likelihood.

Estimates

SASB recognizes that scientifically based estimates, such as the reliance on certain conversion factors or the exclusion of *de minimis* values, may occur for certain quantitative disclosures. Where appropriate, SASB does not discourage the use of such estimates. When using an estimate for a particular disclosure, SASB expects that the registrant discuss its nature and substantiate its basis.

[10] Note to **IF0402-A**—Number of assets shall include the number of distinct real estate property or building assets and is aligned with the 2016 GRESB Real Estate Assessment Reference Guide. Number of assets shall be disclosed separately for each portion of the registrant's portfolio where properties are classified into subsectors that are aligned with the FTSE NAREIT Classification System. The total number of assets reported across all subsectors can exceed the actual number of assets due to the fact that mixed-use assets can be reported in multiple subsectors.
[11] Note to **IF0402-B**—Leasable floor area shall be disclosed separately for each portion of the registrant's portfolio where properties are classified into subsectors that are aligned with the FTSE NAREIT Classification System. Number of units may be used in place of floor area in the Apartments and Lodging/Resorts property subsectors when floor area is not available.
[12] Note to **IF0402-C**—The definition of "indirectly managed assets" is solely based on the landlord/tenant relationship and is aligned with the 2016 GRESB Real Estate Assessment Reference Guide: "Where a single tenant has the sole authority to introduce and implement operating and/or environmental policies and measures, the tenant should be assumed to have operational control, so [the asset] should be considered to be an Indirectly Managed Asset." Percentage of indirectly managed assets shall be disclosed separately for each portion of the registrant's portfolio where properties are classified into subsectors that are aligned with the FTSE NAREIT Classification System.
[13] Note to **IF0402-D**—Average occupancy rate shall be disclosed separately for each portion of the registrant's portfolio where properties are classified into subsectors that are aligned with the FTSE NAREIT Classification System.

Timing

Unless otherwise specified, disclosure shall be for the registrant's fiscal year.

Limitations

There is no guarantee that SASB Standards address all sustainability impacts or opportunities associated with a sector, industry, or company, and therefore, a company must determine for itself the topics—sustainability-related or otherwise—that warrant discussion in its SEC filings.

Disclosure under SASB Standards is voluntary. It is not intended to replace any legal or regulatory requirements that may be applicable to user operations. Where such laws or regulations address legal or regulatory topics, disclosure under SASB Standards is not meant to supersede those requirements. Disclosure according to SASB Standards shall not be construed as demonstration of compliance with any law, regulation, or other requirement.

SASB Standards are intended to be aligned with the principles of materiality enforced by the SEC. However, SASB is not affiliated with or endorsed by the SEC or other entities governing financial reporting, such as FASB, GASB, or IASB.

Forward-looking Statements

Disclosures on sustainability topics can involve discussion of future trends and uncertainties related to the registrant's operations and financial condition, including those influenced by external variables (e.g., environmental, social, regulatory, and political). Companies making such disclosures should familiarize themselves with the safe harbor provisions of Section 27A of the Securities Act and Section 21E of the Exchange Act, which preclude civil liability for material misstatements or omissions in such statements if the registrant takes certain steps, including, among other things, identifying the disclosure as "forward-looking" and accompanying such disclosure with "meaningful cautionary statements identifying important factors that could cause actual results to differ materially from those in the forward-looking statements."

The following sections contain the disclosure guidance associated with each accounting metric such as guidance on definitions, scope, accounting, compilation, and presentation.

The term "shall" is used throughout this document to indicate those elements that reflect requirements of the Standard. The terms "should" and "may" are used to indicate guidance, which, although not required, provides a recommended means of disclosure.

Table 1. Sustainability Disclosure Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Energy Management	Energy consumption data coverage as a percentage of floor area, by property subsector	Quantitative	Percentage (%) by floor area (ft^2)	IF0402-01
	Total energy consumed by portfolio area with data coverage, percentage grid electricity, and percentage renewable, each by property subsector	Quantitative	Gigajoules (GJ), Percentage (%)	IF0402-02
	Like-for-like change in energy consumption of portfolio area with data coverage, by property subsector	Quantitative	Percentage (%) by gigajoules (GJ)	IF0402-03
	Percentage of eligible portfolio that (1) has obtained an energy rating and (2) is certified to ENERGY STAR®, by property subsector	Quantitative	Percentage (%) by floor area (ft^2)	IF0402-04
	Description of how building energy management considerations are integrated into property investment analysis and operational strategy	Discussion and Analysis	n/a	IF0402-05
Water Management	Water withdrawal data coverage as a percentage of total floor area and percentage in regions with High or Extremely High Baseline Water Stress, each by property subsector	Quantitative	Percentage (%) by floor area (ft^2)	IF0402-06
	Total water withdrawn by portfolio area with data coverage and percentage in regions with High or Extremely High Baseline Water Stress, each by property subsector	Quantitative	Cubic meters (m^3), Percentage (%)	IF0402-07
	Like-for-like change in water withdrawn for portfolio area with data coverage, by property subsector	Quantitative	Percentage (%) by cubic meters (m^3)	IF0402-08
	Discussion of water management risks and description of strategies and practices to mitigate those risks	Discussion and Analysis	n/a	IF0402-09

Table 1. Sustainability Disclosure Topics & Accounting Metrics (cont.)

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Management of Tenant Sustainability Impacts	Percentage of new leases that contain a cost recovery clause for resource efficiency-related capital improvements and associated leased floor area, by property subsector	Quantitative	Percentage (%) by floor area (ft^2), Square feet (ft^2)	IF0402-10
	Percentage of tenants that are separately metered or submetered for (1) grid electricity consumption and (2) water withdrawals, by property subsector	Quantitative	Percentage (%) by floor area (ft^2)	IF0402-11
	Description of approach to measuring, incentivizing, and improving sustainability impacts of tenants	Discussion and Analysis	n/a	IF0402-12
Climate Change Adaptation	Area of properties located in FEMA Special Flood Hazard Areas or foreign equivalent, by property subsector	Quantitative	Square feet (ft^2)	IF0402-13
	Description of climate change risk exposure analysis, degree of systematic portfolio exposure, and strategies for mitigating risks	Discussion and Analysis	n/a	IF0402-14

Energy Management

Description

Real estate assets consume significant amounts of energy, primarily related to space heating, ventilating, air conditioning, water heating, lighting, and equipment and appliance use. Type of energy used, magnitude of consumption, and strategies for energy management are highly dependent on the real estate asset class, among other factors. Generally, grid electricity consumption is the predominant form of consumed energy, though on-site fuel combustion also serves an important role. Energy costs may be borne by companies in the industry and/or the property occupants; either way, energy management is a significant industry issue. To the extent that the real estate owner assumes direct responsibility for energy costs, such costs often represent significant operating costs, inherently indicating the importance of energy management. Energy pricing volatility and a general trend of electricity price increases, energy-related regulations, wide variations in energy performance across the existing building stock, and opportunities for efficiency improvements through economically attractive capital investments all further point to the importance of energy management. Energy costs assumed by occupants, either in whole or in part, are nonetheless likely to significantly impact companies in the industry, albeit through differing channels. Building energy performance is a notable driver of tenant demand, as it allows them to control operating costs, mitigate the environmental impacts of operations, and, often just as importantly, maintain a reputation for resource conservation. Additionally, real estate owners may be exposed to energy-related regulations even when energy costs are the responsibility of occupants. Overall, companies in the industry that effectively manage the energy performance of their assets may see reduced operating costs and regulatory risks, as well as increased tenant demand, rental rates, and occupancy rates, all of which drive revenue and asset value appreciation. Improving the energy performance of assets is highly dependent on property type and location, target tenant market, local building codes, physical and legal opportunities to deploy distributed renewable energy, ability to measure consumption, and performance of existing building stock, among other factors.

Accounting Metrics

IF0402-01. Energy consumption data coverage as a percentage of floor area, by property subsector

.01 Energy consumption data coverage shall be disclosed as a percentage and calculated as the total portfolio gross floor area with complete energy consumption data coverage divided by the total portfolio gross floor area for which energy is used, where:

- Gross floor area is defined according to the U.S. Environmental Protection Agency (EPA) ENERGY STAR® definition as "the total property square footage, measured between the principal exterior surfaces of the enclosing fixed walls of the building(s)."

- Floor area is considered to have complete energy consumption data coverage when energy consumption data (i.e., energy types and amounts consumed) is obtained by the registrant for all types of energy consumed in the relevant floor area during the fiscal year, regardless of when such data was obtained.

    - If such data is not available for one or more types of energy consumed, the relevant floor area shall not be considered to have energy consumption data coverage.

.02 The scope of energy includes:

- Energy purchased from sources external to the registrant and its tenants or produced by the registrant or its tenants themselves (self-generated).
- Energy from all sources, including direct fuel usage, purchased electricity, and heating, cooling, and steam energy.

.03 The registrant may choose to discuss the comprehensiveness of data coverage if coverage variations by energy type exist (e.g., if a portion of floor area consumes electricity and natural gas and the registrant has energy consumption data coverage for electricity but not natural gas, the registrant does not have complete energy consumption data coverage but may choose to disclose the portion of total portfolio gross floor area with partial energy consumption data coverage).

.04 The registrant may choose to describe the variations in energy consumption data coverage, including the factors that influence it.

- Variations in energy consumption data coverage may occur based on distinctions including, but not limited to, the following:
  - Base Building, Tenant Space, and Whole Building;
  - Energy purchased by the landlord and energy purchased by tenants;
  - Managed assets and indirectly managed assets; and
  - Geographical markets.
- Relevant factors that influence energy consumption data coverage may include, but are not limited to:
  - Geographical markets and the applicable enabling or inhibiting laws, regulations, and policies within such markets, including those policies of utilities;
  - Administrative or logistical barriers to obtaining energy consumption data (e.g., lack of integration of utilities' data reporting systems);
  - Tenant demands around the privacy or proprietary nature of energy consumption data;
  - Property subsectors or other more nuanced classifications of property types;
  - Lease structures, including the length in time of leases, the terms applicable to the access of energy consumption data by the registrant, and the ability of the registrant to influence energy management performance of tenant spaces; and
  - The registrant's perception that its obtainment of tenant space energy consumption data may negatively impact tenant demand.

.05 The following terms are defined according to the 2016 GRESB Real Estate Assessment Reference Guide:

- Base Building is defined as "Energy consumed in supplying central building services to lettable/leasable areas and common areas."
- Tenant Space is defined as "Lettable floor area (both vacant and let/leased areas)."
- Whole Building is defined as "Energy used by tenants and base building services to lettable/leasable and common spaces. This should include all energy supplied to the building for the operation of the building and the tenant space."
- Purchased by Landlord is defined as "Energy purchased by the landlord, but consumed by the tenant. This can include energy purchased by the landlord but used for vacant space."
- Purchased by Tenant is defined as "Energy purchased by the tenant. Typically this is data that is not within the participants' immediate control…"
- Managed Assets and Indirectly Managed Assets are defined as follows: "This definition of Managed assets and the definition of Indirectly Managed assets are solely based on the landlord/tenant relationship. [Managed and Indirectly Managed Assets are] assets or buildings for which the landlord is determined to have 'operational control' where operational control is defined as having the ability to introduce and implement operating and/or environmental policies and measures. In case both the landlord and tenant have the authority to introduce and implement any or all of the policies mentioned above, the asset or building should be reported as a Managed asset. Where a single tenant has the sole authority to introduce and implement operating and/or environmental policies and measures, the tenant should be assumed to have operational control, so it should be considered to be an Indirectly Managed asset."

.06 Leasable floor area may be used in place of gross floor area when gross floor area is not available for the relevant area of the portfolio (e.g., if a building with an unknown gross floor area has complete energy consumption data coverage, the leasable floor area may be added to the numerator and denominator for the relevant building in the above calculation in place of gross floor area).

.07 Number of units may be used in place of floor area in the Apartments and Lodging/Resorts property subsectors when floor area is not available.

.08 The registrant shall disclose energy consumption data coverage separately for each portion of its portfolio where properties are classified into subsectors that are aligned with the FTSE NAREIT Classification System and include the following: Health Care, Self Storage, Industrial, Office, Apartments, Manufactured Homes, Single Family Homes, Shopping Centers, Regional Malls, Free Standing, Lodging/Resorts, Specialty, Data Centers, and Other (any other property type(s) that cannot be classified to any of the previous property subsector classifications).

.09 The registrant shall consider the 2016 GRESB Real Estate Assessment Reference Guide as a normative reference, thus any updates made year-on-year shall be considered updates to this guidance.

IF0402-02. Total energy consumed by portfolio area with data coverage, percentage grid electricity, and percentage renewable, each by property subsector

.10 The registrant shall disclose total energy consumption by the portfolio area for which there is energy consumption data coverage as an aggregate figure in gigajoules or their multiples, where:

- Energy consumption data shall be disclosed by (1)(a) Base Building and (b) Tenant Space or (2) Whole Building, or a combination of these.
- The scope includes all property area in the registrant's portfolio for which there is energy consumption data coverage, regardless of whether energy is consumed by the Tenant Space or Base Building (including outdoor, exterior, and parking areas) and which party pays for energy expenses.
- The scope excludes the portion of energy consumed by property area in the registrant's portfolio for which energy consumption data is unavailable.[14]
  - If energy consumption data is not available for Tenant Space or Whole Building for a property but is available for the Base Building, then the registrant shall disclose this energy consumption data.
- The scope of energy includes:
  - Energy purchased from sources external to the registrant and its tenants or produced by the registrant or its tenants themselves (self-generated).
  - Energy from all sources, including direct fuel usage, purchased electricity, and heating, cooling, and steam energy.

.11 In calculating energy consumption from fuels and biofuels, the registrant 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).

.12 The registrant shall disclose grid electricity consumption as a percentage of total energy consumption.

.13 The registrant shall disclose renewable energy consumption as a percentage of total energy consumption.

.14 The scope of renewable energy includes renewable fuel the registrant and its tenants consume and renewable energy the registrant and its tenants directly produce, purchase through a renewable power purchase agreement (PPA) that explicitly includes renewable energy certificates (RECs), or for which Green-e Energy Certified RECs are paired with grid electricity.

- For any renewable electricity generated on-site, any RECs must be retained (i.e., not sold) and retired on behalf of the registrant or its tenants in order for the registrant to claim them as renewable energy.

[14] SASB recognizes that there may be property area in the registrant's portfolio for which energy consumption data coverage is unavailable, in which case IF0402-02 will not reflect the entirety of energy consumption within the portfolio.

- For renewable PPAs, the agreement must explicitly include and convey that RECs be retained and retired on behalf of the registrant or its tenants in order for the registrant to claim them as renewable energy.

- The renewable portion of the electricity grid mix that is outside of the control or influence of the registrant and its tenants is excluded from disclosure.[15]

- Renewable energy is defined as energy from sources that are replenished at a rate greater than or equal to their rate of depletion, consistent with U.S. EPA definitions, such as geothermal, wind, solar, hydro, and biomass.

.15 For the purposes of this disclosure, the scope of renewable energy from hydro and biomass sources is limited to the following:

- Energy from hydro sources that are certified by the Low Impact Hydropower Institute or that are eligible for a state Renewable Portfolio Standard.

- 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 renewables" according to the Green-e Energy National Standard Version 2.5 (2014), and materials that are eligible for a state Renewable Portfolio Standard.

.16 The registrant 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 kWh to gigajoules (for energy data including electricity from solar or wind energy).

.17 The registrant shall disclose total energy consumed separately for each portion of its portfolio where properties are classified into subsectors that are aligned with the FTSE NAREIT Classification System and include the following: Health Care, Self Storage, Industrial, Office, Apartments, Manufactured Homes, Single Family Homes, Shopping Centers, Regional Malls, Free Standing, Lodging/Resorts, Specialty, Data Centers, and Other (any other property type(s) that cannot be classified to any of the previous property subsector classifications).

.18 The registrant may choose to describe the variations in energy consumption.

- Variations in energy consumption data coverage may occur based on distinctions including, but not limited to, the following:

  - Base Building, Tenant Space, and Whole Building;

  - Energy purchased by the landlord and energy purchased by tenants;

[15] SASB recognizes that RECs reflect the environmental attributes of renewable energy that have been introduced to the grid.

- Managed assets and indirectly managed assets; and
- Geographical markets.

.19 The following terms are defined according to the 2016 GRESB Real Estate Assessment Reference Guide:

- Base Building is defined as "Energy consumed in supplying central building services to lettable/leasable areas and common areas."
- Tenant Space is defined as "Lettable floor area (both vacant and let/leased areas)."
- Whole Building is defined as "Energy used by tenants and base building services to lettable/leasable and common spaces. This should include all energy supplied to the building for the operation of the building and the tenant space."
- Purchased by Landlord is defined as "Energy purchased by the landlord, but consumed by the tenant. This can include energy purchased by the landlord but used for vacant space."
- Purchased by Tenant is defined as "Energy purchased by the tenant. Typically this is data that is not within the participants' immediate control…"
- Managed Assets and Indirectly Managed Assets are defined as follows: "This definition of Managed assets and the definition of Indirectly Managed assets are solely based on the landlord/tenant relationship. [Managed and Indirectly Managed Assets are] assets or buildings for which the landlord is determined to have 'operational control' where operational control is defined as having the ability to introduce and implement operating and/or environmental policies and measures. In case both the landlord and tenant have the authority to introduce and implement any or all of the policies mentioned above, the asset or building should be reported as a Managed asset. Where a single tenant has the sole authority to introduce and implement operating and/or environmental policies and measures, the tenant should be assumed to have operational control, so it should be considered to be an Indirectly Managed asset."

.20 The registrant shall consider the 2016 GRESB Real Estate Assessment Reference Guide as a normative reference, thus any updates made year-on-year shall be considered updates to this guidance.

IF0402-03. Like-for-like change in energy consumption of portfolio area with data coverage, by property subsector

.21 Like-for-like change in energy consumption shall be disclosed as a percentage and calculated as the total energy consumption in the fiscal year divided by the total energy consumption in the immediately prior fiscal year, where:

- The scope of energy consumption included in calculation of "like-for-like change" shall be aligned with that outlined in the 2016 GRESB Real Estate Assessment Reference Guide ("Like-for-like Comparison") as including all energy consumed by properties that were in the registrant's portfolio for both the full fiscal year and the immediately prior full fiscal year.
    - Energy consumed by properties that have been acquired, disposed of, under development or have undergone a major renovation during the fiscal year or the immediately prior fiscal year shall be excluded.
    - No correction for changes in the occupancy rate is needed and buildings with a high variation in vacancy rates should be included.
- The scope excludes the portion of energy consumed by property area in the registrant's portfolio for which energy consumption data is unavailable for the full fiscal year and/or the immediately prior full fiscal year.[16]

.22 Like-for-like change in energy consumption shall be disclosed by (1)(a) Base Building and (b) Tenant Space or (2) Whole Building, or a combination of these.

- If like-for-like change in energy consumption data is not available for Tenant Space or Whole Building for a property but is available for the Base Building, then the registrant shall disclose this like-for-like change in energy consumption data.

.23 The scope, methodology, and calculations of energy consumption shall be consistent with IF0402-02.

.24 The registrant shall disclose like-for-like change in energy consumption separately for each portion of its portfolio where properties are classified into subsectors that are aligned with the FTSE NAREIT Classification System and include the following: Health Care, Self Storage, Industrial, Office, Apartments, Manufactured Homes, Single Family Homes, Shopping Centers, Regional Malls, Free Standing, Lodging/Resorts, Specialty, Data Centers, and Other (any other property type(s) that cannot be classified to any of the previous property subsector classifications).

.25 The registrant should disclose the floor area, in square feet, included in the scope of like-for-like change in energy consumption if the scope significantly diverges from the floor area of energy consumption data coverage.

[16] SASB recognizes that there may be property area in the registrant's portfolio for which energy consumption data coverage is unavailable, in which case IF0402-03 will not reflect the entirety of energy consumption within the portfolio.

.26 "Like-for-like" data collection, analysis, and disclosure may be consistent with the approach with which the registrant discloses its financial reporting data.

- If the registrant discloses its financial reporting data using a concept and methodology similar to "Like-for-Like Comparison," the registrant shall describe divergences between the scope of assets and/or floor area used in its financial reporting and its like-for-like change in energy consumption. For example, if additional assets are excluded from the like-for-like change in energy consumption relative to like-for-like financial reporting as a result of data coverage limitations, such inconsistencies shall be described.

.27 The registrant may choose to additionally present like-for-like change in energy consumption on a normalized basis.

- Normalization factors and methodologies may include, but are not limited to, the following which are presented in the 2016 GRESB Real Estate Assessment Reference Guide:
  - Occupancy rate;
  - Footfall;
  - Operational hours;
  - Weather conditions;
  - Degree days;
  - Air conditioning and/or natural ventilation;
  - Building age; and/or
  - Other.
- If the registrant chooses to additionally disclose normalized "like-for-like" change in energy consumption, the registrant shall provide a brief description of the normalization factor and methodology or its use of a third-party methodology (e.g., "Weather Normalized Energy" as provided by ENERGY STAR Portfolio Manager®).

.28 The registrant may choose to describe the variations in like-for-like change in energy consumption.

- Variations in energy consumption may occur based on distinctions including, but not limited to, the following:
  - Base Building, Tenant Space, and Whole Building;
  - Energy purchased by the landlord and energy purchased by tenants;
  - Managed assets and indirectly managed assets; and
  - Geographical markets.

.29 The following terms are defined according to the 2016 GRESB Real Estate Assessment Reference Guide:

- Base Building is defined as "Energy consumed in supplying central building services to lettable/leasable areas and common areas."
- Tenant Space is defined as "Lettable floor area (both vacant and let/leased areas)."
- Whole Building is defined as "Energy used by tenants and base building services to lettable/leasable and common spaces. This should include all energy supplied to the building for the operation of the building and the tenant space."
- Purchased by Landlord is defined as "Energy purchased by the landlord, but consumed by the tenant. This can include energy purchased by the landlord but used for vacant space."
- Purchased by Tenant is defined as "Energy purchased by the tenant. Typically this is data that is not within the participants' immediate control…"
- Managed Assets and Indirectly Managed Assets are defined as follows: "This definition of Managed assets and the definition of Indirectly Managed assets are solely based on the landlord/tenant relationship. [Managed and Indirectly Managed Assets are] assets or buildings for which the landlord is determined to have 'operational control' where operational control is defined as having the ability to introduce and implement operating and/or environmental policies and measures. In case both the landlord and tenant have the authority to introduce and implement any or all of the policies mentioned above, the asset or building should be reported as a Managed asset. Where a single tenant has the sole authority to introduce and implement operating and/or environmental policies and measures, the tenant should be assumed to have operational control, so it should be considered to be an Indirectly Managed asset."

.30 The registrant shall consider the 2016 GRESB Real Estate Assessment Reference Guide as a normative reference, thus any updates made year-on-year shall be considered updates to this guidance.

IF0402-04. Percentage of eligible portfolio that (1) has obtained an energy rating and (2) is certified to ENERGY STAR®, by property subsector

.31 The registrant shall disclose the percentage of the portfolio that has a valid or current energy rating, by gross floor area, where:

- The percentage shall be calculated as the total portfolio gross floor area that obtained an energy rating divided by the total portfolio gross floor area.
- Gross floor area is defined according to the EPA ENERGY STAR® definition as "the total property square footage, measured between the principal exterior surfaces of the enclosing fixed walls of the building(s)."

- An energy rating is defined according to the 2016 GRESB Real Estate Assessment Reference Guide as a scheme that measures the energy performance of buildings, including schemes solely concerned with measuring energy performance as well as cases in which an energy rating is an element of a broader scheme measuring environmental performance.

- The scope of energy rating schemes includes:

  - ENERGY STAR® for operations in the U.S. and Canada.

  - E.U. Energy Performance Certificates (EPC) for operations in the European Union.

  - NABERS Energy for operations in Australia.

  - NABERSNZ for operations in New Zealand.

  - Other energy rating schemes that can be demonstrated to have substantially equivalent criteria, methodology, and presentation of results as those schemes above.

- The scope of disclosure is aligned with the 2016 GRESB Real Estate Assessment Reference Guide in that it "only include[s] energy ratings that were awarded before or during the reporting period (pre-assessments or other unofficial forms of pre-certification are not valid). Some energy ratings are valid for a limited period only—the rating should be effective and official during the reporting period."

.32 The registrant may additionally disclose the percentage by energy rating scheme (i.e., by country).

.33 The registrant shall disclose the percentage of the portfolio that is certified to ENERGY STAR®.

- The percentage shall be calculated as the total portfolio gross floor area that is certified to ENERGY STAR® in the United States divided by the total portfolio gross floor area in the United States.

  - If property is located in Canada, the registrant may separately disclose the percentage of the portfolio in Canada that is certified to ENERGY STAR®.

- For a property to qualify as certified to ENERGY STAR®, the certification must be effective and official during the reporting period (as aligned with the 2016 GRESB Real Estate Assessment Reference Guide).

.34 The registrant may exclude from the scope the property area that is ineligible to receive an energy rating or certification based on the property subsector, location (e.g., located in a region in which energy ratings are not a commercially available service), or other specific use characteristics.

.35 The registrant shall consider the 2016 GRESB Real Estate Assessment Reference Guide as a normative reference, thus any updates made year-on-year shall be considered updates to this guidance.

IF0402-05. Description of how building energy management considerations are integrated into property investment analysis and operational strategy

.36 The registrant shall describe its strategic approach and the operational processes it uses to integrate energy-related considerations into its analysis of current and future property investments.

.37 The registrant shall discuss the following elements of its strategic approach, where relevant:

- The use of energy-reduction targets and performance against those targets;
- The integration of property energy performance into its property acquisition due diligence process, such as if these measures are qualitative in nature (e.g., whether or not the building has an energy performance certification) or quantitative in nature (e.g., the registrant adjusts occupancy rate projections based on energy performance data); and
- Entity-level energy consumption and management policies, applicable across the registrant's portfolio (aligned with 2016 GRESB Real Estate Assessment Q8).

.38 The registrant shall discuss the operational processes it uses, which may include, but are not limited to:

- Management of the technical energy performance of its portfolio; and
- The integration of renewable energy into its portfolio.

.39 Relevant elements of its technical approach may include, but are not limited to:

- Use of technical building assessments to identify energy efficiency opportunities, including whether such assessments are in-house or external and the general portfolio coverage of such assessments during the last three years (aligned with 2016 GRESB Real Estate Assessment Q16);
- Measures implemented to improve the energy efficiency of the portfolio, including specific measures taken, general portfolio coverage of such measures, and estimated energy savings (aligned with 2016 GRESB Real Estate Assessment Q17);
- Approach to retrocommissionings, including their applicability to the registrant's portfolio, the comprehensiveness of retrocommissionings conducted, general portfolio coverage, and estimated energy savings;
- Use of environmental management systems to measure, manage, and improve the energy performance of buildings and such systems' alignment with third-party standards or verification (aligned with 2016 GRESB Real Estate Assessment Q21, "Environmental Management Systems"); and
- Use of data management systems to monitor, analyze, and benchmark energy performance of individual buildings, and such systems' alignment with third-party standards or verification (aligned with 2016 GRESB Real Estate Assessment Q22, "Data Management Systems").

.40 The registrant shall discuss its strategies relating to energy ratings, benchmarking, and certifications, including their impact on tenant demand within the registrant's target market(s); their relevance to the property types in its portfolio, such as the subsector(s), locations, and construction (new versus existing stock); and the costs and benefits associated with obtaining and maintaining an energy rating, benchmark, and certification.

- If applicable, the registrant shall discuss whether it prefers certifications that are based on ongoing performance (e.g., ENERGY STAR®) or those based on performance-modeled design objectives.

.41 If the registrant participates in new construction or major renovations, it shall discuss whether and how it incorporates energy efficiency strategies into design and development.

.42 The registrant shall describe its approach to renewable energy generation, which may include, but not is not limited to:

- The relevance of on-site and off-site renewable energy generation to the portfolio and energy management strategy;
- Technical or legal limitations on the ability to incorporate renewable energy into the portfolio and energy management strategy; and
- The energy generated from on-site and off-site renewable energy (aligned with 2016 GRESB Real Estate Assessment Q25.3).

.43 The registrant shall consider the 2016 GRESB Real Estate Assessment as a normative reference, thus any updates made year-on-year shall be considered updates to this guidance.

Water Management

Description

Buildings consume significant amounts of water in their operations, through water fixtures, building equipment, appliances, and irrigation. Operating costs resulting from water consumption may represent significant costs depending on property type, tenant operations, geographical locations, and other factors. Companies in the industry can be responsible for a building's water costs, or common area water costs, though it is common to allocate all, or a portion, of these costs to occupants. In these arrangements, water management continues to play an important role through tenant demand and regulatory exposure. Tenants may assess the water efficiency of real estate assets in an effort to control operating costs, mitigate environmental impacts of operations, and, often just as importantly, develop a reputation for resource conservation. Additionally, real estate owners may be exposed to water-related regulations even when water costs are the responsibility of occupants. Overall, companies in the industry that effectively manage water efficiency of assets, even when they don't face direct exposure to water costs, may see reduced operating costs and regulatory exposure, as well as increased tenant demand, rental rates, and occupancy rates, all of which drive revenue and asset value appreciation. Long-term historic increases in the costs of water, and expectations around continued increases due to overconsumption and constrained supplies resulting from population growth and shifts, pollution, and climate change, indicate the heightened importance of water management. The ability to improve asset water efficiency is highly dependent on the property type, locational water availability, target tenant market, local building codes, the ability to measure consumption, and the level of current efficiency of existing building stock, among other factors.

Accounting Metrics

IF402-06. Water withdrawal data coverage as a percentage of total floor area and percentage in regions with High or Extremely High Baseline Water Stress, each by property subsector

.44 Water withdrawal data coverage shall be disclosed as a percentage and calculated as the total portfolio gross floor area with complete water withdrawal data coverage divided by the total portfolio gross floor area for which water is used, where:

- Gross floor area is defined according to the EPA ENERGY STAR® definition as "the total property square footage, measured between the principal exterior surfaces of the enclosing fixed walls of the building(s)."
- Floor area is considered to have complete water withdrawal data coverage when water withdrawal data (i.e., amounts withdrawn) is obtained by the registrant in the relevant floor area during the fiscal year, regardless of when such data was obtained.

.45 The scope of water withdrawals is aligned with the 2016 GRESB Real Estate Assessment Reference Guide, and includes water that was withdrawn from all sources, where:

- Water sources include surface water (including water from wetlands, rivers, lakes, and oceans), groundwater, rainwater collected directly and stored by the registrant, wastewater obtained from other entities, municipal water supplies, or supply from other water utilities.

.46 The registrant shall disclose the percentage of water withdrawal data coverage in regions with High or Extremely High Baseline Water Stress as classified by the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly accessible online here).

- The percentage shall be calculated as the total portfolio gross floor area with water withdrawal data coverage in regions with High or Extremely High Baseline Water Stress divided by the total portfolio gross floor area for which water is used in regions with High or Extremely High Baseline Water Stress.

.47 The registrant may choose to describe the variations in water withdrawal data coverage, including the factors that influence it.

- Variations in water withdrawal data coverage may occur based on distinctions including, but not limited to, the following:
  - Base Building, Tenant Space, and Whole Building;
  - Water purchased by the landlord and water purchased by tenants;
  - Managed assets and indirectly managed assets; and
  - Geographical markets.
- Relevant factors that influence water withdrawal data coverage may include, but are not limited to:
  - Geographical markets and the applicable enabling or inhibiting laws, regulations, and policies within such markets, including those policies of utilities;
  - Geographical markets and the applicability of risks related to water scarcity (and related current or future regulations);
  - Administrative or logistical barriers to obtaining water withdrawal data (e.g., lack of integration of utilities' data reporting systems);
  - Tenant demands around the privacy or proprietary nature of water withdrawal data;
  - Property subsectors or other more nuanced classifications of property types;
  - Lease structures, including the length in time of leases, the terms applicable to the access of water withdrawal data by the registrant, and the ability of the registrant to influence water management performance of tenant spaces; and
  - The registrant's perception that its obtainment of tenant space water withdrawal data may negatively impact tenant demand.

.48 The following terms are defined according to the 2016 GRESB Real Estate Assessment Reference Guide:

- Base Building is defined as water "consumed in supplying central building services to lettable/leasable areas and common areas."
- Tenant Space is defined as "Lettable floor area (both vacant and let/leased areas)."
- Whole Building is defined as water "used by tenants and base building services to lettable/leasable and common spaces. This should include all [water] supplied to the building for the operation of the building and the tenant space."
- Purchased by Landlord is defined as water "purchased by the landlord, but consumed by the tenant. This can include [water] purchased by the landlord but used for vacant space."
- Purchased by Tenant is defined as water "purchased by the tenant. Typically this is data that is not within the participants' immediate control…"
- Managed Assets and Indirectly Managed Assets are defined as follows: "This definition of Managed assets and the definition of Indirectly Managed assets are solely based on the landlord/tenant relationship. [Managed and Indirectly Managed Assets are] assets or buildings for which the landlord is determined to have 'operational control' where operational control is defined as having the ability to introduce and implement operating and/or environmental policies and measures. In case both the landlord and tenant have the authority to introduce and implement any or all of the policies mentioned above, the asset or building should be reported as a Managed asset. Where a single tenant has the sole authority to introduce and implement operating and/or environmental policies and measures, the tenant should be assumed to have operational control, so it should be considered to be an Indirectly Managed asset."

.49 Leasable floor area may be used in place of gross floor area when gross floor area is not available for the relevant area of the portfolio (e.g., if a building with an unknown gross floor area has complete water withdrawal data coverage, the leasable floor area may be added to the numerator and denominator for the relevant building in the above calculation in place of gross floor area).

.50 Number of units may be used in place of floor area in the Apartments and Lodging/Resorts property subsectors when floor area is not available.

.51 The registrant shall disclose water withdrawal data coverage separately for each portion of its portfolio where properties are classified into subsectors that are aligned with the FTSE NAREIT Classification System and include the following: Health Care, Self Storage, Industrial, Office, Apartments, Manufactured Homes, Single Family Homes, Shopping Centers, Regional Malls, Free Standing, Lodging/Resorts, Specialty, Data Centers, and Other (any other property type(s) that cannot be classified to any of the previous property subsector classifications).

.52 The registrant shall consider the 2016 GRESB Real Estate Assessment Reference Guide as a normative reference, thus any updates made year-on-year shall be considered updates to this guidance.

IF0402-07. Total water withdrawn by portfolio area with data coverage and percentage in regions with High or Extremely High Baseline Water Stress, each by property subsector

.53 The registrant shall disclose the total amount of water (in thousands of cubic meters) that was withdrawn by the portfolio area for which there is water withdrawal data coverage, where:

- Water withdrawal data shall be disclosed by (1)(a) Base Building and (b) Tenant Space or (2) Whole Building, or a combination of these.
- The scope includes all property area in the registrant's portfolio for which there is water withdrawal data coverage, regardless of whether water is consumed by the Tenant Space or Base Building (including outdoor, exterior, and parking areas) and which party pays for water expenses.
- The scope excludes the portion of water consumed by property area in the registrant's portfolio for which water withdrawal data is unavailable.[17]
    - If water withdrawal data is not available for Tenant Space or Whole Building for a property but is available for the Base Building, then the registrant shall disclose this water withdrawal data.
- The scope of water withdrawal is aligned with the 2016 GRESB Real Estate Assessment Reference Guide, and includes water that was withdrawn from all sources, where:
    - Water sources include surface water (including water from wetlands, rivers, lakes, and oceans), groundwater, rainwater collected directly and stored by the registrant, wastewater obtained from other entities, municipal water supplies, or supply from other water utilities.

.54 The registrant shall analyze all of its operations for water risks and identify activities that withdraw water in locations with High (40–80%) or Extremely High (>80%) Baseline Water Stress as classified by the WRI's Water Risk Atlas tool, Aqueduct (publicly accessible online here).

.55 The registrant shall disclose its water withdrawn in locations with High or Extremely High Baseline Water Stress as a percentage of the total water withdrawn.

.56 The registrant shall disclose total water withdrawn separately for each portion of its portfolio where properties are classified into subsectors that are aligned with the FTSE NAREIT Classification System and include the following: Health Care, Self Storage, Industrial, Office, Apartments, Manufactured Homes, Single Family Homes, Shopping Centers, Regional Malls, Free Standing, Lodging/Resorts, Specialty, Data Centers, and Other (any other property type(s) that cannot be classified to any of the previous property sub sector classifications).

[17] SASB recognizes that there may be property area in the registrant's portfolio for which water withdrawal data coverage is unavailable, in which case IF0402-07 will not reflect the entirety of water withdrawals within the portfolio.

.57 The registrant may choose to describe the variations in water withdrawn.

- Variations in water withdrawn may occur based on distinctions including, but not limited to, the following:
  - Base Building, Tenant Space, and Whole Building;
  - Water purchased by the landlord and water purchased by tenants;
  - Managed assets and indirectly managed assets; and
  - Geographical markets.

.58 The following terms are defined according to the 2016 GRESB Real Estate Assessment Reference Guide:

- Base Building is defined as, water "consumed in supplying central building services to lettable/leasable areas and common areas."
- Tenant Space is defined as, "Lettable floor area (both vacant and let/leased areas)."
- Whole Building is defined as, water "used by tenants and base building services to lettable/leasable and common spaces. This should include all [water] supplied to the building for the operation of the building and the tenant space."
- Purchased by landlord is defined as, water "purchased by the landlord, but consumed by the tenant. This can include [water] purchased by the landlord but used for vacant space."
- Purchased by tenant is defined as, water "purchased by the tenant. Typically this is data that is not within the participants' immediate control…"
- Managed Assets and Indirectly Managed Assets are defined as, "This definition of Managed assets and the definition of Indirectly Managed assets are solely based on the landlord/tenant relationship. Assets or buildings for which the landlord is determined to have 'operational control' where operational control is defined as having the ability to introduce and implement operating and/or environmental policies and measures. In case both the landlord and tenant have the authority to introduce and implement any or all of the policies mentioned above, the asset or building should be reported as a Managed asset. Where a single tenant has the sole authority to introduce and implement operating and/or environmental policies and measures, the tenant should be assumed to have operational control, so it should be considered to be an Indirectly Managed asset."

.59 The registrant shall consider the 2016 GRESB Real Estate Assessment Reference Guide as a normative reference, thus any updates made year-on-year shall be considered updates to this guidance.

IF0402-08. Like-for-like change in water withdrawn for portfolio area with data coverage, by property subsector

.60 Like-for-like change in water withdrawals shall be disclosed as a percentage and calculated as the total water withdrawals in the fiscal year divided by the total water withdrawals in the immediately prior fiscal year, where:

- The scope of water withdrawn included in calculation of "like-for-like change" shall be aligned with that outlined in the 2016 GRESB Real Estate Assessment Reference Guide ("Like-for-like Comparison") as including all water withdrawn by properties that were in the registrant's portfolio for both the full fiscal year and the immediately prior full fiscal year.
    - Water withdrawn by properties that have been acquired, disposed of, under development or have undergone a major renovation during the fiscal year or the immediately prior fiscal year shall be excluded.
    - No correction for changes in the occupancy rate is needed and buildings with a high variation in vacancy rates should be included.
- The scope excludes the portion of water withdrawn by property area in the registrant's portfolio for which water withdrawal data is unavailable for the full fiscal year and/or the immediately prior full fiscal year.[18]

.61 Like-for-like change in water withdrawals shall be disclosed by (1)(a) Base Building and (b) Tenant Space or (2) Whole Building, or a combination of these.

- If like-for-like change in water withdrawal data is not available for Tenant Space or Whole Building for a property but is available for the Base Building, then the registrant shall disclose this like-for-like water withdrawal data.

.62 The scope, methodology, and calculations of water withdrawals shall be consistent with IF0402-07.

.63 The registrant shall disclose like-for-like change in water withdrawn separately for each portion of its portfolio where properties are classified into subsectors that are aligned with the FTSE NAREIT Classification System and include the following: Health Care, Self Storage, Industrial, Office, Apartments, Manufactured Homes, Single Family Homes, Shopping Centers, Regional Malls, Free Standing, Lodging/Resorts, Specialty, Data Centers, and Other (any other property type(s) that cannot be classified to any of the previous property subsector classifications).

.64 The registrant should disclose the floor area, in square feet, included in the scope of like-for-like change in water withdrawals if the scope significantly diverges from the floor area of water withdrawal data coverage.

[18] SASB recognizes that there may be property area in the registrant's portfolio where water withdrawal data coverage is unavailable, in which case IF0402-08 will not reflect the entirety of water withdrawals within the portfolio.

.65 "Like-for-like" data collection, analysis, and disclosure may be consistent with the approach with which the registrant discloses its financial reporting data.

- If the registrant discloses its financial reporting data using a concept and methodology similar to "Like-for-Like Comparison," the registrant shall describe divergences between the scope of assets and/or floor area used in its financial reporting and its like-for-like change in water withdrawn. For example, if additional assets are excluded from the like-for-like change in water withdrawn relative to like-for-like financial reporting as a result of data coverage limitations, such inconsistencies shall be described.

.66 The registrant may choose to additionally present like-for-like change in water withdrawals on a normalized basis.

- Normalization factors and methodologies may include, but are not limited to, the following which are presented in the 2016 GRESB Real Estate Assessment Reference Guide:
  - Occupancy rate;
  - Footfall;
  - Operational hours;
  - Weather conditions;
  - Degree days;
  - Air conditioning and/or natural ventilation;
  - Building age; and/or
  - Other.
- If the registrant chooses to additionally disclose normalized "like-for-like" change in water withdrawn, the registrant shall provide a brief description of the normalization factor and methodology or its use of a third-party methodology.

.67 The registrant may choose to describe the variations in like-for-like change in water withdrawn.

- Variations in water withdrawn may occur based on distinctions including, but not limited to, the following:
  - Base Building, Tenant Space, and Whole Building;
  - Water purchased by the landlord and water purchased by tenants;
  - Managed assets and indirectly managed assets; and
  - Geographical markets.

.68 The following terms are defined according to the 2016 GRESB Real Estate Assessment Reference Guide:

- Base Building is defined as water "consumed in supplying central building services to lettable/leasable areas and common areas."
- Tenant Space is defined as "Lettable floor area (both vacant and let/leased areas)."
- Whole Building is defined as water "used by tenants and base building services to lettable/leasable and common spaces. This should include all [water] supplied to the building for the operation of the building and the tenant space."
- Purchased by Landlord is defined as water "purchased by the landlord, but consumed by the tenant. This can include [water] purchased by the landlord but used for vacant space."
- Purchased by Tenant is defined as water "purchased by the tenant. Typically this is data that is not within the participants' immediate control…"
- Managed Assets and Indirectly Managed Assets are defined as follows: "This definition of Managed assets and the definition of Indirectly Managed assets are solely based on the landlord/tenant relationship. [Managed and Indirectly Managed Assets are] assets or buildings for which the landlord is determined to have 'operational control' where operational control is defined as having the ability to introduce and implement operating and/or environmental policies and measures. In case both the landlord and tenant have the authority to introduce and implement any or all of the policies mentioned above, the asset or building should be reported as a Managed asset. Where a single tenant has the sole authority to introduce and implement operating and/or environmental policies and measures, the tenant should be assumed to have operational control, so it should be considered to be an Indirectly Managed asset."

.69 The registrant shall consider the 2016 GRESB Real Estate Assessment Reference Guide as a normative reference, thus any updates made year-on-year shall be considered updates to this guidance.

IF0402-09. Discussion of water management risks and description of strategies and practices to mitigate those risks

.70 The registrant shall discuss its risks associated with water withdrawals.

.71 The registrant shall discuss, where applicable, risks to the availability of adequate, clean water resources.

- Relevant information to provide may include, but is not limited to:
  - Environmental constraints, such as operating in water-stressed regions, drought, interannual or seasonal variability, and risks due to the impact of climate change.
  - External constraints, such as volatility in water costs, stakeholder perceptions and concerns related to water withdrawals (e.g., those from local communities, non-governmental organizations, and regulatory agencies), direct competition with and impact from the actions of

other users (commercial and municipal), restrictions to withdrawals due to regulations, and the ability to obtain and retain water rights or permits.

  - How risks may vary by withdrawal source, including wetlands, rivers, lakes, oceans, groundwater, rainwater, municipal water supplies, or supply from other water utilities.

.72 The registrant should include a discussion of the potential impacts that these risks may have on its operations and the timeline over which such risks are expected to manifest.

- Impacts may include, but are not limited to, those associated with costs, revenues, liabilities, continuity of operations, and reputation.

.73 The registrant shall provide a description of its short-term and long-term strategy or plan to manage these risks, including the following, where relevant:

- Any water management targets it has set, and an analysis of performance against those targets.
  - Water management targets can include water management goals that the registrant prioritizes to manage its risks and opportunities associated with water withdrawals, consumption, or discharge.
  - Targets can include, but are not limited to, those associated with reducing water withdrawals, reducing water consumption, reducing water discharges, and improving water discharge quality.
- The scope of its strategy, plans, or targets, such as whether they pertain differently to different business units, geographies, or water-consuming operational processes.
- The activities and investments required to achieve the plans and targets, and any risks or limiting factors that might affect achievement of the plans and/or targets.

.74 For water management targets, the registrant shall additionally disclose:

- The percentage reduction or improvements from the base year, where:
  - The base year is the first year against which water management targets are evaluated toward the achievement of the target.
- Whether the target is absolute or intensity based, and the metric denominator if it is an intensity-based target.
- The timelines for the water management plans, including the start year, the target year, and the base year.

- The mechanism(s) for achieving the target, including:
    - Efficiency efforts, such as the use of water recycling, closed-loop systems, and/or efficiency-driven equipment and appliance upgrades;
    - The planning and design for the water requirements of outdoor areas and irrigation;
    - The use of tools and technologies (e.g., the World Wildlife Fund Water Risk Filter, WRI/WBCSD Global Water Tool, and Water Footprint Network Footprint Assessment Tool) to analyze water use, risk, and opportunities; and
    - Collaborations or programs in place with the community or other organizations.

.75 Disclosure of strategies, plans, and targets shall be limited to activities that were ongoing (active) or reached completion during the fiscal year.

.76 The registrant may choose to discuss if its water management decisions and practices incorporate consideration of any additional lifecycle impacts or environmental tradeoffs for the registrant, including tradeoffs associated with land-use impacts, energy consumption, and greenhouse gas (GHG) emissions.

Management of Tenant Sustainability Impacts

Description

Real estate assets generate significant sustainability impacts, including resource consumption—namely energy and water—waste generation, and impacts on occupant health through indoor environmental quality. While companies in the industry own real estate assets, it is the tenant operations of such assets that is a dominant driver of sustainability impacts produced by the built environment. Tenants may design and construct leased spaces according to their operating needs. In turn, their operations consume significant amounts of energy and water, generate waste, and impact the health of those living, working, shopping, or visiting the properties. While these sustainability impacts are often generated by tenant operations and activities, real estate owners have an important role in influencing tenant sustainability impacts. The manner in which companies in the industry structure their agreements, contracts, and relationships with tenants is instrumental in effectively managing the sustainability impacts of their tenants, and ultimately, the impacts of their assets. Managing tenant sustainability impacts may include mitigating the problem of split incentives by aligning both parties' financial interests and sustainability outcomes, establishing systematic measurement and communication of resource consumption data, creating shared performance goals, and mandating minimum sustainability performance or design requirements, among other strategies. Effective management of tenant sustainability impacts, particularly related to energy, water, and indoor environmental quality, may drive asset value appreciation, increase tenant demand and satisfaction, decrease direct operating costs, and/or decrease risks related to building codes and regulations.

Accounting Metrics

IF0402-10. Percentage of new leases that contain a cost recovery clause for resource efficiency-related capital improvements and associated leased floor area, by property subsector

.77 The percentage shall be calculated as the total portfolio newly leased floor area associated with leases that contain a cost recovery clause for resource efficiency-related capital improvements divided by total portfolio newly leased floor area, where:

- A cost recovery clause for resource efficiency-related capital improvements is defined as a clause in a lease agreement that allows the registrant to invest in capital improvements to the energy efficiency and/or water efficiency of properties, while recovering all or a proportion of associated expenditures from tenants, regardless of the mechanism of cost recovery.[19, 20]

[19] The definition of cost recovery clause for resource efficiency-related capital improvements is generally aligned with the Green Lease Leaders application: "Tenant cost recovery clause that can be used for energy efficiency-related capital improvements. This typically means that the list of operating expenses is expanded to include capital expenses intended to save energy, with the annual pass-through amount most often determined either by an amortization schedule or projected savings."

[20] The definition of cost recovery clause for resource efficiency-related capital improvements is generally aligned with the 2016 GRESB Real Estate Assessment Reference Guide: "Cost recovery clause for energy efficiency-related capital improvements: Allows the landlord to implement energy-efficiency measures during the lease and to recover a proportion or all of those costs from the tenant."

.78 The scope of disclosure includes all of the properties in the registrant's portfolio that were newly leased during any part of the fiscal year, and for which the associated lease was executed between the registrant and the tenant.

- If the registrant executed lease amendments or letter agreements during the fiscal year that contain a cost recovery clause for resource efficiency-related capital improvements, the associated leased floor area shall be included within the scope of disclosure and shall be added to the numerator and denominator.

.79 The registrant shall disclose the total portfolio newly leased floor area that is associated with leases that contain a cost recovery clause for resource efficiency-related capital improvements in square feet.

.80 The registrant shall disclose the percentage of new leases that contain a cost recovery clause for resource efficiency-related capital improvements and the associated leased floor area separately for each portion of its portfolio where properties are classified into subsectors that are aligned with the FTSE NAREIT Classification System and include the following: Health Care, Self Storage, Industrial, Office, Apartments, Manufactured Homes, Single Family Homes, Shopping Centers, Regional Malls, Free Standing, Lodging/Resorts, Specialty, Data Centers, and Other (any other property type(s) that cannot be classified to any of the previous property subsector classifications).

.81 Number of units may be used in place of floor area in the Apartments and Lodging/Resorts property subsectors when floor area is not available.

.82 The registrant should provide a brief description of instances when such cost recovery clauses were exercised, including the extent throughout the portfolio and the financial implications.

.83 The registrant should describe whether its standard lease contracts include a cost recovery clause for resource efficiency-related capital improvements (aligned with 2016 GRESB Real Estate Assessment Q39).

.84 The registrant may choose to additionally disclose the percentage of all leases in effect as of the last day of the fiscal year that contain a cost recovery clause for resource efficiency-related capital improvements, calculated in a manner consistent with the above percentage.

.85 The registrant may choose to additionally disclose the amount (in U.S. dollars) of actual capital expenditures associated with resource efficiency-related capital improvements that were recovered from tenants during the fiscal year through the use of cost recovery clauses in leases.

.86 The registrant shall consider the 2016 GRESB Real Estate Assessment and the 2016 GRESB Real Estate Assessment Reference Guide as normative references, thus any updates made year-on-year shall be considered updates to this guidance.

IF0402-11. Percentage of tenants that are separately metered or submetered for (1) grid electricity consumption and (2) water withdrawals, by property subsector

.87 The registrant shall disclose the percentage of tenants that are separately metered or submetered for the grid electricity usage resulting from their exclusive electricity consumption.

- The percentage shall be calculated as the total leasable floor area leased to tenants that are separately metered or submetered for their exclusive grid electricity consumption divided by the total portfolio leasable floor area.

.88 The registrant shall disclose the percentage of tenants that are separately metered or submetered for the water usage resulting from their exclusive water withdrawals.

- The percentage shall be calculated as the total leasable floor area leased to tenants that are separately metered or submetered for the water usage resulting from their exclusive withdrawals divided by the total portfolio leasable floor area.

.89 The registrant shall disclose the percentage of tenants that are separately metered or submetered for their exclusive grid electricity consumption and water withdrawals separately for each portion of its portfolio where properties are classified into subsectors that are aligned with the FTSE NAREIT Classification System and include the following: Health Care, Self Storage, Industrial, Office, Apartments, Manufactured Homes, Single Family Homes, Shopping Centers, Regional Malls, Free Standing, Lodging/Resorts, Specialty, Data Centers, and Other (any other property type(s) that cannot be classified to any of the previous property subsector classifications).

.90 Number of units may be used in place of floor area in the Apartments and Lodging/Resorts property subsectors when floor area is not available.

IF0402-12. Description of approach to measuring, incentivizing, and improving sustainability impacts of tenants

.91 The registrant shall describe its strategy and process for integrating considerations of sustainability into its leases and tenant relationships (e.g., tenant communication, voluntary initiatives, selection of a third-party property manager, if applicable, etc.) in order to measure, incentivize, and improve impacts.

.92 For the purposes of this disclosure, the scope of sustainability topics includes the following: energy management, water management, and the impacts of properties on tenant health, including indoor environmental quality.

.93 Relevant strategies to discuss include, but are not limited to:

- The following components of the 2016 GRESB Real Estate Assessment Q39.1:
  - Whether the registrant has agreements with its tenants to mutually share energy consumption and/or water withdrawal data.

- Whether the registrant has shared energy consumption and water withdrawal targets.
- Whether the registrant establishes requirements that any tenant works should meet standards provided by the registrant related to energy consumption, water efficiency, and indoor environmental quality.
- Whether the registrant establishes requirements that its tenants provide accurate information required for mandatory energy rating schemes.
- Whether the registrant has the ability to prioritize sustainability requirements over minimizing the costs of improvements and adjustments.

- Whether the registrant prioritizes separately metering or submetering tenant energy consumption and water withdrawals, and if so, if the registrant also prioritizes its own ability to measure the energy consumption and water withdrawals by its tenants.
- Whether the registrant prioritizes lease structures that require tenants to pay grid electricity and water utility expenses that are directly based on their actual and exclusive consumption of such resources.

.94 The registrant shall include a discussion of its support, participation, and usage of third-party initiatives concerning green leases.

- Third-party initiatives concerning green leases include, but are not limited to, green lease templates, principles, requirements, strategies, and educational programs provided by organizations.
- Examples of third-party initiatives concerning green leases include, but are not limited to:
  - Green Lease Leaders and Green Lease Library (programs jointly operated by the Institute for Market Transformation and the U.S. Department of Energy's Better Building Alliance);
  - Building Owners and Managers Association International, "Commercial Lease: Guide to Sustainable and Energy Efficient Leasing for High-Performance Buildings;"
  - Natural Resources Defense Council, "Energy Efficiency Lease Guidance;"
  - Corporate Realty, Design & Management Institute, "Model Green Lease;"
  - U.S. General Services Administration, "Green Lease Policies and Procedures;"
  - California Sustainability Alliance, "Green Leases Toolkit;"
  - Real Property Association of Canada, "Green Office Leases;" and
  - U.S. Green Building Council, "Green Office Guide: Integrating LEED into Your Leasing Process" and "Greening Your Lease."

.95 The registrant shall describe whether third-party initiatives concerning green leases are integrated into its standard lease contracts (generally aligned with GRESB Real Estate Assessment Q39.1).

.96 The registrant shall discuss how the lease types it uses (e.g., triple-net, full-service) and their provisions (e.g., cost recovery clauses, tenant fit out guides, utility information sharing, mandatory participation in energy ratings, etc.) may influence or incentivize tenant behavior related to sustainability impacts.

- The registrant may provide a discussion of how such lease structures may impact property values, including tenant demand and the associated rental rates and occupancy rates, over the long term.

.97 The registrant shall consider the 2016 GRESB Real Estate Assessment as a normative reference, thus any updates made year-on-year shall be considered updates to this guidance.

Climate Change Adaptation

Description

Climate change affects companies in the industry via frequent or high-impact extreme weather events and changing climate patterns. The manner in which a company's business model is structured to incorporate ongoing assessments of climate change risks, and the adaptation to such risks, is likely to be increasingly connected to company value over the long term. More specifically, investment strategies with assets located on floodplains and in coastal regions that are exposed to inclement weather may have increased needs around risk mitigation and business model adaptation to climate change over the long term. These strategies are especially important in light of the long-term challenges associated with flood insurance rates, the financial stability of government-subsidized flood insurance programs, and financing stipulations or other creditor concerns. Besides insurance, other risk mitigation measures include improvements to physical asset resiliency and lease terms that transfer risk to tenants, although these measures can create their own costs and risks for real estate companies. To ensure long-term growth and protection in shareholder value, companies need to implement climate change adaptation strategies that are comprehensive, account for trade-offs between various risk mitigation strategies, and integrate consideration of all projected costs and benefits over the long term.

Accounting Metrics

IF0402-13. Area of properties located in FEMA Special Flood Hazard Areas or foreign equivalent, by property subsector

.98 The registrant shall disclose the total leasable floor area of properties in the registrant's portfolio that are located in special flood hazard areas, where:

- FEMA Special Flood Hazard Areas (SFHA) are defined as land areas covered by the floodwaters of the base flood on National Flood Insurance Program (NFIP) maps. An SFHA is an area where the NFIP's floodplain management regulations must be enforced and where the mandatory purchase of flood insurance applies. The SFHA includes 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. Examples of SFHAs include coastal floodplains, floodplains along major rivers, and areas subject to flooding from ponding in low-lying areas.

- The scope of disclosure includes properties located in the U.S. that are designated by FEMA as SFHA, as well as properties located outside of the U.S.

- For non-U.S. properties that fall outside of the scope of FEMA, the foreign equivalent is the area that will be inundated by a flood event that has a one-percent chance of being equaled or exceeded in any given year (i.e., the 100-year floodplain).

.99 Number of units may be used in place of floor area in the Apartments and Lodging/Resorts property subsectors when floor area is not available.

.100 The registrant shall disclose the area of properties located in FEMA SFHAs separately for each portion of its portfolio where properties are classified into subsectors that are aligned with the FTSE NAREIT Classification System and include the following: Health Care, Self Storage, Industrial, Office, Apartments, Manufactured Homes, Single Family Homes, Shopping Centers, Regional Malls, Free Standing, Lodging/Resorts, Specialty, Data Centers, and Other (any other property type(s) that cannot be classified to any of the previous property subsector classifications).

.101 The registrant should separately provide the planned leasable floor area of properties under development or construction that are located in FEMA SFHAs.

.102 The registrant may disclose its risk perception and potential impacts resulting from reclassification of FEMA SFHAs, including the risk of expansion of such areas into real estate property owned by the registrant.

IF0402-14. Description of climate change risk exposure analysis, degree of systematic portfolio exposure, and strategies for mitigating risks

.103 The registrant shall discuss the risks and/or opportunities that are presented to its portfolio by climate change scenarios, including, where relevant:

- Identification of the risks presented by climate change, including, but not limited to, availability of water, extreme weather events, evolving regulation and legislation, impacts on regional infrastructure, and impacts on local economies and populations, regardless of the impact of physical risks presented to the registrant's portfolio.
- Discussion of the scenarios used to determine the risks and opportunities presented by climate change.
- Discussion of how such scenarios will manifest (e.g., effects directly on the registrant or effects on the registrant's tenants).
- The timeline over which such risks and opportunities are expected to manifest.
- How risks and strategies may differ by property subsector.
- How risks and strategies may differ by region.

.104 The registrant shall discuss efforts to assess and monitor the impacts of climate change and the related strategies to alleviate and/or adapt to any risks and/or utilize any opportunities, where:

- Alleviation strategies include, but are not limited to, use of property insurance, flood insurance, lease structures, and lease durations.
- Adaptation strategies include, but are not limited to, physical asset resiliency and contingency plans.

.105 The registrant's discussion shall include a differentiation between physical asset risk and financial risk in order to focus on the risks and alleviation and/or adaptation strategies that are most likely to impact company value.

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SUSTAINABILITY ACCOUNTING STANDARD
INFRASTRUCTURE SECTOR

REAL ESTATE SERVICES

Sustainability Accounting Standard

Sustainable Industry Classification System™ (SICS™) #IF0403

Prepared by the
Sustainability Accounting Standards Board®

March 2016
Provisional Standard

REAL ESTATE SERVICES

Sustainability Accounting Standard

About SASB

The Sustainability Accounting Standards Board (SASB) provides sustainability accounting standards for use by publicly-listed corporations in the U.S. in disclosing material sustainability information for the benefit of investors and the public. SASB standards are designed for disclosure in mandatory filings to the Securities and Exchange Commission (SEC), such as the Form 10-K and 20-F. SASB is an independent 501(c)3 non-profit organization. Through 2016, SASB is developing standards for 79 industries in 10 sectors.

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INTRODUCTION

Purpose & Structure

This document contains the SASB Sustainability Accounting Standard (SASB Standard) for the Real Estate Services industry.

SASB Sustainability Accounting Standards are comprised of **(1) disclosure guidance and (2) accounting standards on sustainability topics** for use by U.S. and foreign public companies in their annual filings (Form 10-K or 20-F) with the U.S. Securities and Exchange Commission (SEC). To the extent relevant, SASB Standards may also be applicable to other periodic mandatory filings with the SEC, such as the Form 10-Q, Form S-1, and Form 8-K.

SASB Standards identify sustainability topics at an industry level, which may constitute material information—depending on a company's specific operating context—for a company within that industry. SASB Standards are intended to provide guidance to company management, which is ultimately responsible for determining which information is material and should therefore be included in its Form 10-K or 20-F and other periodic SEC filings.

SASB Standards provide companies with standardized sustainability metrics designed to communicate performance on industry level sustainability topics. When making disclosure on sustainability topics, companies can use SASB Standards to help ensure that disclosure is standardized and therefore decision-useful, relevant, comparable, and complete.

SASB Standards are intended to constitute "suitable criteria" as defined by AT 101.23-.32[1] and referenced in AT 701[2] as having the following attributes:

- *Objectivity*—Criteria should be free from bias.
- *Measurability*—Criteria should permit reasonably consistent measurements, qualitative or quantitative, of subject matter.
- *Completeness*—Criteria should be sufficiently complete so that those relevant factors that would alter a conclusion about subject matter are not omitted.
- *Relevance*—Criteria should be relevant to the subject matter.

Industry Description

The Real Estate Services industry is composed of companies that provide a range of services to real estate owners, tenants, investors, and developers. Primary services include property management, brokerage, appraisal, and information services for real estate owners. Property management services may include leasing, tenant relations, building maintenance, and building security. Many companies also provide brokerage services, facilitating sales and leasing transactions. Appraisals and other advisory or information services are other specialized services that are commonly provided to clients. Companies in the industry play important roles in the real estate value chain, which

[1] http://pcaobus.org/Standards/Attestation/Pages/AT101.aspx#at_101_fn7
[2] http://pcaobus.org/Standards/Attestation/Pages/AT701.aspx

is a substantial part of the global economy. While some of the largest real estate services firms operate internationally, the majority of industry activity for U.S.-listed companies takes place in the U.S.

Guidance for Disclosure of Sustainability Topics in SEC Filings

1. Industry-Level Sustainability Topics

For the Real Estate Services industry, SASB has identified the following sustainability disclosure topics:

- Sustainability Services
- Transparent Information & Management of Conflict of Interest

2. Company-Level Determination and Disclosure of Material Sustainability Topics

Sustainability disclosures are governed by the same laws and regulations that govern disclosures by securities issuers generally. According to the U.S. Supreme Court, a fact is material if, in the event such fact is omitted from a particular disclosure, there is "a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the 'total mix' of the information made available."[3, 4]

SASB has attempted to identify those sustainability topics that are reasonably likely to have a material effect on the financial condition or operating performance of companies within each SICS industry. SASB recognizes, however, that each company is ultimately responsible for determining what information should be disclosed within the context of Regulation S-K and other guidance.

Regulation S-K, which sets forth certain disclosure requirements associated with Form 10-K and other SEC filings, requires companies, among other things, to describe in the Management's Discussion and Analysis of Financial Condition and Results of Operations (MD&A) section of Form 10-K "any known trends or uncertainties that have had or that the registrant reasonably expects will have a material favorable or unfavorable impact on net sales or revenues or income from continuing operations. If the registrant knows of events that will cause a material change in the relationship between costs and revenues (such as known future increases in costs of labor or materials or price increases or inventory adjustments), the change in the relationship shall be disclosed."

Furthermore, instructions to Item 303 state that the MD&A "shall focus specifically on material events and uncertainties known to management that would cause reported financial information not to be necessarily indicative of future operating results or of future financial condition."[2]

The SEC has provided guidance for companies to use in determining whether a trend or uncertainty should be disclosed. The two-part assessment prescribed by the SEC, based on probability and magnitude, can be applied to the topics included within this standard:

[3] TSC Industries v. Northway, Inc., 426 U.S. 438 (1976).
[4] C.F.R. 229.303(Item 303)(a)(3)(ii).

- First, a company is not required to make disclosure about a known trend or uncertainty if its management determines that such trend or uncertainty is not reasonably likely to occur.

- Second, if a company's management cannot make a reasonable determination of the likelihood of an event or uncertainty, then disclosure is required unless management determines that a material effect on the registrant's financial condition or results of operation is not reasonably likely to occur.

3. Sustainability Accounting Standard Disclosures in Form 10-K

a. Management's Discussion and Analysis

For purposes of comparability and usability, companies should consider making disclosure on sustainability topics in the MD&A, in a sub-section titled "**Sustainability Accounting Standards Disclosures**."[5]

b. Other Relevant Sections of Form 10-K

In addition to the MD&A section, it may be relevant for companies to disclose sustainability information in other sections of Form 10-K, including, but not limited to:

- **Description of business**—Item 101 of Regulation S-K requires a company to provide a description of its business and its subsidiaries. Item 101(c)(1)(xii) expressly requires disclosure regarding certain costs of complying with environmental laws:

Appropriate disclosure also shall be made as to the material effects that compliance with Federal, State and local provisions which have been enacted or adopted regulating the discharge of materials into the environment, or otherwise relating to the protection of the environment, may have upon the capital expenditures, earnings and competitive position of the registrant and its subsidiaries.

- **Legal proceedings**—Item 103 of Regulation S-K requires companies to describe briefly any material pending or contemplated legal proceedings. Instructions to Item 103 provide specific disclosure requirements for administrative or judicial proceedings arising from laws and regulations that target discharge of materials into the environment or that are primarily for the purpose of protecting the environment.

- **Risk factors**—Item 503(c) of Regulation S-K requires filing companies to provide a discussion of the most significant factors that make an investment in the registrant speculative or risky, clearly stating the risk and specifying how a particular risk affects the particular filing company.

c. Rule 12b-20

Securities Act Rule 408 and Exchange Act Rule 12b-20 require a registrant to disclose, in addition to the information expressly required by law or regulation, "such further material information, if any, as may be

[5] SEC [Release Nos. 33-8056; 34-45321; FR-61] Commission Statement about Management's Discussion and Analysis of Financial Condition and Results of Operations: "We also want to remind registrants that disclosure must be both useful and understandable. That is, management should provide the most relevant information and provide it using language and formats that investors can be expected to understand. Registrants should be aware also that investors will often find information relating to a particular matter more meaningful if it is disclosed in a single location, rather than presented in a fragmented manner throughout the filing."

necessary to make the required statements, in light of the circumstances under which they are made, not misleading."

More detailed guidance on disclosure of material sustainability topics can be found in the **SASB Conceptual Framework**, available for download via http://www.sasb.org/approach/conceptual-framework/.

Guidance on Accounting for Sustainability Topics

For each sustainability topic included in the Real Estate Services industry Sustainability Accounting Standard, SASB identifies accounting metrics.

SASB recommends that each company consider using these sustainability accounting metrics when preparing disclosures on the sustainability topics identified herein.

As appropriate—and consistent with Rule 12b-20[6]—when disclosing a sustainability topic identified by this Standard, companies should consider including a narrative description of any material factors necessary to ensure completeness, accuracy, and comparability of the data reported. Where not addressed by the specific accounting metrics, but relevant, the registrant should discuss the following, related to the topic:

- The registrant's **strategic approach** to managing performance on material sustainability issues;
- The registrant's **relative performance** with respect to its peers;
- The **degree of control** the registrant has;
- Any **measures the registrant has undertaken** or **plans to undertake** to improve performance; and
- Data for the registrant's **last three completed fiscal years** (when available).

SASB recommends that registrants use SASB Standards specific to their primary industry as identified in the Sustainable Industry Classification System (SICS™). If a registrant generates significant revenue from multiple industries, SASB recommends that it also consider sustainability topics that SASB has identified for those industries and disclose the associated SASB accounting metrics.

In disclosing to SASB Standards, it is expected that registrants disclose with the same level of rigor, accuracy, and responsibility as they apply to all other information contained in their SEC filings.

Users of the SASB Standards

The SASB Standards are intended to provide guidance for companies that engage in public offerings of securities registered under the Securities Act of 1933 (the Securities Act) and those that issue securities registered under the

[6] SEC Rule 12b-20: "In addition to the information expressly required to be included in a statement or report, there shall be added such further material information, if any, as may be necessary to make the required statements, in the light of the circumstances under which they are made, not misleading."

Securities Exchange Act of 1934 (the Exchange Act),[7] for use in SEC filings, including, without limitation, annual reports on Form 10-K (Form 20-F for foreign issuers), quarterly reports on Form 10-Q, current reports on Form 8-K, and registration statements on Forms S-1 and S-3. Disclosure with respect to the SASB Standards is not required or endorsed by the SEC or other entities governing financial reporting, such as FASB, GASB, or IASB.

Scope of Disclosure

Unless otherwise specified, SASB recommends:

- That a registrant disclose on sustainability issues and metrics for itself and for entities that are consolidated for financial reporting purposes as defined by accounting principles generally accepted in the United States for consistency with other accompanying information within SEC filings;[8]
- That for consolidated entities, disclosures be made, and accounting metrics calculated, for the whole entity, regardless of the size of the minority interest; and
- That information from unconsolidated entities not be included in the computation of SASB accounting metrics. A registrant should disclose, however, information about unconsolidated entities to the extent that the registrant considers the information necessary for investors to understand the effect of sustainability topics on the company's financial condition or operating performance (typically, this disclosure would be limited to risks and opportunities associated with these entities).

Reporting Format

Use of Financial Data

In instances where accounting metrics, activity metrics, and technical protocols in this standard incorporate financial data (e.g., revenues, cost of sales, expenses recorded and disclosed for fines, etc.), such financial data shall be prepared in accordance with the accounting principles generally accepted in the United States of America ("US GAAP") and be consistent with the corresponding financial data reported within the registrant's SEC filings. Should accounting metrics, activity metrics and technical protocols in this standard incorporate disclosure of financial data that is not prepared in accordance with US GAAP, the registrant shall disclose such information in accordance with the SEC Regulation G.

Activity Metrics and Normalization

SASB recognizes that normalizing accounting metrics is important for the analysis of SASB disclosures.

[7] Registration under the Securities Exchange Act of 1934 is required (1) for securities to be listed on a national securities exchange such as the New York Stock Exchange, the NYSE Amex, and the NASDAQ Stock Market or (2) if (A) the securities are equity securities and are held by more than 2,000 persons (or 500 persons who are not accredited investors) and (B) the company has more than $10 million in assets.
[8] See US GAAP consolidation rules (Section 810).

SASB recommends that a registrant disclose any basic business data that may assist in the accurate evaluation and comparability of disclosure, to the extent that they are not already disclosed in the Form 10-K (e.g., revenue, EBITDA, etc.).

Such data—termed "activity metrics"—may include high-level business data such as total number of employees, quantity of products produced or services provided, number of facilities, or number of customers. It may also include industry-specific data such as plant capacity utilization (e.g., for specialty chemical companies), number of transactions (e.g., for Internet media and services companies), hospital bed days (e.g., for health care delivery companies), or proven and probable reserves (e.g., for oil and gas exploration and production companies).

Activity metrics disclosed should:

- Convey contextual information that would not otherwise be apparent from SASB accounting metrics.
- Be deemed generally useful for an investor relying on SASB accounting metrics in performing their own calculations and creating their own ratios.
- Be explained and consistently disclosed from period to period to the extent they continue to be relevant. However, a decision to make a voluntary disclosure in one period does not obligate a continuation of that disclosure if it is no longer relevant or if a better metric becomes available.[9]

Where relevant, SASB recommends specific activity metrics that—at a minimum—should accompany SASB accounting metric disclosures.

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Number of property management clients, categorized by (1) tenants and (2) real estate owners	Quantitative	Number	IF0403-A
Floor area under management with owner operational control[10]	Quantitative	Square feet (ft^2)	IF0403-B
Number of buildings under management with owner operational control[11]	Quantitative	Number	IF0403-C
Number of leases transacted, categorized by (1) tenants and (2) real estate owners[12]	Quantitative	Number	IF0403-D
Number of appraisals provided	Quantitative	Number	IF0403-E

[9] *Improving Business Reporting: Insights into Enhancing Voluntary Disclosures*, FASB Business Reporting Research Project, January 29, 2001.
[10] Note to **IF0403-B**—Floor area under management with owner operational control shall only include that portion of gross rentable floor area where property management services are provided and for which the real estate owner has operational control, where operational control is defined consistent with the GRESB® Real Estate Assessment Reference Guide as "having the ability to introduce and implement operating policies, health and safety policies, and/or environmental policies."
[11] Note to **IF0403-C**—Number of buildings under management shall only include distinct buildings or real estate assets where property management services are provided and for which the real estate owner has operational control, where operational control is defined consistent with the GRESB® Real Estate Assessment Reference Guide as "having the ability to introduce and implement operating policies, health and safety policies, and/or environmental policies."
[12] Note to **IF0403-D**—Dual agency transactions shall be included in both (1) tenants and (2) real estate owners. Subleases shall be included in (2) real estate owners.

Units of Measure

Unless specified, disclosures should be reported in International System of Units (SI units).

Uncertainty

SASB recognizes that there may be inherent uncertainty when disclosing certain sustainability data and information. This may be related to variables such as the reliance on data from third-party reporting systems and technologies, or the unpredictable nature of climate events. Where uncertainty around a particular disclosure exists, SASB recommends that the registrant should consider discussing its nature and likelihood.

Estimates

SASB recognizes that scientifically based estimates, such as the reliance on certain conversion factors or the exclusion of *de minimis* values, may occur for certain quantitative disclosures. Where appropriate, SASB does not discourage the use of such estimates. When using an estimate for a particular disclosure, SASB expects that the registrant discuss its nature and substantiate its basis.

Timing

Unless otherwise specified, disclosure shall be for the registrant's fiscal year.

Limitations

There is no guarantee that SASB Standards address all sustainability impacts or opportunities associated with a sector, industry, or company, and therefore, a company must determine for itself the topics—sustainability-related or otherwise—that warrant discussion in its SEC filings.

Disclosure under SASB Standards is voluntary. It is not intended to replace any legal or regulatory requirements that may be applicable to user operations. Where such laws or regulations address legal or regulatory topics, disclosure under SASB Standards is not meant to supersede those requirements. Disclosure according to SASB Standards shall not be construed as demonstration of compliance with any law, regulation, or other requirement.

SASB Standards are intended to be aligned with the principles of materiality enforced by the SEC. However, SASB is not affiliated with or endorsed by the SEC or other entities governing financial reporting, such as FASB, GASB, or IASB.

Forward-Looking Statements

Disclosures on sustainability topics can involve discussion of future trends and uncertainties related to the registrant's operations and financial condition, including those influenced by external variables (e.g., environmental, social, regulatory, and political). Companies making such disclosures should familiarize themselves with the safe harbor provisions of Section 27A of the Securities Act and Section 21E of the Exchange Act, which preclude civil liability for material misstatements or omissions in such statements if the registrant takes certain steps, including,

among other things, identifying the disclosure as "forward-looking" and accompanying such disclosure with "meaningful cautionary statements identifying important factors that could cause actual results to differ materially from those in the forward-looking statements."

The following sections contain the disclosure guidance associated with each accounting metric such as guidance on definitions, scope, accounting, compilation, and presentation.

The term "shall" is used throughout this document to indicate those elements that reflect requirements of the Standard. The terms "should" and "may" are used to indicate guidance, which, although not required, provides a recommended means of disclosure.

Table 1. Sustainability Disclosure Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Sustainability Services	Revenue from energy and sustainability services[13]	Quantitative	U.S. Dollars ($)	IF0403-01
	(1) Floor area and (2) number of buildings under management provided with energy and sustainability services	Quantitative	Square feet (ft^2), Number	IF0403-02
	(1) Floor area and (2) number of buildings under management that obtained an energy rating	Quantitative	Square feet (ft^2), Number	IF0403-03
Transparent Information & Management of Conflict of Interest	Brokerage revenue from dual agency transactions[14]	Quantitative	U.S. Dollars ($)	IF0403-04
	Revenue from transactions associated with appraisal services[15]	Quantitative	U.S. Dollars ($)	IF0403-05
	Amount of legal and regulatory fines and settlements associated with professional integrity or duty of care[16]	Quantitative	U.S. Dollars ($)	IF0403-06

[13] Note to **IF0403-01**—The registrant shall provide a description of the energy and sustainability services it offers.
[14] Note to **IF0403-04**—The registrant shall describe its approach to managing potential conflicts of interest in dual agency transactions.
[15] Note to **IF0403-05**—The registrant shall describe its approach to managing potential conflicts of interest in appraisals.
[16] Note to **IF0403-06**—Disclosure shall include a description of fines and settlements and corrective actions implemented in response to events.

Sustainability Services

Description

In the Real Estate Services industry, buildings owned or occupied by clients generally have significant sustainability impacts. Buildings, and the activities that take place within them, drive energy consumption, direct and indirect GHG emissions, water consumption, waste generation, and indoor environmental quality concerns that can impact the health of occupants. Companies in the industry have an opportunity to improve the sustainability impacts of buildings and their operations through sustainability-related services. These services may include utility data management, energy procurement, energy and water benchmarking, resource efficiency improvements, activities related to sustainability certifications, and sustainability consulting and training. Companies in the industry can further impact building sustainability by arranging leases that incentivize both owners and tenants to enhance sustainability performance, while yielding financial benefits to both parties. Providing these services can drive new revenue growth and increase client retention; effective sustainability services can benefit owners and/or tenants through improved asset values, increased tenant demand, decreased operating costs, and improved tenant experiences.

Accounting Metrics

IF0403-01. Revenue from energy and sustainability services

.01 The registrant shall disclose its revenue, in U.S. dollars, from energy and sustainability services, where:

- Energy and sustainability services are defined as services provided to clients directly related to resource efficiency (including energy, water, and waste), utility data management, energy procurement, obtaining and retaining sustainability and resource-related certifications, environmental reporting, and corporate sustainability consulting and training.

- The scope includes services provided to leasing clients, project- and development-service clients, and capital market and investment management clients.

.02 The scope of disclosure excludes revenue from services that impart improved energy and sustainability performance in an ancillary, indirect, or minimal way, in addition to environmental services that are part of the ordinary operation and maintenance of buildings (e.g., facilities maintenance, janitorial services, etc.).

.03 Examples of energy and sustainability services include, but are not limited to, energy management and performance monitoring (e.g., through sub-meters to measure electric usage); energy, water, and waste benchmarking or ratings-scheme services; advisory services related to renewable energy procurement; services related to LEED, ENERGY STAR®, or other sustainability-related building certifications; energy- and sustainability-related building valuation analysis; and energy- and sustainability-related client training or consulting.

Note to **IF0403-01**

.04 The registrant shall provide a description of the energy and sustainability services it offers, where relevant information includes, but is not limited to:

- The degree to which energy and sustainability services are integrated into, or distinct from, the registrant's base property management services, including, but not limited to, the sales process for such services, the amount of overlap between clients for base property management services and energy and sustainability services, and the level of consistency of contract lengths and terms among base property management services and energy and sustainability services.

- The market dynamics of energy and sustainability services, including competition, risks and opportunities, market share, customer demands and preferences, market growth, and legislative and regulatory impacts.

- Opportunities associated with providing market-leading energy and sustainability services, such as the potential to win a new client based solely on energy and sustainability services, which may lead to additional, non-energy and sustainability-related services in the future.

- Risks associated with providing inadequate or insufficient energy and sustainability services, such as the potential to lose a client based on inadequate or insufficient energy and sustainability services.

.05 The registrant may choose to disclose the number of energy- and sustainability-accredited professionals it employs.

.06 The registrant may choose to disclose the estimated energy savings, GHG emissions reductions, water savings, waste reductions, or other performance measurements associated with the results of the energy and sustainability services it provides to clients.

IF0403-02. (1) Floor area and (2) number of buildings under management provided with energy and sustainability services

.07 The registrant shall disclose the floor area under management for which it provided energy and/or sustainability-related services during the fiscal year, where:

- Floor area under management is defined as the gross rentable floor area where property management services are provided and for which the real estate owner has operational control.

    - Operational control is defined consistent with the GRESB® Real Estate Assessment Reference Guide as an instance when the real estate owner has "the ability to introduce and implement operating policies, health and safety policies, and/or environmental policies."

.08 The registrant shall disclose the number of buildings for which it provided energy and sustainability-related services during the fiscal year, where:

- The number of buildings under management is defined as distinct buildings or real estate assets where property management services are provided and where the real estate owner has operational control.

.09 Energy and sustainability services are defined as services provided to clients that are directly related to resource efficiency, utility data management, energy procurement, sustainability- and resource-related certification services, environmental reporting, and corporate sustainability consulting and training.

- The scope of disclosure includes the total floor area and all buildings that were provided with energy and sustainability services during the fiscal year, regardless of the date of inception of such services.

- The scope of disclosure excludes revenue from services that impart improved energy and sustainability performance in an ancillary, indirect, or minimal way.

IF0403-03. (1) Floor area and (2) number of buildings under management that obtained an energy rating

.10 The registrant shall disclose the floor area under management that obtained an energy rating during the fiscal year, where:

- Floor area under management is defined as the gross rentable floor area where property management services are provided and for which the real estate owner has operational control.

    - Operational control is defined consistent with the GRESB® Real Estate Assessment Reference Guide as an instance when the real estate owner has "the ability to introduce and implement operating policies, health and safety policies, and/or environmental policies."

.11 The registrant shall disclose the number of buildings that obtained an energy rating during the fiscal year, where:

- The number of buildings under management is defined as distinct buildings or real estate assets where property management services are provided and where the real estate owner has operational control.

.12 An energy rating is defined according to the GRESB® Real Estate Assessment Reference Guide as "a scheme that measures the energy performance of buildings."

- The scope of energy rating schemes includes:

    - ENERGY STAR® for operations in the United States and Canada.

    - E.U. Energy Performance Certificates (EPC) for operations in the European Union.

    - NABERS Energy for operations in Australia.

    - NABERSNZ shall for operations in New Zealand.
    - Government energy efficiency benchmarking.
    - Other energy rating schemes that can be demonstrated to have substantially equivalent criteria, methodology, and presentation of results to those schemes above.
- The scope of disclosure is aligned with the GRESB® Real Estate Assessment Reference Guide in that it "only include[s] energy ratings that were awarded before or during the reporting period (pre-assessments or other unofficial forms of pre-certification are not valid). Some energy ratings are valid for a limited period only—the rating should be effective and official during the reporting period."

.13 The registrant shall consider the GRESB® Real Estate Assessment Reference Guide as a normative reference, thus any updates made year-on-year shall be considered updates to this guidance.

Transparent Information & Management of Conflict of Interest

Description

The business model of real estate services companies is dependent on client trust and loyalty. To ensure long-term, mutually beneficial relationships, companies need to provide services that satisfy the highest professional and ethical standards of the industry. Professional integrity is an important governance issue, as the range of services and the number of professionals within a single organization can make the management of conflicts of interest more challenging. Brokerage and appraisal services may come with particularly high risk of conflicts of interest and negligence. In order to manage and avoid these risks, companies in the industry can implement a range of governance measures, including employee training, oversight, and policies, procedures, and enforcement systems focused on transparency and appropriate disclosures. Effective management of these risks can lead to increased client trust and better brand value in the market, adding to long-term revenue growth. Inadequate management of risks may lead to regulatory fines and penalties, as well as decreased client trust and a loss in business.

Accounting Metrics

IF0403-04. Brokerage revenue from dual agency transactions

.14 The registrant shall disclose of its revenue, in U.S. dollars, from real estate sales brokerage services that directly resulted from dual agency transactions, where:

- Brokerage services that directly resulted from dual agency (also referred to as "dual representation") transactions are defined based on the National Association of Realtors' definition as transactions in which the registrant represents both the buyer and the seller in the same real estate brokerage transaction.

.15 The scope of disclosure excludes leasing transactions, insurance transactions, and any other form of brokerage revenue not directly resulting from real estate sales.

.16 The scope of disclosure excludes property management revenue, appraisal revenue, and any other form of revenue resulting from a real estate sales transaction other than brokerage revenue.

Note to **IF0403-04**

.17 The registrant shall discuss its policies and practices to assure the professional integrity and duty of care of its workforce in avoiding of conflicts of interest in dual agency transactions, including mitigation and transparency of potential or perceived conflicts, where:

- Transparency relating to dual agency transactions may include disclosure of any material issues involving real estate transactions, including counterparties to the transaction, potential conflicts of interest, dual agency or dual representation, and fiduciary duties.

- Policies and practices may include, but are not limited to, notifying employees of policies and codes of ethics; conducting training; and enforcing compliance through investigations, mechanisms for internal reporting about violations or concerns regarding business ethics or compliance, and disciplinary procedures.

.18 The registrant should disclose how policies apply to and are enforced for business partners.

.19 The registrant may choose to discuss compliance with industry best practices, including codes of conduct and codes of ethics, as a measure of its management approach to ensuring quality of work and professional integrity.

- Examples include, but are not limited to, the National Association of Realtors Code of Ethics.

IF0403-05. Revenue from transactions associated with appraisal services

.20 The registrant shall disclose the amount, in U.S. dollars, of revenue from transactions associated with appraisal services, where:

- Transactions associated with appraisal services include those transactions associated with properties for which the registrant conducted appraisal services.
  - Appraisal services are defined based on the Appraisal Institute's definition of appraisal as "the act or process of developing an opinion of value."
- The scope includes revenues from brokerage services, financing services, and valuation or market-analysis services.
- The scope excludes revenue that directly results from appraisal services and property management services.

.21 The scope of disclosure includes revenue from services for properties for which the registrant provided appraisal services, regardless of when the registrant conducted the appraisal and recognized the revenue (i.e., during a previous fiscal year).

Note to **IF0403-05**

.22 The registrant shall discuss its policies and practices to assure the professional integrity and duty of care of its workforce in avoiding conflicts of interest in appraisal services, including mitigation and transparency of potential or perceived conflicts, where:

- Transparency relating to transactions associated with appraisal services may include disclosure of any material issues involving real estate transactions and/or appraisal services, including appraisal services conducted by related parties, fees and contingencies of appraisal services, potential conflicts of interest, and fiduciary duties.

- Policies and practices may include, but are not limited to, notifying employees of policies and codes of ethics; conducting training; and enforcing compliance through investigations, mechanisms for internal reporting about violations or concerns regarding business ethics or compliance, and disciplinary procedures.

.23 The registrant should disclose how policies apply to and are enforced for business partners.

.24 The registrant may choose to discuss compliance with industry best practices, including codes of conduct and codes of ethics, as a measure of its management approach to ensuring quality of work and professional integrity.

- Examples include, but are not limited to, the National Association of Realtors Code of Ethics and the Code of Professional Ethics of the Appraisal Institute.

IF0403-06. Amount of legal and regulatory fines and settlements associated with professional integrity or duty of care

.25 The registrant shall disclose the amount in U.S. dollars (excluding legal fees) of all fines or settlements associated with professional integrity or duty of care, including, but not limited to, those related to negligence, malpractice, data security or loss, fraud, corruption, and bribery.

.26 Disclosure shall include civil actions (e.g., civil judgment, settlements, or regulatory penalties) and criminal actions (e.g., criminal judgment, penalties, or restitutions) taken by any entity (government, businesses, or individuals).

Note to **IF0403-06**

.27 The registrant shall briefly describe the nature (e.g., guilty plea, deferred agreement, non-prosecution agreement) and context (e.g., negligence) of fines and settlements.

.28 The registrant shall describe any corrective actions it has implemented as a result of each incident. This may include, but is not limited to, specific changes in operations, management, processes, products, services, business partners, training, or technology.

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