



SUSTAINABILITY ACCOUNTING STANDARD
NON-RENEWABLE RESOURCES SECTOR

OIL & GAS EXPLORATION & PRODUCTION

Sustainability Accounting Standard

Sustainable Industry Classification System™ (SICS™) #NR0101

Prepared by the
Sustainability Accounting Standards Board®

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Provisional Standard

OIL & GAS EXPLORATION & PRODUCTION

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 more than 80 industries in 10 sectors.

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INTRODUCTION

Purpose & Structure

This document contains the SASB Sustainability Accounting Standard (SASB Standard) for Oil & Gas - Exploration & Production.

SASB 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's disclosure guidance identifies sustainability topics at an industry level, which may be material— depending on a company's specific operating context— to a company within that industry.

Each company is ultimately responsible for determining which information is material and is therefore required to be included in its Form 10-K or 20-F and other periodic SEC filings.

SASB's accounting standards provide companies with standardized accounting metrics to account for performance on industry-level sustainability topics. When making disclosure on sustainability topics, companies adopting SASB's accounting standards will help to ensure that disclosure is standardized and therefore useful, relevant, comparable and auditable.

Industry Description

Oil & Gas - Exploration & Production (E&P) companies explore for, extract, or produce energy products such as crude oil and natural gas, which comprise the upstream operations of the oil and gas value chain. Companies in the industry develop conventional and unconventional oil and gas reserves; these include, but are not limited to, shale oil and/or gas reserves, oil sands, and gas hydrates. Activities covered by this standard include the development of both on-shore and off-shore reserves, in the U.S. and international markets. The E&P industry creates contracts with the Oil and Gas Services industry to conduct several E&P activities and to obtain equipment

Note: The standards discussed below are for "pure-play" E&P activities, or independent E&P companies. Integrated oil and gas companies conduct upstream operations but are also involved in the distribution and/or refining or marketing of products. SASB has separate standards for the Oil and Gas Midstream (NR0102) and Refining & Marketing industries (NR0103). As such, integrated companies should also consider the disclosure topics and metrics from these standards. SASB also has separate standards for Oil and Gas Services (NR0104).

Guidance for Disclosure of Material Sustainability Topics in SEC filings

1. Industry-Level Material Sustainability Topics

For the Oil & Gas - Exploration & Production industry, SASB has identified the following material sustainability topics:

- **Greenhouse Gas Emissions**
- **Air Quality**
- **Water Management**
- **Biodiversity Impacts**
- **Security, Human Rights, and Rights of Indigenous Peoples**
- **Community Relations**
- **Health, Safety, and Emergency Management**
- **Business Ethics & Payments Transparency**
- **Reserves Valuation & Capital Expenditures**
- **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”.^{1,2}

SASB has attempted to identify those sustainability topics that it believes may be material for all companies within each SICS industry. SASB recognizes, however, that each company is ultimately responsible for determining what is material to it.

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.”²

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

In determining whether a trend or uncertainty should be disclosed, the SEC has stated that management should use a two-part assessment based on probability and magnitude:

- 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.

¹ TSC Industries v. Northway, Inc., 426 U.S. 438 (1976).

² C.F.R. 229.303(Item 303)(a)(3)(ii).

- 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

Companies should consider making disclosure on sustainability topics as a complete set in the MD&A, in a sub-section titled "**Sustainability Accounting Standards Disclosures.**"³

b. Other Relevant Sections of Form 10-K

In addition to the MD&A section, companies should consider disclosing sustainability information in other sections of Form 10-K, as relevant, including:

- **Description of business**—Item 101 of Regulation S-K requires a company to provide a description of its business and its subsidiaries. Specifically 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 targeting discharge of materials into the environment or 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/>.

³ 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."

Guidance on Accounting of Material Sustainability Topics

For material sustainability topics in the Oil & Gas Exploration and Production industry, SASB identifies accounting metrics.

SASB recommends that each company consider using these sustainability accounting metrics when disclosing its performance with respect to each of the sustainability topics it has identified as material.

As appropriate—and consistent with Rule 12b-20⁴—for each sustainability topic, 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 **competitive positioning**;
- the **degree of control** the registrant has;
- any **measures the registrant has undertaken or plans to undertake** to improve performance; and
- data for 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 \(SICSTM\)](#). If a registrant generates significant revenue from multiple industries, SASB recommends that it consider the materiality of the sustainability issues that SASB has identified for those industries and disclose the associated SASB accounting metrics.

Users of the SASB Standards

The SASB Standards are intended 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),⁵ 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. Nevertheless, 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.

⁴ 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."

⁵ 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.

Scope of Disclosure

Unless otherwise specified, SASB recommends:

- That a registrant disclose on sustainability issues and metrics for itself and for entities in which the registrant has a controlling interest and therefore are consolidated for financial reporting purposes (controlling interest is generally defined as ownership of 50% or more of voting shares)⁶
- 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 such registrant considers the information necessary for investors to understand its performance with respect to sustainability issues (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.).

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 users of SASB accounting metrics (e.g., investors) 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.

⁶ See US GAAP consolidation rules (Section 810).

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

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Wellhead production of: (1) conventional oil, (2) unconventional oil, (3) conventional gas, and (4) unconventional gas	Quantitative	Thousand barrels per day (Mbbbl/day); Million standard cubic feet per day (MMscf/day)	NR0101-A
Number of offshore sites	Quantitative	Number	NR0101-B
Number of terrestrial sites	Quantitative	Number	NR0101-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 like the imperfectness of third-party reporting systems 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 be necessary 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."

Assurance

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

SASB encourages registrants to use independent assurance (attestation), for example, an Examination Engagement to AT Section 101.

Table 1. Material Sustainability Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Greenhouse Gas Emissions	Gross global Scope 1 emissions, percentage covered under a regulatory program, percentage by hydrocarbon resource	Quantitative	Metric tons CO ₂ -e, Percentage (%)	NR0101-01
	Amount of gross global Scope 1 emissions from: (1) combustion, (2) flared hydrocarbons, (3) process emissions, (4) directly vented releases, and (5) fugitive emissions/leaks	Quantitative	Metric tons CO ₂ -e	NR0101-02
	Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	NR0101-03
Air Quality	Air emissions for the following pollutants: NO _x (excluding N ₂ O), SO _x , volatile organic compounds (VOCs), and particulate matter (PM)	Quantitative	Metric tons (t)	NR0101-04
Water Management	Total fresh water withdrawn, percentage recycled, percentage in regions with High or Extremely High Baseline Water Stress	Quantitative	Cubic meters (m ³), Percentage (%)	NR0101-05
	Volume of produced water and flowback generated; percentage (1) discharged, (2) injected, (3) recycled; hydrocarbon content in discharged water	Quantitative	Cubic meters (m ³), Percentage (%), Metric tons (t)	NR0101-06
	Percentage of hydraulically fractured wells for which there is public disclosure of all fracturing fluid chemicals used	Quantitative	Percentage (%)	NR0101-07
	Percentage of hydraulic fracturing sites where ground or surface water quality deteriorated compared to a baseline	Quantitative	Percentage (%)	NR0101-08
Biodiversity Impacts	Description of environmental management policies and practices for active sites	Discussion and Analysis	n/a	NR0101-09
	Number and aggregate volume of hydrocarbon spills, volume in Arctic, volume near shorelines with ESI rankings 8-10, and volume recovered	Quantitative	Number, Barrels (bbls)	NR0101-10
	(1) Proved and (2) probable reserves in or near sites with protected conservation status or endangered species habitat	Quantitative	Million barrels (MMbbls), Million standard cubic feet (MMscf)	NR0101-11

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

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Security, Human Rights, and Rights of Indigenous Peoples	(1) Proved and (2) probable reserves in or near areas of conflict	Quantitative	Million barrels (MMbbls), Million standard cubic feet (MMscf)	NR0101-12
	(1) Proved and (2) probable reserves in or near indigenous land	Quantitative	Million barrels (MMbbls), Million standard cubic feet (MMscf)	NR0101-13
	Discussion of engagement processes and due diligence practices with respect to human rights, indigenous rights, and operation in areas of conflict	Discussion and Analysis	n/a	NR0101-14
Community Relations	Discussion of process to manage risks and opportunities associated with community rights and interests	Discussion and Analysis	n/a	NR0101-15
	Number and duration of non-technical delays	Quantitative	Number, Days	NR0101-16
Health, Safety, and Emergency Management	(1) Total Recordable Injury Rate (TRIR), (2) Fatality Rate, and (3) Near Miss Frequency Rate for (a) full-time employees, (b) contract employees, and (c) short-service employees	Quantitative	Rate	NR0101-17
	Process Safety Event (PSE) rates for Loss of Primary Containment (LOPC) of greater consequence (Tier 1)	Quantitative	Rate	NR0101-18
	Discussion of management systems used to integrate a culture of safety and emergency preparedness throughout the value chain and throughout the exploration and production lifecycle	Discussion and Analysis	n/a	NR0101-19
Business Ethics & Payments Transparency	(1) Proved and (2) probable reserves in countries that have the 20 lowest rankings in Transparency International's Corruption Perception Index	Quantitative	Million barrels (MMbbls), Million standard cubic feet (MMscf)	NR0101-20
	Description of the management system for prevention of corruption and bribery throughout the value chain	Discussion and Analysis	n/a	NR0101-21

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

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Reserves Valuation & Capital Expenditures	Sensitivity of hydrocarbon reserve levels to future price projection scenarios that account for a price on carbon emissions	Quantitative	Million barrels (MMbbls), Million standard cubic feet (MMscf)	NR0101-22
	Estimated carbon dioxide emissions embedded in proved hydrocarbon reserves	Quantitative	Metric tons CO ₂	NR0101-23
	Discussion of how price and demand for hydrocarbons and/or climate regulation influence the capital expenditure strategy for exploration, acquisition, and development of assets	Discussion and Analysis	n/a	NR0101-24
Management of the Legal & Regulatory Environment	Amount of political campaign spending, lobbying expenditures, and contributions to tax-exempt groups including trade associations	Quantitative	U.S. Dollars (\$)	NR0101-25
	Five largest political, lobbying, or tax-exempt group expenditures	Quantitative	U.S. Dollars (\$), by recipient	NR0101-26

Greenhouse Gas Emissions

Description

E&P activities generate significant direct GHG emissions, from combustion in stationary and mobile internal combustion engines and from gas processing equipment, venting, flaring, and fugitive methane. GHG emissions contribute to climate change and create additional regulatory compliance costs and risks for E&P companies due to climate change mitigation policies. With natural gas production from shale resources expanding, the management of highly potent methane emissions from oil and gas E&P systems has emerged as a major operational, reputational, and regulatory risk for companies. Furthermore, the development of other unconventional resources such as oil sands is more GHG-intensive than conventional oil and gas and is likely to increase regulatory risks. Energy efficiency, use of cleaner fuels, or process improvements to reduce fugitive emissions, venting, and flaring, can therefore provide benefits to E&P companies in the form of lower costs and risks, or higher revenues from the capture and sale of methane.

Accounting Metrics

NR0101-01. Gross global Scope 1 emissions, percentage covered under a regulatory program, percentage by hydrocarbon resource

- .01 The registrant shall disclose gross global Scope 1 greenhouse gas (GHG) emissions to the atmosphere of the six greenhouse gases covered under the Kyoto Protocol: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.
- Emissions of all gases shall be disclosed in metric tons of carbon dioxide equivalent (CO₂-e), calculated in accordance with published global warming potential (GWP) factors. To date, the preferred source for global warming potential factors is the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report (2007).
 - 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.
- .02 Scope 1 emissions are defined by the World Resources Institute and the World Business Council on Sustainable Development (WRI/WBCSD) [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; these sources include but are not limited to: equipment at well sites, production facilities, refineries, chemical plants, terminals, fixed site drilling rigs, office buildings, marine vessels transporting products, tank truck fleets, mobile drilling rigs, and moveable equipment at drilling and production facilities.

- .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 2014](#) (hereafter, the “CDP Guidance”).⁷
 - The financial approach detailed in Chapter 3 of the IPIECA/API/OGP Petroleum Industry Guidelines for Reporting Greenhouse Gas Emissions, Second Edition, 2011 (hereafter, the “IPIECA GHG Guidelines”).
 - The approach detailed in Section 4.23 “Organizational boundary setting for GHG emissions reporting” of Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).⁸
- .04 The underlying technical approach to data collection, analysis, and disclosure shall be consistent with the IPIECA GHG Guidelines and the CDP Guidance.
- The registrant shall consider the CDP Guidance as a normative reference; thus, any updates made year-on-year shall be considered updates to this guidance.
- .05 The registrant shall provide a breakdown of its emissions by the following classifications of hydrocarbon resources, where relevant: (1) conventional oil, (2) unconventional oil, (3) conventional gas, and (4) unconventional gas.
- Consistent with the U.S. Energy Information Administration, unconventional (or nonconventional) resources are defined dynamically as hydrocarbon resources that do not meet the criteria for conventional production (i.e., crude oil and natural gas that is produced by a well drilled into a geologic formation in which the reservoir and fluid characteristics permit the oil and natural gas to readily flow to the wellbore).
 - Unconventional (or nonconventional) oil includes oil shales, oil sands, heavy oil, etc.
 - Unconventional (or nonconventional) gas includes coal seam gas, shale gas, etc.
- .06 The registrant shall disclose the percentage of its emissions that are covered under a regulatory program, such as the European Union Emissions Trading Scheme (EU ETS), Western Climate Initiative (WCI), California Cap-and-Trade (California Global Warming Solutions Act), or other regulatory programs.
- Regulatory programs include cap-and-trade schemes and carbon tax/fee systems.
 - Disclosure shall exclude emissions covered under voluntary trading systems and disclosure-based regulations (e.g., the U.S. Environmental Protection Agency (EPA) mandatory reporting rule).

⁷ “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 2014 (p. 94).

⁸ This approach is based on the requirements of the International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) on consolidation and equity accounting. It is consistent with the way in which information relating to entities within a group, or interest in joint ventures/associates, would be included in consolidated financial statements. *Climate Change Reporting Framework*, CDSB.

- .07 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.
- .08 In the case that current reporting of GHG emissions to the CDP or other entity (e.g., a national regulatory disclosure program) differs in terms of the scope and consolidation approach used, the registrant may disclose those emissions. However, primary disclosure shall be according to the guidelines previously mentioned.
- .09 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.
- .10 This accounting metric corresponds to section CC8.2 of the Carbon Disclosure Project (CDP) Questionnaire and section 4.25 of the Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).

NR0101-02. Amount of gross global Scope 1 emissions from: (1) combustion, (2) flared hydrocarbons, (3) process emissions, (4) directly vented releases, and (5) fugitive emissions/leaks

- .11 The registrant shall disclose the amount of direct greenhouse gas (GHG) emissions in CO₂-e from the following sources:
- Combustion emissions, which includes the use of fuel in gas compression, power generation, heating, coke burn, etc.
 - Flaring of hydrocarbons, such as in depressurizing, start-up/shut-down, well testing and well work-over, etc.
 - Process emissions, which include vessel loading, tank storage and flushing, etc.
 - Venting of hydrocarbons, defined as the intentional (or designed), controlled release of gas to the atmosphere during normal operations.
 - Estimate of fugitive emissions or leaks of GHG gases, including leaks from piping and other equipment, well leaks, and non-routine events (e.g., pipeline maintenance, gas releases, equipment maintenance).
- .12 This accounting metric corresponds to:
- Section OG3.3 of the Investor CDP information request for Oil and Gas sector module.
 - “Other reporting elements” of E1 of the IPIECA Oil and Gas Industry Guidance on Voluntary Sustainability Reporting.

NR0101-03. Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets

- .13 The registrant shall discuss the following where relevant:
- The scope, including if strategies, plans, and/or reduction targets pertain differently to different business units, geographies, or emissions sources.

- If strategies, plans, and/or reduction targets are related to or associated with an emissions disclosure (reporting) or reduction program (e.g., EU ETS, Regional Greenhouse Gas Initiative (RGGI), WCI, etc.), including regional, national, international or sectoral programs.
- 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.

.14 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 towards 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 that reached completion during the fiscal year.
- The mechanism(s) for achieving the target, such as energy efficiency efforts, energy source diversification, carbon capture and storage, etc.

.15 Where necessary, the registrant shall discuss any circumstances in which the target base year emissions have been or may be re-calculated retrospectively, or in which the target base year has been reset.

.16 This accounting metric corresponds with:

- CDSB Section 4, "Management Actions"⁹
- CDP questionnaire "CC3. Targets and Initiatives"

⁹ 4.12, "Disclosure shall include a description of the organization's long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including targets to reduce GHG emissions and an analysis of performance against those targets." *Climate Change Reporting Framework* – Edition 1.1, October 2012, CDSB.

Air Quality

Description

Other air emissions from E&P operations include hazardous air pollutants, criteria air pollutants, and Volatile Organic Compounds (VOCs), which can have significant, localized human health and environmental impacts. Of particular concern are sulfur dioxide, nitrogen dioxide, and VOC emissions. The financial impacts on companies from air emissions will vary depending on the specific locations of operations and the prevailing air emissions regulations. As E&P operations expand close to population centers, the impacts on human health are likely to be exacerbated if air emissions limits are breached. Active management of the issue—through technological and process improvements—could allow companies to limit the impact of regulations in an environment of increasing regulatory and public concerns about air quality in the U.S. and globally. Companies could benefit from operational efficiencies that could lead to a lower cost structure over time.

Accounting Metrics

NR0101-04. Air emissions for the following pollutants: NO_x (excluding N₂O), SO_x, volatile organic compounds (VOCs), and particulate matter (PM)

- .17 The registrant shall disclose its emissions released in the atmosphere of air pollutants associated with extraction and production operations, such as:
 - Direct air emissions from stationary or mobile sources include, but are not limited to: equipment at well sites, production facilities, refineries, chemical plants, terminals, fixed site drilling rigs, office buildings, marine vessels transporting products, tank truck fleets, mobile drilling rigs, and moveable equipment at drilling and production facilities.
- .18 The registrant shall disclose emissions consistent with IPIECA's Oil and Gas Industry Guidance on Voluntary Sustainability Reporting, as noted below.
- .19 The registrant shall disclose the following emissions released to the atmosphere from oil and natural gas operations by emissions type:
 - Oxides of nitrogen (including NO and NO₂ and excluding N₂O), reported as NO₂.
 - Oxides of sulfur (SO₂ and SO₃), reported as SO₂.
 - Non-methane volatile organic compounds (VOCs), defined as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and methane, which participates in atmospheric photochemical reactions, except those designated by the EPA as having negligible photochemical reactivity.
 - Particulate matter (PM), reported as the sum of PM₁₀ and PM_{2.5}, or all particulates less than 10 micrometers in diameter.

- .20 This scope does not include CO₂, CH₄, and N₂O, which are disclosed in NR0101-01, as Scope 1 GHG emissions.
- .21 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 NR0101-01.
- .22 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.

Water Management

Description

Depending on the extraction technique, E&P operations need relatively large quantities of water, which may expose companies to the risk of reduced water availability, regulations limiting usage, or related cost increases, particularly in water-stressed regions. Contamination of local water resources can result from produced water, flowback water, hydraulic fracturing fluids, and methane leakage, particularly due to deficiencies in well casings. There is debate about whether or not hydraulic fracturing operations have contaminated groundwater supplies in the past, since there is difficulty in establishing causality without baseline data. In the U.S., concerns about chemicals used in hydraulic fracturing fluids have led to increased disclosure by companies through a voluntary industry registry, FracFocus. There have also been related state regulations, as well as legislative proposals to repeal federal exemptions for hydraulic fracturing operations. Reducing water use and contamination through recycling, other water management strategies, and use of non-toxic fracturing fluids could create operational efficiency for companies and lower their operating costs. They could also minimize the impacts that regulations, water supply shortages, and community-related disruptions have on operations.

Accounting Metrics

NR0101-05. Total fresh water withdrawn, percentage recycled, percentage in regions with High or Extremely High Baseline Water Stress

- .23 The registrant shall disclose the amount of water (in cubic meters) that was withdrawn from freshwater sources for use in operations.
- 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 total dissolved solids (TDS) concentration of less than 1000 mg/l per the Water Quality Association [definition](#).
- .24 Water obtained from a water utility can be assumed to meet the definition of freshwater.¹⁰
- .25 The registrant shall disclose the percentage of water recycled as the volume (in cubic meters) recycled divided by the volume of water withdrawn.
- Any volume of water reused multiple times shall be counted as recycled each time it is recycled and reused.
- .26 Using the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly available online [here](#)), the registrant shall analyze all of its operations for water risks and identify facilities that are in a location with High (40–80%) or Extremely High (>80%) Baseline Water Stress. Water withdrawn in locations with High or Extremely High Baseline Water Stress shall be indicated as a percentage of the total water withdrawn.
- .27 This accounting metric corresponds to section W5. Water Accounting of the CDP's [2014 Water Information Request](#).

¹⁰ <http://water.epa.gov/drink/contaminants/secondarystandards.cfm>

NR0101-06. Volume of produced water and flowback generated; percentage (1) discharged, (2) injected, (3) recycled; hydrocarbon content in discharged water

- .28 The registrant shall disclose the volume (in cubic meters) of produced water and flowback fluid generated during its activities.
- .29 Produced water is defined according to the U.S. EPA (40 CFR 435.41) as water (brine) obtained from the hydrocarbon bearing formation strata during the extraction of oil and gas. This can include formation water, injection water, and any chemicals added downhole or during the oil/water separation process.
- .30 Flowback is defined as the recovered hydraulic fracturing fluid that returns to the surface during a hydraulic fracturing operation that may often be mixed with produced water.
- .31 The registrant shall calculate the percentage of produced water and flowback fluid that was:
- Discharged directly to the environment or indirectly discharged through a third party, such as a local wastewater treatment plant.
 - Injected, such as into a Class II injection well under the U.S. EPA's Underground Injection Control (UIC) program, or equivalent.
 - Recycled for use in other wells in fracturing fluids or in other drilling and production processes.
- .32 The registrant shall disclose the amount (in metric tons) of hydrocarbons in produced water, flowback, or other water discharged to the environment.
- Other water discharges may include process water and storm water.
 - Measurements of hydrocarbon content should be made using test methods required or approved by local regulatory authorities (or equivalent applicable standards).

NR0101-07. Percentage of hydraulically fractured wells for which there is public disclosure of all fracturing fluid chemicals used

- .33 The registrant shall calculate the percentage as: the number of hydraulically fractured wells for which it provides public disclosure of all of the chemical content of fracturing fluid, divided by the total number of hydraulically fractured wells.
- .34 The registrant shall count only wells for which all fluid chemicals are publicly disclosed, including the chemicals that meet the definition of a trade secret, according to [Appendix E to 29 CFR Part §1910.1200](#) and may be exempt from disclosure on a material safety data sheet (MSDS).
- .35 Public disclosure includes, but is not limited to, posting to a publicly accessible corporate website or fracfocus.org.

NR0101-08. Percentage of hydraulic fracturing sites where ground or surface water quality deteriorated compared to a baseline

- .36 The registrant shall calculate the percentage as: the total number of hydraulic fracturing well sites for which it detected a deterioration in the ground or surface water surrounding the well site as compared to a baseline measurement, divided by the total number of hydraulic fracturing well sites.

- .37 Deterioration in water quality is, at a minimum, defined as occurring when testing indicates:
- Presence of thermogenic gas or a mixture of thermogenic and biogenic gas that was not present in baseline testing.
 - An increase in methane concentration by more than 5.0 mg/l between sampling periods.
 - Benzene, toluene, ethylbenzene, or xylenes (BTEX compounds) or total petroleum hydrocarbons (TPH) are present in higher concentrations as compared to the baseline.
- .38 The registrant shall determine whether water quality deteriorated against a baseline through monitoring of ground and surface water surrounding hydraulically fractured well sites.
- Determinations shall be consistent with Chapter 3 of the Wyoming Oil and Gas Conservation Commission (WOGCC) Rules and Regulations and/or The Colorado Oil and Gas Conservation Commission's (COGCC) Rule 609 – Statewide Groundwater Baseline Sampling and Monitoring.
- .39 A baseline water quality assessment includes testing of any water sources (including bodies of water and water wells) located near a hydraulically fractured well site location prior to drilling.
- The registrant shall sample water sources that are within the anticipated fracture radius, plus a safety factor.
- .40 The initial baseline sample shall occur:
- Prior to drilling or before installation of a surface oil and gas facility on a location.
 - Prior to re-stimulation of a well, if more than 12 months have passed since the initial pre-drilling sampling event or the most recent re-stimulation sampling event.
- .41 Ongoing monitoring shall occur with at least the following frequency:
- One subsequent sampling between 12 and 18 months after well completion or facility installation.
 - A second subsequent sampling between 60 and 78 months after the previous sampling event. Dry holes are exempt from this requirement.
- .42 The registrant shall collect initial baseline samples and subsequent monitoring samples from all available water sources, up to a maximum of a four, within a one-half mile radius of a proposed well, multi-well site, or dedicated injection well.
- The registrant shall follow sampling guidance from the WOGCC and COGCC, including for instances when few or no sampling sites exist or are accessible.
- .43 If the registrant does not conduct baseline water quality assessments and ongoing monitoring for any of its well sites, then it shall disclose the percentage of wells for which there is no baseline and/or ongoing monitoring.
- .44 The registrant may choose to disclose whether results of baseline groundwater quality tests and ongoing monitoring are communicated to local regulatory authorities (where not required by local law) and/or residents and business owners in proximity to hydraulic fracturing sites.

Biodiversity Impacts

Description

The E&P industry's activities can have significant impacts on biodiversity. These include habitat loss and alteration through land use for exploration, production, disposing of drilling and associated wastes, and decommissioning of onshore and offshore wells. Oil spills and leaks are a threat to many species and habitats. Biodiversity impacts of E&P operations can affect the valuation of oil and gas reserves and create operational risks. The environmental characteristics of the land where reserves are located could increase extraction costs as a result of increasing awareness and protection of ecosystems, making such reserves uneconomical to extract. Companies could also face regulatory or reputational barriers to accessing reserves in ecologically sensitive areas. This may include new protection statuses afforded to areas where reserves are located. Areas such as the Arctic and certain shorelines with mangroves and swamps are not only extremely ecologically sensitive, but also entail more complex and expensive cleanup operations if hydrocarbon spills or leaks occur there. Negative future impacts on the value of reserves could be mitigated by taking into consideration the location of reserves in or near protected areas when making investment or capital expenditure decisions. Companies with a good track record of minimizing biodiversity impacts could gain a competitive advantage in accessing new reserves in or near protected areas. Ongoing E&P operations could be at risk in the absence of effective environmental management plans for different stages of the project lifecycle, due to regulatory penalties, litigation, community protests, and associated costs.

Accounting Metrics

NR0101-09. Description of environmental management policies and practices for active sites

- .45 The registrant shall provide a brief description of its environmental management plan(s) implemented at active sites, including where relevant:
- Lifecycle stages to which the plan(s) apply, such as: pre-bid (when the registrant is considering acquisition of a site), exploration and appraisal, site development, hydrocarbon production, and during closure, decommissioning, and restoration.
 - The topics addressed by the plan(s), such as: ecological and biodiversity impacts, waste generation, noise impacts, emissions to air, discharges to water, natural resource consumption, and hazardous chemical usage.
 - The underlying references for its plan(s), including whether they are codes, guidelines, standards, or regulations; whether they 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.
- .46 The scope of disclosure includes all terrestrial and offshore operations in which the registrant is involved as an operator, partner, or contractor, and which are in the exploration, development, production, or decommissioning phase.
- .47 Where applicable and relevant, the registrant shall describe differences between policies and practices in terrestrial areas and in marine areas.

- .48 Where environmental management policies and practices differ significantly by hydrocarbon resource (e.g., conventional oil as compared to unconventional natural gas), then the registrant shall describe differences for each resource.
- .49 Where applicable and relevant, the registrant shall describe specific policies and practices that apply to areas with protected conservation status and/or areas of critical habitat, which are [defined](#) by the International Finance Corporation (IFC) as:
- Areas with high biodiversity value, including (i) habitat of significant importance to Critically Endangered and/or Endangered species; (ii) habitat of significant importance to endemic and/or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes.¹¹
- .50 If the management policies and practices do not apply to all of the registrant's sites or operations, it shall indicate the percentage of sites to which they were applied.
- .51 The registrant shall disclose the degree to which its policies and practices are aligned with the International Finance Corporation's (IFC) [Performance Standards on Environmental and Social Sustainability](#), January 1, 2012, including specifically:
- Performance Standard 1 – Assessment and Management of Environmental and Social Risks and Impacts.
 - Performance Standard 3 – Resource Efficiency and Pollution Prevention.
 - Performance Standard 4 – Community Health, Safety, and Security.
 - Performance Standard 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources.
- .52 Additional relevant references may include:
- [“Environmental management in oil and gas exploration and production – An overview of issue and management approaches,”](#) Joint E&P Forum/UNEP Technical Publication 1997.
 - [“Towards Sustainable Decommissioning and Closure of Oil Fields and Mines: A Toolkit to Assist Government Agencies,”](#) DRAFT Version 2.0, November 2009, World Bank Multistakeholder Initiative.

NR0101-10. Number and aggregate volume of hydrocarbon spills, volume in Arctic, volume near shorelines with ESI rankings 8-10, and volume recovered

- .53 The registrant shall disclose the total number and volume (in barrels) of hydrocarbon spills where:
- Spills are defined as greater than 1 bbl (42 U.S. gallons or 159 liters).
 - Spills include those that reached the environment and exclude spills that were contained within impermeable secondary containment.

¹¹ International Finance Corporation (IFC), Performance Standard 6, *Biodiversity Conservation and Sustainable Management of Living Natural Resources*, January 1, 2012.

- .54 Consistent with IPIECA's Oil and Gas Industry Guidance on Voluntary Sustainability Reporting (hereafter, "IPIECA Guidance"), the volume reported shall represent the total estimated amount spilled that reached the environment and not be reduced by the amount of such hydrocarbon subsequently recovered, evaporated, or otherwise lost.
- .55 Consistent with IPIECA Guidance, the scope of releases from operations and events includes:
- Above-ground and below-ground facilities.
 - Sabotage, earthquakes, or other events outside operational control.
 - Company-owned and operated transport.
 - Leakage over time, which is counted once at the time it is identified.
- .56 The registrant may choose to disclose spills to soil and water separately. A spill that qualifies as a spill to both soil and water should be reported as a single spill to water, with the volume properly apportioned to soil and water.
- .57 The registrant shall disclose the volume of spills (in bbls) that occurred in the Arctic, which is considered to be the area north of the Arctic Circle, or north of the parallel of latitude at 66° 33' north.
- .58 The registrant shall disclose the volume of spills near shorelines with Environmentally Sensitive Index (ESI) levels 8 through 10, where levels are defined according to U.S. National Oceanic and Atmospheric Administration (NOAA)'s [shoreline sensitivity rankings list](#).
- .59 The registrant shall calculate the volume of spills recovered as the amount of spilled hydrocarbons (in bbls) removed from the environment through short-term spill response activities, excluding:
- Amounts that were recovered during longer-term remediation at spill sites.
 - Amounts that evaporated, burned, or were dispersed.
- .60 The registrant shall calculate recovery rates using an accepted standard or guideline, such as [California Code of Regulations, Title 14, Division 1, Subdivision 4, Chapter 7, Subchapter 2, Determining Amount of Petroleum Hydrocarbons Recovered, Sections 877-880, Effective June 13, 2009](#).

NR0101-11. (1) Proved and (2) probable reserves in or near sites with protected conservation status or endangered species habitat

- .61 The registrant shall disclose the amount of net proved reserves in sites with protected conservation status, plus the amount of net proved reserves in areas of endangered species habitat.
- .62 The registrant shall disclose the amount of net probable reserves in sites with protected conservation status, plus the amount of net probable reserves in areas of endangered species habitat.

- .63 Reserves are considered to be in areas of protected conservation status if they are located within:
- International Union for Conservation of Nature (IUCN) Protected Areas (categories I-VI).
 - Ramsar Wetlands of International Importance.
 - UNESCO World Heritage Sites.
 - Biosphere Reserves recognized within the framework of UNESCO's Man and the Biosphere (MAB) Programme.
 - Natura 2000 sites.
 - Sites that meet the IUCN's definition of a protected area: "A protected area is a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values."¹²
 - These sites may be listed in the World Database of Protected Areas (WDPA) and mapped on ProtectedPlanet.net.
- .64 Reserves are considered to be in endangered species habitat if they are in or near areas where IUCN Red List of Threatened Species that are classified as Critically Endangered (CR) or Endangered (EN) are extant.
- A species is considered extant in an area if it is a resident, present during breeding or non-breeding season, or if it makes use of the area for passage.
- .65 For the purposes of this disclosure, "near" is defined as within 5 kilometers (km) of the boundary of an area of protected conservation status or an endangered species habitat.
- .66 The registrant shall follow guidance published by the Securities and Exchange Commission (SEC) in its [Oil and Gas Reporting Modernization](#) (Section §229.1202 [Item 1202] Disclosure of Reserves) for the classifying of reserves as proved and probable.
- Reserves of oil products shall be calculated in millions of barrels.
 - Reserves of natural gas products shall be calculated in millions of standard cubic feet.
- .67 The registrant may choose to separately identify reserves in areas with additional ecological, biodiversity, or conservation designations such as those listed by the [A-Z Guide of Areas of Biodiversity Importance](#) prepared by the United Nations Environment Programme's World Conservation Monitoring Centre (UNEP-WCMC).
- .68 The registrant may choose to provide discussion around reserves that are located in protected areas or endangered species habitat, but present low risk to biodiversity or ecosystem services; the registrant may choose to provide similar discussion for reserves located in areas with no official designation of high biodiversity value but that present high biodiversity or ecosystem services risks.

¹² Dudley, N. (ed.) (2008) Guidelines for Applying Protected Areas Management Categories. IUCN: Gland, Switzerland. p.8-9.

Security, Human Rights, and Rights of Indigenous Peoples

Description

E&P companies face additional community-related risks when operating in conflict zones; in areas with weak or absent governance institutions, rule of law, and legislation to protect human rights; or in areas with vulnerable communities such as indigenous peoples. Companies using private or government security forces to protect their workers and assets may knowingly or unknowingly contribute to extreme cases of human rights violations, including use of excessive force. Indigenous people are often the most vulnerable sections of the population, with limited capacity to defend their unique rights and interests. Companies perceived as contributing to human rights violations or failing to account for indigenous peoples' rights may be affected due to protests, riots, or suspension of permits. They could face substantial costs related to compensation or settlement payments and write-downs in the value of their reserves in such areas. In the absence of country laws to address such cases, several international instruments have emerged to provide guidelines for companies, including obtaining the free, prior, and informed consent of indigenous peoples for decisions that affect them. With greater awareness, several countries are also beginning to implement specific laws protecting indigenous peoples' rights, creating increasing regulatory risk for companies.

Accounting Metrics

NR0101-12. (1) Proved and (2) probable reserves in or near areas of conflict

- .69 The registrant shall disclose the amount of net proved reserves that are located in or near areas of active conflict.
- .70 The registrant shall disclose the amount of net probable reserves that are located in or near areas of active conflict.
- .71 Active conflict is defined according to the Uppsala Conflict Data Program (UCDP) [definition](#) as:
- A conflict, both state-based and non-state, is deemed to be active if there are at least 25 battle-related deaths per calendar year in one of the conflict's dyads.
- .72 Reserves shall be considered to be in or near an area of active conflict if they are located in the same country as the active conflict.
- If the registrant can demonstrate that a conflict is contained to a region, state, or designated area that is not proximate to its reserves, then it may exclude these from the scope of disclosure.
 - If reserves are located in a country, region, or state adjacent to an active conflict and/or can be reasonably expected to be operationally impacted by the conflict, then these reserves shall be included in the scope of disclosure.

.73 The registrant shall follow guidance published by the Securities and Exchange Commission (SEC) in its [Oil and Gas Reporting Modernization](#) (Section §229.1202 [Item 1202] Disclosure of Reserves) for the classifying of reserves as proved and probable.

- Reserves of oil products shall be calculated in millions of barrels.
- Reserves of natural gas products shall be calculated in millions of standard cubic feet.

NR0101-13. (1) Proved and (2) probable reserves in or near indigenous land

.74 The registrant shall disclose the amount of net proved reserves that are located in or near areas that are considered to be indigenous peoples' land.

.75 The registrant shall disclose the amount of net probable reserves that are located in or near areas that are considered to be indigenous peoples' land.

.76 Indigenous lands are those occupied by those who self-identify as indigenous, and likely have one or more of the following characteristics based the [working definition](#) of "Indigenous Peoples" adopted by the United Nations:

- Historical continuity with pre-colonial and/or pre-settler societies
- Strong link to territories and surrounding natural resources
- Distinct social, economic, or political systems
- Distinct language, culture, and beliefs
- Form non-dominant groups of society
- Resolve to maintain and reproduce ancestral environments and systems as distinctive peoples and communities

.77 For the purposes of this disclosure, "near" is defined as within 5 km of the recognized boundary of an area considered to be indigenous land.

.78 The registrant shall follow guidance published by the Securities and Exchange Commission (SEC) in its [Oil and Gas Reporting Modernization](#) (Section §229.1202 [Item 1202] Disclosure of Reserves) for the classifying of reserves as proved and probable.

- Reserves of oil products shall be calculated in millions of barrels.
- Reserves of natural gas products shall be calculated in millions of standard cubic feet.

NR0101-14. Discussion of engagement processes and due diligence practices with respect to human rights, indigenous rights, and operation in areas of conflict

.79 The registrant shall describe its due diligence practices and procedures with respect to indigenous rights of communities in which it operates or intends to operate, including:

- Upholding ILO Convention No. 169.
- Use of free, prior, and informed consent (or consultation) processes.

.80 The registrant shall describe its due diligence practices and procedures with respect to human rights, including:

- Upholding the fundamental International Labour Organization (ILO) conventions on freedom of association (No. 87), collective bargaining (No. 98), forced labor (No. 29, No. 105), child labor (No. 138, No. 182), fair wages (No. 100), and discrimination (No. 111).
- Implementation of the European Commission's "Oil and Gas Sector Guide on Implementing the UN Guiding Principles on Business and Human Rights," specifically Human Rights Due Diligence (Principle 17a-c).
- Implementation of Voluntary Principles on Security and Human Rights.

.81 The registrant shall discuss its practices and procedures while operating in areas of conflict, such as:

- Describing its approach according to IPIECA's "Guide to operating in areas of conflict for the oil and gas industry," which includes "do no harm," "do something," and "do something + +."

.82 An area of conflict is located in the same country as an active conflict, or adjacent to an active conflict that can be reasonably expected to impact the registrant's operations.

.83 Active conflict is defined according to the Uppsala Conflict Data Program (UCDP) [definition](#) as:

- A conflict, both state-based and non-state, is deemed to be active if there are at least 25 battle-related deaths per calendar year in one of the conflict's dyads.

.84 The discussion shall include due diligence processes employed during all stages of project development (i.e., prior, during, and post).

.85 The discussion shall include how practices apply to business partners, such as contractors, sub-contractors, suppliers, and joint venture partners.

Community Relations

Description

E&P activities take place over a number of years, and companies may be involved in multiple projects in a region that can have a wide range of community impacts. Community rights and interests may be affected by environmental and social impacts of E&P operations, such as competition for access to local energy or water resources, air and water emissions, and waste from operations. E&P companies need support from local communities to be able to obtain permits and leases and conduct their activities without disruptions. The expected value of reserves could be affected if the community interferes, or lobbies its government to interfere, with the rights of an E&P company in relation to those reserves. In addition to community concerns about the direct impacts of projects, the presence of E&P activities may give rise to associated socioeconomic concerns related to education, health, livelihoods, and food security for the community. E&P companies that are perceived as engaging in rent-seeking and exploiting a country or community's resources without providing any socioeconomic benefits in return may be exposed to the risk of resource nationalism actions by host governments and communities. These could include imposition of ad hoc taxes and export restrictions. These risks may vary depending on the country, and could be higher in countries heavily reliant on oil and gas for their economic growth. Companies in the extractives industries can adopt various community engagement strategies in their global operations to manage risks and opportunities associated with community rights and interests, such as integrating community engagement into each phase of the project cycle. Companies are beginning to adopt a "shared value" approach to provide a key socioeconomic benefit to the community that also creates value for the company itself.

Accounting Metrics

NR0101-15. Discussion of process to manage risks and opportunities associated with community rights and interests

.86 The registrant shall describe its processes, procedures, and practices to manage risks and opportunities associated with the rights and interests of communities in areas where it conducts business, where community rights and interests include:

- Economic rights and interests, including the right to employment, fair wages, payment transparency, and respect of infrastructure and agricultural land.
- Environmental rights and interests, including the right to clean local air and water, as well as safe discharge and disposal of waste.
- Social rights and interests, including the rights to adequate health care, education, and housing.
- Cultural rights and interests, including the right to protection of places of cultural significance (e.g., sacred sites or burial sites).

.87 The registrant shall disclose the following, as relevant:

- Lifecycle stages to which its practices apply, such as: pre-bid (when the registrant is considering acquisition of a site), exploration and appraisal, site development, hydrocarbon production, and during closure, decommissioning, and restoration.

- The community rights and interests (enumerated above) specifically addressed by the practices.
 - The underlying references for its procedures, including whether they are codes, guidelines, standards, or regulations and whether they 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.
- .88 Risks and opportunities include, but are not limited to: non-technical delays, availability and development of local content, availability and access to adequate infrastructure, community actions related to resource nationalism, and challenges associated with resettlement and access to land.
- .89 The registrant shall disclose the degree to which its policies and practices are aligned with the International Finance Corporation's (IFC) [Performance Standards on Environmental and Social Sustainability](#), January 1, 2012, including specifically:
- Performance Standard 4 – Community Health, Safety, and Security
 - Performance Standard 5 – Land Acquisition and Involuntary Resettlement
 - Performance Standard 8 – Cultural Heritage
- .90 The discussion shall include how practices apply to business partners such as contractors, sub-contractors, suppliers, and joint venture partners.
- .91 The registrant should describe its efforts to eliminate or mitigate community risks and/or address community concerns, including, but not limited to:
- The use of social impact assessment (SIA) that evaluates, manages, and mitigates risks.
 - Efforts to engage with stakeholders, build consensus, and collaborate with communities.
 - “Shared” or “blended” value projects that provide quantifiable benefits to the community and the registrant.
- .92 The registrant may choose to quantify its community risks by calculating the aggregate estimated value at risk (in U.S. dollars) to its capital expenditure projects as the difference in value (in U.S. dollars) between a project free from country, regional, and/or community risks (hereafter, country risk) and the value of a project adjusted for these risks.
- This calculation should be conducted using an appropriate valuation model; variations of the Capital Asset Pricing Model (CAPM) are commonly used to assess country risk:
 - Value at risk can be calculated by applying an additional discount rate premium when calculating the net present value of a project using discounted cash flow (DCF) analysis.
 - Value at risk can be expressed as a reduction in the expected cash flows of a project due to country risk when calculating the net present value of a project using discounted cash flow (DCF) analysis.
 - If a project is insured for country risks, the value at risk can be expressed as a reduction in the cash flows of a project due to the cost of insurance when calculating the net present value of a project using discounted cash flow (DCF) analysis.

- Country, regional, and/or community risks include, but are not limited to: corruption, business legal structure, political stability, regulation, resource nationalism, ethnic conflict, stability of the local market, labor force (skills) availability, resettlement and access to land, quality of access to infrastructure (e.g., ports, roads, shipping channels), and/or general license to operate.
 - These risks are likely to manifest differently at the country (national), regional (state), community (local) levels, and project levels.
 - This risk differs from sovereign risk, which is defined as the potential for a central bank or government-backed entity to willingly or unwillingly default on debt obligations, or significantly alter key economic variables such as foreign exchange rates, import ratios, and money supply.
- The registrant should identify and describe country risks specific to its projects and unique operating context.
 - This may include the identification of country, regional, and community risks and/or the discussion of specific projects.
 - This may include discussion of how the registrant has mitigated these risks through community engagement partnerships, blended value projects, etc.; the registrant shall quantify this reduction in risk according to the methods described above.
 - Discussion should be in addition to broad country risk classification (e.g., OECD Prevailing Country Risk classification, Standard & Poor's Country Risk ratings, World Economic Forum Global Competitiveness Index, etc.).
- The registrant should describe the model or approach used to value capital expenditure projects such as adjusted discount rate, expected cash flow, or other methods.

NR0101-16. Number and duration of non-technical delays

- .93 The registrant shall disclose the total number and aggregate duration (in days) of site shutdowns or project delays due to non-technical factors.
- .94 The scope includes shutdowns and project delays including, but not limited to, those resulting from pending regulatory permits or other political delays, community or stakeholder resistance or protest, and armed conflict.
- .95 The registrant may choose to discuss specific delays including associated costs, root cause and corrective actions for resolved delay, and status of ongoing delays.

Additional references

International Convention on Economic, Social and Cultural Rights (1966).

Health, Safety, and Emergency Management

Description

Workers involved in E&P activities face significant health and safety risks due to the harsh working environments and hazards of handling oil and gas. In addition to acute impacts resulting from accidents, workers may develop chronic health conditions, including those caused by silica or dust inhalation, as well as mental health problems. A significant proportion of the workforce at oil and gas drilling sites consists of temporary workers and employees of Oil and Gas Services companies. Therefore, health impacts on, and the safety performance of, such workers also have impacts on E&P companies. Additional health and safety protocols may be needed to protect women and minorities, particularly when they operate in regions where they continue to face discrimination. Significant releases of hydrocarbons or other hazardous substances as a result of accidents can also have wide-ranging negative social and environmental consequences. In addition to effective process safety management practices, it is important for a company to develop a culture of safety in order to reduce the probability that accidents and other health and safety incidents will occur. If accidents and other emergencies do occur, companies with a strong safety culture can effectively detect and respond to such incidents. A culture that engages and empowers employees and contractors to work with management to safeguard their own health, safety, and well-being and prevent accidents is likely to help companies reduce production downtime, mitigate costs, ensure workforce productivity, and maintain their license to operate.

Accounting Metrics

NR0101-17. (1) Total Recordable Injury Rate (TRIR), (2) Fatality Rate, and (3) Near Miss Frequency Rate for (a) full-time employees, (b) contract employees, and (c) short-service employees

- .96 For registrants whose workforce is entirely U.S.-based, the registrant 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 determination of whether an event is a recordable occupational incident and definitions for exemptions for incidents that occurred in the work environment but are not occupational.
- .97 For registrants whose workforce includes non-U.S.-based employees, the registrant shall calculate its total recordable injury rate and fatality rate according to the U.S. Bureau of Labor Statistics [guidance](#) and/or using the U.S. Bureau of Labor Statistics [calculator](#).
- .98 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.

.99 The registrant shall disclose its TRIR, Fatality Rate, and NMFR for each of the following categories of employee:

- Direct, full-time employees
- Contract employees
- Short-service employees (full-time and contract)

.100 Short-Service Employee (SSE) is defined as a newly placed full-time or temporary employee or subcontractor with less than six months' experience in the assigned job.

.101 The scope includes all employees domestic and foreign.

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

NR0101-18. Process Safety Event (PSE) rates for Loss of Primary Containment (LOPC) of greater consequence (Tier 1)

.103 The registrant shall disclose Tier 1 process safety events rates (PSE), as defined by the International Association of Oil & Gas Producers (OGP), for instances of loss of primary containment (LOPC) using terms and definitions from the OGP's Process Safety – Recommended Practice on Key Performance Indicators, Report No. 456.

.104 A PSE is defined as a loss of primary containment (LOPC) from a process that meets the Tier 1 definition below, is recordable, and for the purpose of recording a PSE:

- Drilling facilities are considered to be part of a process when operations are "in-hole."
- Land or marine vessels (trucks and ships) are considered to be part of a process when physically connected to a production facility.

.105 A loss of primary containment (LOPC) is defined as an unplanned or uncontrolled release of any material from primary containment, including non-toxic and non-flammable materials (e.g., steam, hot condensate, nitrogen, compressed CO₂ or compressed air). For drilling operations, any unplanned or uncontrolled release to the surface (seabed or ground level) should be included. LOPC is a type of event. An unplanned or uncontrolled release is an LOPC irrespective of whether the material is released into the environment, secondary containment, or into other primary containment not intended to contain the material released under normal operating conditions.

.106 A Tier 1 PSE is defined as a loss of primary containment (LOPC) as the greatest consequence, resulting in one or more of the following consequences:

- An employee, contractor, or subcontractor experiencing a "days away from work" injury and/or fatality.
- A hospital admission and/or fatality of a third-party.
- An officially declared community evacuation or community shelter-in-place.
- A fire or explosion resulting in greater than, or equal to, \$25,000 of direct cost to the Company.
- A pressure relief device (PRD) discharge to atmosphere, whether directly or via a downstream destructive device, that results in one or more of the following four consequences:

- liquid carryover
- discharge to a potentially unsafe location
- an onsite shelter-in-place
- public protective measures (e.g., road closure) and a PRD discharge quantity greater than the threshold quantities specified in Appendix B of the OGP Process Safety – Recommended Practice on Key Performance Indicators, Report No. 456 in any one-hour period
- A release of material greater than the threshold quantities specified in Appendix B of the OGP Process Safety – Recommended Practice on Key Performance Indicators, Report No. 456 in any one-hour period.

.107 The Tier 1 PSE Rate shall be calculated as (Total Tier 1 PSE Count / Total Hours Worked) x 200,000.

.108 Total work hours include employees and contractors.

NR0101-19. Discussion of management systems used to integrate a culture of safety and emergency preparedness throughout the value chain and throughout the exploration and production lifecycle

.109 Discussion shall include how the registrant integrates a culture of safety and emergency preparedness throughout its value chain, such as through training, joint management by the workforce and leadership, rules and guidelines, and use of technology.

.110 The registrant shall include a description of how emergency preparedness is coordinated amongst business partners (e.g., contractors and sub-contractors).

.111 Disclosure may focus broadly on safety and emergency management systems, but shall specifically address the systems to avoid and manage emergencies, accidents, and incidents that could have catastrophic human health, local community, and environmental impacts.

.112 The exploration and production lifecycle phases include, at a minimum: geological and seismic surveys, site surveys, exploratory drilling, appraisal drilling, site development, production, and decommissioning.

Business Ethics & Payments Transparency

Description

Managing business ethics and maintaining an appropriate level of transparency in payments to governments or individuals are significant issues for the E&P companies. This is due to the importance of government relations to companies' ability to conduct business in this industry and to gain access to oil and gas reserves. The emergence of several anti-corruption, anti-bribery, and payments-transparency laws and initiatives in the U.S. and abroad create regulatory risks. Enforcement of these could lead to significant one-time costs or higher ongoing compliance costs and even affect a company's social license to operate. Companies with significant reserves or operations in corruption-prone countries could face heightened risks. Companies are under pressure to ensure that their governance structures and business practices can address corruption and willful or unintentional participation in illegal or unethical payments or gifts to government officials or private persons.

Accounting Metrics

NR0101-20. (1) Proved and (2) probable reserves in countries that have the 20 lowest rankings in Transparency International's Corruption Perception Index

- .113 The registrant shall disclose the amount of its net proved reserves located in the countries with the 20 lowest rankings in Transparency International's Corruption Perception Index (CPI).
- .114 The registrant shall disclose the amount of its net probable reserves located in the countries with the 20 lowest rankings in Transparency International's Corruption Perception Index (CPI).
- .115 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.
- .116 The registrant shall use the most current version of the CPI via Transparency International's publicly accessible [website](#).
- .117 The registrant may choose to provide discussion around operations that are located in countries with low rankings in the index but 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 which present unique or high business ethics risks.
- .118 The registrant shall follow guidance published by the Securities and Exchange Commission (SEC) in its [Oil and Gas Reporting Modernization](#) (Section §229.1202 [Item 1202] Disclosure of Reserves) for the classifying of reserves as proved and probable.
 - Reserves of oil products shall be calculated in millions of barrels.
 - Reserves of natural gas products shall be calculated in millions of standard cubic feet.

NR0101-21. Description of the management system for prevention of corruption and bribery throughout the value chain

- .119 The registrant shall discuss its management system and due diligence procedures for assessing and managing corruption and bribery risks internally and associated with business partners in its value chain.
- Relevant business partners include customer, suppliers, contractors, subcontractors, and JV partners.
- .120 Relevant aspects of a management system include employee awareness programs, internal mechanisms for reporting and following up on suspected violations, anti-corruption policies, and participation in the Extractive Industry Transparency Initiative (EITI).
- .121 The registrant may choose to discuss the implementation of one or more of the following:
- 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
 - World Economic Forum (WEF): Partnering Against Corruption Initiative (PACI)

Reserves Valuation & Capital Expenditures

Description

Estimates suggest that E&P companies are unlikely to be able to extract a significant proportion of their proved and probable oil and gas reserves if GHG emissions are to be controlled to limit global temperature increases to two degrees Celsius. Companies with more carbon-intensive reserves and production and higher capital costs are likely to face greater risks. Regulatory limits on GHG emissions, together with improved competitiveness of alternative energy technologies, could lower or reduce the growth in global demand, and therefore reduce prices for oil and gas products. Extraction costs could increase with regulations that put a price on GHG emissions. These factors could affect the net present value of oil and gas reserves. Regulatory actions that are more abrupt than anticipated, or those focusing on industries with high emissions, could impair asset values substantially over a short period of time. Stewardship of capital resources and production decisions that take into account near- and long-term trends related to climate change mitigation actions can help prevent current asset impairment and maintain profitability and creditworthiness.

Accounting Metrics

NR0101-22. Sensitivity of hydrocarbon reserve levels to future price projection scenarios that account for a price on carbon emissions

- .122 The registrant shall conduct an analysis of its reserves to determine how several future scenarios may affect its determination of whether the reserves are proved or probable.
- .123 The registrant shall base its sensitivity analysis on potential price changes derived from the following scenarios conducted by the International Energy Agency (IEA) in its annual World Energy Outlook (WEO) publication:
- New Policies Scenario, which assumes that broad policy commitments and plans that have been announced by countries (including national pledges to reduce greenhouse-gas emissions and plans to phase out fossil-energy subsidies), occur even if the measures to implement these commitments have yet to be identified or announced. This broadly serves as the IEA baseline scenario.
 - 450 Scenario, which assumes that an energy pathway occurs that is consistent with the goal of limiting the global increase in temperature to 2°C by limiting concentration of greenhouse gases in the atmosphere to around 450 parts per million of CO₂.
 - Current Policies Scenario, which assumes no changes in policies from the mid-point of the year of publication of the WEO.
- .124 The registrant shall analyze the sensitivity of its current proven and probable reserves using the following differences in price for crude oil and natural gas that the IEA projects between its Current Policies Scenario and (1) its New Policies Scenario and (2) its 450 Scenario:
- IEA crude oil import prices are 8.7% lower per barrel in the New Policies Scenario than in the Current Policies Scenario
 - IEA crude oil import prices are 15.7% lower per barrel in the 450 Scenario than in the Current Policies Scenario

- Natural gas (United States) prices are 6.9% lower per MBtu in the New Policies Scenario than in the Current Policies Scenario
- Natural gas (United States) prices are 3.4% lower per MBtu in the 450 Scenario than in the Current Policies Scenario

- .125 Nota bene – Scenarios above are illustrative based on price differences projected in 2025 and published in the World Energy Outlook 2013; the registrant shall use IEA’s most current 2025 price projections in each scenario. As appropriate, and based on updates to IEA scenarios, SASB will provide updates to the future scenario year to be used in projections.
- .126 The registrant shall follow guidance published by the Securities and Exchange Commission (SEC) in its [Oil and Gas Reporting Modernization](#) (Section §229.1202 [Item 1202] Disclosure of Reserves) for the following:
- Classifying of reserves as proved and probable
 - Conducting a reserves sensitivity analysis
 - Current (or base) case of reserve levels

.127 The registrant shall summarize its findings in the following table format:

Table1. Sensitivity of Reserves to Prices By Principal Product Type and Price Scenario

Price Case (Scenario)	Proved Reserves			Probable Reserves		
	Oil	Gas	Product A	Oil	Gas	Product A
	MMbbls	MMscf	measure	MMbbls	MMscf	measure
Current (base)						
New Policies Scenario*						
450 Scenario*						

*using the percentage difference in price in 2025 between the scenario and the Current Policies Scenario

- .128 The registrant may choose to disclose the sensitivity of its reserve levels in other price and demand scenarios in addition to those described above, particularly if these scenarios differ depending on the type of hydrocarbon reserves, regulatory environment in the countries or regions where exploration occurs, end-use of the registrant’s products, or other factors.

NR0101-23. Estimated carbon dioxide emissions embedded in proved hydrocarbon reserves

- .129 The registrant shall calculate and disclose an estimate of the carbon dioxide emissions embedded in its proved hydrocarbon reserves.

- Nota bene – this estimate applies a factor for potential CO₂ only and does not include an estimate for all potential greenhouse gas emissions, as these are dependent on downstream use (e.g., utility electricity generation, industrial heating and electricity generation, residential heating and cooling, transportation, or use in petrochemicals, agrochemicals, asphalt, lubricants, etc.).
- .130 Estimated potential carbon dioxide emissions from proved hydrocarbon reserves shall be calculated according to the following formula, derived from [Meinshausen et al.](#):
- $E = R \times V \times C$, where
 - E are the potential emissions in kilograms of carbon dioxide (kg CO₂);
 - R are the proved reserves in gigagrams (Gg);
 - V is the net calorific value in terajoules per gigagram (TJ/Gg); and
 - C is the effective carbon dioxide emission factor in kilograms CO₂ per terajoule (kg/TJ).
- .131 In the absence of data specific to the registrant's hydrocarbon reserves, carbon content shall be calculated using default data for each major hydrocarbon resource published by the Intergovernmental Panel on Climate Change (IPCC) in its 2006 IPCC Guidelines for National Greenhouse Gas Inventories.
- The registrant shall use default carbon content values per unit of energy that is listed in IPCC Table 1.3 Default Values of Carbon Content, Volume 2: Energy, Chapter 1.
 - The registrant shall use calorific values per weight of hydrocarbon contained in IPCC Table 1.2 Default Net Calorific Values (NCVs) and Lower and Upper Limit of the 95% Confidence Intervals, Volume 2: Energy, Chapter 1.
- .132 The registrant shall use engineering estimates to determine the weight of its hydrocarbons reserves in gigagrams, such as the type of hydrocarbon reserves and its API gravity as published by the American Petroleum Institute.
- .133 For other assumptions required to estimate the carbon content of hydrocarbon reserves, the registrant shall rely on guidance from the IPCC, Greenhouse Gas Protocol, U.S. Energy Information Agency (EIA), or the International Energy Agency (IEA).

NR0101-24. Discussion of how price and demand for hydrocarbons and/or climate regulation influence the capital expenditure strategy for exploration, acquisition, and development of assets

- .134 The registrant shall discuss how projections for price and demand for hydrocarbon products and the path of climate regulation (including findings from NR0101-22 and NR0101-23) influence the registrant's capital expenditure (CAPEX) strategy.
- This discussion should include the registrant's projections and assumptions about future hydrocarbon prices and the likelihood that certain price and demand scenarios occur.
- .135 The registrant shall discuss the implications of how price and demand scenario planning (i.e., NR0101-22) may affect decisions to explore, acquire, and develop new reserves.

- .136 It may be relevant for the registrant to discuss what factors materially influence its CAPEX decision making, including, for example:
- How the scope of climate change regulation—such as which countries, regions, and/or industries are likely to be impacted—may influence the type of hydrocarbon on which the registrant focuses its exploration and development.
 - Its view of the alignment between the time horizon over which price and demand for hydrocarbons may be affected by climate regulation and time horizons for returns on capital expenditures on reserves.
 - How the structure of climate regulation—i.e., a carbon tax versus cap-and-trade—may differently affect price and demand, and thus the registrant’s capital expenditure decision making.
- .137 The registrant should discuss how these trends affect decision-making in the context of different types of reserve expenditures, including development of assets, acquisition of properties with proved reserves, acquisition of properties with unproved reserves, and exploration activities.
- The registrant shall discuss capital expenditures, regardless of the accounting method it uses (i.e., full cost or successful efforts).
- .138 This accounting metric corresponds to Section OG1.6a and OG1.6b of the Investor CDP information request for Oil and Gas sector module.

Management of the Legal & Regulatory Environment

Description

The interaction of companies in the E&P industry with their legal and regulatory environment can have material impacts on shareholder value. This can be a result of E&P companies' significant spending on lobbying and political contributions or as a result of changes in laws or policies that can affect their operations. In particular, climate change and environmental laws and regulations can have material impacts on business. However, given the scientific consensus that human-induced climate change is occurring, efforts to delay climate-related policy or legislative changes may prove counterproductive to the industry in the long term, by creating regulatory, and therefore investment, uncertainty, or incurring higher costs in the future. Efforts to influence environmental laws and regulations unfairly may affect companies' reputations and social license to operate. Companies with a clear strategy for engaging policymakers and regulators that accounts for societal externalities and is aligned with their goals and activities for long-term sustainable outcomes could benefit from a stronger, long-term license to operate. Such companies will likely be better prepared for medium- to long-term regulatory adjustments to deal with global, high-impact issues such as climate change.

Accounting Metrics

NR0101-25. Amount of political campaign spending, lobbying expenditures, and contributions to tax-exempt groups including trade associations

- .139 The registrant shall disclose its total monetary contributions to political campaigns, lobbyists or lobbying organizations, and those to tax-exempt groups, including trade associations that aim to influence political campaigns or participate in political lobbying.
- .140 The scope of disclosure includes the following:
- Political spending, 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).
 - Any direct or indirect political expenditure (one-time or recurring) that must be reported to the Federal Election Commission, the Internal Revenue Service, or a state disclosure agency.
 - Any direct or indirect contributions to registered lobbyists or lobbying organizations, including contributions made to trade organizations, which in turn contribute to political lobbying efforts.

NR0101-26. Five largest political, lobbying, or tax-exempt group expenditures

- .141 The registrant shall disclose the recipients of its five largest contributions disclosed in NR0101-25, defined as the five largest amounts in aggregate during the fiscal year that were contributed to an individual candidate, organization, ballot measure, or lobbying issue topic.
- .142 The registrant shall disclose the amount (in U.S. dollars) contributed to each individual, organization, ballot measure, or lobbying issue topic.
- .143 The registrant shall consider lobbying issue topics, at a minimum, to be general lobbying issue codes [defined](#) by The Lobbying Disclosure Act of 1995, but should include specific lobbying issues where available.

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SUSTAINABILITY ACCOUNTING STANDARD
NON-RENEWABLE RESOURCES SECTOR

OIL & GAS – MIDSTREAM

Sustainability Accounting Standard

Sustainable Industry Classification System™ (SICS™) #NR0102

Prepared by the
Sustainability Accounting Standards Board®

June 2014
Provisional Standard

OIL & GAS – MIDSTREAM

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 more than 80 industries in 10 sectors.

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INTRODUCTION

Purpose & Structure

This document contains the SASB Sustainability Accounting Standard (SASB Standard) for Oil & Gas-Midstream.

SASB 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's disclosure guidance identifies sustainability topics at an industry level, which may be material— depending on a company's specific operating context— to a company within that industry.

Each company is ultimately responsible for determining which information is material and is therefore required to be included in its Form 10-K or 20-F and other periodic SEC filings.

SASB's accounting standards provide companies with standardized accounting metrics to account for performance on industry-level sustainability topics. When making disclosure on sustainability topics, companies adopting SASB's accounting standards will help to ensure that disclosure is standardized and therefore useful, relevant, comparable and auditable.

Industry Description

The Oil and Gas - Midstream industry consists of companies involved in the transportation or storage of natural gas, crude oil, and refined petroleum products. Midstream natural gas activities involve gathering, transport, and processing of natural gas from the wellhead, as well as the removal of impurities, production of natural gas liquids, storage, pipeline transport, and shipping, liquefaction, or regasification of liquefied natural gas. Midstream oil activities mainly involve transport of crude oil and refined products over land, using a network of pipes and pumping stations, as well as trucks and rail cars, and over seas and rivers via tanker ships or barges. Companies that operate bulk stations and terminals, as well as those that manufacture and install storage tanks and pipelines, are also part of this industry. Publicly-listed midstream companies in the U.S. generally operate within North America.

Note: The standards discussed below are for “pure-play” midstream activities or independent midstream companies. Integrated oil and gas companies may own or operate midstream operations, but are also involved in the upstream operations of the oil and gas value chain and in the refining or marketing of products. SASB has separate standards for the Oil and Gas Exploration & Production (NR0101) and Refining & Marketing industries (NR0103). As such, integrated companies should also consider the disclosure topics and metrics from these standards.

Guidance for Disclosure of Material Sustainability Topics in SEC filings

1. Industry-Level Material Sustainability Topics

For the Oil & Gas - Midstream industry, SASB has identified the following material sustainability topics:

- **Greenhouse Gas & Other Air Emissions**
- **Ecological Impacts**
- **Competitive Behavior**
- **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".^{1,2}

SASB has attempted to identify those sustainability topics that it believes may be material for all companies within each SICS industry. SASB recognizes, however, that each company is ultimately responsible for determining what is material to it.

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."²

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

In determining whether a trend or uncertainty should be disclosed, the SEC has stated that management should use a two-part assessment based on probability and magnitude:

- 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.

¹ TSC Industries v. Northway, Inc., 426 U.S. 438 (1976).

² C.F.R. 229.303(Item 303)(a)(3)(ii).

- 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

Companies should consider making disclosure on sustainability topics as a complete set in the MD&A, in a sub-section titled "**Sustainability Accounting Standards Disclosures.**"³

b. Other Relevant Sections of Form 10-K

In addition to the MD&A section, companies should consider disclosing sustainability information in other sections of Form 10-K, as relevant, including:

- **Description of business**—Item 101 of Regulation S-K requires a company to provide a description of its business and its subsidiaries. Specifically 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 targeting discharge of materials into the environment or 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/>.

³ 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."

Guidance on Accounting of Material Sustainability Topics

For material sustainability topics in the Oil & Gas - Midstream industry, SASB identifies accounting metrics.

SASB recommends that each company consider using these sustainability accounting metrics when disclosing its performance with respect to each of the sustainability topics it has identified as material.

As appropriate—and consistent with Rule 12b-20⁴—for each sustainability topic, 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 **competitive positioning**;
- the **degree of control** the registrant has;
- any **measures the registrant has undertaken** or **plans to undertake** to improve performance; and
- data for 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 consider the materiality of the sustainability issues that SASB has identified for those industries and disclose the associated SASB accounting metrics.

Users of the SASB Standards

The SASB Standards are intended 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),⁵ 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. Nevertheless, 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.

⁴ 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."

⁵ 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.

Scope of Disclosure

Unless otherwise specified, SASB recommends:

- That a registrant disclose on sustainability issues and metrics for itself and for entities in which the registrant has a controlling interest and therefore are consolidated for financial reporting purposes (controlling interest is generally defined as ownership of 50% or more of voting shares)⁶
- 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 such registrant considers the information necessary for investors to understand its performance with respect to sustainability issues (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.).

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 users of SASB accounting metrics (e.g., investors) 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.

⁶ See US GAAP consolidation rules (Section 810).

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

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Total metric ton-kilometers of (1) natural gas, (2) crude oil, and (3) refined petroleum products transported, by mode of transport (e.g., pipelines, rail, tanker, truck, etc.) ⁷ .	Quantitative	Metric ton-kilometers	NR0102-A

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 like the imperfectness of third-party reporting systems 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 be necessary 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.

⁷Note to **NR0102-A** - Relevant modes of transport include: pipeline, tanker, truck, etc.

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."

Assurance

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

SASB encourages registrants to use independent assurance (attestation), for example, an Examination Engagement to AT Section 101.

Table 1. Material Sustainability Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Greenhouse Gas & Other Air Emissions	Gross global Scope 1 emissions, percentage covered under a regulatory program	Quantitative	Metric tons CO ₂ -e, Percentage (%)	NR0102-01
	Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	NR0102-02
	Air emissions for the following pollutants: NO _x (excluding N ₂ O), SO _x , volatile organic compounds (VOCs), and particulate matter (PM)	Quantitative	Metric tons (t)	NR0102-03
Ecological Impacts	Description of environmental management policies and practices for active operations	Discussion and Analysis	n/a	NR0102-04
	Percentage of land owned, leased, and/or operated within areas of protected conservation status or endangered species habitat	Quantitative	Percentage (%) by acreage	NR0102-05
	Terrestrial acreage disturbed, percentage of impacted area restored	Quantitative	Acres, Percentage (%)	NR0102-06
	Number and aggregate volume of hydrocarbon spills, volume in Arctic, volume in Unusually Sensitive Areas (USAs), and volume recovered	Quantitative	Number, Barrels (bbls)	NR0102-07
Competitive Behavior	Amount of legal and regulatory fines and settlements associated with federal pipeline and storage regulations ⁸	Quantitative	U.S. Dollars (\$)	NR0102-08
Operational Safety, Emergency Preparedness, and Response	Number of reportable pipeline incidents, percentage significant	Quantitative	Number, Percentage (%)	NR0102-09
	Number of (1) accident releases and (2) non-accident releases (NARs) from rail transportation ⁹	Quantitative	Number	NR0102-10
	Discussion of management systems used to integrate a culture of safety and emergency preparedness throughout the value chain and throughout project lifecycles	Discussion and Analysis	n/a	NR0102-11

⁸ Note to **NR0102-08** – Disclosure shall include a description of fines and settlements and corrective actions implemented in response to events.

⁹ Note to NR0102-10 – Disclosure shall include a discussion of processes, procedures, and strategies to manage non-accident and accident releases.

Greenhouse Gas & Other Air Emissions

Description

The Midstream industry generates significant quantities of greenhouse gases and other air emissions from compressor engine exhausts, oil and condensate tank vents, natural gas processing, and fugitive emissions, in addition to emissions from mobile sources. Air pollutants can have significant, localized human health and environmental impacts. At the same time, the management of fugitive emissions of methane, a potent greenhouse gas, has emerged as a major operational, reputational, and regulatory risk. Financial impacts on companies will vary depending on the specific location of operations and the prevailing emissions regulations, and include higher operating or capital expenditures and regulatory or legal penalties. Companies that capture and monetize, or cost-effectively reduce emissions by implementing innovative monitoring and mitigation efforts and fuel efficiency measures could enjoy several benefits. These companies have the opportunity to reduce regulatory risks and to realize operational efficiencies in an environment of increasing regulatory and public concerns about air quality and climate change, both in the U.S. and globally.

Accounting Metrics

NR0102-01. Gross global Scope 1 emissions, percentage covered under a regulatory program

- .01 The registrant shall disclose gross global Scope 1 greenhouse gas (GHG) emissions to the atmosphere of the six greenhouse gases covered under the Kyoto Protocol: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.
- Emissions of all gases shall be disclosed in metric tons of carbon dioxide equivalent (CO₂-e), calculated in accordance with published global warming potential (GWP) factors. To date, the preferred source for global warming potential factors is the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report (2007).
 - 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.
- .02 Scope 1 emissions are defined by the World Resources Institute and the World Business Council on Sustainable Development (WRI/WBCSD) [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; these sources include but are not limited to: equipment at well sites, production facilities, refineries, chemical plants, terminals, fixed site drilling rigs, office buildings, marine vessels transporting products, tank truck fleets, mobile drilling rigs, and moveable equipment at drilling and production facilities.
- .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 2014](#) (hereafter, the “CDP Guidance”).¹⁰
 - The financial approach detailed in Chapter 3 of the IPIECA/API/OGP Petroleum Industry Guidelines for Reporting Greenhouse Gas Emissions, Second Edition, 2011 (hereafter, the “IPIECA GHG Guidelines”).
 - The approach detailed in Section 4.23 “Organizational boundary setting for GHG emissions reporting” of Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF)¹¹.
- .04 The underlying technical approach to data collection, analysis, and disclosure shall be consistent with the IPIECA GHG Guidelines and the CDP Guidance.
- The registrant shall consider the CDP Guidance as a normative reference; thus, any updates made year-on-year shall be considered updates to this guidance.
- .05 The registrant shall disclose the percentage of its emissions that are covered under a regulatory program, such as the European Union Emissions Trading Scheme (EU ETS), Western Climate Initiative (WCI), California Cap-and-Trade (California Global Warming Solutions Act), or other regulatory programs.
- Regulatory programs include cap-and-trade schemes and carbon tax/fee systems.
 - Disclosure shall exclude emissions covered under voluntary trading systems and disclosure-based regulations (e.g., the U.S. Environmental Protection Agency (EPA) mandatory reporting rule).
- .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 entity (e.g., a national regulatory disclosure program) differs in terms of the scope and consolidation approach used, the registrant may disclose those emissions. However, primary disclosure shall be according to the guidelines previously mentioned.
- .08 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.
- .09 This accounting metric corresponds to section CC8.2 of the Carbon Disclosure Project (CDP) Questionnaire and section 4.25 of the Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).

¹⁰ “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 2014* (p. 94).

¹¹ This approach is based on the requirements of the International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) on consolidation and equity accounting. It is consistent with the way in which information relating to entities within a group, or interest in joint ventures/associates, would be included in consolidated financial statements. *Climate Change Reporting Framework*, CDSB

NR0102-02. Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets

.10 The registrant shall discuss the following where relevant:

- The scope, including if strategies, plans, and/or reduction targets pertain differently to different business units, geographies, or emissions sources.
- If strategies, plans, and/or reduction targets are related to or associated with an emissions disclosure (reporting) or reduction program (e.g., EU ETS, Regional Greenhouse Gas Initiative (RGGI), WCI, etc.), including regional, national, international or sectoral programs.
- 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 towards 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 that reached completion during the fiscal year.
- The mechanism(s) for achieving the target, such as energy efficiency efforts, energy source diversification, carbon capture and storage, etc.

.12 Where necessary, the registrant shall discuss any circumstances in which the target base year emissions have been or may be re-calculated retrospectively, or in which the target base year has been reset.

.13 This accounting metric corresponds with:

- CDSB Section 4, "Management Actions"¹²
- CDP questionnaire "CC3. Targets and Initiatives"

¹² 4.12, "Disclosure shall include a description of the organization's long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including targets to reduce GHG emissions and an analysis of performance against those targets." *Climate Change Reporting Framework – Edition 1.1*, October 2012, CDSB.

NR0102-03. Air emissions for the following pollutants: NO_x (excluding N₂O), SO_x, volatile organic compounds (VOCs), and particulate matter (PM)

- .14 The registrant shall disclose its emissions of air pollutants associated with midstream operations released to the atmosphere, such as:
- Direct air emissions from stationary or mobile sources, which include, but are not limited to: equipment at well sites, production facilities, terminals, office buildings, marine vessels transporting products, tank truck fleets, and moveable equipment at drilling and production facilities.
- .15 The registrant shall disclose emissions consistent with IPIECA's Oil and Gas Industry Guidance on Voluntary Sustainability Reporting, as noted below.
- .16 The registrant shall disclose the following emissions released to the atmosphere from oil and natural gas operations by emissions type:
- Oxides of nitrogen (including NO and NO₂ and excluding N₂O), reported as NO₂.
 - Oxides of sulfur (SO₂ and SO₃), reported as SO₂.
 - Non-methane volatile organic compounds (VOCs), defined as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and methane, which participates in atmospheric photochemical reactions, except those designated by the EPA as having negligible photochemical reactivity.
 - Particulate matter (PM), reported as the sum of PM₁₀ and PM_{2.5}, or all particulates less than 10 micrometers in diameter.
- .17 This scope does not include CO₂, methane, and nitrous oxide, which are disclosed in NR0102-01, as Scope 1 GHG emissions.
- .18 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 NR0102-01.
- .19 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.

Ecological Impacts

Description

The storage and transport of crude oil, natural gas, and related products through a vast system of maritime transportation vehicles, pipelines, trains, and trucks presents considerable risk to the environment and to local communities. Leaks, accidental discharges, pipeline rights-of-way, and open easements over ecologically sensitive land could impact ecosystems in several ways, including natural habitat loss and changes in species movement. Regulatory agencies, supported by legislation that protects endangered species and ecologically sensitive areas, require plans to mitigate or remediate negative ecological impacts prior to project approval. Together with regulatory compliance costs, these can require significant capital and operational expenditures. As concerns over ecological impacts grow, companies could face the risk that additional areas are designated as protected areas under new or existing laws. Companies that prevent and proactively manage ecological impacts can avoid project delays, remediation, and litigation liabilities, and gain easier access to new projects and sources of revenue.

Accounting Metrics

NR0102-04. Description of environmental management policies and practices for active operations

- .20 The registrant shall provide a brief description of its environmental management plan(s) implemented at active operations, including where relevant:
- Lifecycle stages to which the plan(s) apply, such as: land acquisition and surveying, development and pipeline construction, revegetation, pipeline operations, closure, decommissioning and removal, and restoration.
 - The topics addressed by the plan(s), such as: ecological and biodiversity impacts, waste generation, noise impacts, emissions to air, discharges to water, natural resource consumption, and hazardous chemical usage.
 - The underlying references for its plan(s), including whether they are codes, guidelines, standards, or regulations; whether they 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.
- .21 The scope of disclosure includes all terrestrial and offshore operations in which the registrant is involved as an operator, partner, or contractor and which are in the exploration, development, production, or decommissioning phase.
- .22 Where applicable and relevant, the registrant shall describe differences between policies and practices in terrestrial areas and in marine areas.
- .23 Where environmental management plans differ significantly by activity (e.g., natural gas pipeline as compared to oil pipelines), the registrant shall describe for each the relevant differences.

- .24 Where applicable and relevant, the registrant shall describe specific policies and practices that apply to areas with protected conservation status and/or areas of critical habitat, which are [defined](#) by the International Finance Corporation (IFC) as:
- Areas with high biodiversity value, including (i) habitat of significant importance to Critically Endangered and/or Endangered species; (ii) habitat of significant importance to endemic and/or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes.¹³
- .25 If the management policies and practices do not apply to all of the registrant's sites or operations, it shall indicate the percentage of sites to which they were applied.
- .26 The registrant shall disclose the degree to which its policies and practices are aligned with the International Finance Corporation's (IFC) [Performance Standards on Environmental and Social Sustainability](#), January 1, 2012, including specifically:
- Performance Standard 1 – Assessment and Management of Environmental and Social Risks and Impacts.
 - Performance Standard 3 – Resource Efficiency and Pollution Prevention.
 - Performance Standard 4 – Community Health, Safety, and Security.
 - Performance Standard 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources.
- .27 Additional relevant references may include:
- [“Environmental management in oil and gas exploration and production – An overview of issue and management approaches,”](#) Joint E&P Forum/UNEP Technical Publication 1997.
 - [“Towards Sustainable Decommissioning and Closure of Oil Fields and Mines: A Toolkit to Assist Government Agencies,”](#) DRAFT Version 2.0, November 2009, World Bank Multistakeholder Initiative.

NR0102-05. Percentage of land owned, leased, and/or operated within areas of protected conservation status or endangered species habitat

- .28 The registrant shall calculate percentage as the acreage of land (owned, leased, and/or operated) in sites with protected conservation status, plus the acreage of land in areas of endangered species habitat divided by the registrant's total acreage of land (owned, leased, and/or operated).
- .29 Land is considered to be in areas of protected conservation status if it is located within:
- International Union for Conservation of Nature (IUCN) Protected Areas (categories I-VI).
 - Ramsar Wetlands of International Importance.
 - UNESCO World Heritage Sites.

¹³ International Finance Corporation (IFC), Performance Standard 6, *Biodiversity Conservation and Sustainable Management of Living Natural Resources*, January 1, 2012.

- Biosphere Reserves recognized within the framework of UNESCO's Man and the Biosphere (MAB) Programme.
 - Natura 2000 sites.
 - Sites that meet the IUCN's definition of a protected area: "A protected area is a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values."¹⁴
 - These sites may be listed in the World Database of Protected Areas (WDPA) and mapped on ProtectedPlanet.net.
- .30 Land is considered to be endangered species habitat if it is in or near areas where IUCN Red List of Threatened Species that are classified as Critically Endangered (CR) or Endangered (EN) are extant.
- A species is considered extant in an area if it is a resident, present during breeding or non-breeding season, or if it makes use of the area for passage.
- .31 For the purposes of this disclosure, "near" is defined as within 5 kilometers (km) of the boundary of an area of protected conservation status or an endangered species habitat.
- .32 The scope of land for which the registrant shall provide disclosure includes that which is owned, leased, and/or operated (e.g., rights-of-way, easements, and land concessions).
- .33 The registrant may choose to separately identify land in areas with additional ecological, biodiversity, or conservation designations such as those listed by the [A-Z Guide of Areas of Biodiversity Importance](#) prepared by the United Nations Environment Programme's World Conservation Monitoring Centre (UNEP-WCMC).
- .34 The registrant may choose to provide discussion around land that is located in protected areas or endangered species habitat but that presents low risk to biodiversity or ecosystem services; the registrant may choose to provide similar discussion for land located in areas with no official designation of high biodiversity value but that present high biodiversity or ecosystem services risks.

NR0102-06. Terrestrial acreage disturbed, percentage of impacted area restored

- .35 The registrant shall disclose the total acreage of disturbed land, where the scope includes land that is owned, leased, and/or operated (e.g., rights-of-way, easements, and land concessions).
- This disclosure shall be a cumulative total of all currently active sites, recently decommissioned sites, or sites being restored, and is not limited to land newly disturbed during the fiscal year.
 - Land shall no longer be considered disturbed once post-closure restoration and remediation efforts are substantially complete (even if monitoring is ongoing).
- .36 The registrant shall disclose the acreage of land impacted by operations that was restored during the fiscal year, where, at a minimum, restoration meets the Society for Ecological Restoration's [definition](#): "the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed."

¹⁴ Dudley, N. (ed.) (2008) Guidelines for Applying Protected Areas Management Categories. IUCN: Gland, Switzerland. p.8-9.

- Restoration may be further defined by local, state, or national laws, industry standards, or the registrant's own guidelines.
- The registrant shall disclose the definition of restoration and accompanying practices it follows in its description of its best practice environmental management plan.

.37 Relevant references may include:

- "[Environmental management in oil and gas exploration and production – An overview of issue and management approaches](#)", Joint E&P Forum/UNEP Technical Publication 1997.
- "[Towards Sustainable Decommissioning and Closure of Oil Fields and Mines: A Toolkit to Assist Government Agencies](#)", DRAFT Version 2.0, November 2009, World Bank Multistakeholder Initiative.

NR0102-07. Number and aggregate volume of hydrocarbon spills, volume in Arctic, volume in Unusually Sensitive Areas (USAs), and volume recovered

.38 The registrant shall disclose the total number and volume (in barrels) of hydrocarbon spills where:

- A spill is defined as greater than 1bbl (42 U.S. gallons or 159 liters).
- Spills include those that reached the environment and exclude spills that were contained within impermeable secondary containment.

.39 Consistent with IPIECA's Oil and Gas Industry Guidance on Voluntary Sustainability Reporting (hereafter, "IPIECA Guidance"), the volume reported shall represent the total estimated amount spilled that reached the environment and not be reduced by the amount of such hydrocarbon subsequently recovered, evaporated, or otherwise lost.

.40 Consistent with IPIECA Guidance, the scope of releases from operations and events includes:

- Above-ground and below-ground facilities.
- Sabotage, earthquakes, or other events outside operational control.
- Company-owned and operated transport.
- Leakage over time, which is counted once at the time that it is identified.

.41 The registrant may choose to disclose spills to soil and water separately. A spill that qualifies as a spill to both soil and water should be reported as a single spill to water, with the volume properly apportioned to soil and water.

.42 The registrant shall disclose the volume of spills (in bbls) that occurred in the Arctic, which is considered to be the area north of the Arctic Circle, or north of the parallel of latitude at 66° 33' north.

.43 The registrant shall disclose the volume of spills in Unusually Sensitive Areas (USAs) as identified by the National Pipeline Mapping System of the Office of Pipeline Safety.

- .44 The registrant shall calculate the volume of spills recovered as the amount of spilled hydrocarbons (in bbls) removed from the environment through short-term spill response activities, excluding:
- Amounts that were recovered during longer-term remediation at spill sites.
 - Amounts that evaporated, burned, or were dispersed.
- .45 The registrant shall calculate recovery rates using an accepted standard or guideline, such as [California Code of Regulations, Title 14, Division 1, Subdivision 4, Chapter 7, Subchapter 2, Determining Amount of Petroleum Hydrocarbons Recovered, Sections 877-880, Effective June 13, 2009](#).

Competitive Behavior

Description

Companies that own natural gas pipelines and storage facilities face numerous and constantly changing regulations from the Federal Energy Regulatory Commission (FERC) in all aspects of their operations, including rates charged, access offered to pipelines, and siting and construction of new facilities. Pipeline companies enjoy a natural monopoly, and FERC regulations ensure that companies do not abuse this position through unfair pricing, discriminatory service, or by other means. Due to concerns about the impacts of oil and gas market distortions on American consumers and businesses, new market manipulation regulations issued by the Federal Trade Commission or the Commodity Futures Trading Commission could also affect the Midstream industry. Companies could be affected by prospective rate changes, compensation payments, or regulatory penalties for violating regulations governing competitive behavior. Midstream companies face uncertainty in relation to their ability to change the rates charged, which could affect their ability to recover higher costs.

Accounting Metrics

NR0102-08. Amount of legal and regulatory fines and settlements associated with federal pipeline and storage regulations

- .46 The registrant shall disclose the amount (excluding legal fees) of all fines or settlements associated with federal pipeline and storage regulations, including, but not limited to, those related to rates, pipeline access, price gouging, or price fixing.
- Disclosure includes enforcements from the Federal Energy Regulatory Commission (FERC), the U.S. Commodities Futures Trade Commission, and the U.S. Federal Trade Commission.
- .47 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 NR0102-08

- .48 The registrant shall briefly describe the nature (e.g., guilty plea, deferred agreement, or non-prosecution agreement) and context (e.g., price-fixing, pipeline access, etc.) of fines and settlements.
- .49 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, business partners, training, or technology.

Operational Safety, Emergency Preparedness, and Response

Description

Midstream companies operate a vast network of assets that face risks of spills and accidents. Any incident that results in the unintended releases of hydrocarbons could have wide-ranging impacts on the environment, employees, and local communities. As a result of these concerns, new safety regulations related to pipeline and rail operations are emerging. Significant events could create one-time costs from fines and corrective actions and contingent liabilities for remediation or damages in lawsuits. These factors could also erode a company's social license to operate. In order to avoid or minimize such risks, investigations of past incidents show that it is extremely important to develop a strong safety culture, and establish a thorough and systematic approach to safety and risk management. This includes emergency preparedness and response and operational integrity across the company and in relationships with contractors.

Accounting Metrics

NR0102-09. Number of reportable pipeline incidents, percentage significant

- .50 The registrant shall disclose the total number of reportable pipeline accidents and incidents, including those associated with transportation of hazardous liquid systems and those associated with gas transmission, gathering, and distribution.
- .51 Reportable accidents associated with hazardous liquid pipeline systems are defined based on 49 CFR Part §195.50 as:
- Failure in a pipeline system in which there is a release of the hazardous liquid or carbon dioxide transported resulting in any of the following:
 - Explosion or fire not intentionally set by the operator.
 - Release of 5 gallons (19 liters) or more of hazardous liquid or carbon dioxide, except for a release of less than 5 barrels (0.8 cubic meters) resulting from a pipeline maintenance activity if the release is:
 - Not otherwise reportable under 49 CFR Part §195;
 - Not one described in §195.52(a)(4);
 - Confined to company property or pipeline right-of-way; and
 - Cleaned up promptly.
 - Death of any person.
 - Personal injury necessitating hospitalization.
 - Estimated property damage, including cost of clean-up and recovery, value of lost product, and damage to the property of the operator or others, or both, exceeding \$50,000.

.52 Incidents associated with gas transmission, gathering, and distribution are defined based on 49 CFR Part §191.3 as any of the following events:

- An event that involves a release of gas from a pipeline, or of liquefied natural gas, liquefied petroleum gas, refrigerant gas, or gas from an LNG facility, and that results 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 loss to the operator and others, or both, but excluding cost of gas lost
 - Unintentional estimated gas loss of three million cubic feet or more
- An event that results in an emergency shutdown of an LNG facility. Activation of an emergency shutdown system for reasons other than an actual emergency does not constitute an incident.
- An event that is significant in the judgment of the operator, even though it did not meet the criteria of the above paragraphs of this definition.

.53 The registrant shall disclose the percentage of reportable accidents that were significant, where a significant accident or incident is defined according to the U.S. Pipeline and Hazardous Materials Safety Administration's (PHMSA) pipeline and hazardous materials safety reporting guidelines as those that resulted in:

- Fatality or injury requiring in-patient hospitalization.
- \$50,000 or more in total costs, measured in 1984 dollars.
- Highly volatile liquid releases of 5 bbls or more or other liquid releases of 50 barrels or more.
- Liquid releases resulting in an unintentional fire or explosion.

NR0102-10. Number of (1) accident releases and (2) non-accident releases (NARs) from rail transportation

.54 The registrant shall disclose the total number of accident releases of hazardous material and the total number of non-accident releases (NARs) of hazardous materials from rail transportation activities, where:

- Hazardous material is defined according to Code of Federal Regulations (CFR) Title 49 as: "A substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and is designated as hazardous under section 5103 of Federal hazardous materials transportation law (49 U.S.C. 5103)."
- An accident release is defined as a release of hazardous materials, reportable to the Pipeline and Hazardous Materials Safety Administration (PHMSA) via DOT 5800.1 report form.
- A non-accident release is defined according to the Association of American Railroads (AAR) as the unintentional release of a hazardous material while in transportation, including loading and unloading while in railroad possession that is not caused by a derailment, collision or other rail-related accident. NARs consist of leaks, splashes, and other releases from improperly secured or defective valves, fittings, and tank shells, and also include venting of non-atmospheric gases from safety relief devices. (Normal safety venting of atmospheric gases, such as carbon dioxide and nitrogen, is not considered a NAR.)

.55 Where relevant, the registrant should provide a breakdown of spills and releases by type, such as hydrocarbons and hazardous substances.

Note to NR0102-10

.56 The registrant shall discuss its processes, procedures, and strategies to manage non-accident and accident releases.

.57 Relevant topics of discussion include, but are not limited to, the use of management systems, such as the American Chemistry Council's Responsible Care Management System, use of safety technologies, employee training, implementation of work shift limits, and safe-arrival pay incentives.

NR0102-11. Discussion of management systems used to integrate a culture of safety and emergency preparedness throughout the value chain and throughout project lifecycles

.58 Discussion shall include how the registrant integrates a culture of safety and emergency preparedness throughout its value chain, such as through training, joint management by the workforce and leadership, rules and guidelines, and use of technology.

.59 The registrant shall include a description of how emergency preparedness is coordinated amongst business partners (e.g., contractors and sub-contractors).

.60 Disclosure may focus broadly on safety and emergency management systems, but shall specifically address the systems to avoid and manage emergencies, accidents, and incidents that could have catastrophic human health, local community, and environmental impacts.

.61 The midstream oil and gas project lifecycle includes, at a minimum, land acquisition (e.g., right-of-way easement negotiations), site surveys, site development and pipeline installation, revegetation, operation, and decommissioning and removal.

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SUSTAINABILITY ACCOUNTING STANDARD
NON-RENEWABLE RESOURCES SECTOR

OIL & GAS - REFINING & MARKETING

Sustainability Accounting Standard

Sustainable Industry Classification System™ (SICS™) #NR0103

Prepared by the
Sustainability Accounting Standards Board®

June 2014
Provisional Standard

OIL & GAS - REFINING AND MARKETING

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 more than 80 industries in 10 sectors.

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INTRODUCTION

Purpose & Structure

This document contains the SASB Sustainability Accounting Standard (SASB Standard) for Oil & Gas - Refining & Marketing.

SASB 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's disclosure guidance identifies sustainability topics at an industry level, which may be material— depending on a company's specific operating context— to a company within that industry.

Each company is ultimately responsible for determining which information is material and is therefore required to be included in its Form 10-K or 20-F and other periodic SEC filings.

SASB's accounting standards provide companies with standardized accounting metrics to account for performance on industry-level sustainability topics. When making disclosure on sustainability topics, companies adopting SASB's accounting standards will help to ensure that disclosure is standardized and therefore useful, relevant, comparable and auditable.

Industry Description

Oil & Gas - Refining & Marketing (R&M) companies refine petroleum products, market oil and gas products, and/or operate gas stations and convenience stores, all of which comprise the downstream operations of the oil and gas value chain. The types of refinery products and crude oil inputs influence the complexity of the refining process used, with different expenditure needs and intensity of environmental and social impacts. Most of the companies listed on U.S. exchanges that are primarily involved in oil and gas refining and marketing activities are domiciled in the U.S.

Note: The standards discussed below are for “pure-play” R&M activities, or independent R&M companies. Integrated oil and gas companies conduct upstream operations and are also involved in the distribution and/or refining or marketing of products. SASB has separate standards for the Oil and Gas Exploration & Production (NR-0101), and Midstream (NR-0102) industries. As such, integrated companies should also consider the disclosure topics and metrics from these standards.

Guidance for Disclosure of Material Sustainability Topics in SEC Filings

1. Industry-Level Material Sustainability Topics

For the Oil & Gas - Refining & Marketing Industry, SASB has identified the following material sustainability topics

- **Greenhouse Gas Emissions**
- **Air Quality**
- **Water Management**
- **Hazardous Materials Management**
- **Health, Safety, and Emergency Management**
- **Product Specifications & Clean Fuel Blends**
- **Pricing Integrity & Transparency**
- **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.”^{1,2}

SASB has attempted to identify those sustainability topics that it believes may be material for all companies within each SICS industry. SASB recognizes, however, that each company is ultimately responsible for determining what is material to it.

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.”²

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

In determining whether a trend or uncertainty should be disclosed, the SEC has stated that management should use a two-part assessment based on probability and magnitude:

¹ TSC Industries v. Northway, Inc., 426 U.S. 438 (1976).

² 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.
- 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

Companies should consider making disclosure on sustainability topics as a complete set in the MD&A, in a sub-section titled **"Sustainability Accounting Standards Disclosures."**³

b . Other Relevant Sections of Form 10-K

In addition to the MD&A section, companies should consider disclosing sustainability information in other sections of Form 10-K, as relevant, including:

- **Description of business**—Item 101 of Regulation S-K requires a company to provide a description of its business and its subsidiaries. Specifically 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 targeting discharge of materials into the environment or 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/conceptualframework/>.

³ 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."

Guidance on Accounting of Material Sustainability Topics

For material sustainability topics in the Oil & Gas - Refining & Marketing Industry, SASB identifies accounting metrics.

SASB recommends that each company consider using these sustainability accounting metrics when disclosing its performance with respect to each of the sustainability topics it has identified as material.

As appropriate—and consistent with Rule 12b-20⁴—for each sustainability topic, 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 **competitive positioning**;
- the **degree of control** the registrant has;
- any **measures the registrant has undertaken** or **plans to undertake** to improve performance; and
- data for 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 \(SICSTM\)](#). If a registrant generates significant revenue from multiple industries, SASB recommends that it consider the materiality of the sustainability issues that SASB has identified for those industries and disclose the associated SASB accounting metrics

Users of the SASB Standards

The SASB Standards are intended 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),⁵ 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. Nevertheless, 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

⁴SEC 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."

⁵Registration 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.

Scope of Disclosure

Unless otherwise specified, SASB recommends:

- That a registrant disclose on sustainability issues and metrics for itself and for entities in which the registrant has a controlling interest and therefore are consolidated for financial reporting purposes (controlling interest is generally defined as ownership of 50% or more of voting shares)⁶
- 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 such registrant considers the information necessary for investors to understand its performance with respect to sustainability issues (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.).

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 users of SASB accounting metrics (e.g., investors) 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.

⁶See US GAAP consolidation rules (Section 810).

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

METRIC	CATEGORY	UNIT OF MEASURE	CODE
Refining throughput of crude oil and other feedstocks ⁷	Quantitative	Barrels of oil equivalent (BOE)	NR0103-A
Refining operating capacity ⁸	Quantitative	Million barrels per calendar day (MBPD)	NR0103-B
Solomon-UEDC ^{TM9}	Quantitative	Number	NR0103-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 like the imperfectness of third-party reporting systems 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 be necessary 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.

⁷ Note to **NR0103-A** – The total volume of crude oil and other feedstocks processed in the refinery system during the fiscal year.

⁸ Note to **NR0103-B** – Per the U.S. Energy Information Administration, operating (or operable) capacity is: the amount of capacity that, at the beginning of the period, is in operation; not in operation and not under active repair, but capable of being placed in operation within 30 days; or not in operation but under active repair that can be completed within 90 days. Operable capacity is the sum of the operating and idle capacity and is measured in barrels per calendar day.

⁹ Note to **NR0103-C** – Utilized Equivalent Distillation Capacity, a proprietary metric of Solomon Associates, is a complexity-weighted normalization parameter reflective of the operating cost intensity of a refinery based on size and configuration of its particular mix of process and non-process facilities. According to Solomon Associates, it offers significant improvement in assessing performance over use of a simple barrel-of-input normalization approach.

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."

Assurance

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

SASB encourages registrants to use independent assurance (attestation), for example, an Examination Engagement to AT Section 101.

Table 1. Material Sustainability Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Greenhouse Gas Emissions	Gross global Scope 1 emissions, percentage covered under a regulatory program	Quantitative	Metric tons CO ₂ -e, Percentage (%)	NR0103-01
	Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	NR0103-02
Air Quality	Air emissions for the following pollutants: NO _x (excluding N ₂ O), SO _x , particulate matter (PM), H ₂ S, and volatile organic compounds (VOCs)	Quantitative	Metric tons (t)	NR0103-03
	Number of refineries in or near areas of dense population	Quantitative	Number	NR0103-04
Water Management	Total fresh water withdrawn, percentage recycled, percentage in regions with High or Extremely High Baseline Water Stress	Quantitative	Cubic meters (m ³), Percentage (%)	NR0103-05
	Number of incidents of non-compliance with water quality permits, standards, and regulations	Quantitative	Number	NR0103-06
Hazardous Materials Management	Amount of hazardous waste from operations, percentage recycled	Quantitative	Metric tons (t), Percentage (%)	NR0103-07
	Number of underground storage tanks (USTs), number of UST releases requiring cleanup, percentage in states with UST financial assurance funds	Quantitative	Number, Percentage (%)	NR0103-08
Health, Safety, and Emergency Management	(1) Total Recordable Injury Rate (TRIR), (2) Fatality Rate, and (3) Near Miss Frequency Rate for (a) full-time employees and (b) contract employees	Quantitative	Rate	NR0103-09
	Process Safety Event (PSE) rates for Loss of Primary Containment (LOPC) of greater consequence (Tier 1) and lesser consequence (Tier 2)	Quantitative	Rate	NR0103-10
	Challenges to Safety Systems indicator rate (Tier 3)	Quantitative	Rate	NR0103-11
	Discussion of measurement of Operating Discipline and Management System Performance through Tier 4 Indicators	Discussion and Analysis	n/a	NR0103-12
Product Specifications & Clean Fuel Blends	Percentage of Renewable Volume Obligation (RVO) met through: (1) Production of renewable fuels, (2) Purchase of "separated" renewable identification numbers (RIN)	Quantitative	Percentage (%)	NR0103-13
	Total addressable market and share of market for advanced biofuels and associated infrastructure	Quantitative	U.S. Dollars (\$), Percentage (%)	NR0103-14
Pricing Integrity & Transparency	Amount of legal and regulatory fines and settlements associated with price fixing or price manipulation ¹⁰	Quantitative	U.S. Dollars (\$)	NR0103-15
Management of the Legal & Regulatory Environment	Amount of political campaign spending, lobbying expenditures, and contributions to tax-exempt groups including trade associations	Quantitative	U.S. Dollars (\$)	NR0103-16
	Five largest political, lobbying, or tax-exempt group expenditures	Quantitative	U.S. Dollars (\$) by recipient	NR0103-17

¹⁰ Note to **NR0103-15** – Disclosure shall include a description of fines and settlements and corrective actions implemented in response to events.

Greenhouse Gas Emissions

Description

Oil and Gas R&M operations generate significant direct greenhouse gas (GHG) emissions, primarily of carbon dioxide and methane, from the stationary combustion of fossil fuels for energy consumption. Energy costs are a significant share of refinery operating costs. Greenhouse gases are also released from process emissions, fugitive emissions resulting from leaks, emissions from venting and flaring, and from non-routine events such as equipment maintenance. The energy intensity of production, and therefore the GHG emissions intensity, can vary significantly depending on the type of crude oil feedstock used and refined product specifications. Companies that cost-effectively reduce GHG emissions from their operations by implementing industry-leading technologies and processes can create operational efficiency. They can mitigate the impact on value of increased fuel costs and regulations that limit – or put a price on – carbon emissions in an environment of increasing regulatory and public concerns about climate change, in the U.S. and globally.

Accounting Metrics

NR0103-01. Gross global Scope 1 emissions, percentage covered under a regulatory program

- .01 The registrant shall disclose gross global Scope 1 greenhouse gas (GHG) emissions to the atmosphere of the six greenhouse gases covered under the Kyoto Protocol: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.
 - Emissions of all gases shall be disclosed in metric tons of carbon dioxide equivalent (CO₂-e), calculated in accordance with published global warming potential (GWP) factors. To date, the preferred source for global warming potential factors is the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report (2007).
 - 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.
- .02 Scope 1 emissions are defined by the World Resources Institute and the World Business Council on Sustainable Development (WRI/WBCSD) [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; these sources include but are not limited to: equipment at well sites, production facilities, refineries, chemical plants, terminals, fixed site drilling rigs, office buildings, marine vessels transporting products, tank truck fleets, mobile drilling rigs, and moveable equipment at drilling and production facilities.
- .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 2014](#) (hereafter, the "CDP Guidance").¹¹

¹¹ "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 2014* (p. 94).

- The financial approach detailed in Chapter 3 of the IPIECA/API/OGP Petroleum Industry Guidelines for Reporting Greenhouse Gas Emissions, Second Edition, 2011 (hereafter, the “IPIECA GHG Guidelines”).
 - The approach detailed in Section 4.23 “Organizational boundary setting for GHG emissions reporting” of Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).¹²
- .04 The underlying technical approach to data collection, analysis, and disclosure shall be consistent with the IPIECA GHG Guidelines and the CDP Guidance.
- The registrant shall consider the CDP Guidance as a normative reference; thus, any updates made year-on-year shall be considered updates to this guidance.
- .05 The registrant shall disclose the percentage of its emissions that are covered under a regulatory program, such as the European Union Emissions Trading Scheme (EU ETS), Western Climate Initiative (WCI), California Cap-and-Trade (California Global Warming Solutions Act), or other regulatory programs.
- Regulatory programs include cap-and-trade schemes and carbon tax/fee systems.
 - Disclosure shall exclude emissions covered under voluntary trading systems and disclosure-based regulations (e.g., the U.S. Environmental Protection Agency (EPA) mandatory reporting rule).
- .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 entity (e.g., a national regulatory disclosure program) differs in terms of the scope and consolidation approach used, the registrant may disclose those emissions. However, primary disclosure shall be according to the guidelines previously mentioned.
- .08 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.
- .09 This accounting metric corresponds to section CC8.2 of the Carbon Disclosure Project (CDP) Questionnaire and section 4.25 of the Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).

NR0103-02. Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets

- .10 The registrant shall discuss the following where relevant:
- The scope, including if strategies, plans, and/or reduction targets pertain differently to different business units, geographies, or emissions sources.
 - If strategies, plans, and/or reduction targets are related to or associated with an emissions disclosure (reporting) or reduction program (e.g., EU ETS, Regional Greenhouse Gas Initiative (RGGI), WCI, etc.), including regional, national, international or sectoral programs.
 - 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.

¹² This approach is based on the requirements of the International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) on consolidation and equity accounting. It is consistent with the way in which information relating to entities within a group, or interest in joint ventures/associates, would be included in consolidated financial statements. *Climate Change Reporting Framework*, CDSB.

.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 towards 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 that reached completion during the fiscal year.
- The mechanism(s) for achieving the target, such as energy efficiency efforts, energy source diversification, carbon capture and storage, etc.

.12 Where necessary, the registrant shall discuss any circumstances in which the target base year emissions have been, or may be, re-calculated retrospectively, or in which the target base year has been reset.

.13 This accounting metric corresponds with:

- CDSB Section 4, "Management Actions"¹³
- CDP questionnaire "CC3. Targets and Initiatives"

¹³ 4.12, "Disclosure shall include a description of the organization's long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including targets to reduce GHG emissions and an analysis of performance against those targets." *Climate Change Reporting Framework – Edition 1.1*, October 2012, CDSB.

Air Quality

Description

Other air emissions from R&M operations include criteria air pollutants, Volatile Organic Compounds (VOCs), and hazardous air pollutants, which can have significant, localized human health and environmental impacts. Specific emissions of concern include sulfur dioxide, nitrogen oxides, hydrogen sulfide, particulate matter, and VOCs. Releases occur from stationary combustion sources, storage vessels, flares, and equipment leaks, and may also occur as a result of accidents. Human health impacts and financial consequences for R&M companies are likely to be exacerbated the closer a facility is to a local community. Active management of the issue – through technological and process improvements – could allow companies to limit the impact of regulations and benefit from operational efficiencies that could lead to a lower cost structure over time.

Accounting Metrics

NR0103-03. Air emissions for the following pollutants: NO_x (excluding N₂O), SO_x, particulate matter (PM), H₂S, and volatile organic compounds (VOCs)

- .14 The registrant shall disclose its emissions released to the atmosphere of air pollutants associated with refining and marketing operations, such as:
 - Direct air emissions from stationary or mobile sources include, but are not limited to, production facilities, refineries, chemical plants, terminals, office buildings, marine vessels transporting products, tank truck fleets, and moveable equipment at production facilities.
- .15 The registrant shall disclose emissions consistent with IPECA's Oil and Gas Industry Guidance on Voluntary Sustainability Reporting, as noted below.
- .16 The registrant shall disclose the following emissions released to the atmosphere from refining and marketing operations by emissions type:
 - Oxides of nitrogen (including NO and NO₂ and excluding N₂O), reported as NO₂.
 - Oxides of sulfur (SO₂ and SO₃), reported as SO₂.
 - Particulate matter (PM), reported as the sum of PM₁₀ and PM_{2.5}, or all particulates less than 10 micrometers in diameter.
 - Hydrogen sulfide (H₂S).
 - Non-methane volatile organic compounds (VOCs), defined as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and methane, which participates in atmospheric photochemical reactions, except those designated by the EPA as having negligible photochemical reactivity.
- .17 This scope does not include CO₂, CH₄, and N₂O, which are disclosed in NR0103-01, as Scope 1 GHG emissions.
- .18 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 NR0103-01.

.19 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.

NR0103-04. Number of refineries in or near areas of dense population

.20 The registrant shall disclose the number of its refineries that are located in or near areas of dense population, which are defined as urbanized areas according to U.S. Census Bureau definitions.¹⁴

- Generically, these include urbanized areas with population greater than 50,000.
- A list of urbanized areas is available based on census results, with the list from 2010 accessible [here](#).

.21 The scope of disclosure includes refineries that are located in a census tract or block considered to be in an urbanized area or are within 49 kilometers of an urbanized area.¹⁵

.22 For refineries located outside of the U.S., the registrant shall use available census data to determine whether the refinery 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.

¹⁴ "Federal Register." U.S. Department of Commerce. Vol. 76. No. 164. August 24, 2011. <http://www.census.gov/geo/reference/pdfs/fedreg/fedregv76n164.pdf>

¹⁵The 49 km radius is based on definition of "exposed population" from the U.S. EPA's Office of Pollution Prevention and Toxics, User's Manual for RSEI Version 2.3.2., July 2013: "The exposed population is the population that is likely to come in contact with a chemical. The population differs depending on the exposure pathway modeled. For instance, the population exposed to chemicals released to air is the population in a circle with a radius of 49 km surrounding the facility."

Water Management

Description

Refineries can use relatively large quantities of water depending on their size and the complexity of the refining process. This exposes them to the risk of reduced water availability, depending on their location, and related cost increases. Extraction of water from water-stressed regions or water contamination may also create tensions with local communities. Refinery operations lead to process wastewater and surface water runoff, with many of the waste streams requiring treatment at on-site wastewater treatment plants before discharge. Reducing water use and contamination through recycling and other water management strategies could create operational efficiency for companies and lower their operating costs. They could also minimize the impacts of regulations, water supply shortages, and community-related disruptions on operations.

Accounting Metrics

NR0103-05. Total fresh water withdrawn, percentage recycled, percentage in regions with High or Extremely High Baseline Water Stress

- .23 The registrant shall disclose the amount of water (in cubic meters) that was withdrawn from freshwater sources for use in operations.
- 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 total dissolved solids (TDS) concentration of less than 1000 mg/l per the Water Quality Association [definition](#).
- .24 Water obtained from a water utility can be assumed to meet the definition of freshwater.¹⁶
- .25 The registrant shall disclose the percentage of water recycled as the volume (in cubic meters) recycled divided by the volume of water withdrawn.
- Any volume of water reused multiple times shall be counted as recycled each time it is recycled and reused.
- .26 Using the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly available online [here](#)), the registrant shall analyze all of its operations for water risks and identify facilities that are in a location with High (40–80%) or Extremely High (>80%) Baseline Water Stress. Water withdrawn in locations with High or Extremely High Baseline Water Stress shall be indicated as a percentage of the total water withdrawn.
- .27 This accounting metric corresponds to section W5. Water Accounting of the CDP's [2014 Water Information Request](#).

NR0103-06. Number of incidents of non-compliance with water quality permits, standards, and regulations

- .28 The registrant shall disclose the total number of instances of non-compliance, including violations of a technology-based standard or exceedances of a quality-based standard.
- .29 The scope of disclosure includes incidents related to statutory permits and regulations or voluntary agreements, standards, or guidelines, such as total maximum daily load (TMDL) exceedances.

¹⁶ <http://water.epa.gov/drink/contaminants/secondarystandards.cfm>

- .30 Voluntary standards include the registrant's own water quality standards (parameters) or "effluent guidelines" from the International Finance Corporation's (IFC) "Environmental, Health, and Safety Guidelines for Petroleum Refining."
- .31 Typical parameters of concern include: hydrocarbons (including oil and grease), chemical oxygen demand (COD)/biochemical oxygen demand (BOD), sulfides, ammonia, phenols, total suspended solids (TSS), and total dissolved solids (TDS).
- .32 An incident of non-compliance shall be disclosed regardless of whether it resulted in an enforcement action (e.g., fine, warning letter, etc.).
- .33 Violations, regardless of their measurement methodology or frequency, shall be disclosed. These include:
- For continuous discharges, limitations, standards, and prohibitions that are generally expressed as maximum daily, weekly average, and monthly average.
 - For non-continuous discharges, limitations that are generally expressed in terms of frequency, total mass, maximum rate of discharge, and mass or concentrations of specified pollutants.

Hazardous Materials Management

Description

R&M companies face regulatory and operational challenges in managing waste generated by their activities and in handling and storing petroleum products. Many of these substances are hazardous to human health and the environment. Both active and closed sites have the potential to create contamination through waste and other hazardous materials. Remediation often takes several years to be completed, and companies could continue to accrue liabilities for past operations. Releases of hazardous substances from underground storage tanks (USTs) used by refining facilities and gas stations can affect redevelopment of land for abandoned or closed facilities. Spills and releases during operations can lead to groundwater contamination and other negative impacts. R&M companies that reduce and recycle hazardous waste streams ensure the integrity of their USTs, and have effective and prompt clean-up and remediation measures in place for normal operations and closed facilities could lower regulatory and litigation risks and costs.

Accounting Metrics

NR0103-07. Amount of hazardous waste from operations, percentage recycled

.34 The amount of hazardous waste shall be calculated in metric tons, where:

- Waste is generally defined as anything for which the registrant has no further use and is discarded or released to the environment.
- Hazardous waste is waste that meets the definition of hazardous waste under Subtitle C of the U.S. Environmental Protection Agency's (EPA) Resource Conservation and Recovery Act (RCRA).
 - Hazardous wastes include those that display the following characteristics: ignitability, corrosivity, reactivity, or toxicity.

.35 The percentage recycled shall be calculated as the weight of waste material that was reused, plus the weight recycled or remanufactured (through treatment or processing) by the registrant, plus the amount sent externally for further recycling, divided by the total weight of waste material, where:

- Reused materials are defined as those recovered products or components of products that are used for the same purpose for which they were conceived.
- Recycled and remanufactured materials are defined as waste materials that have been reprocessed or treated by means of production or manufacturing processes and made into a final product or made into a component for incorporation into a product.
- The scope of recycled and remanufactured products includes primary recycled materials, co-products (outputs of equal value to primary recycled materials), and by-products (outputs of lesser value to primary recycled materials).
- Portions of products and materials that are disposed of in landfills are not considered recycled; only the portions of products that are directly incorporated into new products, co-products, or by-products shall be included in the percentage recycled.
- Materials sent for further recycling include those materials that are transferred to a third party for the

expressed purpose of reuse, recycling, or refurbishment.

- Materials incinerated, including for energy recovery, are not considered reused or recycled. Energy recovery is defined as the use of combustible waste as a means to generate energy through direct incineration, with or without other waste, but with recovery of the heat.

NR0103-08. Number of underground storage tanks (USTs), number of UST releases requiring cleanup, percentage in states with UST financial assurance funds

- .36 The registrant shall disclose the number of underground storage tank systems (USTs) for petroleum and hazardous substances.
- The scope of disclosure includes, at a minimum, USTs as defined by 40 CFR §280.12.
 - The scope of disclosure includes active USTs and those closed during the fiscal year.
- .37 The registrant shall disclose the number of UST releases (including leaks, spills, overfills, corrosion, etc.) for which the registrant had some degree of cleanup responsibilities (i.e., including shared cost of remediation).
- .38 The scope of disclosure includes new incidents that occurred during the fiscal year as well as past events (e.g., legacy cleanup) for which the registrant was notified of responsibility during the fiscal year.
- .39 The scope of disclosure includes release from petroleum USTs and hazardous chemical USTs.
- .40 The registrant shall disclose the number of UST incidents that occurred in states with UST financial assurance funds.
- The registrant shall further indicate any incidents that were legacy events in states that do not provide coverage for past events and any incidents that were not eligible for coverage under the rules of state UST trust funds.
- .41 The registrant may choose to describe its effort to maintain compliance with the Federal Underground Storage Tank Program, including its method/process to prevent UST spills, overfills, and corrosion.

Health, Safety, and Emergency Management

Description

The R&M industry poses risks to employee health and safety because of the use of flammable hydrocarbons and high temperatures and pressures in refining operations. Accidents or inadvertent exposures to chemicals and other hazards such as heat or noise, during both routine and non-routine activities, may result in fatalities, severe injuries, or illnesses. Significant releases of hydrocarbons or other hazardous substances as a result of accidents or leaks can also have negative consequences for neighboring communities. Organizational research and previous incidents show that it is important for a company to develop a culture of safety, one that reduces the probability of accidents and other health and safety incidents. If accidents and other emergencies do occur, companies with a strong safety culture can effectively detect and respond to such incidents. Along with effective process safety management practices, a culture that engages and empowers employees to work with management in to safeguard their own health and safety and prevent accidents, is likely to help companies reduce production downtime, mitigate or eliminate costs, and ensure workforce productivity.

Accounting Metrics

NR0103-09. (1) Total Recordable Injury Rate (TRIR), (2) Fatality Rate, and (3) Near Miss Frequency Rate for (a) full-time employees and (b) contract employees

- .42 For registrants whose workforce is entirely U.S.-based, the registrant 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 determination of whether an event is a recordable occupational incident and definitions for exemptions for incidents that occurred in the work environment but are not occupational.
- .43 For registrants whose workforce includes non-U.S.-based employees, the registrant shall calculate its total recordable injury rate and fatality rate according to the U.S. Bureau of Labor Statistics [guidance](#) and/or using the U.S. Bureau of Labor Statistics [calculator](#).
- .44 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.
- .45 The registrant shall disclose its TRIR, Fatality Rate, and NMFR for each of the following categories of employee:
- Direct, full-time employees
 - Contract employees
- .46 The scope includes all domestic and foreign employees.
- .47 Rates shall be calculated as: $(\text{statistic count} / \text{total hours worked}) * 200,000$.

NR0103-10. Process Safety Event (PSE) rates for Loss of Primary Containment (LOPC) of greater consequence (Tier 1) and lesser consequence (Tier 2)

.48 The registrant shall disclose Tier 1 process safety event (PSE) rates and Tier 2 PSE rates for instances of loss of primary containment (LOPC) using terms and definitions from the ANSI/API Recommended Practice 754 – Process Safety Performance Indicators for the Refining and Petrochemical Industries (hereafter, ANSI/API RP-754)

.49 A PSE is defined as an unplanned or uncontrolled loss of primary containment (LOPC) of any material including non-toxic and non-flammable materials (e.g. steam, hot condensate, nitrogen, compressed CO₂ or compressed air) from a process, or an undesired event or condition that, under slightly different circumstances, could have resulted in an LOPC of a material.

- LOPC is a type of event.
- An unplanned or uncontrolled release is an LOPC irrespective of whether the material is released into the environment, or into secondary containment, or into other primary containment not intended to contain the material released under normal operating conditions.

.50 A Tier 1 PSE is defined as a loss of primary containment (LOPC) with the greatest consequence, resulting in one or more of the following consequences:

- An employee, contractor or subcontractor experiencing a “days away from work” injury and/or fatality.
- A hospital admission and/or fatality of a third party.
- An officially declared community evacuation or community shelter-in-place.
- A fire or explosion resulting in greater than or equal to \$25,000 in direct costs to the registrant.
- A pressure relief device (PRD) discharge to atmosphere, whether directly or via a downstream destructive device that results in one or more of the following four consequences:
 - Liquid carryover
 - Discharge to a potentially unsafe location
 - An onsite shelter-in-place
 - Public protective measures (e.g., road closure) and a PRD discharge quantity greater than the threshold quantities specified in Table 1 of ANSI/API RP-754 in any one-hour period.
- A release of material greater than the threshold quantities specified in Table 1 of ANSI/API RP-754 in any one-hour period.

.51 A Tier 2 PSE is defined as a loss of primary containment (LOPC) with lesser consequence, not disclosed as a Tier 1 PSE, and resulting in one or more of the following consequences:

- An employee, contractor or subcontractor recordable injury.
- A fire or explosion resulting in greater than or equal to \$2,500 in direct costs to the registrant.
- A pressure relief device (PRD) discharge to atmosphere, whether directly or via a downstream destructive

device that results in one or more of the following four consequences:

- Liquid carryover
- Discharge to a potentially unsafe location
- An onsite shelter-in-place
- Public protective measures (e.g., road closure) and a PRD discharge quantity greater than the threshold quantities specified in Table 2 of ANSI/API RP-754 in any one-hour period.
- A release of material greater than the threshold quantities specified in Table 2 of ANSI/API RP-754 in any one-hour period.

.52 The Tier 1 PSE Rate shall be calculated as: $(\text{Total Tier 1 PSE Count} / \text{Total Hours Worked}) * 200,000$.

.53 The Tier 2 PSE Rate shall be calculated as: $(\text{Total Tier 2 PSE Count} / \text{Total Hours Worked}) * 200,000$.

.54 Total hours worked include employees and contractors.

NR0103-11. Challenges to Safety Systems indicator rate (Tier 3)

.55 The registrant shall disclose a rate of Tier 3 “challenges to safety systems” using terms, definitions, and guidance from the ANSI/API RP-754 (Section 7.2).

Tier 3 indicators may alternatively be referred to as “near miss” events or “high learning value” events.

.56 A Tier 3 operational situation is defined as a flaw or weakness within internal technical safety systems that led to consequences that fall below the Tier 1 and Tier 2 LOPC impact threshold, such as:

- Demands on safety systems, which are activations (non-manual) of safety systems designed to prevent or mitigate impacts from losses of primary containment, such as mechanical shutdown equipment or pressure relief devices.
- Safe operating limit excursions, which are breaches of safe operating limits for processes beyond which manual or automatic systems return the process to a predetermined safe state.
- Primary containment inspections or testing results outside acceptable limits, which occur when inspection or testing shows that safe primary containment operating limits have been exceeded and require repairs, replacement, or further testing of equipment.
- Near miss incidents, which are incidents that had the potential to result in an LOPC, but that were avoided by circumstance.

.57 Disclosure may include situations with no actual consequences but the recognition that, in other circumstances, further barriers could have been breached and results in a Tier 1 or Tier 2 PSE.

.58 The Tier 3 indicator rate shall be calculated as: $(\text{Total Tier 3 Indicator Count} / \text{Total Hours Worked}) * 200,000$.

.59 Total hours worked include employees and contractors.

NR0103-12. Discussion of measurement of Operating Discipline and Management System Performance through Tier 4 Indicators

- .60 The registrant shall describe its approach to identifying, measuring, and managing “Operating Discipline and Management System Performance,” or Tier 4 key performance indicators (KPIs).
- .61 Tier 4 indicators are metrics developed by the registrant – specific to its facilities, operations, and safety priorities – that measure leading, proactive measures to maintain and improve safety and manage risk.
- .62 Relevant Tier 4 KPIs may be focused on:
- Engineering and inherently safe design
 - Equipment maintenance, inspection and testing
 - Process hazard and major incident risk assessments
 - Quality of, and adherence to, operating procedures
 - Contractor capability and management
 - Audit improvement actions
 - Asset integrity and process safety initiatives
 - Workforce and management training and development
 - Technical competence assessment and assurance
- .63 Discussion may include the use of specific Tier 4 key performance indicators (KPI) such as those suggested in ANSI/API RP-754. Examples of Tier 4 KPIs are:
- Number of process area retrospective and revalidation hazard evaluations completed on time
 - Percentage and/or number of past-due process safety actions
 - Percentage of process safety required training sessions completed with skills verification
- .64 It is not recommended that the registrant disclose quantitative data or figures for its Tier 4 KPIs because they are generally not suitable for peer-to-peer benchmarking and may not be relevant at a corporate level (i.e., they may be refinery-specific). It may be relevant, however, to discuss:
- Trends in Tier 4 KPIs over time and how they are correlated with the frequency of Tier 1, Tier 2, and Tier 3 indicator rates (e.g., that an increase in the focus on Tier 4 performance can be correlated with a decrease in the Tier 1 PSE rate)
 - Application and topical focus of Tier 4 KPIs for different facilities, business units, geographies, employee categories, etc.

Product Specifications & Clean Fuel Blends

Description

Human health risks and emerging environmental trends such as climate change have raised concerns about the end use of products such as gasoline from the R&M industry. Increasingly stringent regulations related to product specifications and renewable fuel blends pose significant compliance and operational risks for R&M companies. Companies could face long-term reductions in revenue from fossil fuel-based products and services due to GHG mitigation policies such as the Renewable Fuel Standard, as well as competition from non-fossil fuel products. Companies that purchase credits known as renewable identification numbers (RINs) to meet regulatory requirements for renewable fuels can face regulatory and cost risks. In order to ensure regulatory compliance and position themselves for long-term competitiveness, some companies are investing in or purchasing ethanol and other renewable biofuels. Advanced biofuels and fuel technologies have lower lifecycle impacts than traditional biofuels, and can be used to minimize future regulatory risks and public pressure. Although short-term costs to find commercially viable technologies can be significant, investments in R&D for such technologies could serve to advance R&M companies' long-term profitability.

Accounting Metrics

NR0103-13. Percentage of Renewable Volume Obligation (RVO) met through: (1) Production of renewable fuels, (2) Purchase of "separated" renewable identification numbers (RIN)

- .65 The registrant shall disclose the percentage of its RVO met through the production of renewable fuels, including biofuels, cellulosic biofuel, ethanol, advanced biofuels, etc. as defined in [40 CFR 80.1401](#).
- .66 The registrant shall disclose the percentage of its RVO met through purchase of "separated" renewable identification numbers (RIN).
- A separated RIN is defined as one that is no longer associated with a physical product and may be traded on an open market.
- .67 The registrant may choose to provide a break down and analysis of its RVO by fuel type: cellulosic biofuels, ethanol equivalent for biomass-based diesel, or advanced biofuels.

NR0103-14. Total addressable market and share of market for advanced biofuels and associated infrastructure

- .68 The registrant shall provide an estimation of the total addressable market for advanced biofuels and associated infrastructure.
- Total addressable market is defined as potential revenue (in billions of U.S. dollars), should the registrant capture 100 percent of the market share of the product category (e.g., the global market for advanced biofuels and advanced biofuel infrastructure).
- .69 If there is a significant difference between the total addressable market and the market that the registrant can serve through its existing or planned capabilities, sales channels, or products (i.e., the serviceable available market) then the registrant should disclose this information.

- .70 The registrant shall disclose the share of the total addressable market for advanced biofuels and/or associated infrastructure that it currently captures with its products.
- Market share shall be calculated as revenues from these products divided by the size of the total addressable market.
- .71 Advanced biofuels are defined according to Section 201 of the Energy Independence and Security Act of 2007 (EISA) as biofuels other than ethanol derived from corn starch (kernels) and having 50% lower lifecycle greenhouse gas emissions relative to gasoline.
- .72 Revenue from advanced biofuel infrastructure includes that from retail operations (i.e., fuel stations), joint ventures with primary producers, or technologies that enable the production of advanced biofuels.
- .73 The registrant may provide a projection of growth of this market, where the projected addressable market is represented – based on a reasonable set of assumptions about changes in market conditions – as a percentage of year-on-year growth or as an estimate of the market size after a defined period (i.e., the market size in 10 years).
- The registrant may disclose its target 3-year market share as a measurement of targeted growth, where the target is the percentage of the total addressable market that the registrant plans to address over a three-year time horizon.
- .74 The registrant may choose to discuss other non-revenue generating initiatives it has undertaken to commercialize biofuels, such as partnerships (e.g., pilot projects, research and development projects) with fleet operators (air, ground, or marine transportation), airlines, vehicle manufacturers, and governmental agencies (e.g., USDA, DOE, armed forces, etc.).

Pricing Integrity & Transparency

Description

Concerned about the impacts of oil and gas market distortions on American consumers and businesses, regulators such as the U.S. Federal Trade Commission (FTC), and the U.S. Commodity Futures Trading Commission (CFTC), have focused on and investigated market manipulation by oil and gas companies, including R&M companies, in recent years. Regulatory agencies focusing on refineries are investigating utilization and maintenance decisions, product supply decisions, product margins, and capital planning, creating uncertainty regarding future enforcement. The focus of enforcement actions thus far has been on reporting prices to price index publishers, as well as distortion of prices using trading positions in physical transactions, and swaps, futures, and derivatives. Maintaining market integrity and ensuring transparency in product pricing can therefore lower regulatory risks and liabilities for R&M companies and protect consumers from unfair pricing.

Accounting Metrics

NR0103-15. Amount of legal and regulatory fines and settlements associated with price fixing or price manipulation

- .75 The registrant shall disclose the amount (excluding legal fees) of all fines or settlements associated with price gouging, price fixing, or price manipulation, including but not limited to those with the U.S. Commodities Futures Trade Commission and Federal Trade Commission.
- .76 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 NR0103-15

- .77 The registrant shall briefly describe the nature (e.g., guilty plea, deferred agreement, or non-prosecution agreement) and context (e.g., price-fixing, false price reporting, etc.) of fines and settlements.
- .78 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, business partners, training, or technology.

Management of the Legal & Regulatory Environment

Description

The interaction of companies in the R&M industry with their legal and regulatory environment can have material impacts on shareholder value, both when they spend significant amounts on related activities such as lobbying and political contributions, and as a result of changes in laws or policies that can affect operations. In particular, climate change and environmental laws and regulations can have material impacts on business. However, given the scientific consensus that human-induced climate change is occurring, efforts to delay climate-related policy or legislative changes may prove counterproductive to the industry in the long term, by creating regulatory, and therefore investment, uncertainty, or by imposing higher costs in the future. Efforts to unfairly influence environmental laws and regulations may affect companies' reputations and social license to operate. Companies with a well-articulated strategy for engaging with policymakers and regulators—one that is aligned with their goals and activities for long-term sustainable outcomes and also accounts for societal externalities—could benefit from a stronger, long-term license to operate. Such companies will likely be better prepared for medium- to long-term regulatory adjustments that deal with global, high-impact issues such as climate change.

Accounting Metrics

NR0103-16. Amount of political campaign spending, lobbying expenditures, and contributions to tax-exempt groups including trade associations

.79 The registrant shall disclose its total monetary contributions to political campaigns, lobbyists or lobbying organizations, and those to tax-exempt groups, including trade associations that aim to influence political campaigns or participate in political lobbying.

.80 The scope of disclosure includes the following:

- Political spending that 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).
- Any direct or indirect political expenditure (one-time or recurring) that must be reported to the Federal Election Commission, the Internal Revenue Service, or a state disclosure agency.
- Any direct or indirect contributions to registered lobbyists or lobbying organizations, including contributions made to trade organizations, which in turn contribute to political lobbying efforts.

NR0103-17. Five largest political, lobbying, or tax-exempt group expenditures

- .81 The registrant shall disclose the recipients of its five largest contributions disclosed in NR0103-16, defined as the five largest amounts in aggregate during the fiscal year, that were contributed to an individual candidate, organization, ballot measure, or lobbying issue topic.
- .82 The registrant shall disclose the amount (in U.S. dollars) contributed to each individual, organization, ballot measure, or lobbying issue topic.
- .83 The registrant shall consider lobbying issue topics, at a minimum, to be general lobbying issue codes [defined](#) by the Lobbying Disclosure Act of 1995, but should include specific lobbying issues where available.

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SUSTAINABILITY ACCOUNTING STANDARD
NON-RENEWABLE RESOURCES SECTOR

OIL & GAS - SERVICES

Sustainability Accounting Standard

Sustainable Industry Classification System™ (SICS™) #NR0104

Prepared by the
Sustainability Accounting Standards Board®

June 2014
Provisional Standard

OIL & GAS - 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 more than 80 industries in 10 sectors.

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INTRODUCTION

Purpose & Structure

This document contains the SASB Sustainability Accounting Standard (SASB Standard) for Oil & Gas - Services.

SASB 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's disclosure guidance identifies sustainability topics at an industry level, which may be material— depending on a company's specific operating context— to a company within that industry.

Each company is ultimately responsible for determining which information is material and is therefore required to be included in its Form 10-K or 20-F and other periodic SEC filings.

SASB's accounting standards provide companies with standardized accounting metrics to account for performance on industry-level sustainability topics. When making disclosure on sustainability topics, companies adopting SASB's accounting standards will help to ensure that disclosure is standardized and therefore useful, relevant, comparable and auditable.

Industry Description

Oil and gas services companies provide support services, manufacture equipment, or are contract drillers for oil and natural gas exploration and production (E&P) companies. The drilling and drilling-support segment comprises companies that drill for oil and natural gas on-shore and off-shore on a contract basis. Companies in this segment may also manufacture jack-up rigs, semisubmersible rigs, and drill ships. Companies in the oilfield services segment manufacture equipment that is used in the extraction, storage, and transportation of oil and natural gas. They also provide support services such as seismic surveying, equipment rental, well cementing, and well monitoring. The activities mentioned are commonly provided on a contractual basis, and the customer will purchase or lease the materials and equipment from the service provider. The contractual relationship between oil and gas services companies and their customers plays a significant role in determining the material impacts of their sustainability performance. Besides the rates charged, companies compete on the basis of their operational and safety performance, technology and process offerings, and reputation. Larger companies in the industry operate globally.

Guidance for Disclosure of Material Sustainability Topics in SEC Filings

1. Industry-Level Material Sustainability Topics

For the Oil & Gas - Services industry, SASB has identified the following material sustainability topics

- **Emissions Reduction Services & Fuels Management**
- **Water Management Services**
- **Chemicals Management**
- **Ecological Impact Management**
- **Health, Safety, and Emergency Management**
- **Business Ethics & Payments Transparency**
- **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.”^{1,2}

SASB has attempted to identify those sustainability topics that it believes may be material for all companies within each SICS industry. SASB recognizes, however, that each company is ultimately responsible for determining what is material to it.

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.”²

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

In determining whether a trend or uncertainty should be disclosed, the SEC has stated that management should use a two-part assessment based on probability and magnitude:

¹ TSC Industries v. Northway, Inc., 426 U.S. 438 (1976).

² 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.
- 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

Companies should consider making disclosure on sustainability topics as a complete set in the MD&A, in a sub-section titled "**Sustainability Accounting Standards Disclosures**."³

b . Other Relevant Sections of Form 10-K

In addition to the MD&A section, companies should consider disclosing sustainability information in other sections of Form 10-K, as relevant, including:

- **Description of business**—Item 101 of Regulation S-K requires a company to provide a description of its business and its subsidiaries. Specifically 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 targeting discharge of materials into the environment or 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/conceptualframework/>.

³ 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."

Guidance on Accounting of Material Sustainability Topics

For material sustainability topics in the Oil & Gas Services Industry, SASB identifies accounting metrics.

SASB recommends that each company consider using these sustainability accounting metrics when disclosing its performance with respect to each of the sustainability topics it has identified as material.

As appropriate—and consistent with Rule 12b-20⁴—for each sustainability topic, 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 **competitive positioning**;
- the **degree of control** the registrant has;
- any **measures the registrant has undertaken** or **plans to undertake** to improve performance; and
- data for 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 \(SICSTM\)](#). If a registrant generates significant revenue from multiple industries, SASB recommends that it consider the materiality of the sustainability issues that SASB has identified for those industries and disclose the associated SASB accounting metrics.

Users of the SASB Standards

The SASB Standards are intended 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)⁵, 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. Nevertheless, 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.

⁴SEC 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."

⁵Registration 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.

Scope of Disclosure

Unless otherwise specified, SASB recommends:

- That a registrant disclose on sustainability issues and metrics for itself and for entities in which the registrant has a controlling interest and therefore are consolidated for financial reporting purposes (controlling interest is generally defined as ownership of 50% or more of voting shares)⁶
- 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 such registrant considers the information necessary for investors to understand its performance with respect to sustainability issues (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.).

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 users of SASB accounting metrics (e.g., investors) 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.

⁶See US GAAP consolidation rules (Section 810).

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

METRIC	CATEGORY	UNIT OF MEASURE	CODE
Number of active rig sites ⁷	Quantitative	Number	NR0104-A
Number of active well sites ⁸	Quantitative	Number	NR0104-B
Total amount of drilling performed	Quantitative	Meters (m)	NR0104-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 like the imperfectness of third-party reporting systems 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 be necessary 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.

⁷ Note to **NR0104-A** – Rigs that are on location and involved in drilling, completions, cementing, fracturing, decommissioning etc., are considered active. Rigs that are in transit from one location to another, or are otherwise idled, are inactive.

⁸ Note to **NR0104-B** – The number of well sites for which the registrant has provided or is providing (on an ongoing basis) drilling, completion, fracturing, and/or decommissioning services.

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."

Assurance

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

SASB encourages registrants to use independent assurance (attestation), for example, an Examination Engagement to AT Section 101.

Table 1. Material Sustainability Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Emissions Reduction Services & Fuels Management	Total fuel consumed, percentage renewable, percentage used in: (1) on-road equipment and vehicles and (2) off-road equipment	Quantitative	Gigajoules (GJ), Percentage (%)	NR0104-01
	Description of strategy or plans to address air emissions-related risks, opportunities, and impacts	Discussion and Analysis	n/a	NR0104-02
	Percentage of engines in service that meet Tier 4 compliance for non-road diesel engine emissions	Quantitative	Percentage	NR0104-03
Water Management Services	Average volume of water used per volume of gas or oil extracted by (1) fresh water and (2) recycled water	Quantitative	Cubic meters (m ³) per million cubic feet (MMscf) or million barrels (MMbbl)	NR0104-04
	Description of strategy or plans to address water consumption and disposal-related risks, opportunities, and impacts	Discussion and Analysis	n/a	NR0104-05
Chemicals Management	Average amount of hydraulic fracturing fluid and proppant consumed per volume of gas or oil extracted	Quantitative	Cubic meters (m ³), Kilograms (kg) per MMscf or MMbbl	NR0104-06
	Percentage of hydraulically fractured wells for which there is public disclosure of all fracturing fluid chemicals used	Quantitative	Percentage (%)	NR0104-07
	Description of strategy or plans to address chemical-related risks, opportunities, and impacts	Discussion and Analysis	n/a	NR0104-08
Ecological Impact Management	Average disturbed acreage per (1) oil and (2) gas well site	Quantitative	Acres	NR0104-09
	Description of strategy or plan to address risks and opportunities related to ecological impacts from core activities	Discussion and Analysis	n/a	NR0104-10
Health, Safety, and Emergency Management	(1) Total Recordable Injury Rate (TRIR), (2) Fatality Rate, (3) Near Miss Frequency Rate, and (4) Total Vehicle Incident Rate (TVIR) for (a) full-time employees, (b) contract employees, and (c) short-service employees	Quantitative	Rate	NR0104-11
	Discussion of management systems used to integrate a culture of safety and emergency preparedness throughout the value chain and project lifecycles	Discussion and Analysis	n/a	NR0104-12

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

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Business Ethics & Payments	Amount of net revenue in countries that have the 20 lowest rankings in Transparency International's Corruption Perception Index	Quantitative	U.S. dollars (\$)	NR0104-13
Transparency	Description of the management system for prevention of corruption and bribery throughout the value chain	Discussion and Analysis	n/a	NR0104-14
Management of the Legal & Regulatory Environment	Amount of political campaign spending, lobbying expenditures, and contributions to tax-exempt groups including trade associations	Quantitative	U.S. Dollars (\$)	NR0104-15
	Five largest political, lobbying, or tax-exempt group expenditures	Quantitative	U.S. Dollars (\$)	NR0104-16

Emissions Reduction Services & Fuels Management

Description

While direct emissions and associated regulatory risks are relatively low for oil and gas services providers, emissions from the operations of their customers—the oil and gas exploration and production (E&P) companies—can be significant. Emissions include greenhouse gases that can contribute to climate change as well as other air pollutants that can have significant localized human health and environmental impacts. Increasing regulation and high costs of fuels associated with these emissions present substantial risk to E&P companies. This is driving companies to seek ways to lower their emissions, including converting pumps and engines to run on natural gas instead of diesel fuel. Oil and gas services companies compete for contracts with E&P companies partly on the basis of providing cutting-edge, efficient technologies that can help customers reduce costs and improve process efficiencies. Services companies can gain a competitive advantage and protect their revenues and market share by providing customers with services and equipment that reduce the emissions and fuel consumption of E&P operations, and by capturing saleable gas that may otherwise be flared or escape through leaks.

Accounting Metrics

NR0104-01. Total fuel consumed, percentage renewable, percentage used in: (1) on-road equipment and vehicles, (2) off-road equipment

- .01 The registrant shall disclose total fuel consumption from all sources as an aggregate figure in gigajoules or its multiples, broken down for (1) on-road, mobile equipment and vehicles and (2) off-road equipment, including stationary rigs, generators, and mounted equipment.
 - The scope includes only fuel consumed by entities owned or controlled by the organization.
 - The scope excludes non-fuel energy sources such as purchased electricity and purchased steam.
 - The scope of disclosure includes combustion sources owned and/or operated by the registrant, regardless of which entity bears the cost of fuel and/or considers greenhouse gas (GHG) emissions from these sources to be part of its Scope 1 inventory.
- .02 In calculating the energy content of 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 calculate the percentage of fuel from renewables as the energy content of renewable fuel consumed, divided by the energy content of all fuel consumed.
- .04 Renewable fuel is defined as fuel from sources that are capable of being replenished in a short period of time through ecological cycles, such as geothermal, wind, solar, hydro, and biomass.
 - For the purposes of this disclosure, the scope of renewable fuel from biomass sources are limited to those that are considered “eligible renewables” according to the [Green-e Energy National Standard Version 2.4](#).
- .05 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).

NR0104-02. Description of strategy or plans to address air emissions-related risks, opportunities, and impacts

- .06 The registrant shall discuss the scope of its strategies, plans, and/or emissions reduction activities, such as whether they pertain differently to different business units, geographies, or emissions sources.
- .07 The registrant shall discuss 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.
- .08 The registrant shall discuss demand for specific products, services, and technologies that reduce well and field operator's fuel consumption, emissions, and/or create other efficiencies, and its ability to meet this demand.
- .09 The registrant shall discuss its short term and long term plans related to air quality management, where:
 - Short-term strategies may include fuel substitution (e.g., drop-in biodiesel), use of dual fuel equipment, or engine maintenance.
 - Long-term strategies may include alternative fuel equipment, process, or equipment redesigns and innovations, carbon capture, and storage.
- .10 The scope of disclosure shall relate to emissions from the following specific sources:
 - Combustion emissions (e.g., fuel use in gas compression, power generation, etc.).
 - Flaring of hydrocarbons (e.g., in depressurizing, start-up/shut-down, well testing and well work-over, etc.).
 - Process emissions (e.g., vessel loading, tank storage, and flushing, etc.).
 - Venting of hydrocarbons, defined as the intentional (or designed), controlled release of gas to the atmosphere during normal operations.
 - Fugitive emissions of GHGs (including equipment leaks).
 - Non-routine events (e.g., gas releases or equipment maintenance).
- .11 The registrant shall discuss risks and opportunities it may face relating to being able to offer its customers services, technologies, or solutions that enhance energy efficiency and reduce air emissions, including of GHGs.

NR0104-03. Percentage of engines in service that meet Tier 4 compliance for non-road diesel engine emissions

- .12 The registrant shall disclose the percentage of its new and in-use non-road diesel engines – those used in equipment, pumps, compressors, generators, etc. – that are in compliance with the U.S. EPA's Tier 4 emissions standards for non-road diesel engines.
- .13 The registrant shall calculate the percentage as the fiscal year's new and in-use number of non-road diesel engines that are in full compliance with the Tier 4 emissions standards, divided by the total number of non-road diesel engines active for the fiscal year, where:
 - An engine is considered in compliance with the Tier 4 emission standards if it belongs to an engine family which has test results showing official emission results and deteriorated emission levels at or below these standards, and the engine family has received a certificate of conformity from the EPA for that model year.

- Engine families are defined as engine product lines that are expected to have similar emissions characteristics, as defined by CFR§1039.230.
- .14 Engines that are exempt from the EPA rules, such as certain marine engines, shall be exempt for the purposes of this disclosure.
 - .15 The scope of disclosure includes domestic and foreign operations, regardless of whether they are under U.S. EPA jurisdiction.
 - .16 The scope of disclosure includes non-road diesel engines manufactured, owned, and/or operated by the registrant, regardless of which entity bears the EPA compliance obligation.

Water Management Services

Description

Oil and gas extraction often requires large quantities of water, exposing producers to the risk of reduced water availability, regulations limiting usage, or related cost increases, particularly in water-stressed regions. Producers also face risks and costs associated with wastewater disposal. Companies in the Oil & Gas Services industry have developed technologies and processes such as closed-loop water recycling systems to reduce customers' water consumption and disposal costs. These offerings provide service companies the potential to gain market share and increase revenues, as management of drilling and waste water is emerging as a major concern for their customers.

Accounting Metrics

NR0104-04. Average volume of water used per volume of gas or oil extracted by (1) fresh water and (2) recycled water

- .17 The registrant shall disclose the volume of fresh water used per volume of hydrocarbons extracted as:
- Cubic meters (m³) of fresh water per million cubic feet (MMscf) of natural gas extracted and/or cubic meters of fresh water per million barrels (MMbbl) oil extracted.
- .18 The registrant shall disclose the volume of recycled water used per volume of hydrocarbons extracted as:
- Cubic meters (m³) of recycled water per million cubic feet (MMscf) of natural gas extracted and/or cubic meters of recycled water per million barrels (MMbbl) oil extracted.
- .19 Fresh water may be defined according to the local statutes and regulations where the registrant operates. If there is no regulatory definition, then fresh water shall be considered as water that has a solids (TDS) concentration of less than 1000 mg/l per the Water Quality Association [definition](#).
- .20 Recycled water shall include the amount recycled in closed loop and open loop systems as well as recycled produced water or flowback.
- Any volume of water reused multiple times shall be counted as recycled each time it is recycled and reused.
- .21 Produced water is defined according to the U.S. EPA (40 CFR 435.41) as water (brine) brought up from the hydrocarbon bearing formation strata during the extraction of oil and gas and can include formation water, injection water, and any chemicals added downhole or during the oil/water separation process.
- .22 Flowback is defined as recovered hydraulic fracturing fluid that returns to the surface during a hydraulic fracturing operation that may often be mixed with produced water.
- .23 The scope is limited to operations for which the registrant provides hydraulic fracturing, completion, drilling, and/or water management services (e.g., injection of produced water or flowback into a Class II injection well under the U.S. EPA's Underground Injection Control (UIC) program or equivalent, water treatment for reuse in drilling or hydraulic fracturing, reduction of unwanted water in subsurface areas, etc.).
- The scope includes, but is not limited to, water that is used in hydraulic fracturing fluids, drilling fluids, dust control, and drilling cement production.

NR0104-05. Description of strategy or plans to address water consumption and disposal-related risks, opportunities, and impacts

- .24 The registrant shall discuss the scope of its strategies, plans, and/or reduction activities, such as whether they pertain differently to different business units, geographies, or water sources.
- .25 The registrant shall discuss 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.
- .26 The registrant shall discuss demand for specific products, services, and technologies that offer well and field operators reduced water consumption, water recycling, and/or other water impact reductions, and its ability to meet this demand.
- .27 The registrant shall discuss its short-term and long-term plans related to water management, where:
 - Short-term strategies may include adopting best practices in water recycling or water efficiency initiatives.
 - Long-term strategies may include process redesigns or technological innovations that lower withdrawal of fresh water in constrained regions, reduce excess water production from wells, provide new water treatment or recycling systems, etc.
- .28 The scope of impact reductions may relate to the following specific areas of water consumption or disposal:
 - Hydraulic fracturing fluids
 - Drilling fluids
 - Dust control
 - Cement production
 - Produced water or flowback
- .29 The registrant shall discuss risks and opportunities it may face relating to: being able to offer its customers services, technologies, or solutions that enhance water use efficiency, treatment and reuse, and reduce water consumption or wastewater production.

Chemicals Management

Description

Oil and gas services companies manufacture drilling and hydraulic fracturing fluids and sell them to E&P companies. While the risk of leaks from a properly drilled well is low, contamination of local water resources can result from contact with hydraulic fracturing fluids and produced water, particularly due to deficiencies in well casings. Concerns about certain chemicals used in hydraulic fracturing fluids have led to fracturing bans, regulation, and legislative proposals to mandate disclosure of chemicals used in some regions, both in the U.S. and abroad. The exact chemical composition of hydraulic fracturing fluids is often proprietary information, and companies compete to create the most effective formulas. In the U.S., some companies are voluntarily disclosing information about the hydraulic fracturing chemicals they use through an industry registry, FracFocus. Under increasing public and regulatory pressure to limit the toxicity of drilling fluid, companies that transparently produce effective, non-hazardous fracking fluids, including formulas that reduce the volumes used per well, may increase their market share and revenues and lower the risk that regulations affect demand for their products.

Accounting Metrics

NR0104-06. Average amount of hydraulic fracturing fluid and proppant consumed per volume of gas or oil extracted

- .30 The registrant shall disclose the total volume of hydraulic fracturing fluid (in m³), including water and chemical additives used to open and enlarge fractures within the rock formation, per volume of hydrocarbons extracted.
- .31 The registrant shall disclose the amount of proppant (in kilograms) used per volume of hydrocarbons extracted.
- .32 Proppant is defined as fine particles (often fine mesh sand or ceramic materials) mixed with fracturing fluid to hold open fractures created during a hydraulic fracturing operation.
- .33 The average amounts shall be calculated as the aggregate amount of fluid and proppant consumed, divided by the aggregate amount of gas and/or oil extracted from hydraulically fractured wells (in MMscf and MMbbl, respectively).
- .34 The scope includes wells for which the registrant supplies hydraulic fracturing fluids and proppant, regardless of whether it conducts the hydraulic fracturing.
- .35 The registrant may choose to provide discussion around how the amount of hydraulic fracturing fluid and proppant used may be influenced by the fracturing technique implemented, independent of the nature of the fluid or proppant and outside of the registrant's control.

NR0104-07. Percentage of hydraulically fractured wells for which there is public disclosure of all fracturing fluid chemicals used

- .36 The registrant shall calculate the percentage as: the number of hydraulically fractured wells for which it provides public disclosure of all of the fracturing fluid's chemical content, divided by the total number of hydraulically fractured wells.
- .37 The scope includes wells for which the registrant supplies hydraulic fracturing fluids, regardless of whether it conducts the hydraulic fracturing.

- .38 The registrant shall count only wells for which all fluid chemicals are publicly disclosed, including those chemicals that meet the definition of a trade secret according to [Appendix E to 29 CFR Part §1910.1200](#) and may be exempt from disclosure on a material safety data sheet (MSDS).
- .39 Public disclosure includes, but is not limited to, posting to a publicly accessible corporate website or fracfocus.org.

NR0104-08. Description of strategy or plans to address chemical-related risks, opportunities, and impacts

- .40 The registrant shall discuss the scope of its strategies, activities, and/or management plans, such as whether they pertain differently to different business units, geographies, or types of service.
- .41 The registrant shall discuss demand from well operators for specific products, services, and technologies that are related to the amount, type, legal status and/or hazard profile of chemicals used or sold by the registrant, and its ability to meet this demand.
- .42 The registrant shall discuss its short-term and long-term plans related to chemicals management, where:
- Short-term strategies may include adopting best practices in chemicals re-use, recycling, or efficiency initiatives, ensuring compliance with local chemicals regulation, providing public disclosure of chemicals used, and participating in initiatives such as Responsible Care and the Global Product Strategy (GPS).
 - Long-term strategies may include process redesigns or technological innovations that reduce or eliminate the needs for certain chemicals, replacement of certain chemicals with benign alternatives, or implementation of green chemistry principles in the development of new products and services.
- .43 The registrant shall discuss 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.

Ecological Impact Management

Description

Oil and gas extraction activities can have significant impacts on biodiversity and ecosystems, particularly when companies operate in ecologically sensitive areas or have resource-intensive operations, such as oil sands extraction. These can occur through disposal of drilling and associated wastes, well decommissioning, land use, and fuel spills. Producers face regulatory risks from legislation and permitting to protect ecosystems in the U.S. and abroad, and from regulations specifically related to well decommissioning or underground waste injection. Oil and gas services companies that offer cost-effective and efficient production and decommissioning technologies that mitigate impacts on biodiversity by reducing land use, drilling wastes, and spills can lower associated risks for their customers and gain competitive advantage.

Accounting Metrics

NR0104-09. Average disturbed acreage per (1) oil and (2) gas well site

- .44 The registrant shall disclose the total acreage of disturbed land per well site, broken down by oil well sites and gas well sites.
- .45 The scope includes land in the exploration, development, production, or decommissioning project phase, but is limited to those sites where the registrant provides drilling, completion, fracturing, and/or decommissioning services.
- This disclosure shall be a cumulative total of all currently active sites, recently decommissioned sites, or sites being restored; it is not limited to land newly disturbed during the fiscal year.
 - Land shall no longer be considered disturbed once post-closure restoration and remediation efforts are substantially complete (even if monitoring is ongoing).
- .46 Disturbed acreage may result from well pads, drilling and production facilities, pipelines, access roads, equipment storage, reserve pits, tailings, produced water impoundments, etc.

NR0104-10. Description of strategy or plan to address risks and opportunities related to ecological impacts from core activities

- .47 The registrant shall discuss the scope of its strategies, plans, and/or reduction activities, such as whether they pertain differently to different business units, geographies, or impact sources.
- .48 The registrant shall discuss 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.
- .49 The registrant shall discuss its short-term and long-term plans related to management of ecological impacts, where:
- Short-term strategies may include efficient use of materials or equipment, use of multi-well pads, and increased production efficiencies that reduce drilling and associated wastes.
 - Long-term strategies may include process redesigns, new rig and equipment designs, advances in geological engineering, and further advances in directional and multilateral drilling that require lower land use and

reduce noise and waste generation, natural resource consumption, hazardous chemical usage, ecological and biodiversity impacts, etc.

.50 The scope of impact reductions may relate to the following specific areas of service provision:

- Drilling or completion
- Hydraulic fracturing
- Water management
- Decommissioning

.51 The registrant may choose to provide discussion around technologies and innovations to reduce ecological impacts that allow their customers access to sites that would not normally be accessible due to their ecological sensitivity.

.52 The registrant may choose to provide discussion around specific plans or strategies to reduce ecological impacts in areas with protected conservation status, endangered species habitat, or in areas of unique ecological sensitivity such as the Arctic. Relevant areas in this regard include:

- International Union for Conservation of Nature (IUCN) Protected Areas (categories I-VI).
- Ramsar Wetlands of International Importance.
- UNESCO World Heritage Sites.
- Biosphere Reserves recognized within the framework of UNESCO's Man and the Biosphere (MAB) Programme.
- Natura 2000 sites.
- Sites that meet the IUCN's definition of a protected area: "A protected area is a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values."
- These sites may be listed in the World Database of Protected Areas (WDPA) and mapped on ProtectedPlanet.net.
- Areas where IUCN Red List of Threatened Species that are classified as Critically Endangered (CR) or Endangered (EN) are extant.
- A species is considered extant in an area if it is a resident, present during breeding or non-breeding season, or if it makes use of the area for passage.

.53 The registrant shall discuss risks and opportunities it may face relating to being able to offer its customers services, technologies, or solutions that lower ecological impacts, including land use and biodiversity impacts.

Health, Safety, and Emergency Management

Description

Workers in the Oil & Gas Services industry face significant health and safety risks due to the harsh working environments and hazards of handling oil and gas. Furthermore, women and minority workers may be at risk, particularly when they operate in regions where they continue to face discrimination. In addition to acute impacts resulting from accidents, workers may develop chronic health conditions, including those caused by silica or dust inhalation, as well as mental health problems. A significant proportion of the workforce at oil and gas drilling sites consists of temporary workers and employees of oil and gas services companies. Health impacts on, and the safety performance of, such workers can affect Services companies directly by influencing worker productivity and costs. Services companies may also be affected indirectly through the impacts that safety incidents or emergencies can have on their E&P customers. Significant releases of hydrocarbons or other hazardous substances as a result of accidents can have wide-ranging negative social and environmental consequences, for which E&P companies can be held liable. E&P companies can, in turn, initiate legal action against oil and gas services companies. Services companies compete on the basis of their reputation and ability to perform activities on a consistently safe basis. Customers evaluate instances of accidents, spills, injuries, and fatalities when considering awarding contracts to services companies. In addition to implementing effective process safety management practices, it is important for a company to develop a culture of safety in order to reduce the probability that accidents and other health and safety incidents will occur. If accidents and other emergencies do occur, companies with a strong safety culture can effectively detect and respond to such incidents. A culture that engages and empowers employees and contractors to work with management and E&P companies in safeguard their own health, safety, and well-being and to prevent accidents is likely to help services companies reduce risks to financial value.

Accounting Metrics

NR0104-11. (1) Total Recordable Injury Rate (TRIR), (2) Fatality Rate, (3) Near Miss Frequency Rate, and (4) Total Vehicle Incident Rate (TVIR) for (a) full-time employees, (b) contract employees, and (c) short-service employees

- .54 For registrants whose workforce is entirely U.S.-based, the registrant 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 determination of whether an event is a recordable occupational incident and definitions for exemptions for incidents that occurred in the work environment but are not occupational.
- .55 For registrants whose workforce includes non-U.S.-based employees, the registrant shall calculate its total recordable injury rate and fatality rate according to the U.S. Bureau of Labor Statistics [guidance](#) and/or using the U.S. Bureau of Labor Statistics [calculator](#).
- .56 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.
- .57 The registrant shall disclose its total vehicle incident rate (TVIR) according to definitions and [guidance](#) from the American Petroleum Institute (API).
- .58 The registrant shall disclose its TRIR, Fatality Rate, and NMFR for each of the following categories of employee:
- Direct, full-time employees
 - Contract employees
 - Short-service employees (full-time and contract)
- .59 Short-Service Employee (SSE) is defined as a newly placed full-time or temporary employee or subcontractor with less than six months' experience in an assigned job.
- .60 The scope includes all employees, both domestic and foreign.
- .61 Rates shall be calculated as: $(\text{statistic count} / \text{total hours worked}) * 200,000$.

NR0104-12. Discussion of management systems used to integrate a culture of safety and emergency preparedness throughout the value chain and project lifecycle

- .62 Discussion shall include how the registrant integrates a culture of safety and emergency preparedness throughout its value chain, such as through training, joint management by the workforce and leadership, rules and guidelines, and use of technology.
- .63 The registrant shall include a description of how emergency preparedness is coordinated amongst business partners (e.g., contractors and sub-contractors).
- .64 Disclosure may focus broadly on safety and emergency management systems, but shall specifically address the systems to avoid and manage emergencies, accidents, and incidents that could have catastrophic human health, local community, and environmental impacts.
- .65 Project lifecycle may include one or more of the following stages: geological and seismic surveys, site surveys, exploratory drilling, appraisal drilling, site development, production, and decommissioning.

Business Ethics & Payments Transparency

Description

With operations across the globe, oil and gas services companies interact with many government and local officials, either directly or through agents, in order to secure contracts with state-owned oil companies and multinational corporations. Bribery and corruption are common in some regions, and in others, taxes and other payments to governments may not be used for the benefit of the local population. Enforcement of anti-corruption, anti-bribery, and payments-transparency laws and initiatives in the U.S. and abroad could lead to significant one-time costs or higher ongoing costs, and could even affect a company's social license to operate. Oil and gas services companies are under pressure to ensure that their governance structures and practices can address corruption, willful or unintentional participation in illegal or unethical payments and gifts to government officials or private persons, or the risk of otherwise unfairly influencing these individuals. Operating in corruption-prone countries can exacerbate these risks.

Accounting Metrics

NR0104-13. Amount of net revenue in countries that have the 20 lowest rankings in Transparency International's Corruption Perception Index

- .66 The registrant shall disclose its net revenue (in U.S. dollars) from activities located in the countries with the 20 lowest rankings in Transparency International's Corruption Perception Index (CPI).
- 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.
- .67 The registrant shall use the most current version of the CPI via Transparency International's publicly accessible [website](#).
- .68 The registrant may choose to provide discussion around operations that are located in countries with low rankings in the index but 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.

NR0104-14. Description of the management system for prevention of corruption and bribery throughout the value chain

- .69 The registrant shall discuss its management system and due diligence procedures for assessing and managing corruption and bribery risks internally and associated with business partners in its value chain.
- Relevant business partners include customers, suppliers, contractors, subcontractors, and JV partners.
- .70 Relevant aspects of a management system include: employee awareness programs, internal mechanisms for reporting and following up on suspected violations, anti-corruption policies, and participation in the Extractive Industry Transparency Initiative (EITI).

.71 The registrant may choose to discuss the implementation of one or more of the following:

- 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
- World Economic Forum (WEF): Partnering Against Corruption Initiative (PACI)

Management of the Legal & Regulatory Environment

Description

The interaction of companies in the Oil & Gas Services industry with their legal and regulatory environment can have material impacts on shareholder value. This can be a result of oil and gas services companies' significant spending lobbying and political contributions or as a result of changes in laws or policies that can affect operations. In particular, climate change and environmental laws and regulations can have material impacts on business. However, given the scientific consensus that human-induced climate change is occurring, efforts to delay climate-related policy or legislative changes may prove counterproductive to the industry in the long term, by creating regulatory, and therefore investment, uncertainty that affects their business, or incurring higher costs in the future. Efforts to unfairly influence environmental laws and regulations may affect companies' reputations and social license to operate. Companies with a clear strategy for engaging policymakers and regulators that accounts for societal externalities and is aligned with their goals and activities for long-term sustainable outcomes could benefit from a stronger long-term license to operate. Such companies will likely be better prepared for medium- to long-term regulatory adjustments to deal with high-impact issues such as climate change and water scarcity and contamination.

Accounting Metrics

NR0104-15. Amount of political campaign spending, lobbying expenditures, and contributions to tax-exempt groups including trade associations

.72 The registrant shall disclose its total monetary contributions to political campaigns, lobbyists or lobbying organizations, and those to tax-exempt groups, including trade associations that aim to influence political campaigns or participate in political lobbying.

.73 The scope of disclosure includes the following:

- Political spending, 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);
- Any direct or indirect political expenditure (one-time or recurring) that must be reported to the Federal Election Commission, the Internal Revenue Service, or a state disclosure agency; and
- Any direct or indirect contributions to registered lobbyists or lobbying organizations, including contributions made to trade organizations, which in turn contribute to political lobbying efforts.

NR0104-16. Five largest political, lobbying, or tax-exempt group expenditures

- .74 The registrant shall disclose the recipients of its five largest contributions disclosed in NR0104-15, defined as the five largest amounts in aggregate during the fiscal year that were contributed to an individual candidate, organization, ballot measure, or lobbying issue topic.
- .75 The registrant shall disclose the amount (in U.S. dollars) contributed to each individual, organization, ballot measure, or lobbying issue topic.
- .76 The registrant shall consider lobbying issue topics, at a minimum, to be general lobbying issue codes [defined](#) by The Lobbying Disclosure Act of 1995, but should include specific lobbying issues where available.

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SUSTAINABILITY ACCOUNTING STANDARD
NON-RENEWABLE RESOURCES SECTOR

COAL OPERATIONS

Sustainability Accounting Standard

Sustainable Industry Classification System™ (SICS™) #NR0201

Prepared by the
Sustainability Accounting Standards Board®

June 2014
Provisional Standard

COAL OPERATIONS

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 more than 80 industries in 10 sectors.

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INTRODUCTION

Purpose & Structure

This document contains the SASB Sustainability Accounting Standard (SASB Standard) for Coal Operations.

SASB 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's disclosure guidance identifies sustainability topics at an industry level, which may be material— depending on a company's specific operating context— to a company within that industry.

Each company is ultimately responsible for determining which information is material and is therefore required to be included in its Form 10-K or 20-F and other periodic SEC filings.

SASB's accounting standards provide companies with standardized accounting metrics to account for performance on industry-level sustainability topics. When making disclosure on sustainability topics, companies adopting SASB's accounting standards will help to ensure that disclosure is standardized and therefore useful, relevant, comparable and auditable.

Industry Description

The Coal Operations industry includes companies that mine coal and those that manufacture coal products. Mining activity covers both underground and surface mining, and thermal and metallurgical coal. Typically, U.S. coal mining companies have domestic operations; however, some of the largest U.S.-listed companies also have operations in the Asia-Pacific region.

Guidance for Disclosure of Material Sustainability Topics in SEC filings

1. Industry-Level Material Sustainability Topics

For the Coal Operations industry, SASB has identified the following material sustainability topics:

- **Greenhouse Gas Emissions**
- **Water Management**
- **Waste Management**
- **Biodiversity Impacts**
- **Community Relations & Rights of Indigenous Peoples**
- **Workforce Health, Safety, and Well-being**
- **Labor Relations**
- **Reserves Valuation & Capital Expenditures**

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”.^{1,2}

SASB has attempted to identify those sustainability topics that it believes may be material for all companies within each SICS industry. SASB recognizes, however, that each company is ultimately responsible for determining what is material to it.

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.”²

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

In determining whether a trend or uncertainty should be disclosed, the SEC has stated that management should use a two-part assessment based on probability and magnitude:

- 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.

¹ TSC Industries v. Northway, Inc., 426 U.S. 438 (1976).

² C.F.R. 229.303(Item 303)(a)(3)(ii).

- 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

Companies should consider making disclosure on sustainability topics as a complete set in the MD&A, in a sub-section titled **"Sustainability Accounting Standards Disclosures."**³

b. Other Relevant Sections of Form 10-K

In addition to the MD&A section, companies should consider disclosing sustainability information in other sections of Form 10-K, as relevant, including:

- **Description of business**—Item 101 of Regulation S-K requires a company to provide a description of its business and its subsidiaries. Specifically 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 targeting discharge of materials into the environment or 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/>.

³ 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."

Guidance on Accounting of Material Sustainability Topics

For material sustainability topics in the Coal Operations industry, SASB identifies accounting metrics.

SASB recommends that each company consider using these sustainability accounting metrics when disclosing its performance with respect to each of the sustainability topics it has identified as material.

As appropriate—and consistent with Rule 12b-20⁴—for each sustainability topic, 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 **competitive positioning**;
- the **degree of control** the registrant has;
- any **measures the registrant has undertaken** or **plans to undertake** to improve performance; and
- data for 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 \(SICSTM\)](#). If a registrant generates significant revenue from multiple industries, SASB recommends that it consider the materiality of the sustainability issues that SASB has identified for those industries and disclose the associated SASB accounting metrics.

Users of the SASB Standards

The SASB Standards are intended 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),⁵ 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. Nevertheless, 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.

⁴ 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."

⁵ 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.

Scope of Disclosure

Unless otherwise specified, SASB recommends:

- That a registrant disclose on sustainability issues and metrics for itself and for entities in which the registrant has a controlling interest and therefore are consolidated for financial reporting purposes (controlling interest is generally defined as ownership of 50% or more of voting shares)⁶
- 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 such registrant considers the information necessary for investors to understand its performance with respect to sustainability issues (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.).

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 users of SASB accounting metrics (e.g., investors) 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.

⁶ See US GAAP consolidation rules (Section 810).

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

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Production of thermal coal	Quantitative	Million metric tons (t)	NR0201-A
Production of metallurgical coal ⁷	Quantitative	Million metric tons (t)	NR0201-B

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 like the imperfectness of third-party reporting systems 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 be necessary 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.

⁷ Note to **NR0201-B** – The scope includes pulverized coal injection.

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."

Assurance

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

SASB encourages registrants to use independent assurance (attestation), for example, an Examination Engagement to AT Section 101.

Table 1. Material Sustainability Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Greenhouse Gas Emissions	Gross global Scope 1 emissions, percentage covered under a regulatory program	Quantitative	Metric tons CO ₂ -e, Percentage (%)	NR0201-01
	Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	NR0201-02
Water Management	Total fresh water withdrawn, percentage recycled, percentage in regions with High or Extremely High Baseline Water Stress	Quantitative	Cubic meters (m ³), Percentage (%)	NR0201-03
	Number of incidents of non-compliance with water-quality permits, standards, and regulations	Quantitative	Number	NR0201-04
Waste Management	Number of tailings impoundments by MSHA hazard potential	Quantitative	Number	NR0201-05
Biodiversity Impacts	Description of environmental management policies and practices for active sites	Discussion and Analysis	n/a	NR0201-06
	Percentage of mine sites where acid rock drainage is: (1) predicted to occur, (2) actively mitigated, (3) under treatment or remediation	Quantitative	Percentage (%)	NR0201-07
	(1) Proven and (2) probable reserves in or near sites with protected conservation status or endangered species habitat	Quantitative	Million metric tons (t)	NR0201-08
Community Relations & Rights of Indigenous Peoples	Discussion of process to manage risks and opportunities associated with community rights and interests	Discussion and Analysis	n/a	NR0201-09
	Number and duration of non-technical delays	Quantitative	Number, Days	NR0201-10
	(1) Proven and (2) probable reserves in or near indigenous land	Quantitative	Million metric tons (t)	NR0201-11
Workforce Health, Safety, and Well-Being	(1) MSHA All-Incidence Rate, (2) Fatality Rate, and (3) Near-Miss Frequency Rate	Quantitative	Rate	NR0201-12
	Discussion of management of accident and safety risks and long-term health and safety risks	Discussion and Analysis	n/a	NR0201-13

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

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Labor Relations	Percentage of active workforce covered under collective-bargaining agreements, broken down by U.S. and foreign employees	Quantitative	Percentage (%)	NR0201-14
	Number and duration of strikes and lockouts ⁸	Quantitative	Number, Days	NR0201-15
Reserves Valuation & Capital Expenditures	Sensitivity of coal reserve levels to future price projection scenarios that account for a price on carbon emissions	Quantitative	Million metric tons (t)	NR0201-16
	Estimated carbon dioxide emissions embedded in proven coal reserves	Quantitative	Metric tons CO ₂ -e	NR0201-17
	Discussion of how price and demand for coal and/or emissions regulations influence the capital expenditure strategy for exploration, acquisition, and development of assets	Discussion and Analysis	n/a	NR0201-18

⁸ Note to **NR0201-15** – Disclosure shall include the number, duration, and reason for the stoppage.

Greenhouse Gas Emissions

Description

Coal operations are energy-intensive and generate significant direct greenhouse gas (GHG) emissions, including carbon dioxide from fuel use and methane released from coal beds during mining and post-mining activities. The relative magnitude of GHG emissions from the industry exposes it to higher operating and capital expenditures from emissions regulations at the state, national, and regional levels, with a high degree of uncertainty about future emissions regulations. Companies that cost-effectively reduce GHG emissions from their operations by implementing industry-leading technologies and processes can create operational efficiency. They can mitigate the impact on value from increased fuel costs and regulations that limit – or put a price on – carbon emissions, which are occurring as regulatory and public concerns about climate change are increasing in the U.S. and globally.

Accounting Metrics

NR0201-01. Gross global Scope 1 emissions, percentage covered under a regulatory program

- .01 The registrant shall disclose gross global Scope 1 greenhouse gas (GHG) emissions to the atmosphere of the six greenhouse gases covered under the Kyoto Protocol: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.
 - Emissions of all gases shall be disclosed in metric tons of carbon dioxide equivalent (CO₂-e), calculated in accordance with published global warming potential (GWP) factors. To date, the preferred source for global warming potential factors is the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report (2007).
 - 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.
- .02 Scope 1 emissions are defined by the World Resources Institute and the World Business Council on Sustainable Development (WRI/WBCSD) 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; these sources include but are not limited to: equipment at mine sites, production and processing facilities, storage facilities, office buildings, and transportation (marine, road, and rail).
- .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 2014 (hereafter, the “CDP Guidance”).⁹
 - The approach detailed in Section 4.23 “Organizational boundary setting for GHG emissions reporting” of Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).¹⁰
- .04 The underlying technical approach to data collection, analysis, and disclosure shall be consistent with the CDP Guidance.
- The registrant shall consider the CDP Guidance as a normative reference; thus, any updates made year-on-year shall be considered updates to this guidance.
- .05 The registrant shall disclose the percentage of its emissions that are covered under a regulatory program, such as the European Union Emissions Trading Scheme (EU ETS), Western Climate Initiative (WCI), California Cap-and-Trade (California Global Warming Solutions Act), or other regulatory programs.
- Regulatory programs include cap-and-trade schemes and carbon tax/fee systems.
 - Disclosure shall exclude emissions covered under voluntary trading systems and disclosure-based regulations (e.g., the U.S. Environmental Protection Agency (EPA) mandatory reporting rule).
- .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 entity (e.g., a national regulatory disclosure program) differs in terms of the scope and consolidation approach used, the registrant may disclose those emissions. However, primary disclosure shall be according to the guidelines previously mentioned.
- .08 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.
- .09 This accounting metric corresponds to section CC8.2 of the Carbon Disclosure Project (CDP) Questionnaire and section 4.25 of the Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).

NR0201-02. Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets

- .10 The registrant shall discuss the following where relevant:
- The scope, including if strategies, plans, and/or reduction targets pertain differently to different business units, geographies, or emissions sources.

⁹ “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 2014* (p. 94).

¹⁰ This approach is based on the requirements of the International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) on consolidation and equity accounting. It is consistent with the way in which information relating to entities within a group, or interest in joint ventures/associates, would be included in consolidated financial statements. *Climate Change Reporting Framework*, CDSB

- If strategies, plans, and/or reduction targets are related to or associated with an emissions disclosure (reporting) or reduction program (e.g., EU ETS, Regional Greenhouse Gas Initiative (RGGI), WCI, etc.), including regional, national, international or sectoral programs.
- 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 towards 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 that reached completion during the fiscal year.
- The mechanism(s) for achieving the target, such as energy efficiency efforts, energy source diversification, carbon capture and storage, etc.

.12 Where necessary, the registrant shall discuss any circumstances in which the target base year emissions have been or may be re-calculated retrospectively, or in which the target base year has been reset.

.13 This accounting metric corresponds with:

- CDSB Section 4, "Management Actions"¹¹
- CDP questionnaire "CC3. Targets and Initiatives"

¹¹ 4.12, "Disclosure shall include a description of the organization's long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including targets to reduce GHG emissions and an analysis of performance against those targets." *Climate Change Reporting Framework – Edition 1.1*, October 2012, CDSB.

Water Management

Description

Coal operations have an impact on both the quality and quantity of local water resources. Coal operations are water-intensive. The use of water in coal washing to remove sulfur, in cooling drilling equipment, and in transporting coal in slurry pipelines can strain resources in water-stressed regions. Companies that increase efficiencies in water use could mitigate the risk of reduced water availability, regulations limiting water use, community protests that disrupt production, or related cost increases. Federal and state laws mandate treatment of wastewater prior to discharge into water bodies. Violating limits on selenium, sulfate, and dissolved solids could affect coal operations companies through significant penalties, compliance costs, delays in production, or higher costs related to mine closure.

Accounting Metrics

NR0201-03. Total fresh water withdrawn, percentage recycled, percentage in regions with High or Extremely High Baseline Water Stress

- .14 The registrant shall disclose the amount of water (in cubic meters) that was withdrawn from freshwater sources for use in operations.
- 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 total dissolved solids (TDS) concentration of less than 1000 mg/l per the Water Quality Association definition.
- .15 Water obtained from a water utility can be assumed to meet the definition of freshwater.¹²
- .16 The registrant shall disclose the percentage of water recycled as the volume (in cubic meters) recycled divided by the volume of water withdrawn.
- Any volume of water reused multiple times shall be counted as recycled each time it is recycled and reused.
- .17 Using the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly available online [here](#)), the registrant shall analyze all of its operations for water risks and identify facilities that are in a location with High (40–80%) or Extremely High (>80%) Baseline Water Stress. Water withdrawn in locations with High or Extremely High Baseline Water Stress shall be indicated as a percentage of the total water withdrawn.
- .18 This accounting metric corresponds to section W5. Water Accounting of the CDP's 2014 [Water Information Request](#).

¹² <http://water.epa.gov/drink/contaminants/secondarystandards.cfm>

NR0201-04. Number of incidents of non-compliance with water-quality permits, standards, and regulations

- .19 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.
- .20 The scope of disclosure includes incidents related to statutory permits and regulations or voluntary agreements, standards, or guidelines, such as total maximum daily load (TMDL) exceedances.
- .21 Voluntary standards include the registrant's own water quality standards (parameters) or "effluent guidelines" from the International Finance Corporation's (IFC) "Environmental, Health, and Safety Guidelines for Mining."
 - Typical parameters of concern include selenium, total dissolved solids (TDS), sulfate, total suspended solids (TSS), and pH.
- .22 An incident of non-compliance shall be disclosed regardless of whether it resulted in an enforcement action (e.g., fine, warning letter, etc.).
- .23 Violations, regardless of their measurement methodology or frequency, shall be disclosed. These include:
 - For continuous discharges, limitations, standards, and prohibitions that are generally expressed as maximum daily, weekly average, and monthly average.
 - For non-continuous discharges, limitations that are generally expressed in terms of frequency, total mass, maximum rate of discharge, and mass or concentrations of specified pollutants.

Waste Management

Description

Handling of solid rock and clay waste, process refuse, and liquid coal waste containing toxins like mercury, arsenic, and cadmium poses operational and regulatory challenges for coal operations companies. Coal slurry or tailings ponds can present a significant threat if the impoundments burst, collapse, or leak, leading to destruction of lives, property, and ecosystems. This ultimately leads to costs for companies in the form of regulatory penalties, compensation payments, and remediation or compliance obligations. Permitting of mining operations may be affected, lowering a company's revenue-earning potential, or requiring additional expenditures prior to approval. Companies' ability to lower the number and size of tailings ponds and ensure the structural integrity of impoundments can help minimize such impacts.

Accounting Metrics

NR0201-05. Number of tailings impoundments by MSHA hazard potential

- .24 The registrant shall disclose the number of tailings impoundments according to the following U.S. Mine Safety and Health Administration (MSHA) hazard potential classification:
- High hazard potential
 - Significant hazard potential
 - Low hazard potential
- .25 For locations under the auspices of the MSHA, the hazard potential shall be determined by Mine Safety and Health enforcement personnel (Metal and Nonmetal) during regular (E01) inspections through verification that the mine operator has appropriately classified the dam or by assigning a hazard classification if the existing one does not appear reasonable or if no classification has been assigned.
- .26 For locations not under the auspices of the MSHA, hazard potential shall be determined by a third party following MSHA [Procedure Instruction Letter No. I13-IV-01 guidance](#).
- .27 High hazard potential impoundments are dams, regardless of their condition or size, whose failure will probably cause loss of life.
- These facilities are generally located in populated areas or where dwellings are found in the flood plain, and failure can reasonably be expected to cause loss of life, serious damage to homes, industrial and commercial buildings, and damage to important utilities, highways, or railroads.

- .28 Significant hazard potential impoundments are dams, regardless of their condition or size, whose failure would result in no probable loss of life but would disrupt important utilities or cause significant economic loss or significant environmental damage.
- These facilities are generally located in predominantly rural areas, but could be in populated areas with significant infrastructure, where failure could damage isolated homes, main highways, and minor railroads, or disrupt the use of service of public utilities.
- .29 Low hazard potential impoundments are dams whose failure would not be expected to cause loss of life, disrupt important utilities, or cause significant economic loss or significant environmental damage.
- These facilities are usually located in rural or agricultural areas where losses are limited principally to the owner's property or where failure would cause only slight damage to farm buildings, forest and agricultural land, and minor roads.
 - The scope includes only dams that either: (1) Equal or exceed 25 feet in height and can or do store a volume of more than 15 acre-feet, or (2) Exceed 6 feet in height and can or do store 50 or more acre-feet.
- .30 Hazard potential classification depends solely on the consequences of failure of the dam and not on the condition of the dam.
- .31 Hazard potential classification can change over time.

Biodiversity Impacts

Description

Coal operations can have a range of impacts on biodiversity. Surface mining and mountaintop removal can alter the landscape, removing vegetation and wildlife habitats. Acid mine drainage is particularly significant: It is highly acidic water, rich in heavy metals, that is formed when surface and shallow subsurface water comes into contact with coal mining overburden, and can have harmful effects on humans, animals, and plants. Biodiversity impacts of coal operations can affect the valuation of reserves and create operational risks. The environmental characteristics of the land where reserves are located could increase extraction costs as a result of increasing awareness and protection of ecosystems. Companies could also face regulatory or reputational barriers to accessing reserves in ecologically sensitive areas. This may include new protection status afforded to areas where reserves are located. Coal operations companies face regulatory risks related to reclamation after a mine is decommissioned, as they need to follow specific standards for restoring mined property according to a prior, approved reclamation plan. Material costs arise from removing or covering refuse piles, fulfilling water treatment obligations, and dismantling infrastructure at the end of life. Furthermore, ongoing coal operations might result in the violation of laws protecting endangered species. Companies that have an effective environmental management plan for different stages of the project lifecycle could minimize their compliance costs and legal liabilities, face less resistance in developing new mines, avert delays in project completion, and avoid difficulties in obtaining permits and accessing reserves.

Accounting Metrics

NR0201-06. Description of environmental management policies and practices for active sites

.32 The registrant shall provide a brief description of its environmental management plan(s) implemented at active sites, including where relevant:

- Lifecycle stages to which the plan(s) apply, such as: pre-bid (when the registrant is considering acquisition of a site), exploration and appraisal, site development, production, and during closure, decommissioning, and restoration.
- The topics addressed by the plan(s), such as: ecological and biodiversity impacts, waste generation, noise impacts, emissions to air, discharges to water, natural resource consumption, and hazardous chemical usage.
- The underlying references for its plan(s), including whether they are codes, guidelines, standards, or regulations; whether they 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.

- .33 Where applicable and relevant, the registrant shall describe specific policies and practices that apply to areas with protected conservation status and/or areas of critical habitat, which are [defined](#) by the International Finance Corporation (IFC) as:
- Areas with high biodiversity value, including (i) habitat of significant importance to Critically Endangered and/or Endangered species; (ii) habitat of significant importance to endemic and/or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes.¹³
- .34 If the management policies and practices do not apply to all of the registrant's sites or operations, it shall indicate the percentage of sites to which they were applied.
- .35 The registrant shall disclose the degree to which its policies and practices are aligned with the International Finance Corporation's (IFC) [Performance Standards on Environmental and Social Sustainability](#), January 1, 2012, including specifically:
- Performance Standard 1 – Assessment and Management of Environmental and Social Risks and Impacts.
 - Performance Standard 3 – Resource Efficiency and Pollution Prevention.
 - Performance Standard 4 – Community Health, Safety, and Security.
 - Performance Standard 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources.
- .36 Additional relevant references may include:
- [“Environmental management in oil and gas exploration and production – An overview of issue and management approaches,”](#) Joint E&P Forum/UNEP Technical Publication 1997.
 - [“Towards Sustainable Decommissioning and Closure of Oil Fields and Mines: A Toolkit to Assist Government Agencies,”](#) DRAFT Version 2.0, November 2009, World Bank Multistakeholder Initiative.

NR0201-07. Percentage of mine sites where acid rock drainage is: (1) predicted to occur, (2) actively mitigated, and (3) under treatment or remediation

- .37 The registrant shall disclose the percentage of its sites (by annual production output from mines in metric tons) where acid-generating seepage into surrounding surface water and/or groundwater is: (1) predicted to occur, (2) actively mitigated, and (3) under treatment or remediation.
- .38 Acid Rock Drainage (ARD) is predicted to occur if, based on computer simulations, chemical evaluations, and/or acid-base accounting, it is biochemically likely that ARD could form at the mine site.
- .39 ARD is considered to be actively mitigated if the registrant is preventing the formation of ARD through methods that include, but are not limited to: storing or covering sulfite-bearing minerals to prevent oxidation, flood prevention and mine sealing, mixing of acid buffering materials with acid-producing materials, or chemical treatment of sulfide wastes (e.g., organic chemicals designed to kill sulfide-oxidizing bacteria).

¹³ International Finance Corporation (IFC), Performance Standard 6, *Biodiversity Conservation and Sustainable Management of Living Natural Resources*, January 1, 2012.

.40 ARD is considered under treatment or remediation, if the acidic water discharged from the mine area is captured and undergoes a wastewater treatment process (active or passive).

.41 ARD may also be referred to as acid-generating seepage or acid mine drainage.

NR0201-08. (1) Proven and (2) probable reserves in or near sites with protected conservation status or endangered species habitat

.42 The registrant shall disclose the amount of proven reserves (in metric tons) in sites with protected conservation status, plus the amount of proven reserves in areas of endangered species habitat.

.43 The registrant shall disclose the amount of probable reserves (in metric tons) in sites with protected conservation status, plus the amount of proven reserves in areas of endangered species habitat.

.44 Reserves are considered to be in areas of protected conservation status if they are located within:

- International Union for Conservation of Nature (IUCN) Protected Areas (categories I-VI).
- Ramsar Wetlands of International Importance.
- UNESCO World Heritage Sites.
- Biosphere Reserves recognized within the framework of UNESCO's Man and the Biosphere (MAB) Programme.
- Natura 2000 sites.
- Sites that meet the IUCN's definition of a protected area: "A protected area is a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values."¹⁴
 - These sites may be listed in the World Database of Protected Areas (WDPA) and mapped on ProtectedPlanet.net.

.45 Reserves are considered to be in endangered species habitat if they are in or near areas where IUCN Red List of Threatened Species that are classified as Critically Endangered (CR) or Endangered (EN) are extant.

- A species is considered extant in an area if it is a resident, present during breeding or non-breeding season, or if it makes use of the area for passage.

.46 For the purposes of this disclosure, "near" is defined as within 5 kilometer (km) of the boundary of an area of protected conservation status or an endangered species habitat.

.47 Reserves are defined by the U.S. Securities and Exchange Commission (SEC) [Industry Guide 7, Description of Property by Issuers Engaged or to Be Engaged in Significant Mining Operations](#):

- Reserves, as that part of a mineral deposit which could be economically and legally extracted or produced at the time of the reserve determination.

¹⁴ Dudley, N. (ed.) (2008) Guidelines for Applying Protected Areas Management Categories. IUCN: Gland, Switzerland. p.8-9.

- Proven (or measured) reserves, as reserves for which (a) quantity is computed from dimensions revealed in outcrops, trenches, workings, or drill holes; grade and/or quality are computed from the results of detailed sampling, and (b) the sites for inspection, sampling, and measurement are spaced so closely and the geographic character is so well-defined that size, shape, depth, and mineral content of reserves are well-established.
 - Probable (or indicated) reserves are reserves for which quantity and grade and/or quality are computed from information similar to that used for proven (measured) reserves, but the sites for inspection, sampling, and measurement are farther apart or are otherwise less adequately spaced. The degree of assurance, although lower than that for proven (measured) reserves, is high enough to assume continuity between points of observation.
- .48 The registrant may choose to separately identify reserves in areas with additional ecological, biodiversity, or conservation designations such as those listed by the [A-Z Guide of Areas of Biodiversity Importance](#) prepared by the United Nations Environment Programme's World Conservation Monitoring Centre (UNEP-WCMC).
- .49 The registrant may choose to provide discussion around reserves that are located in protected areas or endangered species habitat but present low risk to biodiversity or ecosystem services; the registrant may choose to provide similar discussion for reserves located in areas with no official designation of high biodiversity value but that present high biodiversity or ecosystem services risks.

Additional references

The International Network for Acid Prevention (INAP) [Global Acid Rock Drainage \(GARD\) Guide](#)

Community Relations & Rights of Indigenous Peoples

Description

Coal operations take place over a number of years and can have a wide range of community impacts. Community rights and interests may be affected by the environmental and social impacts of operations, such as air and water emissions, waste from operations, and decommissioning activities. Coal operations companies need support from local communities to be able to obtain permits and leases and conduct their activities without disruptions. The expected value of reserves could be affected if the community interferes, or lobbies its government to interfere, with the rights of a coal company in relation to those reserves. In addition to community concerns about the direct impacts of projects, the presence of coal mining activities may give rise to associated socioeconomic concerns related to education, health, and livelihoods. Coal companies that are perceived as engaging in rent-seeking and exploiting a community's resources without providing any socioeconomic benefits in return may be exposed to the risk of resource nationalism actions by host governments and communities that restrict their activities or impose additional costs. Furthermore, indigenous peoples are often the most vulnerable sections of the population, with limited capacity to defend their unique rights and interests. Accounting for indigenous peoples' rights could protect companies from protests, impacts of laws and international instruments governing such rights, and write-down of reserves located on indigenous peoples' lands. Companies in the extractives industries can adopt various community engagement strategies in their global operations to manage risks and opportunities associated with community rights and interests, such as integrating community engagement into each phase of the project cycle. Companies are beginning to adopt a "shared value" approach to provide a key socioeconomic benefit to the community that also creates value for the company itself.

Accounting Metrics

NR0201-09. Discussion of process to manage risks and opportunities associated with community rights and interests

.50 The registrant shall describe its processes, procedures, and practices to manage risks and opportunities associated with the rights and interests of communities in areas where it conducts business, where community rights and interests include:

- Economic rights and interests, including the right to employment, fair wages, payment transparency, and respect of infrastructure and agricultural land.
- Environmental rights and interests, including the right to clean local air and water, as well as safe discharge and disposal of waste.
- Social rights and interests, including the rights to adequate health care, education, and housing.
- Cultural rights and interests, including the right to protection of places of cultural significance (e.g., sacred sites or burial sites).

- .51 The registrant shall disclose the following, as relevant:
- Lifecycle stages to which its practices apply, such as: pre-bid (when the registrant is considering acquisition of a site), exploration and appraisal, site development, coal production, and during closure, decommissioning, and restoration.
 - The community rights and interests (enumerated above) specifically addressed by the practices.
 - The underlying references for its procedures, including whether they are codes, guidelines, standards, or regulations and whether they 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.
- .52 Risks and opportunities include, but are not limited to: non-technical delays, availability and development of local content, availability and access to adequate infrastructure, community actions related to resource nationalism, and challenges associated with resettlement and access to land.
- .53 The registrant shall disclose the degree to which its policies and practices are aligned with the International Finance Corporation's (IFC) [Performance Standards on Environmental and Social Sustainability](#), January 1, 2012, including specifically:
- Performance Standard 4 – Community Health, Safety, and Security
 - Performance Standard 5 – Land Acquisition and Involuntary Resettlement
 - Performance Standard 8 – Cultural Heritage
- .54 The discussion shall include how practices apply to business partners such as contractors, sub-contractors, suppliers, and joint venture partners.
- .55 The registrant should describe its efforts to eliminate or mitigate community risks and/or address community concerns, including, but not limited to:
- The use of social impact assessment (SIA) that evaluates, manages, and mitigates risks.
 - Efforts to engage with stakeholders, build consensus, and collaborate with communities.
 - “Shared” or “blended” value projects that provide quantifiable benefits to the community and the registrant.
- .56 The registrant may choose to quantify its community risks by calculating the aggregate estimated value at risk (in U.S. dollars) to its capital expenditure projects as the difference in value (in U.S. dollars) between a project free from country, regional, and/or community risks (hereafter, country risk) and the value of a project adjusted for these risks.
- This calculation should be conducted using an appropriate valuation model; variations of the Capital Asset Pricing Model (CAPM) are commonly used to assess country risk.
 - Value at risk can be calculated by applying an additional discount rate premium when calculating the net present value of a project using discounted cash flow (DCF) analysis.

- Value at risk can be expressed as a reduction in the expected cash flows of a project due to country risk when calculating the net present value of a project using discounted cash flow (DCF) analysis.
- If a project is insured for country risks, the value at risk can be expressed as a reduction in the cash flows of a project due to the cost of insurance when calculating the net present value of a project using discounted cash flow (DCF) analysis.
- Country, regional, and/or community risks include, but are not limited to: corruption, business legal structure, political stability, regulation, resource nationalism, ethnic conflict, stability of the local market, labor force (skills) availability, resettlement and access to land, quality of access to infrastructure (e.g., ports, roads, shipping channels), and/or general license to operate.
 - These risks are likely to manifest differently at the country (national), regional (state), community (local) levels, and project levels.
 - This risk differs from sovereign risk, which is defined as the potential for a central bank or government-backed entity to willingly or unwillingly default on debt obligations, or significantly alter key economic variables such as foreign exchange rates, import ratios, and money supply.
- The registrant should identify and describe country risks specific to its projects and unique operating context.
 - This may include the identification of country, regional, and community risks and/or the discussion of specific projects.
 - This may include discussion of how the registrant has mitigated these risks through community engagement partnerships, blended value projects, etc.; the registrant shall quantify this reduction in risk according to the methods described above.
 - Discussion should be in addition to broad country risk classification (e.g., OECD Prevailing Country Risk classification, Standard & Poor's Country Risk ratings, World Economic Forum Global Competitiveness Index, etc.).
- The registrant should describe the model or approach used to value capital expenditure projects such as adjusted discount rate, expected cash flow, or other methods.

NR0201-10. Number and duration of non-technical delays

- .57 The registrant shall disclose the total number and aggregate length (in days) of site shutdowns or project delays due to non-technical factors.
- .58 The scope includes shutdowns and project delays including, but not limited to, those resulting from pending regulatory permits or other political delays, community or stakeholder resistance or protest, and armed conflict.
- .59 The scope of disclosure excludes delays due to strikes and lockouts that are disclosed according to NR0201-15.
- .60 The registrant may choose to discuss specific delays including associated costs, root cause and corrective actions for resolved delay, and status of ongoing delays.

NR0201-11. (1) Proven and (2) probable reserves in or near indigenous land

- .61 The registrant shall disclose the amount of net proven reserves that are located in or near areas that are considered to be indigenous peoples' land.
- .62 The registrant shall disclose the amount of net probable reserves that are located in or near areas that are considered to be indigenous peoples' land.
- .63 Indigenous lands are those occupied by those who self-identify as indigenous, and likely have one or more of the following characteristics based the [working definition](#) of "Indigenous Peoples" adopted by the United Nations:
- Historical continuity with pre-colonial and/or pre-settler societies
 - Strong link to territories and surrounding natural resources
 - Distinct social, economic, or political systems
 - Distinct language, culture, and beliefs
 - Form non-dominant groups of society
 - Resolve to maintain and reproduce ancestral environments and systems as distinctive peoples and communities
- .64 For the purposes of this disclosure, "near" is defined as within 5 km of the recognized boundary of an area considered to be indigenous land.
- .65 Reserves shall be calculated in metric tons and are defined by the U.S. Securities and Exchange Commission (SEC) [Industry Guide 7, Description of Property by Issuers Engaged or to Be Engaged in Significant Mining Operations](#):
- Reserves, as that part of a mineral deposit that could be economically and legally extracted or produced at the time of the reserve determination.
 - Proven (or measured) reserves, as reserves for which (a) quantity is computed from dimensions revealed in outcrops, trenches, workings, or drill holes; grade and/or quality are computed from the results of detailed sampling and (b) the sites for inspection, sampling, and measurement are spaced so closely and the geographic character is so well-defined that size, shape, depth, and mineral content of reserves are well-established.

Workforce Health, Safety, and Well-Being

Description

Although coal-mining processes have become increasingly automated, companies continue to rely on miners to operate critical machinery. Accidents at coal mines, including cave-ins, explosions, and flooding, often have the greatest impact on workers, with the industry having relatively high fatality and injury rates compared to other industries. Serious injuries and illnesses result in a higher-than-average number of days away from work for coal miners compared to workers in other industries. Coal miners are also susceptible to long-term health risks such as chronic lung disease, commonly known as “black lung” disease, as well as mental health problems. Specific federal health and safety laws protect coal mining workers and make provisions for compensation for black lung disease. These can impose additional costs on companies or lead to regulatory penalties. Changes in legislation can result in additional liabilities. A company’s ability to protect employee health and safety, and to create a culture of safety and well-being among employees at all levels, can help prevent accidents, mitigate costs and operational downtime, and enhance workforce productivity.

Accounting Metrics

NR0201-12. (1) MSHA All-Incidence Rate, (2) Fatality Rate, and (3) Near-Miss Frequency Rate

- .66 For registrants whose workforce is entirely U.S.-based, the registrant shall disclose its All Incidence Rate (AIR) and fatality rate, as calculated and reported through the Mine Safety and Health Administration’s (MSHA) Form 7000-1 (as required under 30 CFR, Part 50), where incidents include:
- Fatalities, or work-related injuries resulting in death to employees on active mine property.
 - Nonfatal, Days Lost (NFDL) cases, or occupational injuries that result in loss of one or more days from the registrant’s scheduled work, or days of limited or restricted activity while at work.
 - No Days Lost (NDL) cases, or occurrences requiring only medical treatment (beyond first aid); that is, nonfatal-injury occurrences resulting only in loss of consciousness or medical treatment other than first aid.
- .67 For registrants whose workforce includes non-U.S.-based employees, the registrant shall calculate its AIR and fatality rate according to the MSHA [instructions](#) and [definitions](#).
- .68 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.

.69 The registrant shall disclose its AIR, fatality rate, and NMFR for its employees.

- The scope includes full time and contract employees.
- The scope includes all employees, domestic and foreign.

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

NR0201-13. Discussion of management of accident and safety risks and long-term health and safety risks

.71 The registrant shall discuss how it manages safety and emergency preparedness throughout its value chain, such as through training, joint management by the workforce and leadership, rules and guidelines (and their enforcement), and use of technology.

- The registrant shall include a description of how emergency preparedness is coordinated amongst business partners (e.g., contractors and sub-contractors).
- Disclosure may focus broadly on safety and emergency management systems, but shall specifically address the systems to avoid and manage emergencies, accidents, and incidents that could have catastrophic human health, local community, and environmental impacts.

.72 The registrant shall discuss how it manages long-term health and safety risks associated with coal mining (e.g., coal worker's pneumoconiosis) such as through training, rules and guidelines (and their enforcement), use of personal protective equipment, and use of technology.

.73 The registrant may choose to discuss implementation of relevant management systems such as CORESafety (developed by the National Mining Association), including progress towards tracking safety and health (S&H) metrics, management system (MS) metrics, and obtaining third-party verification.

Labor Relations

Description

Coal mining companies face inherent conflict between the need to lower the cost of labor to remain price-competitive and the need to manage human resources to ensure long-term performance. Working conditions related to coal operations are usually physically demanding and hazardous. Labor unions play a key role in representing workers' interests and managing collective bargaining for better wages and working conditions. This makes the management of labor relations critical, as conflict with workers can result in labor strikes and other disruptions that can delay or stop production, leading to significant lost revenue and reputational damage. Continued labor stresses can impact the long-term profitability of the business.

Accounting Metrics

NR0201-14. Percentage of active workforce covered under collective-bargaining agreements, broken down by U.S. and foreign employees

.74 The registrant shall indicate the percentage of U.S. employees and the percentage of foreign employees in the active workforce who are 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.
- U.S. employees are defined as employees that do not need a visa to work in the U.S.
- Foreign employees are defined as employees that do need a visa to work in the U.S.

NR0201-15. Number and duration of strikes and lockouts

.75 The registrant shall disclose the number of work stoppages and total duration, in worker days idle, of work stoppages involving 1,000 or more workers lasting one full shift or longer.

- Worker days idle is calculated as the product of days idle and number of workers involved.

.76 The scope of disclosure includes work stoppage due to disputes between labor and management, including strikes and lockouts.

.77 The scope of disclosure excludes work stoppages due to other non-technical reasons that are disclosed according to NR0201-10.

Note to NR0201-15

.78 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.

Reserves Valuation & Capital Expenditures

Description

Estimates suggest that coal companies are unlikely to be able to extract a significant proportion of their coal reserves if GHG emissions are to be controlled to limit global temperature increases to two degrees Celsius. Stewardship of capital resources while taking into account medium- to long-term trends, particularly related to climate change mitigation actions, is critical in order to prevent asset impairment and maintain profitability and creditworthiness. In the U.S. and international markets, regulations and policies are already being put into place to limit GHG emissions from coal-fired power plants—the customers of coal companies—thus lowering the demand for, and subsequently the prices of, coal. Coal demand is also being affected by regulations governing other harmful air emissions that apply to coal-fired power plants. GHG-mitigation regulations are likely to expand in scope and magnitude of impacts in the medium- to long-term. Along with improved competitiveness of alternative energy technologies, this poses a long-term risk for the reserves and capital expenditures of coal operations companies.

Accounting Metrics

NR0201-16. Sensitivity of coal reserve levels to future price projection scenarios that account for a price on carbon emissions

- .79 The registrant shall conduct an analysis of its reserves to determine how several future scenarios may affect its determination of whether the reserves are proven or probable.
- .80 The registrant shall base its sensitivity analysis on potential price changes derived from the following scenarios conducted by the International Energy Agency (IEA) in its annual World Energy Outlook (WEO) publication:
- New Policies Scenario, which assumes that broad policy commitments and plans that have been announced by countries including national pledges to reduce greenhouse-gas emissions and plans to phase out fossil-energy subsidies occur, even if the measures to implement these commitments have yet to be identified or announced. This broadly serves as the IEA baseline scenario.
 - 450 Scenario, which assumes that an energy pathway occurs that is consistent with the goal of limiting the global increase in temperature to 2°C by limiting concentration of greenhouse gases in the atmosphere to around 450 parts per million of CO₂.
 - Current Policies Scenario, which assumes no changes in policies from the mid-point of the year of publication of the WEO.
- .81 The registrant shall analyze the sensitivity of its current proven and probable reserves using the following differences in price for coal that the IEA projects between the IEA's Current Policies Scenario and (1) the New Policies Scenario and (2) the 450 Scenario:
- OECD steam coal import prices are 6.0% lower per barrel in the New Policies Scenario than in the Current Policies Scenario
 - OECD steam coal oil import prices are 18.1% lower per barrel in the 450 Scenario than in the Current Policies Scenario

.82 *Nota bene* – Scenarios above are illustrative based on price differences projected in 2025 and published in the World Energy Outlook 2013; the registrant shall use IEA’s most current 2025 price projections in each scenario. As appropriate, and based on updates to IEA scenarios, SASB will provide updates to the future scenario year to be used in projections.

.83 Reserves are defined by U.S. Securities and Exchange Commission (SEC) [Industry Guide 7, Description of Property by Issuers Engaged or to Be Engaged in Significant Mining Operations](#):

- Reserves, as that part of a mineral deposit that could be economically and legally extracted or produced at the time of the reserve determination.
- Proven (or measured) reserves, as reserves for which (a) quantity is computed from dimensions revealed in outcrops, trenches, workings, or drill holes; grade and/or quality are computed from the results of detailed sampling and (b) the sites for inspection, sampling, and measurement are spaced so closely and the geographic character is so well defined that size, shape, depth, and mineral content of reserves are well established.
- Probable (or indicated) reserves, as reserves for which quantity and grade and/or quality are computed from information similar to that used for proven (measured) reserves, but the sites for inspection, sampling, and measurement are farther apart or are otherwise less adequately spaced. The degree of assurance, although lower than that for proven (measured) reserves, is high enough to assume continuity between points of observation.

.84 The registrant shall follow guidance published by the Securities and Exchange Commission (SEC) in its [Oil and Gas Reporting Modernization](#) (Section §229.1202 (Item 1202) Disclosure of Reserves) for conducting a reserves sensitivity analysis.

.85 The registrant shall summarize its findings in the following table format:

Table 1. Sensitivity of Reserves to Prices By Principal Product Type and Price Scenario

Price Case (Scenario)	Proven Reserve		Probable Reserves	
	Coal tons	Product A measure	Coal tons	Product A measure
Current (base)				
New Policies Scenario*				
450 Scenario*				

*using the percentage difference in price in 2025 between the scenario and the Current Policies Scenario

.86 The registrant may choose to discuss the sensitivity of its reserve levels in other price and demand scenarios in addition to those described above, particularly if these scenarios differ depending on the type of coal reserves, regulatory environment in the countries or regions where mining occurs, end-use of the registrant’s products, or other factors.

NR0201-17. Estimated carbon dioxide emissions embedded in proven coal reserves

.87 The registrant shall calculate and disclose an estimate of the carbon dioxide emissions embedded in its proven coal reserves.

- *Nota bene* – this estimate applies a factor for potential CO₂ only and does not include an estimate for all potential greenhouse gas emissions, as these are dependent on downstream use (e.g., utility electricity generation, industrial heating and electricity generation, cement production, or use steel production, etc.).

.88 Estimated potential carbon dioxide emissions from proven coal reserves shall be calculated according to the following formula, derived from [Meinshausen et al.](#):

- $E = R \times V \times C$, where
- E are the potential emissions in kilograms of carbon dioxide (kg CO₂);
- R are the proven reserves in gigagrams (Gg);
- V is the net calorific value in terajoules per gigagram (TJ/Gg); and
- C is the effective carbon dioxide emission factor in kilograms CO₂ per terajoule (kg/TJ).

.89 In the absence of data specific to the registrant's coal reserves, carbon content shall be calculated using default data for each major type of coal resource published by the Intergovernmental Panel on Climate Change (IPCC) in its 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

- The registrant shall use default carbon content values per unit of energy that is listed in IPCC Table 1.3 Default Values of Carbon Content, Volume 2: Energy, Chapter 1.
- The registrant shall use calorific values per weight of coal resource contained in IPCC Table 1.2 Default Net Calorific Values (NCVs) and Lower and Upper Limit of the 95% Confidence Intervals, Volume 2: Energy, Chapter 1.

.90 The registrant shall use engineering estimates to determine the weight of its coal reserves in gigagrams.

.91 For other assumptions required to estimate the carbon content of coal reserves, the registrant shall rely on guidance from the IPCC, Greenhouse Gas Protocol, U.S. Energy Information Agency (EIA), or the International Energy Agency (IEA).

NR0201-18. Discussion of how price and demand for coal and/or climate regulation influence the capital expenditure strategy for exploration, acquisition, and development of assets

.92 The registrant shall discuss how projections for price and demand for coal and the path of air quality and climate regulation (including findings from NR0201-16 and NR0201-17) influence the registrant's capital expenditure (CAPEX) strategy.

- This discussion should include the registrant's projections and assumptions about future coal prices and the likelihood that certain price and demand scenarios occur.

- .93 The registrant shall discuss the implications of price and demand scenario planning (i.e., NRO201-16) and how they may affect decisions to explore, acquire, and develop new reserves.
- .94 It may be relevant for the registrant to discuss which factors materially influence its CAPEX decision making, including, for example:
- How the scope of air quality and climate change regulation – such as which countries, regions, and/or industries are likely to be impacted – may influence where the registrant focuses its exploration and development.
 - Its view of the alignment between the time horizon during which price and demand for coal may be affected by climate regulation and time horizons for returns on capital expenditures on reserves.
 - How the structure of climate regulation – i.e., a carbon tax versus cap-and-trade – may differently affect price and demand, and thus the registrant’s capital expenditure decision making.
- .95 The registrant should discuss how these trends affect decision-making in the context of different types of reserve expenditures, including development of assets, acquisition of properties with proven reserves, acquisition of properties with unproven resources, and exploration activities.

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SUSTAINABILITY ACCOUNTING STANDARD
NON-RENEWABLE RESOURCES SECTOR

IRON & STEEL PRODUCERS

Sustainability Accounting Standard

Sustainable Industry Classification System™ (SICS™) #NR0301

Prepared by the
Sustainability Accounting Standards Board®

June 2014
Provisional Standard

IRON & STEEL PRODUCERS

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 more than 80 industries in 10 sectors.

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INTRODUCTION

Purpose & Structure

This document contains the SASB Sustainability Accounting Standard (SASB Standard) for Iron & Steel Producers.

SASB 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's disclosure guidance identifies sustainability topics at an industry level, which may be material— depending on a company's specific operating context— to a company within that industry.

Each company is ultimately responsible for determining which information is material and is therefore required to be included in its Form 10-K or 20-F and other periodic SEC filings.

SASB's accounting standards provide companies with standardized accounting metrics to account for performance on industry-level sustainability topics. When making disclosure on sustainability topics, companies adopting SASB's accounting standards will help to ensure that disclosure is standardized and therefore useful, relevant, comparable and auditable.

Industry Description

The Iron & Steel Producers industry consists of steel producers with iron and steel mills and companies with iron and steel foundries. The steel producers segment consists of companies that produce iron and steel products from their own mills. These products include flat-rolled sheets, tin plates, pipes, tubes, and products made of stainless steel, titanium, and high alloy steels. Iron and steel foundries, which cast various products, typically purchase iron and steel from other firms. The industry also includes metal service centers and other metal merchant wholesalers, which distribute, import, or export ferrous products. Steel production occurs via two primary methods: the Basic Oxygen Furnace (BOF), which uses iron ore as an input, and the Electric Arc Furnace (EAF), which uses scrap steel. Many companies in the industry operate on an international scale.

Note: With a few exceptions, most companies do not mine their own ore to manufacture steel and iron products. There are separate SASB standards for the Metals & Mining industry.

Guidance for Disclosure of Material Sustainability Topics in SEC filings

1. Industry-Level Material Sustainability Topics

For the Iron & Steel Producers industry, SASB has identified the following material sustainability topics:

- **Greenhouse Gas Emissions**
- **Air Quality**
- **Energy Management**
- **Water Management**
- **Waste Management**
- **Workforce Health, Safety and Well-Being**
- **Supply Chain Management**

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”.^{1,2}

SASB has attempted to identify those sustainability topics that it believes may be material for all companies within each SICS industry. SASB recognizes, however, that each company is ultimately responsible for determining what is material to it.

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.”²

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

In determining whether a trend or uncertainty should be disclosed, the SEC has stated that management should use a two-part assessment based on probability and magnitude:

- 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.

¹ TSC Industries v. Northway, Inc., 426 U.S. 438 (1976).

² C.F.R. 229.303(Item 303)(a)(3)(ii).

- 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

Companies should consider making disclosure on sustainability topics as a complete set in the MD&A, in a sub-section titled "**Sustainability Accounting Standards Disclosures.**"³

b. Other Relevant Sections of Form 10-K

In addition to the MD&A section, companies should consider disclosing sustainability information in other sections of Form 10-K, as relevant, including:

- **Description of business**—Item 101 of Regulation S-K requires a company to provide a description of its business and its subsidiaries. Specifically 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 targeting discharge of materials into the environment or 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/>.

³ 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."

Guidance on Accounting of Material Sustainability Topics

For material sustainability topics in the Iron & Steel Producers industry, SASB identifies accounting metrics.

SASB recommends that each company consider using these sustainability accounting metrics when disclosing its performance with respect to each of the sustainability topics it has identified as material.

As appropriate—and consistent with Rule 12b-20⁴—for each sustainability topic, 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 **competitive positioning**;
- the **degree of control** the registrant has;
- any **measures the registrant has undertaken** or **plans to undertake** to improve performance; and
- data for 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 \(SICSTM\)](#). If a registrant generates significant revenue from multiple industries, SASB recommends that it consider the materiality of the sustainability issues that SASB has identified for those industries and disclose the associated SASB accounting metrics.

Users of the SASB Standards

The SASB Standards are intended 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),⁵ 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. Nevertheless, 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.

⁴ 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."

⁵ 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.

Scope of Disclosure

Unless otherwise specified, SASB recommends:

- That a registrant disclose on sustainability issues and metrics for itself and for entities in which the registrant has a controlling interest and therefore are consolidated for financial reporting purposes (controlling interest is generally defined as ownership of 50% or more of voting shares)⁶
- 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 such registrant considers the information necessary for investors to understand its performance with respect to sustainability issues (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.).

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 users of SASB accounting metrics (e.g., investors) 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.

⁶ See US GAAP consolidation rules (Section 810).

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

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Raw steel production, percentage from: (1) basic oxygen furnace processes, (2) electric arc furnace processes	Quantitative	Metric tons (t), Percentage (%)	NR0301-A
Total iron ore production ⁷	Quantitative	Metric tons (t)	NR0301-B
Total coking coal production ⁸	Quantitative	Metric tons (t)	NR0301-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 like the imperfectness of third-party reporting systems 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 be necessary 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.

⁷ Note to **NR0301-B** – The scope of production includes iron ore consumed internally and that which is made available for sale.

⁸ Note to **NR0301-C** – The scope of production includes coking coal consumed internally and that which is made available for sale.

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."

Assurance

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

SASB encourages registrants to use independent assurance (attestation), for example, an Examination Engagement to AT Section 101.

Table 1. Material Sustainability Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Greenhouse Gas Emissions	Gross global Scope 1 emissions, percentage covered under a regulatory program	Quantitative	Metric tons CO ₂ -e, Percentage (%)	NR0301-01
	Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	NR0301-02
Air Quality	Air emissions for the following pollutants: CO, NO _x (excluding N ₂ O), SO _x , particulate matter (PM), manganese, lead (Pb), volatile organic compounds (VOCs), and polycyclic aromatic hydrocarbons (PAHs)	Quantitative	Metric tons (t)	NR0301-03
Energy Management	Total purchased electricity consumed, percentage renewable	Quantitative	Gigajoules (GJ), Percentage (%)	NR0301-04
	Total fuel consumed, percentage from: (1) coal, (2) natural gas, (3) renewable sources	Quantitative	Gigajoules (GJ), Percentage (%)	NR0301-05
Water Management	Total fresh water withdrawn, percentage recycled, percentage in regions with High or Extremely High Baseline Water Stress	Quantitative	Cubic meters (m ³), Percentage (%)	NR0301-06
Waste Management	Amount of waste from operations, percentage hazardous, percentage recycled	Quantitative	Metric tons (t), Percentage (%)	NR0301-07
Workforce Health, Safety, and Well-Being	(1) Total Recordable Injury Rate (TRIR), (2) Fatality Rate, and (3) Near Miss Frequency Rate for (a) full-time employees and (b) contract employees	Quantitative	Rate	NR0301-08
Supply Chain Management	Discussion of the process for managing iron ore and/or coking coal sourcing risks arising from environmental and social issues	Discussion and Analysis	n/a	NR0301-09

Greenhouse Gas Emissions

Description

Iron and steel production generates significant direct GHG emissions, primarily of carbon dioxide and methane, from production processes and on-site fuel combustion. While technological improvements have reduced the GHG emissions per ton produced, overall steel output is growing rapidly and steel production remains carbon-intensive relative to other industries. These GHG emissions create risk for companies, as regulations take shape in the U.S. and abroad. Companies that cost-effectively reduce GHG emissions from their operations by implementing industry-leading technologies and processes can create operational efficiency. They can mitigate the effect of increased fuel costs and regulations that limit — or put a price on — carbon emissions.

Accounting Metrics

NR0301-01. Gross global Scope 1 emissions, percentage covered under a regulatory program

- .01 The registrant shall disclose gross global Scope 1 greenhouse gas (GHG) emissions to the atmosphere of the six greenhouse gases covered under the Kyoto Protocol: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.
- Emissions of all gases shall be disclosed in metric tons of carbon dioxide equivalent (CO₂-e), calculated in accordance with published global warming potential (GWP) factors. To date, the preferred source for global warming potential factors is the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report (2007).
 - 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.
- .02 Scope 1 emissions are defined by the World Resources Institute and the World Business Council on Sustainable Development (WRI/WBCSD) [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, production facilities, office buildings, and iron and steel transportation (marine, road, and rail).
- .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 2014](#) (hereafter, the "CDP Guidance").⁹

⁹ "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 2014* (p. 94).

- The approach detailed in Section 4.23 “Organizational boundary setting for GHG emissions reporting” of Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).¹⁰
- .04 The underlying technical approach to data collection, analysis, and disclosure shall be consistent with the CDP Guidance.
- The registrant shall consider the CDP Guidance as a normative reference; thus, any updates made year-on-year shall be considered updates to this guidance.
- .05 The registrant shall disclose the percentage of its emissions that are covered under a regulatory program, such as the European Union Emissions Trading Scheme (EU ETS), Western Climate Initiative (WCI), California Cap-and-Trade (California Global Warming Solutions Act), or other regulatory programs.
- Regulatory programs include cap-and-trade schemes and carbon tax/fee systems.
 - Disclosure shall exclude emissions covered under voluntary trading systems and disclosure-based regulations (e.g., the U.S. Environmental Protection Agency (EPA) mandatory reporting rule).
- .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 entity (e.g., a national regulatory disclosure program) differs in terms of the scope and consolidation approach used, the registrant may disclose those emissions. However, primary disclosure shall be according to the guidelines previously mentioned.
- .08 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.
- .09 This accounting metric corresponds to section CC8.2 of the Carbon Disclosure Project (CDP) Questionnaire and section 4.25 of the Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).

NR0301-02. Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets

- .10 The registrant shall discuss the following where relevant:
- The scope, including if strategies, plans, and/or reduction targets pertain differently to different business units, geographies, or emissions sources.
 - If strategies, plans, and/or reduction targets are related to or associated with an emissions disclosure (reporting) or reduction program (e.g., EU ETS, Regional Greenhouse Gas Initiative (RGGI), WCI, etc.), including regional, national, international or sectoral programs.

¹⁰This approach is based on the requirements of the International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) on consolidation and equity accounting. It is consistent with the way in which information relating to entities within a group, or interest in joint ventures/associates, would be included in consolidated financial statements. *Climate Change Reporting Framework*, CDSB

- 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 towards 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 that reached completion during the fiscal year.
- The mechanism(s) for achieving the target, such as energy efficiency efforts, energy source diversification, carbon capture and storage, etc.

.12 Where necessary, the registrant shall discuss any circumstances in which the target base year emissions have been or may be re-calculated retrospectively, or in which the target base year has been reset.

.13 This accounting metric corresponds with:

- CDSB Section 4, "Management Actions"¹¹
- CDP questionnaire "CC3. Targets and Initiatives"

¹¹ 4.12, "Disclosure shall include a description of the organization's long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including targets to reduce GHG emissions and an analysis of performance against those targets." *Climate Change Reporting Framework – Edition 1.1*, October 2012, CDSB.

Air Quality

Description

Iron and steel production typically generates criteria air pollutants, volatile organic compounds (VOCs), and hazardous air pollutants, which can have significant localized public health impacts. Of particular concern are sulfur oxides, nitrogen dioxide, lead, carbon monoxide, and manganese, as well as particles such as soot and dust, which are released during the production process. Mercury emissions were a concern previously, but industries are working together to reduce these. Across North America, Western Europe, and Japan, technological innovation and continuous improvements in steel-making processes have significantly reduced air pollutants from the Iron & Steel Producers industry. However, air pollutants remain a concern due to heightened regulatory and public concern about air pollution globally, as well as expansion of steel production in emerging markets. Iron and steel production in emerging markets is affected by new regulatory efforts aimed at curbing alarming levels of air pollution. Active management of facility emissions through implementation of industry best practices across global operations can facilitate the transition to sustainable steel production, lowering costs and potentially enhancing operational efficiency.

Accounting Metrics

NR0301-03. Air emissions for the following pollutants: CO, NO_x (excluding N₂O), SO_x, particulate matter (PM), manganese, lead (Pb), volatile organic compounds (VOCs), and polycyclic aromatic hydrocarbons (PAHs)

.14 The registrant shall disclose its emissions released to the atmosphere of air pollutants associated with its activities (e.g., refining through primary production):

- Direct air emissions from stationary or mobile sources include, but are not limited to, primary production facilities, office buildings, marine vessels transporting products, truck fleets, and moveable equipment at production facilities.

.15 The registrant shall disclose the following emissions released to the atmosphere by emissions type:

- Carbon monoxide (CO)
- Oxides of nitrogen (including NO and NO₂ and excluding N₂O) disclosed as NO₂
- Oxides of sulfur (SO₂ and SO₃) reported as SO₂
- Particulate matter (PM), reported as the sum of PM₁₀ and PM_{2.5}, or all particulates less than 10 micrometers in diameter
- Oxides of manganese disclosed as MnO
- Lead (Pb)

- Non-methane volatile organic compounds (VOCs), defined as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and methane, which participates in atmospheric photochemical reactions, except those designated by the U.S. Environmental Protection Agency (EPA) as having negligible photochemical reactivity
 - Polycyclic aromatic hydrocarbons (PAHs), at a minimum, include those listed in Table 1 of the European Commission Joint Research Centre's Institute for Reference Materials and Measurements [PAH Factsheet](#).
 - These include compounds frequently monitored by the Scientific Committee for Food (SCF), the European Union (EU), and the U.S. EPA.
- .16 This scope does not include CO₂, CH₄, and N₂O, which are disclosed in NR0301-01 as Scope 1 GHG emissions.
- .17 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 NR0301-01.
- .18 The registrant should discuss the calculation methodology for its emission disclosure, such as whether data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.

Energy Management

Description

Despite gains in energy efficiency in recent years, the production of steel requires significant quantities of energy, sourced primarily from the direct combustion of fossil fuels and the electric grid. Energy-intense production has implications for climate change and electricity purchases from the grid create indirect impacts on the climate through the industry's Scope 2 emissions. The choice between different production processes – EAF and integrated BOF – can influence whether a company uses more fossil fuels directly or purchases relatively more electricity. This decision, together with the choice between using coal versus natural gas or on-site versus grid-sourced electricity, can play an important role in influencing both the costs and reliability of energy supply. Affordable, easily accessible, and reliable energy is essential for competitive advantage in this industry, with energy costs accounting for a substantial portion of manufacturing costs. The way in which an iron and steel company manages its overall energy efficiency, its reliance on different types of energy and associated sustainability risks, and its ability to access alternative sources of energy can influence its profitability.

Accounting Metrics

NR0301-04. Total purchased electricity consumed, percentage renewable

- .19 The registrant shall disclose total electricity consumption from all sources as an aggregate figure in gigajoules or its multiples.
- The scope includes electricity purchased from sources external to the organization
 - The scope excludes electricity produced by the registrant itself (self-generated) from primary fuel.
 - The scope includes only electricity consumed by entities owned or controlled by the organization.
- .20 The registrant shall disclose renewable electricity consumption as a percentage of its total electricity consumption.
- Renewable electricity is defined as electricity produced from energy sources that are capable of being replenished in a short time through ecological cycles, such as geothermal, wind, solar, hydro, and biomass.
 - The scope of renewable electricity includes the renewable electricity the registrant purchases 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 all renewable electricity consumed in this manner, RECs must be retired on behalf of the registrant to be claimed as renewable electricity as part of this disclosure.
 - For renewable PPAs, the agreement must explicitly include and convey that RECs be retained and retired on behalf of the registrant in order for the registrant to claim as renewable electricity.

- For the purposes of this disclosure, the scope of renewable electricity from hydro and biomass sources are limited to the following:
 - Electricity from hydro sources that are certified by the Low Impact Hydropower Institute.
 - Electricity from biomass sources that are Green-e Energy certified or eligible for a state Renewable Portfolio Standard.
- The renewable portion of the electricity grid mix that is outside of the control or influence of the registrant is excluded from disclosure.¹²

.21 The registrant shall apply conversion factors consistently for all data reported under this disclosure, such as for the conversion of kWh to gigajoules (including for electricity from solar or wind energy).

NR0301-05. Total fuel consumed, percentage from: (1) coal, (2) natural gas, (3) renewable sources

- .22 The registrant shall disclose total fuel consumption from all sources as an aggregate figure in gigajoules or its multiples.
- The scope includes only fuel consumed by entities owned or controlled by the organization.
 - The scope excludes non-fuel energy sources such as purchased electricity and purchased steam.
- .23 In calculating the energy content of 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).
- .24 The registrant shall calculate the percentage of fuel from coal as the energy content of coal, coke, and coke breeze consumed divided by the energy content of all fuel consumed.
- .25 The registrant shall calculate the percentage of fuel from natural gas as the energy content of natural gas fuel consumed divided by the energy content of all fuel consumed.
- .26 The registrant shall calculate the percentage of fuel from renewable sources as the energy content of renewable fuel consumed divided by the energy content of all fuel consumed.
- .27 Renewable fuel is defined as fuel from sources that are capable of being replenished in a short time through ecological cycles, such as biomass.
- .28 For the purposes of this disclosure, the scope of renewable fuel from biomass sources are limited to those that are considered “eligible renewables” according to the [Green-e Energy National Standard Version 2.4](#).
- .29 The registrant shall apply conversion factors consistently for all data reported under this disclosure, such as the use of HHVs for fuel consumption (including biofuels).

¹² SASB recognizes that RECs reflect the environmental attributes of renewable energy that have been introduced to the grid, and that a premium has been paid by the purchaser of the REC to enable generation of renewable energy beyond any renewable energy already in the grid mix, absent the market for RECs.

Water Management

Description

Despite reductions in water intake by the industry over the past several years, the substantial water requirements of steel production could present a material risk to the industry. This is the case especially in regions of water scarcity, due to potential water availability constraints and price volatility. Companies that are unable to secure a stable water supply could face production disruptions, while rising water prices could directly increase production costs. Consequently, the adoption of technologies and processes that continue to reduce water consumption could lower operating risks and costs for companies and create a competitive advantage. This could minimize the impact of regulations, water supply shortages, and community-related disruptions on company operations.

Accounting Metrics

NR0301-06. Total fresh water withdrawn, percentage recycled, percentage in regions with High or Extremely High Baseline Water Stress

- .30 The registrant shall disclose the amount of water (in cubic meters) that was withdrawn from freshwater sources for use in operations.
- 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 total dissolved solids (TDS) concentration of less than 1000 mg/l per the Water Quality Association [definition](#).
- .31 Water obtained from a water utility can be assumed to meet the definition of freshwater.¹³
- .32 The registrant shall disclose the percentage of water recycled as the volume (in cubic meters) recycled divided by the volume of water withdrawn.
- Any volume of water reused multiple times shall be counted as recycled each time it is recycled and reused.
- .33 Using the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly available online [here](#)), the registrant shall analyze all of its operations for water risks and identify facilities that are in a location with High (40–80%) or Extremely High (>80%) Baseline Water Stress. Water withdrawn in locations with High or Extremely High Baseline Water Stress shall be indicated as a percentage of the total water withdrawn.
- .34 This accounting metric corresponds to section W5. Water Accounting of the CDP's 2014 [Water Information Request](#).

¹³ <http://water.epa.gov/drink/contaminants/secondarystandards.cfm>

Waste Management

Description

While waste reclamation rates in steel production are high, the industry generates significant quantities of hazardous wastes. There are three main waste types in the industry – slag, dusts, and sludges. These by-products are often recycled internally or sold to other industries. However, process wastes such as EAF dust, which is regulated as a hazardous material in the U.S. due to its heavy metal content, can have significant environmental and human health impacts, present a regulatory risk, and raise operating costs for companies. As environmental regulations were implemented in the U.S. and evolved over time, some waste disposal activities that were allowed under the law previously began to be understood as creating a contamination threat. Such threats are periodically discovered, including contaminated off-site disposal properties, and iron and steel producers may be held responsible for remediation of such legacy sites. Companies that reduce waste streams - hazardous waste streams in particular - and recycle or sell non-hazardous by-products could therefore lower regulatory risks and costs while increasing revenues.

Accounting Metrics

NR0301-07. Amount of waste from operations, percentage hazardous, percentage recycled

- .35 The amount of total waste shall be calculated in metric tons, where waste is defined as anything for which the registrant has no further use and which is discarded or is released to the environment.
- The scope includes slags, dusts, sludges, scrap steel, reject coal, used oil, and other solid wastes that meet the above definition.
 - The scope excludes gaseous wastes.
- .36 The percentage of hazardous waste shall be calculated as the weight of waste that meets the definition of hazardous waste under Subtitle C of the U.S. Environmental Protection Agency's (EPA) Resource Conservation and Recovery Act (RCRA) divided by the total weight of waste material.
- Hazardous wastes include those that display the following characteristics: ignitability, corrosivity, reactivity, or toxicity.
- .37 The percentage recycled shall be calculated as the weight of waste material that was reused plus the weight recycled or remanufactured (through treatment or processing) by the registrant, plus the amount sent externally for further recycling, divided by the total weight of waste material, where:
- Reused materials are defined as those recovered products or components of products that are used for the same purpose for which they were conceived.
 - Recycled and remanufactured materials are defined as waste materials that have been reprocessed or treated by means of production or manufacturing processes and made into a final product or made into a component for incorporation into a product.

- The scope of recycled and remanufactured products include primary recycled materials, co-products (outputs of equal value to primary recycled materials), and by-products (outputs of lesser value to primary recycled materials).
- Portions of products and materials that are disposed of in landfills are not considered recycled; only the portions of products that are directly incorporated into new products, co-products, or by-products shall be included in the percentage recycled.
- Materials sent for further recycling include those materials which are transferred to a third party for the expressed purpose of reuse, recycling, or refurbishment.
- Materials incinerated including for energy recovery are not considered reused or recycled. Energy recovery is defined as the use of combustible waste as a means to generate energy through direct incineration, with or without other waste, but with recovery of the heat.

Workforce Health, Safety and Well-Being

Description

Industrial processes used in iron and steel production can present significant risks to employees and contractors working at iron and steel plants. Given the high temperatures and heavy machinery involved, worker injuries and fatalities are a matter of concern to iron and steel producers. The industry has relatively high fatality rates, signifying the risky work environment and requiring a strong safety culture and health and safety policies. While accident rates in the industry are on a long-term decline, worker injuries and fatalities can lead to regulatory penalties, negative publicity, low worker morale and productivity, and increased healthcare and compensation costs.

Accounting Metrics

NR0301-08. (1) Total Recordable Injury Rate (TRIR), (2) Fatality Rate, and (3) Near Miss Frequency Rate for (a) full-time employees and (b) contract employees

- .38 For registrants whose workforce is entirely U.S.-based, the registrant shall disclose its total recordable injury rate (TRIR), as calculated and reported in the Occupational Safety and Health Administration's (OSHA) Form 300.
- OSHA guidelines provide details on determination of whether an event is a recordable occupational incident and definitions for exemptions for incidents that occurred in the work environment but are not occupational.
- .39 For registrants whose workforce includes non-U.S.-based employees, the registrant shall calculate its TRIR according to the U.S. Bureau of Labor Statistics [guidance](#) and/or using the U.S. Bureau of Labor Statistics [calculator](#).
- .40 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.
- .41 The registrant shall disclose its TRIR and NMFR for each of the following categories of employee:
- Direct, full time employees
 - Contract employees
- .42 The scope includes all employees, domestic and foreign.
- .43 Rates shall be calculated as: $(\text{statistic count} / \text{total hours worked}) * 200,000$.

Supply Chain Management

Description

Iron ore and coal are critical raw material inputs to the steel production process. Iron ore mining and coal production are resource-intensive processes. Extraction of these materials often has substantial environmental and social externalities affecting local communities, workers, and ecosystems. There can be disruptions to mining operations due to community protests, legal or regulatory action, or increased costs of extraction as a result of regulatory compliance costs or penalties. Iron and steel companies could face disruptions to their own production as a result, or in some cases, may also be subject to regulatory penalties associated with the environmental or social impact of the mining company supplier. In order to minimize such risks, iron and steel producers could ensure that their direct suppliers of critical raw materials are not engaged in illegal or otherwise environmentally or socially damaging practices, through appropriate supplier screening, monitoring, and engagement.

Accounting Metrics

NR0301-09. Discussion of the process for managing iron ore and/or coking coal sourcing risks arising from environmental and social issues

- .44 The registrant shall disclose its policies and procedures for managing environmental and social risks that may affect sourcing that are present in its iron ore and/or coking coal supply chain.
- .45 Relevant disclosure may include description of the use of screening, codes of conduct, audits, and certifications.
 - If audits are discussed, the registrant should indicate whether audits are internal (first party), independent (third party), or administered by peers (e.g. trade organizations).
- .46 Discussion shall include any existing or projected risks or constraints in obtaining raw materials (e.g. iron ore, coking coal) within the supply chain, including those related to restricted/limited availability, political situations, local labor conditions, natural disasters, climate change, or regulations.

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SUSTAINABILITY ACCOUNTING STANDARD
NON-RENEWABLE RESOURCES SECTOR

METALS & MINING

Sustainability Accounting Standard

Sustainable Industry Classification System™ (SICS™) #NR0302

Prepared by the
Sustainability Accounting Standards Board®

June 2014
Provisional Standard

METALS & MINING

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 more than 80 industries in 10 sectors.

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INTRODUCTION

Purpose & Structure

This document contains the SASB Sustainability Accounting Standard (SASB Standard) for Metals & Mining.

SASB 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's disclosure guidance identifies sustainability topics at an industry level, which may be material— depending on a company's specific operating context— to a company within that industry.

Each company is ultimately responsible for determining which information is material and is therefore required to be included in its Form 10-K or 20-F and other periodic SEC filings.

SASB's accounting standards provide companies with standardized accounting metrics to account for performance on industry-level sustainability topics. When making disclosure on sustainability topics, companies adopting SASB's accounting standards will help to ensure that disclosure is standardized and therefore useful, relevant, comparable and auditable.

Industry Description

The Metals & Mining industry is involved in extracting all metals and minerals, producing ores, quarrying stones, smelting and manufacturing metals, refining metals, and providing mining support activities. It also produces iron ores, rare earth metals, and precious metals and stones. Larger companies in this industry are vertically integrated – from mining ores in several countries to wholesaling metals to customers.

Note: SASB has separate standards for the Iron & Steel Producers industry (NR0301).

Guidance for Disclosure of Material Sustainability Topics in SEC filings

1. Industry-Level Material Sustainability Topics

For the Metals & Mining industry, SASB has identified the following material sustainability topics:

- **Greenhouse Gas Emissions**
- **Air Quality**
- **Energy Management**
- **Water Management**
- **Waste & Hazardous Materials Management**
- **Biodiversity Impacts**
- **Community Relations**
- **Security, Human Rights and Rights of Indigenous Peoples**
- **Workforce Health, Safety, and Well-Being**
- **Labor Relations**
- **Business Ethics & Payments Transparency**

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.”^{1,2}

SASB has attempted to identify those sustainability topics that it believes may be material for all companies within each SICS industry. SASB recognizes, however, that each company is ultimately responsible for determining what is material to it.

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.”²

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

In determining whether a trend or uncertainty should be disclosed, the SEC has stated that management should use a two-part assessment based on probability and magnitude:

- 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.

¹ TSC Industries v. Northway, Inc., 426 U.S. 438 (1976).

² C.F.R. 229.303(Item 303)(a)(3)(ii).

- 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

Companies should consider making disclosure on sustainability topics as a complete set in the MD&A, in a sub-section titled "**Sustainability Accounting Standards Disclosures.**"³

b. Other Relevant Sections of Form 10-K

In addition to the MD&A section, companies should consider disclosing sustainability information in other sections of Form 10-K, as relevant, including:

- **Description of business**—Item 101 of Regulation S-K requires a company to provide a description of its business and its subsidiaries. Specifically 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 targeting discharge of materials into the environment or 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/>.

³ 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."

Guidance on Accounting of Material Sustainability Topics

For material sustainability topics in the Metals & Mining industry, SASB identifies accounting metrics.

SASB recommends that each company consider using these sustainability accounting metrics when disclosing its performance with respect to each of the sustainability topics it has identified as material.

As appropriate—and consistent with Rule 12b-20⁴—for each sustainability topic, 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 **competitive positioning**;
- the **degree of control** the registrant has;
- any **measures the registrant has undertaken** or **plans to undertake** to improve performance; and
- data for 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 consider the materiality of the sustainability issues that SASB has identified for those industries and disclose the associated SASB accounting metrics.

Users of the SASB Standards

The SASB Standards are intended 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)⁵, 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. Nevertheless, 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.

⁴ 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."

⁵ 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.

Scope of Disclosure

Unless otherwise specified, SASB recommends:

- That a registrant disclose on sustainability issues and metrics for itself and for entities in which the registrant has a controlling interest and therefore are consolidated for financial reporting purposes (controlling interest is generally defined as ownership of 50% or more of voting shares)⁶
- 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 such registrant considers the information necessary for investors to understand its performance with respect to sustainability issues (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.).

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 users of SASB accounting metrics (e.g., investors) 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.

⁶ See US GAAP consolidation rules (Section 810).

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

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Production of (1) metal ores and (2) finished metal products	Quantitative	Metric tons saleable (t)	NR0302-A
Total number of employees, percentage contractors	Quantitative	Number, Percentage (%)	NR0302-B

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 like the imperfectness of third-party reporting systems 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 be necessary 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."

Assurance

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

SASB encourages registrants to use independent assurance (attestation), for example, an Examination Engagement to AT Section 101.

Table 1. Material Sustainability Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Greenhouse Gas Emissions	Gross global Scope 1 emissions, percentage covered under a regulatory program	Quantitative	Metric tons CO ₂ -e, Percentage (%)	NR0302-01
	Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	NR0302-02
Air Quality	Air emissions for the following pollutants: CO, NO _x (excluding N ₂ O), SO _x , particulate matter (PM), mercury (Hg), lead (Pb), and volatile organic compounds (VOCs)	Quantitative	Metric tons (t)	NR0302-03
Energy Management	Total energy consumed, percentage grid electricity, percentage renewable	Quantitative	Gigajoules (GJ), Percentage (%)	NR0302-04
Water Management	Total fresh water withdrawn, percentage recycled, percentage in regions with High or Extremely High Baseline Water Stress	Quantitative	Cubic meters (m ³), Percentage (%)	NR0302-05
	Number of incidents of non-compliance with water-quality permits, standards, and regulations	Quantitative	Number	NR0302-06
Waste & Hazardous Materials Management	Total weight of tailings waste, percentage recycled	Quantitative	Metric tons (t), Percentage (%)	NR0302-07
	Total weight of mineral processing waste, percentage recycled	Quantitative	Metric tons (t), Percentage (%)	NR0302-08
	Number of tailings impoundments, broken down by MSHA hazard potential	Quantitative	Number	NR0302-09
Biodiversity Impacts	Description of environmental management policies and practices for active sites	Discussion and Analysis	n/a	NR0302-10
	Percentage of mine sites where acid rock drainage is: (1) predicted to occur, (2) actively mitigated, and (3) under treatment or remediation	Quantitative	Percentage (%)	NR0302-11
	(1) Proven and (2) probable reserves in or near sites with protected conservation status or endangered species habitat	Quantitative	Metric tons (t), Grade (%)	NR0302-12

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

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Community Relations	Discussion of process to manage risks and opportunities associated with community rights and interests	Discussion and Analysis	n/a	NR0302-13
	Number and duration of non-technical delays	Quantitative	Number, Days	NR0302-14
Security, Human Rights, and Rights of Indigenous Peoples	(1) Proven and (2) probable reserves in or near areas of conflict	Quantitative	Metric tons (t), Grade (%)	NR0302-15
	(1) Proven and (2) probable reserves in or near indigenous land	Quantitative	Metric tons (t), Grade (%)	NR0302-16
	Discussion of engagement processes and due diligence practices with respect to human rights, indigenous rights, and operation in areas of conflict	Discussion and Analysis	n/a	NR0302-17
Workforce Health, Safety, and Well-Being	(1) MSHA All-Incidence Rate, (2) Fatality Rate, and (3) Near Miss Frequency Rate for (a) full-time employees and (b) contract employees	Quantitative	Rate	NR0302-18
Labor Relations	Percentage of active workforce covered under collective-bargaining agreements, broken down by U.S. and foreign employees	Quantitative	Percentage (%)	NR0302-19
	Number and duration of strikes and lockouts ^{IV}	Quantitative	Number, Days	NR0302-20
Business Ethics & Payments Transparency	Description of the management system for prevention of corruption and bribery throughout the value chain	Discussion and Analysis	n/a	NR0302-21
	Production in countries that have the 20 lowest rankings in Transparency International's Corruption Perception Index	Quantitative	Metric tons saleable (t)	NR0302-22

⁷ Note to **NR0302-20** – Disclosure shall include a description of the root cause for each work stoppage.

Greenhouse Gas Emissions

Description

Mining operations are energy-intensive and generate significant direct greenhouse gas (GHG) emissions, including carbon dioxide from fuel use during mining, ore processing, and smelting activities. The extent and type of GHG emissions can vary depending on the metal mined and processed. GHG emissions contribute to climate change, and create additional regulatory compliance costs and risks for metals and mining companies due to climate change mitigation policies. Companies that cost-effectively reduce GHG emissions from their operations by implementing industry-leading technologies and processes can create operational efficiency. They can mitigate the impact on value from increased fuel costs and regulations that limit – or put a price on – carbon emissions, which are occurring as regulatory and public concerns about climate change are increasing in the U.S. and globally.

Accounting Metrics

NR0302-01. Gross global Scope 1 emissions, percentage covered under a regulatory program

- .01 The registrant shall disclose gross global Scope 1 greenhouse gas (GHG) emissions to the atmosphere of the six greenhouse gases covered under the Kyoto Protocol: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.
- Emissions of all gases shall be disclosed in metric tons of carbon dioxide equivalent (CO₂-e), calculated in accordance with published global warming potential (GWP) factors. To date, the preferred source for global warming potential factors is the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report (2007).
 - 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.
- .02 Scope 1 emissions are defined by the World Resources Institute and the World Business Council on Sustainable Development (WRI/WBCSD) [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, equipment at mine site, refineries and smelting facilities, office buildings, and metal transportation (marine, road, and rail).
- .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 2014](#) (hereafter, the "CDP Guidance").⁸

⁸ "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 2014* (p. 94).

- The approach detailed in Section 4.23 “Organizational boundary setting for GHG emissions reporting” of Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).⁹
- .04 The underlying technical approach to data collection, analysis, and disclosure shall be consistent with the CDP Guidance.
- The registrant shall consider the CDP Guidance as a normative reference; thus, any updates made year-on-year shall be considered updates to this guidance.
- .05 The registrant shall disclose the percentage of its emissions that are covered under a regulatory program, such as the European Union Emissions Trading Scheme (EU ETS), Western Climate Initiative (WCI), California Cap-and-Trade (California Global Warming Solutions Act), or other regulatory programs.
- Regulatory programs include cap-and-trade schemes and carbon tax/fee systems.
 - Disclosure shall exclude emissions covered under voluntary trading systems and disclosure-based regulations (e.g., the U.S. Environmental Protection Agency (EPA) mandatory reporting rule).
- .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 entity (e.g., a national regulatory disclosure program) differs in terms of the scope and consolidation approach used, the registrant may disclose those emissions. However, primary disclosure shall be according to the guidelines previously mentioned.
- .08 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.
- .09 This accounting metric corresponds to section CC8.2 of the Carbon Disclosure Project (CDP) Questionnaire and section 4.25 of the Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).
- .10 The registrant should, where relevant, provide a breakdown of its emissions by mineral or business unit.
- Minerals or business units may include, for example: aluminum, copper, zinc, iron ore, precious metals, diamonds, etc.

⁹ This approach is based on the requirements of the International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) on consolidation and equity accounting. It is consistent with the way in which information relating to entities within a group, or interest in joint ventures/associates, would be included in consolidated financial statements. *Climate Change Reporting Framework*, CDSB

NR0302-02. Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets

.11 The registrant shall discuss the following where relevant:

- The scope, including if strategies, plans, and/or reduction targets pertain differently to different business units, geographies, or emissions sources.
- If strategies, plans, and/or reduction targets are related to or associated with an emissions disclosure (reporting) or reduction program (e.g., EU ETS, Regional Greenhouse Gas Initiative (RGGI), WCI, etc.), including regional, national, international or sectoral programs.
- 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.

.12 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 towards 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 that reached completion during the fiscal year.
- The mechanism(s) for achieving the target, such as energy efficiency efforts, energy source diversification, carbon capture and storage, etc.

.13 Where necessary, the registrant shall discuss any circumstances in which the target base year emissions have been or may be re-calculated retrospectively, or in which the target base year has been reset.

.14 This accounting metric corresponds with:

- CDSB Section 4, "Management Actions"¹⁰
- CDP questionnaire "CC3. Targets and Initiatives"

¹⁰ 4.12, "Disclosure shall include a description of the organization's long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including targets to reduce GHG emissions and an analysis of performance against those targets." *Climate Change Reporting Framework – Edition 1.1*, October 2012, CDSB.

Air Quality

Description

Other air emissions from the Metals & Mining industry include hazardous air pollutants, criteria air pollutants, and Volatile Organic Compounds (VOCs) from smelting and refining activities. These can have significant, localized human health and environmental impacts. Depending on the metal, uncaptured sulfur dioxide, lead, mercury, cadmium, and arsenic are among the chief pollutants, along with particulate matter. The Metals & Mining industry is a significant source of some of these pollutants relative to other industries. Financial impacts on companies will vary depending on the specific location of operations and the prevailing air emissions regulations. Active management of the issue – through technological and process improvements – could allow companies to limit the impacts of increasingly stringent air quality regulations globally. Companies could also benefit from operational efficiencies that could lead to a lower cost structure over time.

Accounting Metrics

NR0302-03. Air emissions for the following pollutants: CO, NO_x (excluding N₂O), SO_x, particulate matter (PM), mercury (Hg), lead (Pb), and volatile organic compounds (VOCs)

- .15 The registrant shall disclose its emissions released to the atmosphere of air pollutants associated with its activities (e.g., refining through primary production):
- Direct air emissions from stationary or mobile sources include, but are not limited to, equipment at mining sites, smelters and refineries, primary production facilities, chemical plants, office buildings, marine vessels transporting products, truck fleets, and moveable equipment at mining and production facilities.
- .16 The registrant shall disclose emissions released to the atmosphere by emissions type. Substances include:
- Carbon monoxide (CO);
 - Oxides of nitrogen (including NO and NO₂ and excluding N₂O) reported as NO₂;
 - Oxides of sulfur (SO₂ and SO₃) reported as SO₂;
 - Particulate matter (PM); reported as the sum of PM₁₀ and PM_{2.5}, or all particulates less than 10 micrometers in diameter;
 - Mercury (Hg);
 - Lead (Pb);
 - Non-methane volatile organic compounds (VOCs), defined as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and methane, which participates in atmospheric photochemical reactions, except those designated by the EPA as having negligible photochemical reactivity.

- .17 This scope does not include CO₂, CH₄, and N₂O, which are disclosed in NR0302-01, as Scope 1 GHG emissions.
- .18 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 NR0302-01.
- .19 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions-monitoring systems (CEMS), engineering calculations, mass-balance calculations, etc.
- .20 The registrant should, where relevant, provide a breakdown of its emissions by mineral or business unit.
- Minerals or business units may include, for example: aluminum, copper, zinc, iron ore, precious metals, diamonds, etc.

Energy Management

Description

Mining and metals production is an energy-intensive process, with a significant proportion of energy consumption in the industry accounted for by purchased electricity. While fuel combustion on-site contributes to the industry's direct (Scope 1) GHG emissions, electricity purchases from the grid create indirect impacts on the climate through Scope 2 emissions. The energy intensity of operations is likely to increase with decreasing grades of deposits and increasing depth and scale of mining operations. The choice between on-site versus grid-sourced electricity, and use of alternative energy, can play an important role in influencing both the costs and reliability of energy supply. Affordable and easily accessible energy is essential for competing in a commodity market driven by global competition; purchased fuels and electricity account for a significant proportion of total production costs. The way in which a company manages its overall energy efficiency and intensity, its reliance on different types of energy and associated sustainability risks, and its ability to access alternative sources of energy, can therefore be material.

Accounting Metrics

NR0302-04. Total energy consumed, percentage grid electricity, percentage renewable

- .21 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.
- .22 In calculating energy consumption from fuels and biofuels, the registrant shall use higher heating values (HHV), also known as gross calorific values (GCV), and 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).
- .23 The registrant shall disclose purchased grid electricity consumption as a percentage of its total energy consumption.
- .24 The registrant shall disclose renewable energy consumption as a percentage of its total energy consumption.
 - The scope of renewable energy includes the renewable energy the registrant directly produces, purchases 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 all renewable energy consumed as electricity in this manner, RECs must be retired on behalf of the registrant to be claimed as renewable energy as part of this disclosure.

- 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 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.¹¹
- .25 Renewable energy is defined as energy from sources that are capable of being replenished in a short time through ecological cycles, such as geothermal, wind, solar, hydro, and biomass.
- For the purposes of this disclosure, the scope of renewable energy from hydro and biomass sources are limited to the following:
 - Energy from hydro sources that are certified by the Low Impact Hydropower Institute.
 - Energy from biomass sources biomass sources are limited to those that are considered “eligible renewables” according to the Green-e Energy National Standard Version 2.4 or eligible for a state Renewable Portfolio Standard.
- .26 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 (including for electricity from solar or wind energy).

¹¹ SASB recognizes that RECs reflect the environmental attributes of renewable energy that have been introduced to the grid, and that a premium has been paid by the purchaser of the REC to enable generation of renewable energy beyond any renewable energy already in the grid mix, absent the market for RECs.

Water Management

Description

Mining and metals production has impacts on both the quantity and the quality of local water resources. Metals and mining companies face operational, regulatory, and reputational risks due to water scarcity, costs of water acquisition, regulations on effluents or amount of water used, and competition with local communities and other industries for limited water resources. Impacts of water-intensive production and potential contamination of water resources include higher costs, liabilities, and lost revenues due to curtailment or suspension of operations. The severity of these risks can vary depending on the region's water resources and regulatory environment. Companies in the industry are addressing risks by increasingly using new technologies, including desalination, water recirculation, and innovative waste-disposal solutions. Reducing water use and contamination could also create operational efficiency for companies and lower their operating costs.

Accounting Metrics

NR0302-05. Total fresh water withdrawn, percentage recycled, percentage in regions with High or Extremely High Baseline Water Stress

- .27 The registrant shall disclose the amount of water (in cubic meters) that was withdrawn from freshwater sources for use in operations.
- 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 total dissolved solids (TDS) concentration of less than 1000 mg/l per the Water Quality Association [definition](#).
- .28 Water obtained from a water utility can be assumed to meet the definition of freshwater.¹²
- .29 The registrant shall disclose the percentage of water recycled as the volume (in cubic meters) recycled divided by the volume of water withdrawn.
- Any volume of water reused multiple times shall be counted as recycled each time it is recycled and reused.
- .30 Using the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly available online [here](#)), the registrant shall analyze all of its operations for water risks and identify facilities that are in a location with High (40–80%) or Extremely High (>80%) Baseline Water Stress. Water withdrawn in locations with High or Extremely High Baseline Water Stress shall be indicated as a percentage of the total water withdrawn.
- .31 This accounting metric corresponds to section W5. Water Accounting of the CDP's [2014 Water Information Request](#).

¹² <http://water.epa.gov/drink/contaminants/secondarystandards.cfm>

NR0302-06. Number of incidents of non-compliance with water-quality permits, standards, and regulations

- .32 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.
- .33 The scope of disclosure includes incidents related to statutory permits and regulations or voluntary agreements, standards, or guidelines, such as total maximum daily load (TMDL) exceedances.
- .34 Voluntary standards include the registrant's own water-quality standards (parameters) or "effluent guidelines" from the International Finance Corporation's (IFC) "Environmental, Health, and Safety Guidelines for Mining."
- Typical parameters of concern include arsenic, copper, lead, nickel, zinc, cyanide, radium-226, total suspended solids, pH, and toxicity.
- .35 An incident of non-compliance shall be disclosed regardless of whether it resulted in an enforcement action (e.g., fine, warning letter, etc.).
- .36 Violations, regardless of their measurement methodology or frequency, shall be disclosed. These include:
- For continuous discharges, limitations, standards, and prohibitions that are generally expressed as maximum daily, weekly average, and monthly average.
 - For non-continuous discharges, limitations that are generally expressed in terms of frequency, total mass, maximum rate of discharge, and mass or concentrations of specified pollutants.

Waste & Hazardous Materials Management

Description

The Metals & Mining industry generates large volumes of mineral processing and smelting wastes, including slags and tailings, some of which may be hazardous or chemically reactive. Impoundments for tailings can cover large areas of land. This can present a significant threat if the impoundments burst, collapse, or leak, leading to destruction of lives, property, and ecosystems. Mineral wastes are also often stored in-pit, using abandoned open-pit surface mines. Such storage can create the potential for groundwater contamination and could affect the stability of active mines in the area. Companies that reduce and recycle waste streams, lower the number of tailings ponds, and ensure the integrity of their impoundments could lower regulatory and litigation risks, remediation liabilities, and costs. Additionally, tailings can contain toxic chemical residues from extraction and processing operations. Companies face associated risks from the use of such chemicals. Companies' ability to manage the sourcing, transport, use, and disposal of mining and metal processing chemicals and by-products can lower these risks.

Accounting Metrics

NR0302-07. Total weight of tailings waste, percentage recycled

.37 The amount of total tailings waste shall be calculated in metric tons, where waste is defined as anything for which the registrant has no further use and which is discarded or released to the environment.

- The scope includes tailings waste generated from mining activities.
- The scope of disclosure excludes waste rock and overburden.

.38 The percentage recycled shall be calculated as the weight of waste material that was reused plus the weight recycled or remanufactured (through treatment or processing) by the registrant plus the amount sent externally for further recycling divided by the total weight of waste material, where:

- Reused materials are defined as those recovered materials that are used for the same purpose for which they were conceived.
- Recycled and remanufactured materials are defined as waste materials that have been reprocessed or treated by means of production or manufacturing process and made into a final product or made into a component for incorporation into a product.
- The scope of recycled and remanufactured products includes primary recycled materials, co-products (outputs of equal value to primary recycled materials), and by-products (outputs of lesser value to primary recycled materials).
- Portions of waste materials that are disposed of in landfills are not considered recycled; only the portions of materials that are directly incorporated into new products, co-products, or by-products shall be included in the percentage recycled.

- Materials sent for further recycling include those materials which are transferred to a third party for the expressed purpose of reuse, recycling, or refurbishment.
- Materials incinerated, including for energy recovery, are not considered reused or recycled. Energy recovery is defined as the use of combustible waste as a means to generate energy through direct incineration with or without other waste but with recovery of the heat.

NR0302-08. Total weight of mineral processing waste, percentage recycled

- .39 The amount of total mineral processing waste shall be calculated in metric tons, where waste is defined as anything for which the registrant has no further use and which is discarded or released to the environment.
- The scope includes waste generated during metals processing (e.g., smelting and refining), such as slags, dusts, sludges, and spent solvents.
 - The scope includes scrap metal, reject coal, used oil, and other solid wastes and excludes gaseous wastes.
- .40 The percentage recycled shall be calculated as the weight of waste material that was reused plus the weight recycled or remanufactured (through treatment or processing) by the registrant plus the amount sent externally for further recycling divided by the total weight of waste material, where:
- Reused materials are defined as those recovered products or components of products that are used for the same purpose for which they were conceived.
 - Recycled and remanufactured materials are defined as waste materials that have been reprocessed or treated by means of production or manufacturing process and made into a final product or made into a component for incorporation into a product.
 - The scope of recycled and remanufactured products includes primary recycled materials, co-products (outputs of equal value to primary recycled materials), and by-products (outputs of lesser value to primary recycled materials).
 - Portions of products and materials that are disposed of in landfills are not considered recycled; only the portions of products that are directly incorporated into new products, co-products, or by-products shall be included in the percentage recycled.
 - Materials sent for further recycling include those materials which are transferred to a third party for the expressed purpose of reuse, recycling, or refurbishment.
 - Materials incinerated, including for energy recovery, are not considered reused or recycled. Energy recovery is defined as the use of combustible waste as a means to generate energy through direct incineration with or without other waste but with recovery of the heat.

NR0302-09. Number of tailings impoundments, broken down by MSHA hazard potential

- .41 The registrant shall disclose the number of tailings impoundments according to the following U.S. Mine Safety and Health Administration (MSHA) hazard potential classification:
- High hazard potential
 - Significant hazard potential
 - Low hazard potential
- .42 For locations under the auspices of the MSHA, the hazard potential shall be determined by Mine Safety and Health enforcement personnel (Metal and Nonmetal) during regular (E01) inspections through verification that the mine operator has appropriately classified the dam or by assigning a hazard classification if the existing one does not appear reasonable or if no classification has been assigned.
- .43 For locations not under the auspices of the MSHA, hazard potential shall be determined by a third party following MSHA [Procedure Instruction Letter No. I13-IV-01](#) guidance.
- .44 High hazard potential impoundments are dams, regardless of their condition or size, whose failure will probably cause loss of life.
- These facilities are generally located in populated areas or where dwellings are found in the flood plain, and failure can reasonably be expected to cause loss of life, serious damage to homes, industrial and commercial buildings, and damage to important utilities, highways, or railroads.
- .45 Significant hazard potential impoundments are dams, regardless of their condition or size, whose failure would result in no probable loss of life but would disrupt important utilities or cause significant economic loss or significant environmental damage.
- These facilities are generally located in predominantly rural areas, but could be in populated areas with significant infrastructure, where failure could damage isolated homes, main highways, and minor railroads, or disrupt the use of service of public utilities.
- .46 Low hazard potential impoundments are dams whose failure would not be expected to cause loss of life, disrupt important utilities, or cause significant economic loss or significant environmental damage.
- These facilities are usually located in rural or agricultural areas where losses are limited principally to the owner's property or where failure would cause only slight damage to farm buildings, forest and agricultural land, and minor roads.
 - The scope includes only dams that either: (1) Equal or exceed 25 feet in height and can or do store a volume of more than 15 acre-feet, or (2) Exceed 6 feet in height and can or do store 50 or more acre-feet.
- .47 Hazard potential classification depends solely on the consequences of failure of the dam and not on the condition of the dam.
- .48 Hazard potential classification can change over time.

Biodiversity Impacts

Description

The development, operation, and closure of mines can have a range of impacts on biodiversity, such as alterations of landscape, vegetation removal, and destruction of wildlife habitats. Acid rock drainage is a particularly significant risk: it is highly acidic water, rich in heavy metals, formed when surface and shallow subsurface water come into contact with mining overburden. It can have harmful effects on humans, animals, and plants. Biodiversity impacts of mining operations can affect the valuation of reserves and create operational risks. The environmental characteristics of the land where reserves are located could increase extraction costs due to increasing awareness and protection of ecosystems. Companies could also face regulatory or reputational barriers to accessing reserves in ecologically sensitive areas. This may include new protection status afforded to areas where reserves are located. Metals and mining companies face regulatory risks related to reclamation after a mine is decommissioned, as they need to follow specific standards for restoring mined property according to a prior, approved reclamation plan. Material costs arise from removing or covering refuse piles, meeting water treatment obligations, and dismantling infrastructure at the end of life. Furthermore, ongoing mining operations might result in the violation of laws protecting endangered species. Companies that have an effective environmental management plan for different stages of the project lifecycle could minimize their compliance costs and legal liabilities, face less resistance in developing new mines, and avoid difficulties in obtaining permits, accessing reserves, and facing delays in project completion.

Accounting Metrics

NR0302-10. Description of environmental management policies and practices for active sites

.49 The registrant shall provide a brief description of its environmental management plan(s) implemented at active sites, including where relevant:

- Lifecycle stages to which the plan(s) apply, such as: pre-bid (when the registrant is considering acquisition of a site), exploration and appraisal, site development, production, and during closure, decommissioning, and restoration.
- The topics addressed by the plan(s), such as: ecological and biodiversity impacts, waste generation, noise impacts, emissions to air, discharges to water, natural resource consumption, and hazardous chemical usage.
- The underlying references for its plan(s), including whether they are codes, guidelines, standards, or regulations; whether they 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.

- .50 Where applicable and relevant, the registrant shall describe specific policies and practices that apply to areas with protected conservation status and/or areas of critical habitat, which are [defined](#) by the International Finance Corporation (IFC) as:
- Areas with high biodiversity value, including (i) habitat of significant importance to Critically Endangered and/or Endangered species; (ii) habitat of significant importance to endemic and/or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes.¹³
- .51 If the management policies and practices do not apply to all of the registrant's sites or operations, it shall indicate the percentage of sites to which they were applied.
- .52 Where environmental management policies and practices differ significantly by mineral resource (e.g., bauxite mining as compared to silver mining) then the registrant shall describe differences for each resource.
- .53 The registrant shall disclose the degree to which its policies and practices are aligned with the International Finance Corporation's (IFC) [Performance Standards on Environmental and Social Sustainability](#), January 1, 2012, including specifically:
- Performance Standard 1 – Assessment and Management of Environmental and Social Risks and Impacts.
 - Performance Standard 3 – Resource Efficiency and Pollution Prevention.
 - Performance Standard 4 – Community Health, Safety, and Security.
 - Performance Standard 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources.
- .54 Additional relevant references may include:
- "[Environmental management in oil and gas exploration and production – An overview of issue and management approaches](#)," Joint E&P Forum/UNEP Technical Publication 1997.
 - "[Towards Sustainable Decommissioning and Closure of Oil Fields and Mines: A Toolkit to Assist Government Agencies](#)," DRAFT Version 2.0, November 2009, World Bank Multistakeholder Initiative.

NR0302-11. Percentage of mine sites where acid rock drainage is: (1) predicted to occur, (2) actively mitigated, and (3) under treatment or remediation

- .55 The registrant shall disclose the percentage of its sites (by annual production output from mines in metric tons) where acid-generating seepage into surrounding surface water and/or groundwater is: (1) predicted to occur, (2) actively mitigated, and (3) under treatment or remediation.
- .56 Acid Rock Drainage (ARD) is predicted to occur if, based on computer simulations, chemical evaluations, and/or acid-base accounting, it is biochemically likely that ARD could form at the mine site.

¹³ International Finance Corporation (IFC), Performance Standard 6, *Biodiversity Conservation and Sustainable Management of Living Natural Resources*, January 1, 2012.

- .57 ARD is considered to be actively mitigated if the registrant is preventing the formation of ARD through methods that include, but are not limited to: storing or covering sulfite-bearing minerals to prevent oxidation, flood prevention and mine sealing, mixing of acid buffering materials with acid-producing materials, or chemical treatment of sulfide wastes (e.g., organic chemicals designed to kill sulfide-oxidizing bacteria).
- .58 ARD is considered under treatment or remediation, if the acidic water discharged from the mine area is captured and undergoes a wastewater treatment process (active or passive).
- .59 The registrant may choose, where relevant, to provide a breakdown by mineral or business unit.
- Minerals or business units may include, for example: aluminum, copper, zinc, iron ore, precious metals, diamonds, etc.
- .60 ARD may also be referred to as acid-generating seepage or acid mine drainage.

NR0302-12. (1) Proven and (2) probable reserves in or near sites with protected conservation status or endangered species habitat

- .61 The registrant shall disclose the amount (in metric tons) and grade (in percentage metal content) of proven reserves in sites with protected conservation status plus the amount and grade of proven reserves in areas of endangered species habitat.
- The registrant shall, where relevant, provide a breakdown of calculations by mineral or business unit where minerals or business units include, for example: aluminum, copper, zinc, iron ore, platinum group metals, diamonds, etc.
- .62 The registrant shall disclose the amount (in metric tons) and grade (in percentage metal content) of probable reserves in sites with protected conservation status plus the amount and grade of probable reserves in areas of endangered species habitat.
- The registrant shall, where relevant, provide a breakdown of calculations by mineral or business unit where minerals or business units include, for example: aluminum, copper, zinc, iron ore, platinum group metals, diamonds, etc.
- .63 Reserves are considered to be in areas of protected conservation status if they are located within:
- International Union for Conservation of Nature (IUCN) Protected Areas (categories I-VI).
 - Ramsar Wetlands of International Importance.
 - UNESCO World Heritage Sites.
 - Biosphere Reserves recognized within the framework of UNESCO's Man and the Biosphere (MAB) Programme.
 - Natura 2000 sites.
 - Sites that meet the IUCN's definition of a protected area: "A protected area is a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values."¹⁴

¹⁴ Dudley, N. (ed.) (2008) Guidelines for Applying Protected Areas Management Categories. IUCN: Gland, Switzerland. p.8-9.

- These sites may be listed in the World Database of Protected Areas (WDPA) and mapped on ProtectedPlanet.net.
- .64 Reserves are considered to be in endangered species habitat if they are in or near areas where IUCN Red List of Threatened Species that are classified as Critically Endangered (CR) or Endangered (EN) are extant.
- A species is considered extant in an area if it is a resident, present during breeding or non-breeding season, or if it makes use of the area for passage.
- .65 For the purposes of this disclosure, “near” is defined as within 5 kilometer (km) of the boundary of an area of protected conservation status or an endangered species habitat.
- .66 Reserves are defined by the SEC Industry Guide 7, Description of Property by Issuers Engaged or to Be Engaged in Significant Mining Operations:
- Reserves, as that part of a mineral deposit which could be economically and legally extracted or produced at the time of the reserve determination.
 - Proven (or measured) reserves, as reserves for which (a) quantity is computed from dimensions revealed in outcrops, trenches, workings, or drill holes; grade and/or quality are computed from the results of detailed sampling, and (b) the sites for inspection, sampling, and measurement are spaced so closely and the geographic character is so well-defined that size, shape, depth, and mineral content of reserves are well-established.
 - Probable (or indicated) reserves are reserves for which quantity and grade and/or quality are computed from information similar to that used for proven (measured) reserves, but the sites for inspection, sampling, and measurement are farther apart or are otherwise less adequately spaced. The degree of assurance, although lower than that for proven (measured) reserves, is high enough to assume continuity between points of observation.
- .67 The registrant should follow the Combined Reserves International Reporting Standards Committee (CRIRSCO) guidance for classifying ore reserves and mineral resources, including the use of a “competent person” to compile information.
- .68 The registrant may choose to separately identify reserves in areas with additional ecological, biodiversity, or conservation designations such as those listed by the A-Z Guide of Areas of Biodiversity Importance prepared by the United Nations Environment Programme’s World Conservation Monitoring Centre (UNEP-WCMC).
- .69 The registrant may choose to provide discussion around reserves that are located in protected areas or endangered species habitat but present low risk to biodiversity or ecosystem services; the registrant may choose to provide similar discussion for reserves located in areas with no official designation of high biodiversity value but that present high biodiversity or ecosystem services risks.

Additional references

The International Network for Acid Prevention (INAP) [Global Acid Rock Drainage \(GARD\) Guide](http://www.miningfacts.org/Environment/What-is-acid-rock-drainage/)
<http://www.miningfacts.org/Environment/What-is-acid-rock-drainage/>

Community Relations

Description

Mining activities take place over a number of years, and companies may be involved in multiple projects in a region that can have a wide range of community impacts. Community rights and interests may be affected through environmental and social impacts of mining operations, such as competition for access to local energy or water resources, air and water emissions, and waste from operations. Mining companies need support from local communities to be able to obtain permits and leases, and conduct their activities without disruptions. The expected value of reserves could be affected if the community interferes, or lobbies its government to interfere, with the rights of a mining company in relation to those reserves. In addition to community concerns about direct impacts of projects, the presence of mining activities may give rise to associated socio-economic concerns, such as education, health, livelihoods, and food security for the community. Metals and mining companies that are perceived as engaging in rent-seeking and exploiting a country or community's resources without providing any socio-economic benefits in return may be exposed to the risk of actions, motivated by resource nationalism, by host governments and communities. These could include imposition of ad hoc taxes and export restrictions. These risks may vary depending on the country, and could be higher in countries that are heavily reliant on mineral resources for their economic growth. Companies in the extractives industries can adopt various community engagement strategies in their global operations to manage risks and opportunities associated with community rights and interests. Strategies are often underpinned by the integration of community engagement into each phase of the project cycle. Companies are beginning to adopt a "shared value" approach to provide a key socio-economic benefit to the community while also creating value for the company.

Accounting Metrics

NR0302-13. Discussion of process to manage risks and opportunities associated with community rights and interests

.70 The registrant shall describe its processes, procedures, and practices to manage risks and opportunities associated with the rights and interests of communities in areas where it conducts business, where community rights and interests include:

- Economic rights and interests, including the right to employment, fair wages, payment transparency, and respect of infrastructure and agricultural land.
- Environmental rights and interests, including the right to clean local air and water, as well as safe discharge and disposal of waste.
- Social rights and interests, including the rights to adequate health care, education, and housing.
- Cultural rights and interests, including the right to protection of places of cultural significance (e.g., sacred sites or burial sites).

- .71 The registrant shall disclose the following, as relevant:
- Lifecycle stages to which its practices apply, such as: pre-bid (when the registrant is considering acquisition of a site), exploration and appraisal, site development, mineral production, and during closure, decommissioning, and restoration.
 - The community rights and interests (enumerated above) specifically addressed by the practices.
 - The underlying references for its procedures, including whether they are codes, guidelines, standards, or regulations and whether they 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.
- .72 Risks and opportunities include, but are not limited to: non-technical delays, availability and development of local content, availability and access to adequate infrastructure, community actions related to resource nationalism, and challenges associated with resettlement and access to land.
- .73 The registrant shall disclose the degree to which its policies and practices are aligned with the International Finance Corporation's (IFC) [Performance Standards on Environmental and Social Sustainability](#), January 1, 2012, including specifically:
- Performance Standard 4 – Community Health, Safety, and Security
 - Performance Standard 5 – Land Acquisition and Involuntary Resettlement
 - Performance Standard 8 – Cultural Heritage
- .74 The discussion shall include how practices apply to business partners such as contractors, sub-contractors, suppliers, and joint venture partners.
- .75 The registrant should describe its efforts to eliminate or mitigate community risks and/or address community concerns, including, but not limited to:
- The use of social impact assessment (SIA) that evaluates, manages, and mitigates risks.
 - Efforts to engage with stakeholders, build consensus, and collaborate with communities.
 - “Shared” or “blended” value projects that provide quantifiable benefits to the community and the registrant.
- .76 The registrant may choose to quantify its community risks by calculating the aggregate estimated value at risk (in U.S. dollars) to its capital expenditure projects as the difference in value (in U.S. dollars) between a project free from country, regional, and/or community risks (hereafter, country risk) and the value of a project adjusted for these risks.
- This calculation should be conducted using an appropriate valuation model; variations of the Capital Asset Pricing Model (CAPM) are commonly used to assess country risk.
 - Value at risk can be calculated by applying an additional discount rate premium when calculating the net present value of a project using discounted cash flow (DCF) analysis.
 - Value at risk can be expressed as a reduction in the expected cash flows of a project due to country risk when calculating the net present value of a project using discounted cash flow (DCF) analysis.

- If a project is insured for country risks, the value at risk can be expressed as a reduction in the cash flows of a project due to the cost of insurance when calculating the net present value of a project using discounted cash flow (DCF) analysis.
- Country, regional, and/or community risks include, but are not limited to: corruption, business legal structure, political stability, regulation, resource nationalism, ethnic conflict, stability of the local market, labor force (skills) availability, resettlement and access to land, quality of access to infrastructure (e.g., ports, roads, shipping channels), and/or general license to operate.
 - These risks are likely to manifest differently at the country (national), regional (state), community (local) levels, and project levels.
 - This risk differs from sovereign risk, which is defined as the potential for a central bank or government-backed entity to willingly or unwillingly default on debt obligations, or significantly alter key economic variables such as foreign exchange rates, import ratios, and money supply.
- The registrant should identify and describe country risks specific to its projects and unique operating context.
 - This may include the identification of country, regional, and community risks and/or the discussion of specific projects.
 - This may include discussion of how the registrant has mitigated these risks through community engagement partnerships, blended value projects, etc.; the registrant shall quantify this reduction in risk according to the methods described above.
 - Discussion should be in addition to broad country risk classification (e.g., OECD Prevailing Country Risk classification, Standard & Poor's Country Risk ratings, World Economic Forum Global Competitiveness Index, etc.).
- The registrant should describe the model or approach used to value capital expenditure projects such as adjusted discount rate, expected cash flow, or other methods.

NR0302-14. Number and duration of non-technical delays

- .77 The registrant shall disclose the total number and aggregate duration (in days) of site shutdowns or project delays due to non-technical factors.
- .78 The scope includes shutdowns and project delays including, but not limited to, those resulting from pending regulatory permits or other political delays, community or stakeholder resistance or protest, and armed conflict.
- .79 The scope of disclosure excludes delays due to strikes and lockouts that are disclosed according to NR0302-20.
- .80 The registrant may choose to discuss specific delays including associated costs, root cause and corrective actions for resolved delay, and status of ongoing delays.

Security, Human Rights, and Rights of Indigenous Peoples

Description

Metals and mining companies face additional community-related risks when operating in conflict zones and in areas with weak or absent governance institutions, rule of law, and legislation to protect human rights. They also face risks when operating in areas with vulnerable communities, such as indigenous peoples. Companies using private or government security forces to protect their workers and assets may knowingly, or unknowingly, contribute to extreme cases of human rights violations, including use of excessive force. Indigenous people are often the most vulnerable sections of the population, with limited capacity to defend their unique rights and interests. Companies perceived as contributing to human rights violations or failing to account for indigenous peoples' rights may be affected due to protests, riots, or suspension of permits. They could face substantial costs related to compensation or settlement payments, and write-downs in the value of their reserves in such areas. In the absence of country laws to address such cases, several international instruments have emerged to provide guidelines for companies. These instruments include obtaining the free, prior, and informed consent of indigenous peoples for decisions affecting them. With greater awareness, several countries are also beginning to implement specific laws protecting indigenous peoples' rights, creating increasing regulatory risk for companies.

Accounting Metrics

NR0302-15. (1) Proven and (2) probable reserves in or near areas of conflict

- .81 The registrant shall disclose the amount (in metric tons) and grade (in percentage metal content) of proven reserves that are located in or near areas of active conflict.
- The registrant shall, where relevant, provide a breakdown of calculations by mineral or business unit where minerals or business units include, for example: aluminum, copper, zinc, iron ore, platinum group metals, diamonds, etc.
- .82 The registrant shall disclose the amount (in metric tons) and grade (in percentage metal content) of probable reserves that are located in or near areas of active conflict.
- The registrant shall, where relevant, provide a breakdown of calculations by mineral or business unit where minerals or business units include, for example: aluminum, copper, zinc, iron ore, platinum group metals, diamonds, etc.
- .83 Active conflict is defined according to the Uppsala Conflict Data Program (UCDP) [definition](#) as:
- A conflict, both state-based and non-state, is deemed to be active if there are at least 25 battle-related deaths per calendar year in one of the conflict's dyads.

- .84 Reserves shall be considered to be in or near an area of active conflict if it is located in the same country as the active conflict.
- If the registrant can demonstrate that a conflict is contained to a region, state, or designated area that is not proximate to its reserves then it may exclude these from the scope of disclosure.
 - If reserves are located in a country, region, or state adjacent to an active conflict and/or can be reasonably expected to be operationally impacted by the conflict then these reserves shall be included in the scope of disclosure.
- .85 Reserves are defined by the SEC [Industry Guide 7, Description of Property by Issuers Engaged or to Be Engaged in Significant Mining Operations](#):
- Reserves, as that part of a mineral deposit which could be economically and legally extracted or produced at the time of the reserve determination.
 - Proven (or measured) reserves, as reserves for which (a) quantity is computed from dimensions revealed in outcrops, trenches, workings, or drill holes; grade and/or quality are computed from the results of detailed sampling, and (b) the sites for inspection, sampling, and measurement are spaced so closely and the geographic character is so well-defined that size, shape, depth, and mineral content of reserves are well-established.
 - Probable (or indicated) reserves are reserves for which quantity and grade and/or quality are computed from information similar to that used for proven (measured) reserves, but the sites for inspection, sampling, and measurement are farther apart or are otherwise less adequately spaced. The degree of assurance, although lower than that for proven (measured) reserves, is high enough to assume continuity between points of observation.
- .86 The registrant should follow the Combined Reserves International Reporting Standards Committee (CRIRSCO) guidance for classifying ore reserves and mineral resources, including the use of a “competent person” to compile information.

NR0302-16. (1) Proven and (2) probable reserves in or near indigenous land

- .87 The registrant shall disclose the amount (in metric tons) and grade (in percentage metal content) of proven reserves that are located in or near areas that are considered to be indigenous peoples’ land.
- The registrant shall, where relevant, provide a breakdown of calculations by mineral or business unit where minerals or business units include, for example: aluminum, copper, zinc, iron ore, platinum group metals, diamonds, etc.
- .88 The registrant shall disclose the amount (in metric tons) and grade (in percentage metal content) of probable reserves that are located in or near areas that are considered to be indigenous peoples’ land.
- The registrant shall, where relevant, provide a breakdown of calculations by mineral or business unit where minerals or business units include, for example: aluminum, copper, zinc, iron ore, platinum group metals, diamonds, etc.

.89 Indigenous lands are those occupied by those who self-identify as indigenous and likely have one or more of the following characteristics based the [working definition](#) of “Indigenous Peoples” adopted by the United Nations:

- Historical continuity with pre-colonial and/or pre-settler societies
- Strong link to territories and surrounding natural resources
- Distinct social, economic, or political systems
- Distinct language, culture, and beliefs
- Form non-dominant groups of society
- Resolve to maintain and reproduce ancestral environments and systems as distinctive peoples and communities

.90 For the purposes of this disclosure, “near” is defined as within 5km of the recognized boundary of an area considered to be indigenous land.

.91 Reserves are defined by the [SEC Industry Guide 7, Description of Property by Issuers Engaged or to Be Engaged in Significant Mining Operations](#):

- Reserves, as that part of a mineral deposit which could be economically and legally extracted or produced at the time of the reserve determination.
- Proven (or measured) reserves, as reserves for which (a) quantity is computed from dimensions revealed in outcrops, trenches, workings, or drill holes; grade and/or quality are computed from the results of detailed sampling, and (b) the sites for inspection, sampling, and measurement are spaced so closely and the geographic character is so well-defined that size, shape, depth, and mineral content of reserves are well-established.
- Probable (or indicated) reserves are reserves for which quantity and grade and/or quality are computed from information similar to that used for proven (measured) reserves, but the sites for inspection, sampling, and measurement are farther apart or are otherwise less adequately spaced. The degree of assurance, although lower than that for proven (measured) reserves, is high enough to assume continuity between points of observation.

.92 The registrant should follow the Combined Reserves International Reporting Standards Committee (CRIRSCO) guidance for classifying ore reserves and mineral resources, including the use of a “competent person” to compile information.

NR0302-17. Discussion of engagement processes and due diligence practices with respect to human rights, indigenous rights, and operation in areas of conflict

.93 The registrant shall describe its due diligence practices and procedures with respect to indigenous rights of communities in which it operates or intends to operate, including:

- Upholding ILO Convention No. 169.
- Use of free, prior, and informed consent (or consultation) processes.

.94 The registrant shall describe its due diligence practices and procedures with respect to human rights, including:

- Upholding the fundamental International Labour Organization (ILO) conventions on freedom of association (No. 87), collective bargaining (No. 98), forced labor (No. 29, No. 105), child labor (No. 138, No. 182), fair wages (No. 100), and discrimination (No. 111).
- Implementation of the European Commission's "Oil and Gas Sector Guide on Implementing the UN Guiding Principles on Business and Human Rights," specifically Human Rights Due Diligence (Principle 17a-c).
- Implementation of Voluntary Principles on Security and Human Rights.

.95 The registrant shall discuss its practices and procedures while operating in zones of conflict, such as:

- Describing its approach according to the Five-Step Framework outlined in the [OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas](#).

.96 An area of conflict is located in the same country as an active conflict, or adjacent to an active conflict that can be reasonably expected to impact the registrant's operations.

.97 Active conflict is defined according to the Uppsala Conflict Data Program (UCDP) [definition](#) as:

- A conflict, both state-based and non-state, is deemed to be active if there are at least 25 battle-related deaths per calendar year in one of the conflict's dyads.

.98 The discussion shall include due diligence processes employed during all stages of project development (i.e., prior, during, and post).

.99 The discussion shall include how practices apply to business partners, such as contractors, sub-contractors, suppliers, and joint venture partners.

Workforce Health, Safety, and Well-Being

Description

Safety is critical to mining operations due to hazardous working conditions, and accidents often have the greatest impact on workers. The Metals & Mining industry has relatively high fatality rates compared to other industries. Miner fatality or injury can result from incidents that include powered haulage and machinery accidents and mine cave-ins. Poor health and safety records can result in fines and penalties, and an increase in regulatory compliance costs from more stringent oversight. A company's ability to protect employee health and safety, and to create a culture of safety and well-being among employees at all levels, can help prevent accidents, mitigating costs and operational downtime, and enhance workforce productivity.

Accounting Metrics

NR0302-18. (1) MSHA All-Incidence Rate, (2) Fatality Rate, and (3) Near Miss Frequency Rate for (a) full-time employees and (b) contract employees

- .100 For registrants whose workforce is entirely U.S.-based, the registrant shall disclose its All-Incidence Rate (AIR) and fatality rate, as calculated and reported through the Mine Safety and Health Administration's (MSHA) Form 7000-1 (as required under 30 CFR, Part 50), where incidents include:
- Fatalities, or work-related injuries resulting in death to employees on active mine property;
 - Nonfatal, Days Lost (NFDL) cases, or occupational injuries that result in loss of one or more days from the registrant's scheduled work or days of limited or restricted activity while at work;
 - No Days Lost (NDL) cases, or occurrences requiring only medical treatment (beyond first aid); that is, nonfatal-injury occurrences resulting only in loss of consciousness or medical treatment other than first aid.
- .101 For registrants whose workforce includes non-U.S.-based employees, the registrant shall calculate its AIR and fatality rate according to the MSHA [instructions](#) and [definitions](#).
- .102 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.
- .103 The registrant shall disclose its AIR, fatality rate, and NMFR for each of the following categories of employee:
- Direct, full-time employees
 - Contract employees
- .104 The scope includes all employees, domestic and foreign.
- .105 Rates shall be calculated as: $(\text{statistic count} / \text{total hours worked}) * 200,000$.

Labor Relations

Description

Metals and mining companies face inherent conflict between the need to lower the cost of labor to remain price-competitive, and to manage human resources to ensure long-term performance. Working conditions related to metal and mining operations are usually physically demanding and hazardous. Labor unions play a key role in representing workers' interests and managing collective bargaining for better wages and working conditions. At the same time, metals and mining companies often operate in areas where worker rights are not adequately protected. The nuances of both domestic and international worker concerns make management of labor relations critical for metals and mining companies. Conflict with workers can result in labor strikes and other disruptions that can delay or stop production. Work stoppages result in significant lost revenue and reputational damage. Continued labor stresses can impact the long-term profitability of the business.

Accounting Metrics

NR0302-19. Percentage of active workforce covered under collective-bargaining agreements, broken down by U.S. and foreign employees

- .106 The registrant shall indicate the percentage of U.S. employees and the percentage of foreign employees in the active workforce who are 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.
 - U.S. employees are defined as employees that do not need a visa to work in the U.S.
 - Foreign employees are defined as employees that do need a visa to work in the U.S.

NR0302-20. Number and duration of strikes and lockouts

- .107 The registrant shall disclose the number of work stoppages and total duration, in worker days idle, of work stoppages involving 1,000 or more workers lasting one full shift or longer.
- Worker days idle is calculated as the product of days idle and number of workers involved.
- .108 The scope of disclosure includes work stoppage due to disputes between labor and management, including strikes and lockouts.
- .109 The scope of disclosure excludes work stoppages due to other non-technical reasons that are disclosed according to NR0302-14.

Note to NR0302-20

- .110 The registrant shall describe the reason for each work stoppage (as stated by labor), and the impact on production, and any corrective actions taken as a result.

Business Ethics and Payments Transparency

Description

Managing business ethics and maintaining an appropriate level of transparency in payments to governments or individuals are significant issues for the metals and mining companies. This is due to the importance of government relations to companies' ability to conduct business in this industry and to gain access to mining reserves. The emergence of several anti-corruption, anti-bribery, and payments-transparency laws and initiatives, in the U.S. and abroad, create regulatory risks. Enforcement of these could lead to significant one-time costs or higher ongoing compliance costs and even affect a company's social license to operate. Companies with significant reserves or operations in corruption-prone countries could face heightened risks. Companies are under pressure to ensure that their governance structures and business practices can address corruption and willful or unintentional participation in illegal or unethical payments or gifts to government officials or private persons.

Accounting Metrics

NR0302-21. Description of the management system for prevention of corruption and bribery throughout the value chain

- .111 The registrant shall discuss its management system and due diligence procedures for assessing and managing corruption and bribery risks internally and associated with business partners in its value chain.
 - Relevant business partners include customers, suppliers, contractors, subcontractors, and JV partners.
- .112 Relevant aspects of a management system include employee awareness programs, internal mechanisms for reporting and following up on suspected violations, anti-corruption policies, and participation in the Extractive Industry Transparency Initiative (EITI).
- .113 The registrant may choose to discuss the implementation of one or more of the following:
 - Key Organisation 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
 - World Economic Forum (WEF): Partnering Against Corruption Initiative (PACI)

NR0302-22. Production in countries that have the 20 lowest rankings in Transparency International's Corruption Perception Index

.114 The registrant shall disclose its net production from activities located in the countries with the 20 lowest rankings in Transparency International's Corruption Perception Index (CPI).

- 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.

.115 The registrant shall use the most current version of the CPI via Transparency International's publicly accessible [website](#).

.116 Production shall be disclosed in saleable tons of minerals.

- The registrant should, where relevant, provide a breakdown of calculations by mineral or business unit where minerals or business units may include, for example: aluminum, copper, zinc, iron ore, precious metals, diamonds, etc.

.117 The registrant may choose to provide discussion around operations that are located in countries with low rankings in the index but 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.

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CONSTRUCTION MATERIALS

Sustainability Accounting Standard

Sustainable Industry Classification System™ (SICS™) #NR0401

Prepared by the
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June 2014
Provisional Standard

CONSTRUCTION MATERIALS

Sustainability Accounting Standard

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INTRODUCTION

Purpose & Structure

This document contains the SASB Sustainability Accounting Standard (SASB Standard) for Construction Materials.

SASB 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's disclosure guidance identifies sustainability topics at an industry level, which may be material— depending on a company's specific operating context— to a company within that industry.

Each company is ultimately responsible for determining which information is material and is therefore required to be included in its Form 10-K or 20-F and other periodic SEC filings.

SASB's accounting standards provide companies with standardized accounting metrics to account for performance on industry-level sustainability topics. When making disclosure on sustainability topics, companies adopting SASB's accounting standards will help to ensure that disclosure is standardized and therefore useful, relevant, comparable and auditable.

Industry Description

Construction materials companies have global operations and produce construction materials for sale to construction firms or wholesale distributors. These primarily include cement and aggregates, but also glass, plastic materials, insulation, bricks, and roofing material. Materials producers operate their own quarries, mining crushed stone or sand and gravel. They may also purchase raw materials from the mining and petroleum industries.

Note: Companies producing wood-building products are included the Forestry and Paper industry under the Sustainable Industry Classification System (SICS) and are not included in the Construction Materials standard.

Guidance for Disclosure of Material Sustainability Topics in SEC filings

1. Industry-Level Material Sustainability Topics

For the Construction Materials industry, SASB has identified the following material sustainability topics:

- **Greenhouse Gas Emissions**
- **Air Quality**
- **Energy Management**
- **Water Management**
- **Waste Management**
- **Biodiversity Impacts**
- **Workforce Health, Safety, and Well-Being**
- **Product Innovation**
- **Pricing Integrity & Payments Transparency**

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”.^{1,2}

SASB has attempted to identify those sustainability topics that it believes may be material for all companies within each SICS industry. SASB recognizes, however, that each company is ultimately responsible for determining what is material to it.

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.”²

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

In determining whether a trend or uncertainty should be disclosed, the SEC has stated that management should use a two-part assessment based on probability and magnitude:

- 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.

¹ TSC Industries v. Northway, Inc., 426 U.S. 438 (1976).

² C.F.R. 229.303(Item 303)(a)(3)(ii).

- 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

Companies should consider making disclosure on sustainability topics as a complete set in the MD&A, in a sub-section titled "**Sustainability Accounting Standards Disclosures.**"³

b. Other Relevant Sections of Form 10-K

In addition to the MD&A section, companies should consider disclosing sustainability information in other sections of Form 10-K, as relevant, including:

- **Description of business**—Item 101 of Regulation S-K requires a company to provide a description of its business and its subsidiaries. Specifically 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 targeting discharge of materials into the environment or 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/>.

³ 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."

Guidance on Accounting of Material Sustainability Topics

For material sustainability topics in the Construction Materials industry, SASB identifies accounting metrics.

SASB recommends that each company consider using these sustainability accounting metrics when disclosing its performance with respect to each of the sustainability topics it has identified as material.

As appropriate—and consistent with Rule 12b-20⁴—for each sustainability topic, 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 **competitive positioning**;
- the **degree of control** the registrant has;
- any **measures the registrant has undertaken** or **plans to undertake** to improve performance; and
- data for 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 \(SICSTM\)](#). If a registrant generates significant revenue from multiple industries, SASB recommends that it consider the materiality of the sustainability issues that SASB has identified for those industries and disclose the associated SASB accounting metrics.

Users of the SASB Standards

The SASB Standards are intended 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),⁵ 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. Nevertheless, 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.

⁴ 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."

⁵ 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.

Scope of Disclosure

Unless otherwise specified, SASB recommends:

- That a registrant disclose on sustainability issues and metrics for itself and for entities in which the registrant has a controlling interest and therefore are consolidated for financial reporting purposes (controlling interest is generally defined as ownership of 50% or more of voting shares)⁶
- 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 such registrant considers the information necessary for investors to understand its performance with respect to sustainability issues (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.).

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 users of SASB accounting metrics (e.g., investors) 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.

⁶ See US GAAP consolidation rules (Section 810).

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

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Production by major product line ⁷	Quantitative	Metric tons (t)	NR0401-A

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 like the imperfectness of third-party reporting systems 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 be necessary 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.

⁷ Note to **NR0401-A** – Determination of major product line (e.g., cement and aggregates, composites, roofing materials, fiberglass, brick, and tile, etc.) should be based on revenue generation, and may include a category of “other” construction materials products that combines multiple smaller revenue streams

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."

Assurance

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

SASB encourages registrants to use independent assurance (attestation), for example, an Examination Engagement to AT Section 101.

Table 1. Material Sustainability Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Greenhouse Gas Emissions	Gross global Scope 1 emissions, percentage covered under a regulatory program	Quantitative	Metric tons CO ₂ -e, Percentage (%)	NR0401-01
	Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	NR0401-02
Air Quality	Air emissions for the following pollutants: NO _x (excluding N ₂ O), SO _x , particulate matter (PM), dioxins/furans, volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and heavy metals	Quantitative	Metric tons (t)	NR0401-03
Energy Management	Total energy consumed, percentage from: (1) purchased electricity, (2) alternative sources, (3) renewable sources	Quantitative	Gigajoules (GJ), Percentage (%)	NR0401-04
Water Management	Total fresh water withdrawn, percentage recycled, percentage in regions with High or Extremely High Baseline Water Stress	Quantitative	Cubic meters (m ³), Percentage (%)	NR0401-05
Waste Management	Amount of waste from operations, percentage hazardous, percentage recycled	Quantitative	Metric tons (t), Percentage (%)	NR0401-06
Biodiversity Impacts	Description of environmental management policies and practices for active sites	Discussion and Analysis	n/a	NR0401-07
	Terrestrial acreage disturbed, percentage of impacted area restored	Quantitative	Acres, Percentage (%)	NR0401-08
Workforce Health, Safety, and Well-Being	(1) Total Recordable Injury Rate (TRIR) and (2) Near Miss Frequency Rate for (a) full-time employees and (b) contract employees	Quantitative	Rate	NR0401-09
	Number of reported cases of silicosis ⁸	Quantitative	Number	NR0401-10

⁸ Note to **NR0401-10** – Disclosure shall include a discussion of efforts to minimize workers’ exposure to crystalline silica.

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

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Product Innovation	Percentage of products that can be used for credits in sustainable building design and construction certifications	Quantitative	Percentage (%) by annual sales revenue	NR0401-11
	Total addressable market and share of market for products that reduce energy, water, and/or material impacts during usage and/or production	Quantitative	U.S. Dollars (\$), Percentage (%)	NR0401-12
Pricing Integrity & Transparency	Amount of legal and regulatory fines and settlements associated with cartel activities, price fixing, and anti-trust activities ⁹	Quantitative	U.S. Dollars (\$)	NR0401-13

⁹ Note to **NR0401-13** – Disclosure shall include a description of fines and settlements and corrective actions implemented in response to events.

Greenhouse Gas Emissions

Description

The production of construction materials, particularly cement, generates significant direct greenhouse gas (GHG) emissions from on-site fuel combustion and chemical processes. Through gains in efficiency the industry has achieved emissions reductions per ton of materials produced. However, overall production output is growing rapidly, leading to an increase in absolute emissions from cement production. The production of construction materials remains carbon-intensive relative to other industries, exposing the industry to higher operating and capital expenditures from emissions regulations. Strategies to reduce GHG emissions include: energy efficiency, use of alternative and renewable fuels, carbon sequestration, and clinker substitution. Companies that cost-effectively reduce GHG emissions from their operations, implementing industry-leading technologies and processes, can create operational efficiency. They can mitigate the impact on value from increased fuel costs and regulations that limit – or put a price on – carbon emissions, which are occurring as regulatory and public concerns about climate change are increasing in the U.S. and globally.

Accounting Metrics

NR0401-01. Gross global Scope 1 emissions, percentage covered under a regulatory program

- .01 The registrant shall disclose gross global Scope 1 greenhouse gas (GHG) emissions to the atmosphere of the six greenhouse gases covered under the Kyoto Protocol: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.
- Emissions of all gases shall be disclosed in metric tons of carbon dioxide equivalent (CO₂-e), calculated in accordance with published global warming potential (GWP) factors. To date, the preferred source for global warming potential factors is the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report (2007).
 - 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.
- .02 Scope 1 emissions are defined by the World Resources Institute and the World Business Council on Sustainable Development (WRI/WBCSD) [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, production facilities, office buildings, and products transportation (marine, road, and rail).

- .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 2014](#) (hereafter, the “CDP Guidance”).¹⁰
 - The approach detailed in Section 4.23 “Organizational boundary setting for GHG emissions reporting” of Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF)¹¹.
- .04 The underlying technical approach to data collection, analysis, and disclosure shall be consistent with the CDP Guidance.
- The registrant shall consider the CDP Guidance as a normative reference; thus, any updates made year-on-year shall be considered updates to this guidance.
- .05 The registrant shall disclose the percentage of its emissions that are covered under a regulatory program, such as the European Union Emissions Trading Scheme (EU ETS), Western Climate Initiative (WCI), California Cap-and-Trade (California Global Warming Solutions Act), or other regulatory programs.
- Regulatory programs include cap-and-trade schemes and carbon tax/fee systems.
 - Disclosure shall exclude emissions covered under voluntary trading systems and disclosure-based regulations (e.g., the U.S. Environmental Protection Agency (EPA) mandatory reporting rule).
- .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 entity (e.g., a national regulatory disclosure program) differs in terms of the scope and consolidation approach used, the registrant may disclose those emissions. However, primary disclosure shall be according to the guidelines previously mentioned.
- .08 The registrant should discuss the calculation methodology for its emission disclosure, such as if data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.
- .09 This accounting metric corresponds to section CC8.2 of the Carbon Disclosure Project (CDP) Questionnaire and section 4.25 of the Climate Disclosure Standards Board (CDSB) Climate Change Reporting Framework (CCRF).

¹⁰ “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 2014* (p. 94).

¹¹ This approach is based on the requirements of the International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) on consolidation and equity accounting. It is consistent with the way in which information relating to entities within a group, or interest in joint ventures/associates, would be included in consolidated financial statements. *Climate Change Reporting Framework*, CDSB

NR0401-02. Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets

.10 The registrant shall discuss the following where relevant:

- The scope, including if strategies, plans, and/or reduction targets pertain differently to different business units, geographies, or emissions sources.
- If strategies, plans, and/or reduction targets are related to or associated with an emissions disclosure (reporting) or reduction program (e.g., EU ETS, Regional Greenhouse Gas Initiative (RGGI), WCI, etc.), including regional, national, international or sectoral programs.
- 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 towards 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 that reached completion during the fiscal year.
- The mechanism(s) for achieving the target, such as energy efficiency efforts, energy source diversification, carbon capture and storage, etc.

.12 Where necessary, the registrant shall discuss any circumstances in which the target base year emissions have been or may be re-calculated retrospectively, or in which the target base year has been reset.

.13 This accounting metric corresponds with:

- CDSB Section 4, "Management Actions"¹²
- CDP questionnaire "CC3. Targets and Initiatives"

¹² 4.12, "Disclosure shall include a description of the organization's long-term and short-term strategy or plan to address climate change-related risks, opportunities and impacts, including targets to reduce GHG emissions and an analysis of performance against those targets." *Climate Change Reporting Framework – Edition 1.1*, October 2012, CDSB.

Air Quality

Description

On-site fuel combustion and production processes in the Construction Materials industry emit criteria air pollutants and toxic chemicals, including small quantities of organic compounds and heavy metals. Some emissions of particular concern are those of mercury, nitrogen oxides, sulfur dioxides, and particulate matter. These air emissions can have significant, localized human health and environmental impacts. Financial impacts on companies from air emissions will vary depending on the specific location of operations and the prevailing air emissions regulations, but could include higher operating or capital expenditures and regulatory or legal penalties. Active management of the issue – through technological and process improvements – could allow companies to limit the impact of regulations and benefit from operational efficiencies that could lead to a lower cost structure over time.

Accounting Metrics

NR0401-03. Air emissions for the following pollutants: NO_x (excluding N₂O), SO_x, particulate matter (PM), dioxins/furans, volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and heavy metals

- .14 The registrant shall disclose its emissions released to the atmosphere of air pollutants associated with its activities:
- Direct air emissions from stationary or mobile sources that include, but are not limited to, production facilities, office buildings, marine vessels transporting products, truck fleets, and moveable equipment at production facilities.
- .15 The registrant shall disclose emissions released to the atmosphere by emissions type. Substances include:
- Oxides of nitrogen (including NO and NO₂ and excluding N₂O) reported as NO₂
 - Oxides of sulfur (SO₂ and SO₃) reported as SO₂
 - Particulate matter (PM); reported as the sum of PM₁₀ and PM_{2.5}, or all particulates less than 10 micrometers in diameter
 - Dioxins/furans, reported, at a minimum, as the sum of the 17 congeners of polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) that contain chlorine
 - Non-methane volatile organic compounds (VOCs), defined as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and methane, which participates in atmospheric photochemical reactions, except those designated by the U.S. Environmental Protection Agency (EPA) as having negligible photochemical reactivity
 - Heavy metals emissions include: Lead (Pb), mercury (Hg), and cadmium (Cd)
 - Polycyclic aromatic hydrocarbons (PAHs), at a minimum, include those listed in Table 1 of the European Commission Joint Research Centre's Institute for Reference Materials and Measurements [PAH Factsheet](#).
 - These include compounds frequently monitored by the Scientific Committee for Food (SCF), the European Union (EU), and the U.S. EPA.

- .16 This scope does not include CO₂, CH₄, and N₂O, which are disclosed in NR0401-01, as Scope 1 GHG emissions.
- .17 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 NR0401-01.
- .18 The registrant should discuss the calculation methodology for its emission disclosure, such as whether data are from continuous emissions monitoring systems (CEMS), engineering calculations, mass balance calculations, etc.

Energy Management

Description

Despite gains in energy efficiency in recent years, the production of construction materials requires vast quantities of energy, sourced primarily from direct combustion of fossil fuels and the electric grid. Energy-intensive production has implications for climate change, and electricity purchases from the grid create indirect impacts on the climate through the industry's Scope 2 emissions. Construction materials companies also use alternative fuels for their kilns, such as scrap tires and waste oil—often waste generated by other industries. If properly managed, these can lower energy costs and GHG emissions. However, there could be potentially negative impacts, such as releases of harmful air pollutants that companies need to minimize in order to obtain net benefits from using such fuels. Decisions about use of alternative fuels, renewable energy, and on-site generation of electricity (versus purchases from the grid) can play an important role in influencing both the costs and reliability of energy supply. Affordable, easily accessible, and reliable energy is essential for competitive advantage in this industry, with purchased fuels and electricity accounting for a significant proportion of total production costs. The way in which a construction materials company manages its overall energy efficiency, its reliance on different types of energy and associated sustainability risks, and its ability to access alternative sources of energy can influence its profitability.

Accounting Metrics

NR0401-04. Total energy consumed, percentage from: (1) purchased electricity, (2) alternative sources, (3) renewable sources

- .19 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.
- .20 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).
- .21 The registrant shall disclose purchased grid electricity consumption as a percentage of its total energy consumption.
- .22 The registrant shall disclose its consumption of energy from alternative sources as a percentage of its total energy consumption, in terms of its energy content.
 - Alternative sources of energy include: used tires, spent solvents and waste oils, processed municipal solid waste, household wastes, agricultural wastes such as rice, peanut shells and coffee husks, and animal meal, and sewage sludge.

- .23 The registrant shall disclose renewable energy consumption as a percentage of its total energy consumption.
- The scope of renewable energy includes the renewable energy the registrant directly produces, energy purchased 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 all renewable energy consumed as electricity in this manner, RECs must be retired on behalf of the registrant to be claimed as renewable energy as part of this disclosure.
 - 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 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.¹³
- .24 Renewable energy is defined as energy from sources that are capable of being replenished in a short time through ecological cycles, such as geothermal, wind, solar, hydro, and biomass.
- For the purposes of this disclosure, the scope of renewable energy from hydro and biomass sources are limited to the following:
 - Energy from hydro sources that are certified by the Low Impact Hydropower Institute.
 - Energy from biomass sources biomass sources are limited to those that are considered “eligible renewables” according to the [Green-e Energy National Standard Version 2.4](#) or eligible for a state Renewable Portfolio Standard.
- .25 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 (including for electricity from solar or wind energy).

¹³ SASB recognizes that RECs reflect the environmental attributes of renewable energy that have been introduced to the grid, and that a premium has been paid by the purchaser of the REC to enable generation of renewable energy beyond any renewable energy already in the grid mix, absent the market for RECs.

Water Management

Description

Despite reductions in water intensity over the past several years, the industry requires substantial volumes of water for the production process, presenting operational risks. Risks are likely to be higher in regions of water scarcity, due to potential water availability constraints and price volatility. Companies that are unable to secure a stable water supply could face production disruptions, while rising water prices could directly increase production costs. Consequently, the adoption of technologies and processes that reduce water consumption could lower operating risks and costs for companies and create a competitive advantage. This could minimize the impact of regulations, water supply shortages, and community-related disruptions on company operations.

Accounting Metrics

NR0401-05. Total fresh water withdrawn, percentage recycled, percentage in regions with High or Extremely High Baseline Water Stress

- .26 The registrant shall disclose the amount of water (in cubic meters) that was withdrawn from freshwater sources for use in operations.
- 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 total dissolved solids (TDS) concentration of less than 1000 mg/l per the Water Quality Association [definition](#).
- .27 Water obtained from a water utility can be assumed to meet the definition of freshwater.¹⁴
- .28 The registrant shall disclose the percentage of water recycled as the volume (in cubic meters) recycled divided by the volume of water withdrawn.
- Any volume of water reused multiple times shall be counted as recycled each time it is recycled and reused.
- .29 Using the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly available online [here](#)), the registrant shall analyze all of its operations for water risks and identify facilities that are in a location with High (40–80%) or Extremely High (>80%) Baseline Water Stress. Water withdrawn in locations with High or Extremely High Baseline Water Stress shall be indicated as a percentage of the total water withdrawn.
- .30 This accounting metric corresponds to section W5. Water Accounting of the CDP's [2014 Water Information Request](#).

¹⁴ <http://water.epa.gov/drink/contaminants/secondarystandards.cfm>

Waste Management

Description

Recycling rates in construction materials production are high. However, wastes from production processes, pollution control devices, and from hazardous waste management activities present a regulatory risk and can raise operating costs. Cement kiln dust (CKD) – consisting of fine-grained, solid, highly alkaline waste removed from cement kiln exhaust gas by air pollution control devices – is the most significant waste category in the industry. In the U.S., CKD is currently exempted from regulations governing hazardous wastes. However, the EPA is currently working to establish rules governing appropriate handling of CKD. Regulatory risk remains from evolving environmental laws, including those at a state level and for other waste streams. Companies that reduce waste streams—hazardous waste streams in particular—and recycle by-products, could therefore lower regulatory and litigation risks and costs.

Accounting Metrics

NR0401-06. Amount of waste from operations, percentage hazardous, percentage recycled

- .31 The amount of total waste shall be calculated in metric tons, where waste is defined as anything for which the registrant has no further use and which is discarded or is released to the environment.
- The scope includes slags, dusts, sludges, used oil, and other solid wastes that meet the above definition.
 - The scope excludes gaseous wastes.
- .32 The percentage hazardous shall be calculated as the weight of waste that meets the definition of hazardous waste under Subtitle C of the U.S. Environmental Protection Agency's (EPA) Resource Conservation and Recovery Act (RCRA) divided by the total weight of waste material.
- Hazardous wastes include those that display the following characteristics: ignitability, corrosivity, reactivity, or toxicity.
- .33 The percentage recycled shall be calculated as the weight of waste material that was reused, plus the weight recycled or remanufactured (through treatment or processing) by the registrant, plus the amount sent externally for further recycling, divided by the total weight of waste material, where:
- Reused materials are defined as those recovered products or components of products that are used for the same purpose for which they were conceived.
 - Recycled and remanufactured materials are defined as waste materials that have been reprocessed or treated by means of production or manufacturing processes and made into a final product or made into a component for incorporation into a product.
 - The scope of recycled and remanufactured products include primary recycled materials, co-products (outputs of equal value to primary recycled materials), and by-products (outputs of lesser value to primary recycled materials).

- Portions of products and materials that are disposed of in landfills are not considered recycled; only the portions of products that are directly incorporated into new products, co-products, or by-products shall be included in the percentage recycled.
- Materials sent for further recycling include those materials which are transferred to a third party for the expressed purpose of reuse, recycling, or refurbishment.
- Materials incinerated including for energy recovery are not considered reused or recycled. Energy recovery is defined as the use of combustible waste as a means to generate energy through direct incineration, with or without other waste, but with recovery of the heat.

Biodiversity Impacts

Description

Construction materials companies often operate their own quarries close to processing facilities. Quarrying requires the removal of vegetation and topsoil. It also requires the blasting and crushing of underlying stone deposits. The process can lead to permanent alterations of the landscape, with significant impacts on biodiversity. The environmental characteristics of the land where quarrying takes place could increase extraction costs, due to increasing awareness and protection of ecosystems. Companies could also face regulatory or reputational barriers to accessing sites in ecologically sensitive areas. This may include new protection status afforded to areas where reserves are located. Ongoing quarrying operations might result in the violation of laws protecting endangered species. Companies that have an effective environmental management plan for different stages of the project lifecycle—including restoration during site decommissioning—could minimize their compliance costs and legal liabilities. These companies could face less community resistance in quarrying at new sites and avoid difficulties in obtaining permits and delays in project completion.

Accounting Metrics

NR0401-07. Description of environmental management policies and practices for active sites

.34 The registrant shall provide a brief description of its environmental management plan(s) implemented at active sites, including where relevant:

- Lifecycle stages to which the plan(s) apply, such as: pre-bid (when the registrant is considering acquisition of a site), during exploration and appraisal, site development, production, and during closure, decommissioning, and restoration.
- The topics addressed by the plan(s), such as: ecological and biodiversity impacts, waste generation, noise impacts, emissions to air, discharges to water, natural resource consumption, and hazardous chemical usage.
- The underlying references for its plan(s), including whether they are codes, guidelines, standards, or regulations; whether they 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.

.35 Where applicable and relevant, the registrant shall describe specific policies and practices that apply to areas with protected conservation status and/or areas of critical habitat, which are [defined](#) by the International Finance Corporation (IFC) as:

- Areas with high biodiversity value, including (i) habitat of significant importance to Critically Endangered and/or Endangered species; (ii) habitat of significant importance to endemic and/or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes.¹⁵

¹⁵ International Finance Corporation (IFC), Performance Standard 6, *Biodiversity Conservation and Sustainable Management of Living Natural Resources*, January 1, 2012.

- .36 If the management policies and practices do not apply to all of the registrant's sites or operations, it shall indicate the percentage of sites to which they were applied.
- .37 Where environmental management policies and practices differ significantly by resource or mineral (e.g., silica as compared to gypsum), then the registrant shall describe differences for each resource.
- .38 The registrant shall disclose the degree to which its policies and practices are aligned with the International Finance Corporation's (IFC) [Performance Standards on Environmental and Social Sustainability](#), January 1, 2012, including specifically:
- Performance Standard 1 – Assessment and Management of Environmental and Social Risks and Impacts.
 - Performance Standard 3 – Resource Efficiency and Pollution Prevention.
 - Performance Standard 4 – Community Health, Safety, and Security.
 - Performance Standard 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources.
- .39 Additional relevant references may include:
- "[Environmental, Health and Safety Guidelines for Mining](#)," International Finance Corporation, December 10, 2007.
 - "[Towards Sustainable Decommissioning and Closure of Oil Fields and Mines: A Toolkit to Assist Government Agencies](#)," DRAFT Version 2.0, November 2009, World Bank Multistakeholder Initiative.

NR0401-08. Terrestrial acreage disturbed, percentage of impacted area restored

- .40 The registrant shall disclose the total acreage of disturbed land, where the scope includes land in in the exploration, development and production, or quarry/mine closure, and post-closure project phases.
- This disclosure shall be a cumulative total of all currently active sites and sites being restored; it is not limited to land newly disturbed during the fiscal year.
 - Land shall no longer be considered disturbed once post-closure restoration and remediation efforts are substantially complete (even if monitoring is ongoing).
- .41 The registrant shall disclose the percentage of disturbed acreage that was restored during the fiscal year, where, at a minimum, restoration meets the Society for Ecological Restoration [definition](#): "the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed."
- Restoration may be further defined by local, state, or national laws, industry standards, or the registrant's own guidelines.
 - The registrant shall disclose the definition of restoration and accompanying practices it follows.

Workforce Health, Safety, and Well-Being

Description

Employees and contractors of construction materials companies face significant health and safety risks. These risks are due in large part to exposure to heavy equipment and dangerous quarrying operations. In addition to acute impacts, workers can develop chronic health conditions from silica dust inhalation, among other factors. The industry has relatively high fatality rates, signifying the risky work environment, and requires a strong safety culture and health and safety policies. Worker injuries, illnesses, and fatalities can lead to regulatory penalties, negative publicity, low worker morale and productivity, and increased healthcare and compensation costs.

Accounting Metrics

NR0401-09. (1) Total Recordable Injury Rate (TRIR) and (2) Near Miss Frequency Rate for (a) full-time employees and (b) contract employees

- .42 For registrants whose workforce is entirely U.S.-based, the registrant shall disclose its total recordable injury rate (TRIR), as calculated and reported in the Occupational Safety and Health Administration's (OSHA) Form 300.
- OSHA guidelines provide details on determination of whether an event is a recordable occupational incident and definitions for exemptions for incidents that occurred in the work environment but are not occupational.
- .43 For registrants whose workforce includes non-U.S.-based employees, the registrant shall calculate its TRIR according to the U.S. Bureau of Labor Statistics [guidance](#) and/or using the U.S. Bureau of Labor Statistics [calculator](#).
- .44 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.
- .45 The registrant shall disclose its TRIR and NMFR for each of the following categories of employee:
- Direct, full time employees
 - Contract employees
- .46 The scope includes all employees, domestic and foreign.
- .47 Rates shall be calculated as: $(\text{statistic count} / \text{total hours worked}) * 200,000$.

NR0401-10. Number of reported cases of silicosis

.48 The registrant shall disclose the number of reported cases of silicosis (exposure to crystalline silica) affecting the registrant's current workforce or past employees.

- The scope of disclosure includes cases of chronic, acute, or accelerated silicosis.

Note to NR0401-10

.49 The registrant shall disclose its efforts to minimize workers' exposure to crystalline silica, such as respirator programs, engineering controls, or safety training programs.

.50 The registrant shall describe its processes (e.g., rules and their enforcement), procedures, trainings, and technologies used to minimize its workforce's exposure to crystalline silica.

- This may include systems for maintaining compliance with OSHA Standards for General Industry ([29 CFR 1910](#)), including sections on ventilation ([1910.94](#)) and air contaminants ([1910.1000](#)), and focusing on mineral dusts within the OSHA standards ([Table Z-3](#)).

.51 The registrant may choose to discuss exposure standards it follows such as:

- The U.S. Mine Safety and Health Administration (MSHA) and OSHA permissible exposure limit (PEL) for respirable crystalline silica (quartz), which is 100 µg/m³ as an 8-hour time-weighted average.
- The National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit (REL) of 0.05 µg/m³ as a 10-hour time-weighted average.

Product Innovation

Description

Innovations in building materials are a key component in the growth of sustainable construction. Consumer and regulatory trends are largely driving adoption of sustainable building materials and processes that are more resource efficient and lower health impacts of buildings throughout their lifecycle. This is creating new business drivers for construction materials companies, with an opportunity to increase revenues. Furthermore, some new products require less energy to produce, or use largely recycled inputs, reducing production costs. Sustainable construction materials, therefore, are likely to drive a company's long-term growth and competitiveness.

Accounting Metrics

NR0401-11. Percentage of products that can be used for credits in sustainable building design and construction certifications

- .52 The registrant shall calculate the percentage as the revenue during the fiscal year from products that can be used for credits in recognized sustainable design and construction certifications divided by the total revenue from building products.
- The scope of products excludes raw or intermediate materials that would require additional manufacturing before being incorporated into a building; the registrant shall exclude these products from the numerator and denominator of its calculations.
- .53 Recognized sustainable building design and construction certifications and guidelines include: BREEAM® (BRE Global), Green Globes® (Green Building Initiative), LEED® (U.S. Green Building Council), and ICC-700 National Green Building Standard® (National Association of Home Builders).¹⁶
- If the registrant's products can be used to obtain credits in certifications other than those described above, it shall provide the name of the certification and evidence of why it is equal to or more rigorous than those standards listed here.
- .54 The registrant may choose to disclose and discuss which specific products contribute to sustainable building practices and future plans to address market demand for these types of products.

NR0401-12. Total addressable market and share of market for products that reduce energy, water, and/or material impacts during usage and/or production

- .55 The registrant shall provide an estimation of the total addressable market for products that show reduced environmental impacts at various lifecycle stages, including during material sourcing, manufacturing, and product usage (hereafter, "reduced environmental impact products").
- Total addressable market is defined as potential revenue (in billions of U.S. dollars) should the registrant capture 100 percent of the market share of the product category (e.g., the global market for reduced environmental impact building products).

¹⁶ SASB is not affiliated with any of the standards or organization listed, and listing should not be taken as an endorsement of any standard or organization. Listing of standards is not meant to imply that standards are identical in scope, underlying requirements, or criteria, or that standards are interchangeable.

.56 The scope of products includes those:

- With product attributes that reduce energy consumption or increase energy efficiency for users, such as by providing improved insulation as compared to typical products.
- With process or product attributes that reduce the amount water required in manufacturing, during product assembly, or product usage.
- That use secondary or recycled materials in place of virgin materials such that upstream impacts are reduced.
- Made with design innovations that lower carbon emissions during manufacturing, such as use of renewable fuels, energy efficiency improvements, the use of materials requiring less processing, etc.

.57 If there is a significant difference between the total addressable market and the market that the registrant can serve through its existing or planned capabilities, sales channels, or products (i.e., the serviceable available market) then the registrant should disclose this information.

.58 The registrant shall disclose the share of the total addressable market for reduced environmental impact products that it currently captures with its products.

- Market share shall be calculated as revenues from these products divided by the size of the total addressable market.

.59 The registrant may provide a projection of growth of this market, where the projected addressable market is represented – based on a reasonable set of assumptions about changes in market conditions – as a percentage of year-on-year growth or as an estimate of the market size after a defined period (i.e., the market size in 10 years).

- The registrant may disclose its target 3-year market share as a measurement of targeted growth, where the target is the percentage of the total addressable market that the registrant plans to address over a three-year time horizon.

Pricing Integrity & Transparency

Description

The construction materials market has been subject to instances of anti-competitive behavior, such as maintaining artificially high prices through cartel activity. Most countries have well-established fair business practice laws in place. Business activity leading to price fixing or other manipulation of prices can lead to material legal fines or business disruption. Managing anti-competitive behavior within an organization can effectively mitigate regulatory risks, including those related to investigations of mergers and acquisitions or compliance costs.

Accounting Metrics

NR0401-13. Amount of legal and regulatory fines and settlements associated with cartel activities, price fixing, and anti-trust activities

- .60 The registrant shall disclose the amount (excluding legal fees) of all fines or settlements associated with incidents relating to anti-competitive behavior, including, but not limited to, cartel activities, price fixing, and anti-trust activities.
- .61 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 NR0401-13

- .62 The registrant shall briefly describe the nature (e.g., guilty plea, deferred agreement, or non-prosecution agreement) and context (e.g., collusion, price fixing, anti-trust, etc.) of fines and settlements.
- .63 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, business partners, training, or technology.

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