Overview of GHG Protocol Integration in Regulatory Climate Disclosure Rules

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A key goal of GHG Protocol's update process for its corporate suite of standards is to align with major disclosure initiatives under development. In the past two years there have been significant developments in emerging climate disclosure mandates around the world. This resource provides an overview of four climate-related disclosure rules that integrate GHG Protocol standards and guidance:

- IFRS S2 Climate-related Disclosures issued by the International Sustainability Standards Board (ISSB)
- European Sustainability Reporting Standards (ESRS) mandated by the European Union Corporate Sustainability Reporting Directive (CSRD)
- Climate Corporate Data Accountability Act (CA SB 253) adopted by the California State Legislature for regulatory development by the California Air Resources Board (CARB)
- The Enhancement and Standardization of Climate-Related Disclosures for Investors Rule enacted by the United States Securities and Exchange Commission (US SEC)

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A. IFRS S2 Climate-related Disclosures

A.1. IFRS S2 Overview

The International Sustainability Standards Board (ISSB) is a standard-setting body established under the IFRS Foundation to develop sustainability-related financial reporting standards to meet investors' needs. In June of 2023, the ISSB issued IFRS S1 (General Requirements for Disclosure of Sustainability-related Financial Information) and IFRS S2 (Climate-related Disclosures). IFRS S1 is the core framework for the disclosure of financially material information about sustainability-related risks and opportunities across an entity's value chain. IFRS S2 is a thematic standard that sets out requirements for entities to disclose information about climate-related risks and opportunities. This overview focuses solely on IFRS S2 because of the reference and utilization of GHG Protocol standards.

IFRS Sustainability Standards are voluntary standards, meaning jurisdictions can decide to require application of the IFRS S1 and S2 standards as a basis for sustainability reporting. For example, IFRS S2 is being adopted into regulatory frameworks in Turkey, Nigeria and Brazil, while other governments have expressed intention to make IFRS S2 mandatory, including New Zealand, the Philippines, Singapore and Taiwan. The effective date of IFRS S2 is on or after January 1, 2024 depending on the jurisdictional implementation of the standard.

Table A1. IRFS S2 Overview

Program	International Sustainability Standards Board (ISSB)
Standard Name	IFRS S2 Climate-Related Disclosures
Disclosure Type	Voluntary; Mandatory when implemented at jurisdictional level
Objective	To develop a comprehensive global baseline of sustainability reporting standards for consistent, comparable and high-quality sustainability reporting designed to meet investor needs
Impact	Estimated 100,000-130,000 companies globally in countries such as Japan, Canada, and Australia (Reuters)
Effective Date	January 1, 2024

A.2. IFRS S2 Direct Reference of the GHG Protocol

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (2004) and the Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (2011) are both directly referenced and required for disclosure following IFRS S2 rules, unless the reporting entity is required by a jurisdictional authority or an exchange on which it is listed to use a different method for measuring its greenhouse gas emissions. The publication years of both GHG Protocol standards referenced in IFRS S2 are included, meaning any updated versions of GHG Protocol standards must undergo review by IFRS in order to be adopted.

Table A2. IFRS S2 Direct Reference of GHG Protocol

Referenced GHG Protocol Standards	Greenhouse Gas Protocol: A Corporate and Accounting Reporting Standard (2004); Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (2011)
Other Allowable Disclosure Frameworks	None; the GHG Protocol is the only allowable disclosure framework, unless the reporting entity is required by a jurisdictional authority or an exchange on which it is listed to use a different method for measuring its greenhouse gas emissions.
Requirements to Transition to GHG Protocol	None. *"If, in the annual reporting period immediately preceding the date of initial application of this Standard, the entity used a method for measuring its greenhouse gas emissions other than the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (2004), the entity is permitted to continue using that other method" (IFRS S2, section C4)*.
Cadence for Update	Not mentioned

A.3. IFRS S2 Organizational Boundaries

There is alignment between IFRS S2 and the GHG Protocol Corporate Standard in guidance on organizational boundaries: both allow for a choice in consolidation approach between equity share and control.

Table A3. IFRS S2 Organizational Boundaries

Category	**GHG Protocol**	**IFRS S2**	**Differences**
Organizational Boundaries	*"For corporate reporting, two distinct approaches can be used to consolidate GHG emissions: the equity share and the control approaches" (Corporate Standard, pg. 17).*	*"When the entity discloses its greenhouse gas emissions measured in accordance with the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (2004), the entity is required to use the equity share or control approach" (IFRS S2, Section B27).*	**None**

A.4. IFRS S2 Operational Boundaries

IFRS S2 requires the disclosure of scope 1, 2, and 3 emissions while the GHG Protocol Corporate Standard allows for the option of reporting scope 3 emissions, unless also following the Scope 3 Standard.

Table A4. IFRS S2 Operational Boundaries

Category	GHG Protocol	IFRS S2	Differences
Operational Boundaries	*"Companies shall separately account for and report on scopes 1 and 2 at a minimum" (Corporate Standard, pg. 25).* *"Companies shall report scope 3 emissions following the requirements of the Scope 3 Standard" (Corporate Value Chain Scope 3 Standard, pg. 6).*	*"The entity shall disclose its absolute gross GHG emissions generation during the reporting period, expressed as metric tonnes of CO2 equivalent classified as Scope 1 emissions, Scope 2 emissions, and Scope 3 emissions" (IFRS S2, section 29).* *"Scope 3 greenhouse gas emissions, in accordance with the Scope 3 categories described in the Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (2011)" (IFRS S2, section 29).*	**IFRS S2 requires scope 3 reporting.** **This is a divergence from the GHG Protocol Corporate Standard, though aligns with the requirements of the Scope 3 Standard.**

A.5. IFRS S2 Scope 2 Emissions

IFRS S2 and the GHG Protocol Corporate Standard have differing requirements for reporting scope 2 emissions. IFRS S2 requires location-based reporting with separate disclosure of contractual instruments. The GHG Protocol Corporate Standard, which includes the Scope 2 Guidance, requires dual reporting of both the location- and market-based methods.

Table A5. IFRS S2 Scope 2 Emissions

Category	GHG Protocol	IFRS S2	Differences
Dual Reporting	*"Companies with any operations in markets providing product or supplier-specific data in the form of contractual instruments shall report scope 2 emissions in two ways and label each result according to the method: one based on the location-based method, and one based on the market-based method. This is also*	*"For Scope 2 greenhouse gas emissions, disclose its location-based Scope 2 greenhouse gas emissions, and provide information about any contractual instruments that is necessary to inform users' understanding of the entity's Scope 2 greenhouse gas emissions" (IFRS S2, section 29).*	**Dual reporting is not required in IFRS S2. The market-based method is not required under IFRS S2 but may be reported as part of an entity's disclosure.**

	termed 'dual reporting'" (Scope 2 Guidance, pg. 8).	*"Various types of contractual instruments are available in different markets and the entity might disclose information about its market-based Scope 2 greenhouse gas emissions as part of its disclosure (IFRS S2, section B31).*	

A.6. IFRS S2 Scope 3 Emissions

IFRS S2 requires the disclosure of scope 3 emissions in all fifteen scope 3 categories and provides relief for entities in the first reporting year. The fifteen categories follow the same requirements outlined in the GHG Protocol Scope 3 Standard, though the GHG Protocol does not issue transition periods as a voluntary GHG accounting standard.

Table A6. IFRS S2 Scope 3 Emissions

Category	**GHG Protocol**	**IFRS S2**	**Differences**
Scope 3 Emissions	*"Companies shall report scope 3 emissions following the requirements of the Scope 3 Standard" (Corporate Value Chain Scope 3 Standard, pg. 6).*	*"An entity shall disclose Scope 1, Scope 2, and Scope 3 emissions" (IFRS S2, section 29).* *"In the first annual reporting period in which an entity applies this Standard, an entity is not required to disclose its Scope 3 greenhouse gas emissions" (IFRS S2, section C4).*	**None, though companies following IFRS S2 requirements are provided relief from scope 3 reporting requirements for the first reporting year.**
Scope 3 Categories	*"[There are] 15 categories that comprise scope 3 emissions. Companies are required to report scope 3 emissions by scope 3 category.*	*"The entity shall consider its entire value chain (upstream and downstream) and shall consider all 15 categories of Scope 3 greenhouse gas*	**None**

	Any scope 3 activities not captured by the list of scope 3 categories may be reported separately" ([Corporate Value Chain Scope 3 Standard, pg. 31]).	*emissions, as described in the Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard" ([IFRS S2, section B32]).*	

A.7. IFRS S2 Land Sector Emissions

IFRS S2 does not specify requirements regarding reporting of biogenic emissions or GHG removals. The GHG Protocol Corporate Standard requires disclosure of biogenic emissions and GHG removals outside of the GHG inventory.

B. European Sustainability Reporting Standards (ESRS E1)

B.1. ESRS S1 Overview

In the European Union, the Corporate Sustainability Reporting Directive (CSRD) requires companies to disclose sustainability information. Under CSRD, the European Sustainability Reporting Standards (ESRS) E1 Climate Change directly references and adopts the GHG Protocol Corporate Standard and Scope 3 Standard.

CSRD sets forth the European Sustainability Reporting Standards to specify what information an undertaking organization shall disclose about its material impacts, risks, and opportunities in relation to sustainability matters. Materiality as defined in ESRS refers to "double materiality," which includes both impact materiality and financial materiality. Impact materiality pertains to the undertaking's material actual or potential positive or negative impacts on people or the environment over short-, medium- and long-term time horizons. Financial materiality relates to any risks or opportunities that affect (or could reasonably be expected to affect) the undertaking's financial position, financial performance, cash flows, access to finance or cost of capital over the short, medium or long term.

CSRD is expected to affect approximately 50,000 companies that are not currently already reporting their environmental, social, and governance activities under the EU's Non-Financial Reporting Directive (Grant Thornton, 2023). The scope of the CSRD will include EU subsidiaries of non-EU parent companies, including US companies and global multinational companies. The rule will begin to apply to organizations between 2024 and 2028 depending on company size, starting with the largest (over 500 employees) on January 1, 2024.

Table B1. ESRS E1 Overview

Program	Corporate Sustainability Reporting Directive (CSRD)
Standard Name	European Sustainability Reporting Standards: Climate Change (ESRS E1)
Disclosure Type	Mandatory for large companies in European Union
Objective	*"Specify the information that an undertaking shall disclose about its material impacts, risks, and opportunities in relation to ESG sustainability matters. The information disclosed with ESRS enables users of the sustainability statement to understand the undertaking's material impacts on people and environment and the material effects of sustainability matters on the undertaking's development" (ESRS E1, pg. 5)*.
Impact	Estimated 50,000 companies in EU and EU subsidiaries of non-EU parent companies, including US companies and global multinational companies (Grant Thornton)
Effective Date	January 1, 2024 (or later depending on company size). More information on phase-in can be found here.

B.2. ESRS E1 Direct Reference of GHG Protocol

ESRS 1 requires the use of the GHG Protocol Corporate Standard (2004), including the Scope 2 Guidance (2015), the Scope 3 Standard (2011), Product Standard (2011), Agriculture Guidance (2014), and the Land use, Land-use Change, and Forestry Guidance for GHG Project Accounting (2006). The publication years of all GHG Protocol standards referenced in ESRS E1 are included, meaning any updated versions of GHG Protocol standards must undergo review by the European Commission in order to be adopted.

ESRS E1 allows for the choice of reporting using either the GHG Protocol standard(s) and ISO 14064-1:2018. However, if the entity chooses to use ISO 14064-1:2018, the entity shall comply with the requirements of the GHG Protocol Scope 2 Guidance regarding reporting boundaries and the disclosure of market-based scope 2 GHG emissions.

Table B2. ESRS E1 Direct Reference of GHG Protocol

Referenced GHG Protocol Standards	Required: Greenhouse Gas Protocol: A Corporate and Accounting Reporting Standard (version 2004); GHG Protocol Scope 2 Guidance (version 2015); Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (version 2011) Considerations: GHG Protocol Corporate Standard (version 2004); Product Standard (version 2011); Agriculture Guidance (version 2014); Land use, Land-use Change, and Forestry Guidance for GHG Project Accounting (version 2006)
Other Allowable Disclosure Frameworks	*"The undertaking may consider Commission Recommendation (EU) 2021/227958 or the requirements stipulated by EN ISO 14064- 1:2018. If the undertaking already applies the GHG accounting methodology of ISO 14064- 1: 2018, it shall nevertheless comply with the requirements of this standard (e.g., regarding reporting boundaries and the disclosure of market-based Scope 2 GHG emissions)" (ESRS E1, pg. 97).*
Requirements to Transition	None, choice is allowed between GHG Protocol and ISO 14064:2018.

to GHG Protocol	
Cadence for Update	Not mentioned

B.3. ESRS E1 Organizational Boundaries

ESRS E1 requires use of the operational control approach only, while the GHG Protocol Corporate Standard allows for choice between the equity share and the control approach. In addition, ESRS E1 requires disaggregation of emissions between the parent and unconsolidated subsidiaries, whereas this is not a requirement in the GHG Protocol Corporate Standard.

Table B3. ESRS E1 Organizational Boundaries

Category	**GHG Protocol**	**ESRS E1**	**Differences**
Control Approach	*"For corporate reporting, two distinct approaches can be used to consolidate GHG emissions: the equity share and the control approaches" (Corporate Standard, pg. 17).*	*"For its associates, joint ventures, unconsolidated subsidiaries and contractual arrangements that are joint arrangements not structured through an entity, the undertaking shall include the GHG emissions in accordance with the extent of the undertaking's operational control over them" (ESRS E1, pg. 81).*	**ESRS E1 requires the use of the operational control approach only.**
Joint Ventures	The GHG Protocol Corporate Standard (2004) does not describe any requirement to disaggregate emissions for consolidation accounting groups and investees.	*"For Scope 1 and Scope 2 emissions the undertaking shall disaggregate the information, separately disclosing emissions from the consolidated accounting group (the parent and subsidiaries); and investees such as associates, joint*	**ESRS E1 requires disaggregation between consolidated group and its investees.**

		ventures, or unconsolidated subsidiaries that are not fully consolidated in the financial statements of the consolidated accounting group, as well as contractual arrangements that are joint arrangements not structured through an entity (i.e., jointly controlled operations and assets), for which it has operational control" (ESRS E1, pg. 81).	

B.4. ESRS E1 Operational Boundaries

ESRS E1 requires scope 1, 2, and 3 emissions as operational boundaries whereas the GHG Protocol Corporate Standard requires only scope 1 and 2 emissions. However, the GHG Protocol Scope 3 Standard, a separate standard from the Corporate Standard, does require disclosure of scope 3 emissions in addition to the requirements of the Corporate Standard.

Table B4. ESRS E1 Operational Boundaries

Category	GHG Protocol	ESRS E1	Differences
Operational Boundaries	*"Companies shall separately account for and report on scopes 1 and 2 at a minimum" (Corporate Standard, pg. 25).* *"Companies shall report scope 3 emissions following the requirements of the Scope 3 Standard" (Corporate Value Chain Scope 3 Standard, pg.6).*	*"The undertaking shall disclose in metric tonnes of CO2eq its: (a) gross Scope 1 GHG emissions; (b) gross Scope 2 GHG emissions; (c) gross Scope 3 GHG emissions; and (d) total GHG emissions" (ESRS E1, pg. 80).*	**ESRS E1 requires scope 3 reporting.** **This is a divergence from the GHG Protocol Corporate Standard, though aligns with the Scope 3 Standard requirements of the Scope 3 Standard.**

B.5. ESRS E1 Scope 2 Emissions

There are no differences between the CSRD and the GHG Protocol regarding scope 2 emissions. Both frameworks require dual reporting using both the location and market-based method.

Table B5. ESRS E1 Scope 2 Emissions

Category	GHG Protocol	ESRS E1	Differences
Scope 2 Emissions	*"Companies with any operations in markets providing product or supplier-specific data in the form of contractual instruments shall report scope 2 emissions in two ways and label each result according to the method: one based on the location-based method, and one based on the market-based method. This is also termed 'dual reporting'" (Scope 2 Guidance, pg. 8).*	*"The undertaking shall apply the location-based and market-based methods to calculate Scope 2 GHG emissions and provide information on the share and types of contractual instruments" (ESRS E1, pg. 99).* *"When preparing the information on gross Scope 2 GHG **emissions** required under paragraph 49, the undertaking shall:* *"Consider the principles and requirements of the GHG Protocol Scope 2 Guidance (version 2015, in particular the Scope 2 quality criteria in chapter 7.1 relating to contractual instruments); it may also consider Commission Recommendation (EU) 2021/2279 or the relevant requirements for the quantification of **indirect GHG emissions** from imported energy in EN ISO 14064-1:2018" (ESRS E1, pg. 98).*	**None**

B.6. ESRS E1 Scope 3 Emissions

The ESRS E1 requires the disclosure of scope 3 emissions in all fifteen scope 3 categories outlined by the GHG Protocol Scope 3 Standard. ESRS E1 offers relief to smaller companies with fewer than 750 employees, in the first reporting year.

Table B6. ESRS E1 Scope 3 Emissions

Category	GHG Protocol	ESRS E1	Differences
Scope 3 Emissions	*"Companies shall report scope 3 emissions following the requirements of the Scope 3 Standard" (Corporate Value Chain Scope 3 Standard, pg. 6).*	*"When preparing the information on gross Scope 3 GHG emissions required under paragraph 51, the undertaking shall consider the principles and provisions of the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (Version 2011); and it may consider Commission Recommendation (EU) 2021/2279 or the relevant requirements for the quantification of indirect GHG emissions from EN ISO 14064-1:2018" (ESRS E1, pg. 99).* *"Undertakings or groups not exceeding on their balance sheet dates the average number of 750 employees during the financial year (on a consolidated basis where applicable) may omit the*	**None, ESRS E1 is aligned with the Scope 3 Standard.** **ESRS E1 provides relief for entities in the first reporting period.**

		datapoints on scope 3 emissions and total GHG emissions for the first year of preparation of their sustainability statement" (ESRS E1, pg. 33).	
Scope 3 Categories	*"[There are] 15 categories that comprise scope 3 emissions. Companies are required to report scope 3 emissions by scope 3 category. Any scope 3 activities not captured by the list of scope 3 categories may be reported separately" (Corporate Value Chain Scope 3 Standard, pg. 31).*	*"The undertaking shall screen its total Scope 3 GHG emissions based on the 15 Scope 3 categories identified by the GHG Protocol Corporate Standard and GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (Version 2011) using appropriate estimates" (ESRS E1, p. 99).* *"The Scope 3 GHG emissions may also be presented by according to the indirect emission categories defined in EN ISO 14064-1:2018" (ESRS E1, pg. 102).*	**None, all fifteen categories are required by ESRS E1.**

B.7. ESRS E1 Land Sector Emissions

There are no major differences between the ESRS E1 and the GHG Protocol Corporate Standard regarding the treatment of GHG removals and biogenic emissions. Both frameworks require GHG removals and biogenic emissions to be disclosed outside of the GHG inventory.

Table B7. ESRS Land Sector Emissions

Category	**GHG Protocol**	**ESRS E1**	**Differences**
GHG Removals	*"Information on sequestered carbon in*	*"The disclosure on GHG removals and storage shall*	**None**

	the company's inventory boundary should be kept separate from project-based reductions at sources that are not in the inventory boundary. Where removal enhancement projects take place within a company's inventory boundary they would normally show up as an increase in carbon removals over time but can also be reported in optional information. However, they should also be identified separately to ensure that they are not double counted" (Corporate Standard, pg. 89. *"Any GHG removals (e.g., biological GHG sequestration) shall not be included in scope 3, but may be reported separately" (Scope 3 Standard, pg. 60).*	*include, if applicable: the total amount of GHG removals and storage in metric tons of CO2eq disaggregated and separately disclosed for the amount related to the undertaking's own operations and its value chain, and broken down by removal activity" (ESRS E1, pg. 82).*	
Biogenic Emissions	*"Biogenic CO2 emissions that occur in the reporting company's value chain shall not be included in the scopes, but shall be included and separately reported in the public report" (Scope 3 Standard, pg. 60).*	*"Disclose biogenic emissions of CO2 from the combustion or bio-degradation of biomass separately from the Scope 1 GHG emissions, but include emissions of other types of GHG" (ESRS E1, pg. 98)* *"Disclose biogenic emissions of CO2 carbon from the combustion or biodegradation of biomass separately from the Scope 2*	**None**

		GHG emissions but include emissions of other types of GHG" (ESRS E1, pg. 99). *"Disclose biogenic emissions of CO2 from the combustion or biodegradation of biomass that occur in its upstream and downstream value chain separately from the gross Scope 3 GHG emissions, and include emissions of other types of GHG" (ESRS E1, pg. 100).*	

C. U.S. SEC Rule: The Enhancement and Standardization of Climate-Related Disclosure for Investors

C.1. SEC Rule Overview

The United States Securities and Exchange Commission enacted The Enhancement and Standardization of Climate-Related Disclosures for Investors Rule (termed here, 'SEC Rule') which will require companies publicly traded in the United States to disclose scope 1 and scope 2 emissions if the emissions information is determined to be financially material to investors. The rule was finalized on March 6, 2024, almost two years after the draft rule was proposed. The draft rule had required disclosure across all three scopes, but the requirement to report scope 3 was not included in the final rule.

Table C1. SEC Rule Overview

Program	United States Securities and Exchange Commission (SEC)
Proposed Rule	The Enhancement and Standardization of Climate-Related Disclosures for Investors
Disclosure Type	Mandatory for companies publicly traded in the U.S.
Objective	To ensure that investors have access to consistent and reliable information on the climate-related risks and opportunities faced by public companies, and to encourage companies to address these risks and opportunities in their operations and strategies
Impact	Estimated 4,000 companies
Effective Date	Effective date is 60 days after date of publication in the Federal Register, compliance date is dependent on the status of the registrant

C.2. SEC Rule Direct Reference of GHG Protocol

The SEC Rule cites the GHG Protocol framework, but provides registrants with the option to use the accounting standards of their choice.

Table C2. SEC Rule Direct Reference of GHG Protocol

Referenced GHG Protocol Standards	Greenhouse Gas Protocol: A Corporate and Accounting Reporting Standard (2004); GHG Protocol Scope 2 Guidance (2015)
Other Allowable Disclosure Frameworks	*"Registrants have flexibility to leverage standards of their choice in calculating and disclosing GHG emissions metrics required by the final rules, including the GHG Protocol or relevant ISO standards, or other standards that may be established over time" (SEC Rule, pg. 245).*
Requirements to Transition to GHG Protocol	None
Cadence for Update	Not mentioned

C.3. SEC Rule Organizational Boundaries

The SEC Rule provides registrants with the flexibility to choose the method for determining organizational boundary as long as it discloses the method it uses.

Table C3. SEC Rule Organizational Boundaries

Category	GHG Protocol	SEC	Differences
Organizational Boundaries	*"For corporate reporting, two distinct approaches can be used to consolidate GHG emissions: the equity share and the control approaches" (Corporate Standard, pg. 17)*	*"A registrant will have flexibility to use, for example, one of the methods for determining control under the GHG Protocol, including the operational control approach, as recommended by some commenters, as long as it discloses the method used, and provides investors with information material to understanding the scope of entities and operations included in the GHG emissions calculation as compared to those included in its financial statements" (SEC Rule, pg. 252)*	**None**

C.4. SEC Rule Operational Boundaries

The SEC Rule only requires disclosure of scope 1 and scope 2 emissions if those emissions are deemed material, as defined in the table below.

Table C4. SEC Rule Operational Boundaries

Category	GHG Protocol	SEC	Differences
Operational Boundaries	*Companies shall separately account for and report on scopes 1 and 2 at a minimum (Corporate Standard, pg. 25)* *Companies shall report scope 3 emissions following the requirements of the Scope 3 Standard (Corporate Value Chain Scope 3 Standard, pg. 6)*	*"The final rules will require the disclosure of Scope 1 emissions and/or Scope 2 emissions metrics by LAFs and AFs that are not SRCs or EGCs, on a phased in basis if such emissions are material" (SEC Rule, pg. 244-245).* *"As with other materiality determinations under the Federal securities laws and Regulation S-K, the guiding principle for this determination is whether a reasonable investor would consider the disclosure of an item of information, in this case the registrant's Scope 1 emissions and/or its Scope 2 emissions, important when making an investment or voting decision or such a reasonable investor would view omission of the disclosure as having significantly altered the total mix of information made available" (SEC Rule, pg. 246).*	**SEC Rule requires disclosure of scope 1 and scope 2 emissions if they are deemed material.**

C.5. SEC Rule Scope 2 Emissions

The SEC Rule indicates that registrants may use the market-based method, the location-based method, or both.

Table C5. SEC Rule Scope 2 Emissions

Category	GHG Protocol	SEC Rule	Differences
Scope 2 Emissions	*"Companies with any operations in markets providing product or*	*"We would expect a registrant to also disclose whether it calculated its*	**The SEC Rule indicates that registrants may report the**

	supplier-specific data in the form of contractual instruments shall report scope 2 emissions in two ways and label each result according to the method: one based on the location-based method, and one based on the market-based method. This is also termed 'dual reporting'" (Scope 2 Guidance, pg. 8).	*Scope 2 emissions using a particular method (which may differ from the method used to calculate Scope 1 emissions, to the extent both Scope 1 and 2 emissions are required to be disclosed under the final rules), such as the location-based method, market-based method, or both" (SEC Rule, pg. 254).*	**market-based method, the location-based method, or both.** **This is a divergence from the GHG Protocol Corporate Standard and Scope 2 Guidance, which requires dual reporting.**

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C.6. SEC Rule Scope 3 Emissions

SEC Rule does not require scope 3 emissions reporting.

Table C6. SEC Rule Scope 3 Emissions

Category	GHG Protocol	SEC Rule	Differences
Scope 3 Emissions	*Companies shall report scope 3 emissions following the requirements of the Scope 3 Standard (Corporate Value Chain Scope 3 Standard, pg. 6)*	*"No registrants are required to disclose Scope 3 emissions or obtain an attestation report for Scope 3 emissions under the final rules" (SEC Rule, pg. 332).*	**The SEC Rule does not require scope 3 emissions reporting.** **Thus, it is aligned with the reporting requirements of scopes 1 and 2, following the GHG Protocol Corporate Standard, but unaligned with the scope 3 reporting requirements of the GHG Protocol Scope 3 Standard.**

C.7. SEC Rule Land Sector Emissions

The SEC Rule does not reference biogenic emissions, though states that GHG removals should be reported separately from scope 1 and 2 emissions.

Table C7. SEC Rule Land Sector Emissions

Category	**GHG Protocol**	**SEC Rule**	**Differences**
GHG Removals	*"Information on sequestered carbon in the company's inventory boundary should be kept separate from project-based reductions at sources that are not in the inventory boundary. Where removal enhancement projects take place within a company's inventory boundary they would normally show up as an increase in carbon removals over time but can also be reported in optional information. However, they should also be identified separately to ensure that they are not double counted" (Corporate Standard, pg. 89.* *"Any GHG removals (e.g., biological GHG sequestration) shall not be included in scope 3, but may be reported separately" (Scope 3 Standard, pg. 60).*	*"If carbon offsets or RECs have been used as a material component of a registrant's plan to achieve climate-related targets or goals, the final rules require registrants to separately disclose the amount of carbon avoidance, reduction, or removal represented by the offsets or the amount of generated renewable energy represented by the RECs, the nature and source of the offsets or RECs, a description and location of the underlying projects, any registries or other authentication of the offsets or RECs, and the costs of the offsets or RECs. Describing the features of RECs will help investors understand how registrants are managing their climate-related risks. (SEC Rule, pg. 679).*	**None**
Biogenic Emissions	*"Biogenic CO2 emissions that occur in the reporting company's value chain shall not be included in the scopes, but shall be included and separately reported in the public report" (Scope 3 Standard, pg. 60).*	Not discussed	**The SEC rule does not address separate reporting of biogenic CO2 emissions.**

D. California Climate Corporate Data Accountability Act (CA SB 253)

D.1. California Senate Bill 253 Overview

In October 2023, California Governor Gavin Newson signed the Climate Corporate Data Accountability Act, or California Senate Bill 253 (SB 253) into law. This Act requires the California Air Resources Board (CARB), on or before January 1, 2025, to develop and adopt regulations requiring companies with over $1 billion in revenues that do business in California to publicly disclose their scope 1 and scope 2 greenhouse gas emissions starting in 2026 and their scope 3 greenhouse gas emissions starting in 2027.

The regulations would apply to an estimated 5,400 public and private companies as well as subsidiaries of non-US-headquartered companies.

Table D1. SB 253 Overview

Program	California Air Resources Board (CARB)
Standard Name	Senate Bill 253: Climate Corporate Data Accountability Act (CA SB 253)
Disclosure Type	Companies operating in California with over $1 billion in annual revenue
Objective	To mandate GHG emissions data reporting for large companies that do business in California, as well as ensure public access to the data in a manner that is easily understandable and accessible to inform investors, empower consumers, and activate companies. CA SB 253 is a step for California to protect the state and its residents and improve risk management to move towards a net-zero carbon economy.
Impact	Estimated 5,400 companies (Withum)
Effective Date	January 1, 2025

D.2. SB 253 Direct Reference of GHG Protocol

The bill requires companies to use the GHG Protocol Corporate Standard and the Corporate Value Chain (Scope 3) Standard. Starting in 2033 and every five years thereafter, the state board may survey and assess other available greenhouse gas accounting and reporting standards and adopt another standard if it determines its use would more effectively further the goals of the bill.

Table D2. SB 253 Direct Reference of GHG Protocol

Referenced GHG Protocol Standards	Greenhouse Gas Protocol: A Corporate and Accounting Reporting Standard; Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard
Versions of the Standards	Versions of standards are not specified
Other Allowable	The GHG Protocol standards are the only allowable frameworks until a reevaluation year of 2033

Disclosure Frameworks	
Requirements to Transition to GHG Protocol	None
Cadence for Update	*The bill would authorize the state board, starting in 2033 and every 5 years thereafter, to assess the global greenhouse gas accounting and reporting standards and to adopt an alternative standard if it determines that using the alternative standard would more effectively further the goals of the bill (SB 253)*

D.3. SB 253 Organizational Boundaries

Organizational boundaries are to be determined by the California Air Resources Board (CARB).

D.4. SB 253 Operational Boundaries

Exact requirements for the disclosure of scope 1, 2, and 3 emissions will be determined by CARB, on or before January 1 2025. In 2026, the reporting entity must disclose scope 1 and 2 emissions. In 2027, the reporting entity must disclosure scope 1, 2, and 3 emissions.

Table D4. SB 253 Operational Boundaries

Category	GHG Protocol	SB 253	Differences
Operational Boundaries	*"Companies shall separately account for and report on scopes 1 and 2 at a minimum" (Corporate Standard, pg. 25).* *"Companies shall report scope 3 emissions following the requirements of the Scope 3 Standard" (Corporate Value Chain Scope 3 Standard pg. 6).*	*"On or before January 1, 2025, the state board shall develop and adopt regulations to require a reporting entity to annually disclose to the emissions registry, reporting organization, and verify, all of the reporting entity's scope 1 emissions, scope 2 emissions, and scope 3 emissions" (SB 253, Section 38532 (c)(1)).*	**SB 253 will require scope 3 reporting.** **This is divergence from the GHG Protocol Corporate Standard, though aligns with the requirements of the Scope 3 Standard.**

D.5. SB 253 Scope 2 Emissions

The California Air Resources Board (CARB) will develop the specific requirements regarding scope 2 emissions disclosure. Companies will need to begin disclosing scope 2 emissions in 2026 with the requirements determined by the state board.

D.6. SB 253 Scope 3 Emissions

The California Air Resources Board (CARB) will develop the specific requirements regarding scope 3 emissions disclosure. Companies will need to begin disclosing scope 3 emissions in 2027 with the requirements determined by the state board.

D.7. SB 253 Land Sector Emissions

Requirements for GHG removals and biogenic emissions will be determined by the California Air Resources Board (CARB).

Summary Areas of Alignment between GHG Protocol & Climate Disclosure Mandates

Framework	Requirement to use GHG Protocol	Organizational Boundaries	Operational Boundaries	Scope 2	Scope 3	Land Sector
GHG Protocol Corporate Standard	-	Choice of consolidation approach	Scope 1, 2, and 3 (scope 3 optional in Corporate Standard)	Dual reporting required	Scope 3 emissions required through Scope 3 Standard; 15 categories	Biogenic emissions and GHG removals reported separately from scopes
IFRS S2 (ISSB)	Requirement to use GHG Protocol, unless otherwise specified by jurisdictional authority	Choice of consolidation approach	Scope 1, 2, and 3	Location-based reporting with separate disclosure of contractual instruments. Market-based scope 2 emissions may be disclosed separately.	Scope 3 emissions required with relief for first reporting period; 15 categories	Not mentioned
ESRS E1 (EU CSRD)	Option between GHG Protocol and ISO 14064: 2018.	Operational control approach required	Scope 1, 2, and 3	Dual reporting required	Scope 3 emissions required with relief for first reporting period; 15 categories	Biogenic emissions and GHG removals reported separately from scopes
U.S. SEC Rule	Option to use standard of choice	Choice of consolidation approach	Scope 1 and 2 emissions that are deemed material to investors	Market-based method, location-based method, or both	Scope 3 emissions not required	Not mentioned
CA SB 253	Requirement to use GHG Protocol	TBD	Scope 1, 2, and 3 (subject to changes)	TBD	TBD	TBD