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To: The U.S. Securities & Exchange Commission

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Dear Commissioners:

We offer the following comments on File Number S7-10-22, "The Enhancement and Standardization of Climate-Related Disclosures for Investors."

1. We broadly agree with the Commission's judgment that climate-related risks are increasingly material to investors, necessitating a comprehensive, consistent, comparable, and reliable format for reporting under Regulation S-X.

2. Our comments focus on the accounting foundations for reporting corporate greenhouse gas (GHG) emissions, identified as a primary cause of anthropogenic climate change. The common unit of measurement for these emissions is one ton of CO2 equivalent, with greenhouse gases other than carbon dioxide accounted for by the use of a multiplier, as specified by the IPCC. We focus on own-company emissions (CO2 equivalents) as well as those incurred by the company's suppliers of products and services.

3. While many organizations are involved in promulgating climate-related disclosure and reporting standards, including the SASB, WEF, GRI, ISSB, and EFRAG, these organizations all defer to the measurement framework of the Greenhouse Gas (GHG) Protocol.

4. The GHG Protocol classifies a reporting entity's carbon emissions into three categories – Scope 1 (direct emissions), Scope 2 (indirect electricity- and HVAC-related emissions), and Scope 3 (all other indirect upstream and all indirect downstream emissions). The Protocol also establishes categories and boundaries for measuring emissions in each of the three categories.

5. We endorse the GHG Protocol's Scope 1 category of own-company emissions as a rigorous and measurable concept. Scope 1 emissions constitute the core emissions metric because the sum of all Scope 1 emissions, added up across all carbon emitting entities, yields the addition of anthropogenic greenhouse gases to the atmosphere in any given year. We therefore enthusiastically support the SEC's emphasis on accurate measurement and full disclosure of Scope 1 emissions. As we elaborate further below,

accurate measurement of Scope 1 emissions is foundational for full and accurate reporting of a company's supply-chain emissions.

6. The Scope 3 category, however, is flawed in concept. It is also implemented selectively and inconsistently in practice. Many firms currently report only select Scope 3 items, e.g., employee travel and diesel fuel consumed by suppliers' vehicles. In principle, the GHG Protocol requires a company to measure its Scope 3 emissions by gathering data from all its multiple-tier suppliers and customers for each of its products. This is a fiendishly complex task, especially when most companies do not even know the identity of suppliers beyond Tier 1 and Tier 2, leave alone the carbon emissions of those suppliers. The requirement to estimate the emissions from all downstream customers, who have purchased the company's products and services, is even more daunting. All companies obviously know their immediate customers, but few know the identity of their customers' customers, and, especially, all the customers of its customers' customers. The near-impossibility of obtaining accurate information about total supplier and customer emissions guided the authors of the GHG Protocol standards to allow entities the option of relying on outside consultants who use industry and regional averages, rather than the specific emissions attributable to the firm's actual suppliers, distributors, and customers. But allowing entities to use average rather than specific and traceable data fundamentally undermines the integrity of Scope 3 measurement. In the context of financial reporting, such an approach would be akin to an accounting standard that allows an entity to calculate profit margins by using industry-average raw-material costs rather than actual invoiced raw-material costs.

7. The current Scope 3 approach of requiring each entity in a value chain to estimate the accumulated Scope 1 emissions from all its suppliers and customers is unreliable, costly, and leads to multiple-counting of the same Scope 1 emissions, an obvious defect for any accounting system. The multiple-counting Scope 3 flaw, if applied to financial reporting, would require each reporting entity to disclose not only its own profits but also a pro-rated share of the total profits of every supplier, distributor, and customer in its value chain.

8. A third serious defect with the current practice of estimating Scope 3 emissions is the requirement for companies to estimate and report both their upstream and downstream GHG emissions. The seemingly attractive symmetric treatment of upstream and downstream GHG emissions, however, ignores that a company's ability to influence and measure GHG emissions is not symmetric between suppliers and customers. A company has far more control and influence over its suppliers than over its customers, and its customers' customers. Companies can influence and should be accountable for emissions in all its upstream (supplier) operations, but assigning it accountability over downstream emissions, for which they have little-to-no influence and traceability, is a dubious requirement. Consider a company mining iron ore. It cannot influence decisions made by deep-downstream entities, such as companies that build automobiles, airplanes, and appliances made from steel derived off its ores, much less how the final

customers and consumers use the products made from the ores and minerals they have mined and extracted. Even direct-to-consumer companies, such as Apple, can neither reliably estimate nor control their end-consumers' use of the products they sell.

9. Fourth, because Scope 3 reports are currently based on industry averages rather than actual supply chain emissions, and also typically exclude many sources of supply chain emissions, they cannot be validated via full-scope audits. The audit and assurance firms hired voluntarily by some companies conduct only limited-scope audits that produce double-negative opinions in the sense that they could not find inconsistencies or errors in the company's Scope 3 report. Investors should expect that companies' GHG reports have the same integrity and auditability of their financial statements, a criterion that is impossible to meet given the impossibility of obtaining accurate Scope 3 measurements.

10. The inherent flaws of inaccurate, unreliable, and unauditable measurement, multiple counting of the same emissions, and the failure to recognize the asymmetric influence of companies between suppliers and customers lead us to recommend strongly that the SEC not endorse the current Scope 3 accounting standards. We support the Commission's recommendation that requires only limited disclosure of Scope 3 emissions combined with a safe harbour protection to recognize the inherent inaccuracies and omissions in any company's disclosure of Scope 3 emissions.

11. Our letter has, so far, skipped recommendations on Scope 2 emissions. This was deliberate since Scope 2 is an anomalous category. The GHG Protocol's authors presumably included the indirect emissions associated with the generation of purchased electricity as a separate category because, unlike most other Scope 3 emissions, emissions in this category can be determined and traced to electricity-consuming entities.

12. Despite the serious flaws in the manner in which Scope 3 emissions are currently estimated and reported, we do concur with the *intent* of identifying a firm's upstream emissions. In order for the reported figures to become reliable, however, we submit that the assignment of carbon balances to individual products and services must proceed sequentially along the supply chain, relying at each node on local firm-specific knowledge of the direct emissions attributable to different products. Measurement and reporting of supply-chain emissions will be essential for the Commission to achieve its objective to require robust accounting and disclosure for climate-related risks to investors. The Rocky Mountain Institute reports that the average company's supply-chain GHG emissions are 5.5 times higher than the direct emissions from its own assets and operations. Any effective system of GHG accounting, therefore, needs to measure accurately each entity's supply-chain carbon impacts, providing visibility and incentives for it to make more climate-friendly product-specification and purchasing decisions.

13. In a 2021 Harvard Business Review article, two of us described a robust, accurate, and auditable accounting system for measuring a company's total supply-chain GHG emissions. The conceptual framework for this system is simple and analogous to how

companies' cost and inventory accounting systems function today. Each company allocates its direct (Scope 1) emissions to its products and services. These allocations rely on the specifics of the firm's production process as well as the carbon balances of all production inputs as reported by the firm's suppliers. In this way, whenever a company sells and delivers a product or service to a customer, the customer acquires not only the product/service itself but also "ownership" of all the GHG emitted, from cradle to gate, by all the extraction, transportation, and operating processes used to generate that product or service. The GHG information embedded in every company's products is automatically transferred from stage-to-stage of the supply chain. Every company is thus accountable for its direct emissions and the cumulative sum of all upstream emissions in its purchased products and services. This system of supply-chain carbon accounting (referred to as E-liability accounting in the HBR article) avoids the multiple-counting problem of the current Scope 3 approach. Electricity purchased from a supplier is just one of many production inputs accounted for, thus obviating the need for the ad hoc Scope 2 category.

14. The E-liability approach, when implemented across a company's supply chain, can produce numbers that can be assured via a full-scope "true and fair" audit. The E-liability method is grounded in the well-established and generally accepted principles for inventory accounting, principles that are entirely familiar to investors and analysts. As a consequence, the E-liability approach can be implemented in parallel to a company's existing financial-accounting infrastructure, making the accounting for carbon emissions less expensive, and yet more objective, than the current ad hoc attempts at estimating Scope 3 emissions.

15. Beyond the benefits of more accurate and auditable reporting, the widespread adoption of the E-liability accounting approach will motivate companies to be more innovative in their product design, purchasing, and sourcing decisions. The innovations will be guided by a tangible and measurable goal to acquire input products and services that have been produced with lower GHG emissions. The Scope 3 framework was designed for reporting and disclosure but not for motivating management decisions since companies are not accountable for the specific GHG emissions produced in their supply chains. This helps to explain the limited progress most companies have made during the past 20 years to decarbonize their supply chains.

16. Since publication, the November 2021 paper has been recognized with the 2021 HBR-McKinsey Award as the journal's outstanding 2021 publication "for its practical and ground-breaking management thinking." The three authors of this letter have initiated pilot projects with several major companies to demonstrate the feasibility and benefits of the E-liability approach. We have also published a follow-up paper that includes our findings about the multiple limitations of the GHG Protocol Scope 3 reporting standards, as summarized above. To date, our experience with the multiple pilot projects underway and planned has indicated that the E-liability approach is feasible and practical to implement and will yield insights valuable to companies, as well as their

suppliers and customers. We are in the process of writing a paper that elaborates on the parallels between the E-liability approach and conventional financial reporting, showcasing the multiple pilot projects currently underway.

17. With this background, we recommend that the Commission encourage further entities to pursue pilot studies of the E-liability approach during a three-year trial period. The pilot studies can be shared, voluntarily, with the Commission to enable it to develop more rigorous and cost-effective standards for supply-chain carbon accounting. Moreover, to stem the continued release of misleading Scope 3 reports, we recommend the Commission establish a three-year transition period, after which entities may not use industry and regional averages in computing their Scope 3 emissions. We recommend that, except for suppliers with trivial GHG content, reporting entities should be required to use only primary (actual) data to report the specific upstream emissions produced by their actual suppliers. The three-year transitional should be adequate to demonstrate how to replace the flawed Scope 3 approach with the more conceptually correct, feasible, and auditable E-liability GHG accounting system.

18. We further recommend that the Commission require that, after the three-year transition period, the only acceptable assurance for a GHG emissions report be a "fairly stated opinion," which would deny assurance to Scope 3 reports based substantively on industry-average data. Such true-and-fair audit opinions would enable entities' GHG reports to have the same reliability as their financial statements, and, like these, provide a sound basis for investment decisions and accountability for corporate performance.

Please do not hesitate to contact us if you have questions or seek any clarifications on this letter. We remain at your service.

Yours sincerely,

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