June 14, 2021

Via Electronic Mail
to rule-comments@sec.gov

Secretary Vanessa Countryman
U.S. Securities and Exchange Commission
100 F Street, NE
Washington, DC 20549

Re: Carbon Tracker Initiative's response to the Public Input on Climate Change Disclosures

Dear Ms. Countryman:

Carbon Tracker Initiative (Carbon Tracker) would like to thank the Securities and Exchange Commission ("SEC" or "Commission") for the opportunity to provide comments on its consultation on Climate Change Disclosures.

Carbon Tracker is an independent financial think-tank that carries out in-depth analysis on the impact of the energy transition on both capital markets and investments in high-cost, carbon-intensive fossil fuels. For the past decade we have published research on how climate and carbon constraints could materially impact companies in the fossil-fuel intensive sectors of upstream oil and gas, coal mining, and power generation and utilities.[1]

Carbon Tracker is one of four data providers to the Climate Action 100+ (CA100+) initiative which counts more than $54 trillion in assets under management (AUM) in its membership.[2] One of our unique contributions is to have pioneered research on how the energy transition mega-trend is likely to impact individual companies in the sectors we cover.[3]

We greatly appreciate the Commission's renewed focus on climate-related risks, including this consultation, as it gathers ideas and information for future actions. Our experience suggests there are no silver bullet solutions, but there are many simple, practical steps the Commission can take to improve market understanding of climate risk and, in doing so, market integrity with respect to those risks.

Today, climate-related risks are being considered by both the stewardship/governance and investment teams of institutional investors. Relevant information is needed to guide decisions

[1] As part of our mission to facilitate investor understanding and improve transparency of climate-related risks, we are reviewing the latest annual reports from 55 companies (including 19 in the U.S.), to assess whether companies are integrating climate-related inputs into the financial statements themselves and disclosing evidence of that accordingly. Some examples from this work have been provided herein.
[2] See: https://www.climateaction100.org/
[3] See, e.g.: https://carbontracker.org/reports/fault-lines-stranded-asset/

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around active stock selection, fixed income strategies, or the creation of indices, benchmarks and portfolios for passive strategies as well as shareholder resolutions, the reappointment of directors and auditors, and remuneration schemes. One key source of information is the issuer (the company). Issuers are best positioned to understand and assess how changed circumstances may impact them.

The SEC's principles-based disclosure requirements contemplate all material risks and for many companies, climate is one such risk. However, "climate" has sometimes been mistakenly considered outside of a company's core business model, misplaced in a parallel "ESG"[4] framework. This fails to appreciate the degree to which the financial statements are built upon future assumptions, many of which may be substantially altered by decarbonization. If anything is clear, it is that climate poses a material, financial risk—every US upstream oil and gas company acknowledges as much in its risk factor disclosures.

Changes in the "real world" are altering companies' forward-looking expectations and this is adversely impacting asset values. The world's seven top oil and gas companies took nearly $90 billion in impairments through the end of 2019 and early 2020[5]. These impairments were driven not by poor returns but instead by reduced commodity price *expectations*, resulting in lower cash flow forecasts and the need to write-down costly investments or forego marginal expansion projects.

Some might see the write-downs as evidence that the market disclosure system is working; but more likely it is just the tip of the iceberg—the SEC should seek to provide information to help investors understand how big that iceberg might be.

A case in point: in jurisdictions outside the United States, where companies must disclose forward commodity price assumptions used in impairment testing, no company to date has tested using forecast oil prices nearly as low as industry forecasters like Wood Mackenzie[6] and the International Energy Agency (IEA),[7] who have modeled scenarios consistent with net zero emissions by 2050 (a common goal that, at least nominally, even some major oil and gas companies are beginning to adopt).

While these risks should already be disclosed, this requires issuers to re-consider long-held beliefs and assumptions, potentially adversely impacting reported results. Consider that today, it is standard accounting practice to assume that oil transportation pipelines and refineries will have indefinite lives. Does that assumption continue to make sense in a world seeking to produce net zero carbon emissions? Here, Commission guidance can play a pivotal role, for the fossil fuel intensive sectors and others.

The climate problem also presents new issues which may require new or modified rules. Today, virtually every investor evaluating energy transition risk uses greenhouse gas (GHG) emissions as

[4] While outside the scope of our response, we would agree that many other environmental, social and governance factors would be relevant to buy, sell, hold and voting decisions as well.
[5] https://www.theguardian.com/business/2020/aug/14/seven-top-oil-firms-downgrade-assets-by-87bn-in-nine-months
[6] https://www.naturalgasworld.com/action-to-achieve-paris-climate-goals-will-upend-oil-and-gas-markets-87375
[7] See, e.g.: https://www.iea.org/data-and-statistics/data-product/net-zero-by-2050-scenario

a model input. However, there are no requirements for companies to disclose their GHG emissions, much less obtain assurance that what they voluntarily disclose is accurate. We struggle to identify a data point that is so universally sought after by the investing community but is entirely absent from any formal reporting requirement.

In the recommendations that follow, we are guided by the key role that market regulators play in facilitating capital formation, protecting investors, and promoting market integrity, as well as our view of what current disclosures and enforcement efforts have lacked with respect to material climate-related issues:

- **Required disclosures should be relevant to investor decision-making**: Disclosures should better inform investor decisions on buying, selling or holding shares, or providing inputs to shareholder decisions on governance (including resolution voting).

- **Disclosure requirements should minimize transaction costs of acquiring material information**: Mandatory disclosure improves capital formation and enhances market integrity by reducing the transaction costs of obtaining relevant company information. Standardization of disclosure (as US generally accepted accounting principles (GAAP) does for the accounts) further reduces transaction costs by ensuring apples-to-apples comparisons.

- **Useful information on climate-related risks should facilitate accountability through the investment value chain**: Disclosures should allow all actors in the investment value chain, from beneficial owners to institutional asset owners, to brokers and asset managers, to understand and assess the choices of those they oversee; particularly as more and more are charged with making sustainable investment decisions. Accountability through the value chain allows financial intermediaries to police their own ranks and minimize "greenwashing." The keystone data for this system, however, comes from disclosures by issuers.

- **Climate-related disclosures should focus on making the basis for current asset valuations transparent**: As the SEC noted more than a decade ago, climate-related risks implicate a range of reporting requirements under Regulation S-K and S-X. Fundamentally, the drastic economic transformation associated with decarbonization, if nothing else, poses a threat to planned and existing carbon-intensive infrastructure. Where such asset valuations rely on forward-looking estimates and assumptions, there is a substantial risk to investors if management neither updates nor reports on those assumptions. That risk is compounded if auditors fail to approach these questions with the requisite professional scrutiny apply standards in a reasonable way. And while it is not the regulator's role to ensure that issuers are arriving at the right conclusions, it is the regulator's role to ensure that investors receive the information needed to form these judgements.

The SEC can facilitate substantial improvements in market integrity vis-à-vis climate-related risks through a few discrete interventions, as discussed below. The building blocks for many of these interventions are embedded in existing reporting requirements.

We divide proposed actions into those that the SEC can take now, based on existing rules and regulations and as part of its regularly scheduled supervisory review and enforcement activities, and those which we believe fall within its remit and consultation process.

SUMMARY

Actions that can be completed in the near term without new rulemakings (though may benefit from additional guidance or Staff Accounting Bulletins):

1. Enforce existing requirements that material assumptions and estimates be disclosed. This is especially important for asset valuations or tests that are reliant on forward-looking assumptions.

2. Ensure that forward-looking assumptions used in investment planning are not inconsistent with those used in financial reporting.

3. Ensure that companies are discussing the greater than "remote" chance of an energy transition in the Management's Discussion and Analysis of Financial Condition and Results of Operations (MD&A) and quantifying impacts, if reasonably available.

4. Ensure that U.S. investors are receiving the equivalent or better information as their overseas counterparts and ensure that climate-related risks were considered in the audit reports (e.g., in the critical audit matters or CAMs).

Actions that require consultations and should be started soon:

1. For all issuers, disclose the undiscounted costs, discount rates and timing assumptions of their on-balance sheet asset retirement obligations (AROs) and the undiscounted costs of all off-balance sheet AROs.

2. For all issuers, include emissions reduction targets in annual/ filed reports.

3. For all issuers, disclosure of scopes 1, 2 & 3 GHG emissions in a supplemental schedule to the financial statements and be assured according to rigorous standards established by the Public Company Accounting Oversight Board (PCAOB) at the appropriate assurance level.

4. For the upstream oil and gas sector, mandate provision of the currently optional sensitivity analysis under Item 1202(b) for upstream oil and gas reserves and cause the Standardized Measure of Oil and Gas to be modified to make it comparable to how impairments are tested in the oil and gas sector. Require the disclosure of all wells, including inactive and ancillary wells, under Items 1205 and 1208.

We remain at your disposal for further discussions on this important matter. Please do not hesitate to contact me directly (rschuwerk@carbontracker.org) or Barbara Davidson, Senior Analyst in Climate Disclosure and Accountancy (bdavidson@carbontracker.org.

Rob Schuwerk, Executive Director, Carbon Tracker Initiative North America

Appendix A: Responses to selected Commission's enumerated questions

Question 1: How can the Commission best regulate, monitor, review, and guide climate change disclosures in order to provide more consistent, comparable, and reliable information for investors while also providing greater clarity to registrants as to what is expected of them? Where and how should such disclosures be provided? Should any such disclosures be included in annual reports, other periodic filings, or otherwise be furnished?

The Commission should first take steps that do not require new rulemakings before moving on to other actions. A key first step includes supervisory review to ensure that company reports comply with existing requirements. Where the Commission believes the application of existing standards is ambiguous, it should provide clarifying guidance.[8]

I. Near term actions: Enforcement and non-consultative guidance

The SEC should start by considering how decarbonization efforts are likely to impact critical forward-looking assumptions and estimates today. The Commission's existing regulations and guidance already require[9] material assumptions about uncertain future events to be both consistent with company business practice and disclosed. The SEC should ensure that relevant disclosures are actually being made.

A. The nexus between the energy transition, narrative reporting, and financial reporting

Financial reporting and especially asset valuations are built on forward-looking assumptions that will be impacted by decarbonization.

Reported financial information is in many cases a function of future assumptions. For example, accounting seeks to give a present value to the useful life of assets. In a decarbonizing world, emissions producing assets become less valuable—whether those emissions are produced by those assets, are a consequence of running those assets, or are produced using the products created by those assets.

These changes to asset values are brought forward through US GAAP, which requires a company to determine the recoverability of an asset using "cash flows expected to result from the use and

[8] Question 2 of this Consultation asks about quantifying and measuring climate risks, it also asks what information from internal evaluations of climate risk should be provided to investors. We have included part of our response to this question in this section because we believe that some of this quantitative information is already required and so should be subject to current enforcement practice.

[9] The SEC requires the "disclosure of key assumptions used in the development of cash flow projections" as well as discussion in the MD&A of the implications of assumptions" (SEC Topic 5.CC). It also requires that "the judgments and assumptions made for purposes of [impairment testing] must be consistent with other financial statement calculations and disclosures and disclosures in MD&A. The staff also expects that forecasts made for [these] purposes…be consistent with other forward-looking information prepared by the company, such as that used for internal budgets, incentive compensation plans, discussions with lenders or third parties, and/or reporting to management or the board of directors." SEC Topic 5.CC, Codification of Staff Accounting Bulletins - Topic 5: Miscellaneous Accounting (sec.gov)

eventual disposition of the asset…"[10]. The primary mechanism for valuation changes are changes to future assumptions.

Those assumptions can differ materially in a decarbonizing world from those that might be used for "business as usual". Indeed, in many cases, oil and gas company impairments are driven not by poor results, but instead by changes to long-term forecasts.[11] This makes these assumptions material.

Assumptions and estimates relating to future commodity prices, asset lives, and other items that are likely to be materially impacted by decarbonization should be disclosed so that investors can evaluate them.[12]

The importance of forward-looking assumptions can be seen in valuing oil and gas producing assets and related liabilities.

Below, we discuss how those impacts can be seen in the oil and gas sector, though analogues exist for other sectors. For oil and gas companies, this is most relevant for asset impairment tests (regardless of whether there is an impairment loss) and the calculation of AROs.

The value of oil and gas producing properties is a function of future oil and gas prices (which are affected by policies, regulations, demand and replacement technologies, to name a few). Those prices are key inputs in assessing the recoverability of the carrying value of relevant property, plant and equipment (PPE). They also affect asset lives, since lower prices will bring forward a well's "economic limit," i.e., the point at which it is no longer economically viable to operate. Shorter lives and lower production volumes, in turn, affect volumes of reserves and depreciation expense. They may also bring forward the timing of expenditures needed to fulfil legal AROs such as covering the costs of plugging and abandoning wells imposed by state and federal regulations. As useful lives are reduced, companies may be required to test those assets for recoverability, opening the possibility of impairments.[13]

The risks to companies that should be reflected in financial reporting come both from societal decarbonization, as described above, and the company's own plans to the extent that it sets emissions reduction efforts. Those goals may rely in part on costly technologies, including carbon, capture, usage and storage (CCUS) or carbon pricing. Forecasted costs may also

[10] ASC 360-10-35-17.
[11] Noting that the pandemic would likely, "accelerate the pace of transition to a lower carbon economy and energy system…," bp plc "revised its long-term price assumptions, lowering them and extending the period covered to 2050 so that it is now consistent with its ambition horizon." This resulted in more than $17 billion in impairments. See: https://www.bp.com/en/global/corporate/news-and-insights/press-releases/bp-revises-long-term-price-assumptions.html
[12] We note that there are already credible climate scenarios which provide assumptions and or estimates for companies to use in their financial statements. For example, the IEA publishes various scenarios which project certain commodity and carbon prices based on policies, the energy mix and changes in demand. The most salient is the revised net zero by 2050 (IEA NZE2050) scenario. See: International Energy Agency, "Net Zero by 2050: A Roadmap for the Global Energy Sector" (May 2021). In addition, companies such as Chevron Corporation have used modelling inputs, like future commodity demand, from such third-party scenarios in their own internal price forecasting models.
[13] "Any revision to the remaining useful life of a long-lived asset resulting from that review shall also be in developing estimates of future cash flows used to test the asset…for recoverability". ASC 360-10-35-22.

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increase due to compliance with new regulations. Investors would need to know the extent to which a company has factored those added costs into their cash flow forecasts (e.g., in asset impairment testing).[14]

As we noted earlier, the world's seven top oil and gas companies took nearly $90 billion in impairments through the end of 2019 and early 2020[15] due primarily to reduced future cash flow expectations from oil and gas producing assets. Does this mean that transition risks are already baked into asset valuations? Understanding the estimates and assumptions that form the basis to the accounts is key to answering this question.

The above examples are not exhaustive. Other financial statement items such as inventory valuations, or expected credit losses, and the recovery of deferred tax assets could also be impacted by material climate-related risks. The impact may depend on the sector in which a company is operating.

However, our review of financial statements makes clear that while these items are material to investors and are often identified as "critical audit matters" by auditors,[16] the actual assumptions are not always disclosed.[17] This is especially true in the U.S., a stark contrast to the practice in Canada and Europe.[18]

Commercial sensitivity concerns do not outweigh the investor interest in understanding the assumptions upon which the financial statements are based.

The Commission should also scrutinize claims by companies that exclude this information due to commercial sensitivity. Clearly, this information is material to reported results—many company auditors have indicated as much. Moreover, for things such as forecast commodity prices, we have noted that peers in Europe and Canada disclose the forward prices used, belying the argument the information is commercially sensitive. Not disclosing this information simply deprives U.S. market investors of information available in other jurisdictions. At the least, investors should be entitled to know what assumptions were used in constructing the financial statements.

- Example: Chevron Corporation (Chevron) claims that its oil and gas price forecasts are proprietary. It does not disclose this information, nor does it disclose its carbon-price forecasts or carbon-cost calculations.[19] Without this information, investors cannot determine

[14] *Ibid.*
[15] https://www.theguardian.com/business/2020/aug/14/seven-top-oil-firms-downgrade-assets-by-87bn-in-nine-months
[16] For example, in their 2020 10-K filings, auditors of Chevron, ConocoPhillips, Continental Resources, Devon Energy Corporation, Exxon, Hess Corporation, Occidental Petroleum, and Pioneer Natural Resources Company indicated that some or all these factors were material to company disclosures.
[17] For example, in their 2020 financial statements, Chevron, ConocoPhillips, Exxon and Pioneer Natural Resources Company did not disclose the commodity prices that they used in the preparation of their financial statements. Hess only provided some of the forward strip prices used, while Devon provided an approximate range of prices.
[18] By contrast, bp, Royal Dutch Shell (Shell), Total and Equinor clearly disclosed the commodity price assumptions that they used in the financial statements in their 2020 20-F filings.
[19] Chevron: "Climate change resilience: Advancing a lower-carbon future" (2020), p. 29.

the extent to which Chevron is including climate change risk considerations in the impairment testing of its upstream assets, if at all.

Company accounts and corporate planning should be based on a consistent set of assumptions

SEC guidance documents make clear that the assumptions used in preparing a company's financial statements should be consistent with those used for its planning and investment decisions.[20] This becomes increasingly important as companies seek to portray their actions as aligned with a low-carbon transition. A company should not have one set of "net zero" climate pledges and a different set of accounting assumptions.

The consistency of this information should be clear to investors and other stakeholders when reading a company's 10-K. Accordingly, the Commission should ensure that disclosures allow investors to evaluate whether consistent assumptions have been used in planning and in the preparation of the financial statements (when material).

- Are the future oil, gas and carbon prices a company uses for planning and investment decisions the same as those used in the financial statements?
    - Example: In its 10-K filing for the year ended December 31, 2020, Exxon Mobil Corporation (Exxon)[21] indicates that it uses an internal carbon price in evaluating investments and provides that price (which rises to $80 per tonne in 2040 in OECD nations, and lesser amounts in non-OECD countries). However, it makes no indication as to whether it uses this price, or indeed any carbon price, in the forecasted cash flows in its financial statements.

- Have companies clearly considered the effects of achieving their climate targets (as described in their 10-Ks or in their sustainability reports), on the assumptions /estimates that they use in preparing their financial statements? If they are different, why are they different? Companies in the EU and UK[22] are already providing this information.
    - Example: In contrast to Chevron and Exxon (above), in its 2020 financial statements bp plc (bp) disclosed the oil and gas price assumptions that it used for its impairment tests. It clearly aligns these with the prices that it uses (and discloses in the front end of its annual report and its Form 20-F) for investment planning. Bp also indicates that, as a result of the transition to a lower carbon economy, in 2020 it lowered the long-term oil and gas prices that it used (including in its audited financial statements).

[20] The SEC requires the "disclosure of key assumptions used in the development of cash flow projections" as well as discussion in the MD&A of the implications of assumptions" (SEC Topic 5.CC). It also requires that "the judgments and assumptions made for purposes of [impairment testing] must be consistent with other financial statement calculations and disclosures and disclosures in MD&A. The staff also expects that forecasts made for [these] purposes…be consistent with other forward-looking information prepared by the company, such as that used for internal budgets, incentive compensation plans, discussions with lenders or third parties, and/or reporting to management or the board of directors." SEC Topic 5.CC, Codification of Staff Accounting Bulletins - Topic 5: Miscellaneous Accounting (sec.gov)

[21] Exxon Mobil Corporation, Form 10-K 2020, p. 41.

[22] Such as the 2020 financial statements of BP, Eni, Equinor, OMV, Repsol, Shell and Total.

The energy transition towards net-zero emissions is not a remote probability, it is the direction of travel. Every impacted company should consider this known trend in its MD&A.

The Commission should also monitor whether companies are disclosing the current and prospective effects of material climate-related risks in the MD&A. It should determine whether management has performed the 'two-part disclosure test' required for identifying such disclosures and, if so, whether the company's conclusions were reasonable and internally consistent. The Commission has made it clear that the "reasonably likely" threshold for MD&A disclosure is greater than "remotely likely".[23]

The evidence that there is a greater than "remotely likely" transition underway comes from investors and from corporate reports themselves. Indeed, many leading oil and gas companies are setting what they claim are "net zero" targets. While they may disagree as to the pace of the transition, such differences should not excuse companies from addressing the issue in the MD&A.

Investors are signaling concerns as well. In the past several months, investor concerns with Exxon's hands off approach to the energy transition has caused five of twelve members of Exxon's board to be replaced.[24] In short, decarbonization risk is no longer remote.

If a company views decarbonization as likely, they should be evaluating it in the MD&A. And it should seek to quantify the impact of known, but uncertain, trends if the information is reasonably available.[25] Finally, where MD&A has identified potential financial statement impacts, SEC staff should seek to understand the extent to which those items have been consistently integrated into the financial statements.

Reviewing for consistency would not break new ground. In 2020, the UK regulator, the Financial Reporting Council (FRC), started to review audit and company reporting of climate-related risks, finding numerous deficiencies[26].

The Commission should ensure robust and consistent auditing practice

Some stakeholders have stated that auditors "must include clear and robust discussions of critical audit matters, such as the uncertainties related to climate change and the transition to net-zero

[23] "…when applying the 'reasonably likely' threshold, registrants should consider whether a known trend, demand, commitment, event, or uncertainty is likely to come to fruition." If it "would reasonably be likely to have a material effect on the registrant's future results or financial condition, disclosure is required. Known trends, demands, commitments, events, or uncertainties that are not remote or where management cannot make an assessment as to the likelihood that they will come to fruition, and that would be reasonably likely to have a material effect on the registrant's future results or financial condition, were they to come to fruition, should be disclosed if a reasonable investor would consider omission of the information as significantly altering the mix of information made available in the registrant's disclosures." Final amendments to "17 CFR Parts 210, 229, 230, 239, 240, and 249, Management's Discussion and Analysis, Selected Financial Data, and Supplementary Financial Information", pp. 46-48.

[24] Exxon appointed two members in seeking to appease investors. Finding this insufficient, a majority of Exxon's shareholders then voted on another three directors—against board and management recommendations.

[25] 17 CFR Parts 211, 231 and 241, SEC Release Nos. 33-8350; 34-48960 (Dec. 29, 2003).

[26] The FRC's 2020 climate thematic identified flaws in the financial reporting of, the audit work around and corporate governance of climate-related risks, https://www.frc.org.uk/frc-for-you/climate-thematic-review-2020.

global emissions, and what the auditors did to address them "[27] in their audit reports. We would agree. Investors in U.S. markets should not receive less information than others overseas, but that appears to be what is happening today.

- The requirements for reporting Key Audit Matters (KAMs) under International Standards on Auditing (ISAs) and CAMs under PCAOB standards do not differ significantly. Yet, considerable differences between audit report discussions of climate-related risks exist between EU/UK and US audit reports—even for the same companies, conducted by the same auditors.

- For foreign filers, often an auditor will issue two reports for the same company: one for the annual report under ISAs and another under PCAOB standards for the 20-F filing. While the auditor may have indicated that it assessed the effects of climate-related risks on relevant KAMs in its non-US audit report, it does not always provide the same amount of information in the 20-F audit report. As a result, investors reading the annual reports of these filers may receive more robust information than those reading the 20-Fs. For example:

    - Same company, different jurisdictions: In their audit of Rio Tinto for the year ended December 31, 2020, the auditors noted the same KAMs/CAMs for the 20-F and the annual report. However, they only indicated consideration of climate change issues in their audit planning, and for the audit of the KAMs, in the annual report.

    - Same industry, different jurisdictions: bp's auditors discuss consideration of climate related risks in both their CAMs (bp's 2020 20-F filing) and their KAMs (bp's 2020 Annual Report). The same topics were identified as CAMs by Chevron/Exxon's auditors. However, contrary to bp's auditors, neither Chevron's nor Exxon's auditors indicate that they considered climate-related risks when testing these CAMs.

Just as management should be disclosing these assumptions, it is also incumbent upon auditors to insist on this, particularly when they believe those estimates to be subject to substantial uncertainties.

- Example: In their 2020 audit report, Chevron's auditors identified *The Impact of Proved Crude Oil and Natural Gas Reserves on Upstream Property, Plant, and Equipment, Net* as a CAM[28]. They indicated that commodity prices are a key uncertain variable impacting estimated reserve volumes. Despite this, the auditors did not require that Chevron disclose the commodity prices that it used in determining such reserves (or in the forecasted cash flows for impairment testing). This information is vital for enabling investors to understand whether a company has taken material climate risks into consideration. The Commission might offer guidance clarifying the disclosure requirements.

[27] Ceres, "Lifting the Veil: Investor Expectations for Paris-aligned Financial Reporting at Oil and Gas Companies" May 2021, p. 20. https://www.ceres.org/resources/reports/lifting-veil-investor-expectations-paris-aligned-financial-reporting-oil-and-gas

[28] Chevron 2020 10-K page 57.

Finally, the Commission, along with the PCAOB, should review the appropriateness of the tests that the auditors performed on management's assumptions, with a specific focus on those mentioned in the CAMs that can or will be affected by climate-related risks. Again, these can include forecast commodity prices, the remaining useful lives of relevant assets, use of external specialists (versus the company's specialists) and the use of external forecasts.

- Example: in their 2020 audit report, Exxon's auditors used management's specialists (and not their own) in assessing the reasonableness of future production volumes for impairment testing. The auditors also based their evaluation of commodity price assumptions on "observable market data" rather than other forward scenarios[29]. The Commission, in conjunction with the PCAOB, should review the appropriateness of such testing going forward.

B. The role for guidance

Staff guidance could clarify the application of existing requirements.

As noted above, material assumptions should already be disclosed under current requirements. The Division of Corporate Finance should monitor the above-referenced issues as part of regular supervisory review since existing rules and guidance (including PCAOB requirements) make these disclosures mandatory today. The Commission could also announce an interpretation/or a clarification of general requirements.[30] For example, if auditors or a company note that commodity prices are subject to significant estimation or judgment issues, the Commission could announce its views that the company should disclose the quantitative assumptions/estimates in the notes to its financial statements.

However, if the Commission believes that additional guidance would be helpful, it can simultaneously develop clarifying guidance. For example, it could do so by promptly issuing a Staff Accounting Bulletin (SAB).[31] A SAB would align authoritative accounting guidance and Commission requirements to make clear that:

- the assumptions the company uses for planning and investments must not be inconsistent with those used in the preparation of its financial statements.

- companies disclose the material climate-related assumptions and estimates that they have used in the preparation of their financial statements. If no climate related issues are considered material to the company, a statement to that effect should be made.

[29] When assessing impairment, "[e]stimates of future cash flows used to test the recoverability of a long-lived asset (asset group) shall be made for the remaining useful life of the asset (asset group) to the entity" (ASC 360-10-35-31)
[30]For example, see https://www.sec.gov/corpfin/disclosure-special-purpose-acquisition-companies, https://www.sec.gov/news/public-statement/division-cf-spac-2021-03-31, https://www.sec.gov/news/public-statement/spacs-ipos-liability-risk-under-securities-laws , and https://www.sec.gov/news/public-statement/accounting-reporting-warrants-issued-spacs.
[31] "Staff Accounting Bulletins reflect the Commission staff's views regarding accounting-related disclosure practices. They represent interpretations and policies followed by the Division of Corporation Finance and the Office of the Chief Accountant in administering the disclosure requirements of the federal securities laws." SEC.gov | Selected Staff Accounting Bulletins

- sensitivities to credible climate scenarios, if not already used, should be required. These should include the potential effects on profitability and on the asset/liability balances.

To complement the above, we recommend that the Commission request that the PCAOB publish guidance on how consideration of material climate-related risks is already required under current audit standards. This can be done relatively quickly and can be like the guidance provided by the staff of the International Auditing and Assurance Standards Board (IAASB) in October 2020[32].

II. Consultative actions

In some cases, while key inputs may or may not be material in the eyes of management, they may still be relevant because they allow investors to review the company's inputs and adjust accordingly. These disclosures may require new or amended regulations.[33]

A. Require the key inputs to asset retirement obligation calculations to be disclosed

The energy transition could accelerate asset retirement, causing the discounted costs on the balance sheet to go up.

Our report, *Billion Dollar Orphans*,[34] suggests that the undiscounted costs of retiring all wells in the U.S. could run to hundreds of billions of dollars of which only a small fraction of these costs—by our calculations approximately 1%—are back by financial assurance.

Current balance sheets don't identify the undiscounted costs of upstream infrastructure, nor do they provide information on how far into the future management believes these costs reside. But if decarbonization adversely impacts the economics of fossil fuel projects as most believe it would, many projects will need to retire earlier than currently anticipated, bringing those costs forward. If policymakers and regulators seek to de-risk from the industry by requiring greater financial assurance, these costs will only be accelerated further.

Key attributes of AROs are not explicitly required to be disclosed today.

Unfortunately, neither the discount rates nor undiscounted costs of such liabilities are disclosed (in contrast to requirements for disclosing the undiscounted estimates of certain loss contingencies).[35]

[32] IAASB, The Consideration of Climate-Related Risks in an Audit of Financial Statements, October 2020.
[33] Though not discussed in this comment, we believe the SEC should revisit disclosure requirements around liquidity risk, debt covenants, distributable reserves and the ability to continue as a going concern. In the past several years multi-decade dividend payment increases by oil and gas companies have been suspended or reduced, and increasingly oil and gas companies are noting that concerns about climate change are further limiting their access to capital. Companies are already able to discuss the impacts of COVID, the effects of which is similar to climate change, on many of these issues. But today's reporting standards provide no ready means of understanding whether forward-looking assumptions have incorporated decarbonization risks.
[34] See: https://carbontracker.org/reports/billion-dollar-orphans/
[35] When providing accounting disclosures related to loss contingencies (including those that might meet the conditions set forth in FASB ASC 410-30-35-12 (asset retirement obligations), the SEC requires "…disclosures of the discount rate used, the expected aggregate undiscounted amount, expected payments for each of the five succeeding years and the aggregate amount thereafter, and a reconciliation of the expected aggregate undiscounted amount to amounts recognized in the statements of financial position…" (SEC Topic 5.Y).

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This is particularly problematic where, as here, the spread between discounted and undiscounted estimates can be significant.

- Example: In its FY 2019 10-K, Devon Energy Corporation (Devon) indicated that its sale of Canadian assets to Canadian Natural Resources Limited meant that "$436 million of asset retirement obligations were assumed by Canadian Natural Resources Limited." This amount is greater than Devon's total discounted AROs and appears to represent the *undiscounted* value of Devon's assets. In 2019, Devon also divested of several positions in the Barnet shale and elsewhere. However, the total change to its balance sheet AROs in 2019 due to these divestures was a $42 million reduction to the *discounted* value of those obligations. Based on this information, without further disclosures, it appears that the undiscounted value of the Canadian portion of Devon's AROs were at least *ten times greater* than the discounted value, as presented on the balance sheet. That is a significant spread suggesting Devon is using high discount rates and/or very long useful lives in calculating the AROs related to its upstream assets.

Providing investors with undiscounted cost estimates for retirement allows them to create their own models of accelerated retirement as would be expected in a decarbonizing economy.

The SEC should work around the accounting loophole that has created off-balance sheet AROs.

Finally, oil and gas companies do not typically estimate midstream and downstream ARO liabilities and recognize them on their balance sheets. This is a result of specific loopholes in US GAAP, wherein companies need not recognize liabilities if either costs and/or timing cannot be reasonably estimated.[36]

It is generally agreed by financial auditors that midstream and downstream oil and gas assets have indefinite useful lives and that a range of potential ARO settlement dates *cannot* be reasonably estimated. Effectively, oil and gas companies and their auditors assume that midstream and downstream oil and gas assets may last forever, so it is unnecessary to account for their retirement costs.

An important question for the industry and its financial auditors is whether climate change and the global ambition to reach net zero by 2050 now makes it untenable to blindly assume that a range of ARO settlement dates for midstream and downstream oil and gas cannot be reasonably estimated?

[36] The loophole is explicitly stated under U.S GAAP and implied under international accounting standards used outside the U.S. Under U.S. GAAP: "An entity shall recognize the fair value of a liability for an asset retirement obligation in the period in which it is incurred *if a reasonable estimate of fair value can be made* [emphasis added]. If a reasonable estimate of fair value cannot be made in the period the asset retirement obligation is incurred, the liability shall be recognized when a reasonable estimate of fair value can be made." ASC 410-20-25-4. U.S. GAAP further clarifies that a reasonable estimate of fair value *cannot* be made if there is not sufficient information available to reasonably estimate the settlement date or the range of potential settlement dates. ASC 410-20-25-8.

The Commission should ensure that auditors answer this question on current reports and, to avoid all doubt, at least require companies to undiscounted estimates of costs including for these off-balance sheet AROs.

Given the above, we recommend that the SEC modify requirements for the disclosure of AROs to require disclosure of:

- Undiscounted cost estimates, discount rates, and the timing of future AROs, including the historic accuracy of these assumptions.
- Undiscounted cost estimates for AROs currently not on the balance sheet.
- The face value of the company's financial assurance and/or cash collateral earmarked for addressing these liabilities, and the cost associated with maintaining that financial assurance.

Question 2: What information related to climate risks can be quantified and measured? How are markets currently using quantified information? Are there specific metrics on which all registrants should report (such as, for example, scopes 1, 2, and 3 greenhouse gas emissions, and greenhouse gas reduction goals)? What quantified and measured information or metrics should be disclosed because it may be material to an investment or voting decision? Should disclosures be tiered or scaled based on the size and/or type of registrant)? If so, how? Should disclosures be phased in over time? If so, how? How are markets evaluating and pricing externalities of contributions to climate change? Do climate change related impacts affect the cost of capital, and if so, how and in what ways? How have registrants or investors analyzed risks and costs associated with climate change? What are registrants doing internally to evaluate or project climate scenarios, and what information from or about such internal evaluations should be disclosed to investors to inform investment and voting decisions? How does the absence or presence of robust carbon markets impact firms' analysis of the risks and costs associated with climate change?

In response to Question 1, we discussed that some types of quantitative assumptions and estimates that would be affected by climate related risks are already being considered in financial reporting today, and ways in which the Commission can ensure that this information is disclosed to investors.

Beyond these, the Commission can identify areas where new disclosures are needed to meet the Commission's mandate to protect investors and improve market integrity. Below we describe examples of potential actions in each category.

New disclosure requirements

The previous recommendations are based on the SEC's enforcing and/or clarifying existing disclosure requirements—actions it can implement swiftly. However, there are other valuable disclosures that have no analogues in current regulation that it should also put in motion.

A. Require disclosure and assurance of scope 1, 2 & 3 GHG emissions

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The most glaring omission is the lack of reporting requirements around GHG emissions[37]. GHG emissions are used: (a) by issuers to track their own corporate targets, their exposure to new regulations, and pledges made to investors, (b) by investors as a proxy for transition and physical risks, and (c) by financial institutions as they consider their financed emissions and loan books. GHG emissions are also a proxy for the associated financial risk.

Investors everywhere use emissions data. The Partnership for Carbon Accounting Financials (PCAF), a consortium of 123 institutions with $39.8 trillion in AUM[38], seeks to identify financed emissions, making it a critical input.[39] Other data providers are using emissions data to provide screens or relative portfolio rankings for purposes of climate-related risk analysis or to assess alignment with the investors' (or issuers') climate objectives.

The SEC should therefore mandate such disclosure for all firms, with segmented, tabular disclosure of scopes 1,2 & 3 in a format that allows use by a range of investors. These disclosures should also be assured, and the SEC should work with the PCAOB to achieve this.

The need for mandatory disclosure—standardization and universal compliance.

While emissions data is a nearly universally adopted input for climate risk assessment[40], reporting is completely voluntary, and companies can selectively choose which standards to use. Studies have shown that in a self-reporting regime, reporting to different standards hampers comparability and the voluntary nature results in self-selection bias.[41] As a result, voluntary reporting is uneven, incomplete, unassured, and often unreliable. The cost of normalizing this information falls upon market participants.

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[37] Reporting of emissions was a key recommendation of the Task Force on Climate-Related Financial Disclosures. TCFD, "Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures", FINAL-TCFD-Annex-Amended-121517.pdf (bbhub.io), p. 55.

[38] https://carbonaccountingfinancials.com/financial-institutions-taking-action#overview-of-financial-institutions

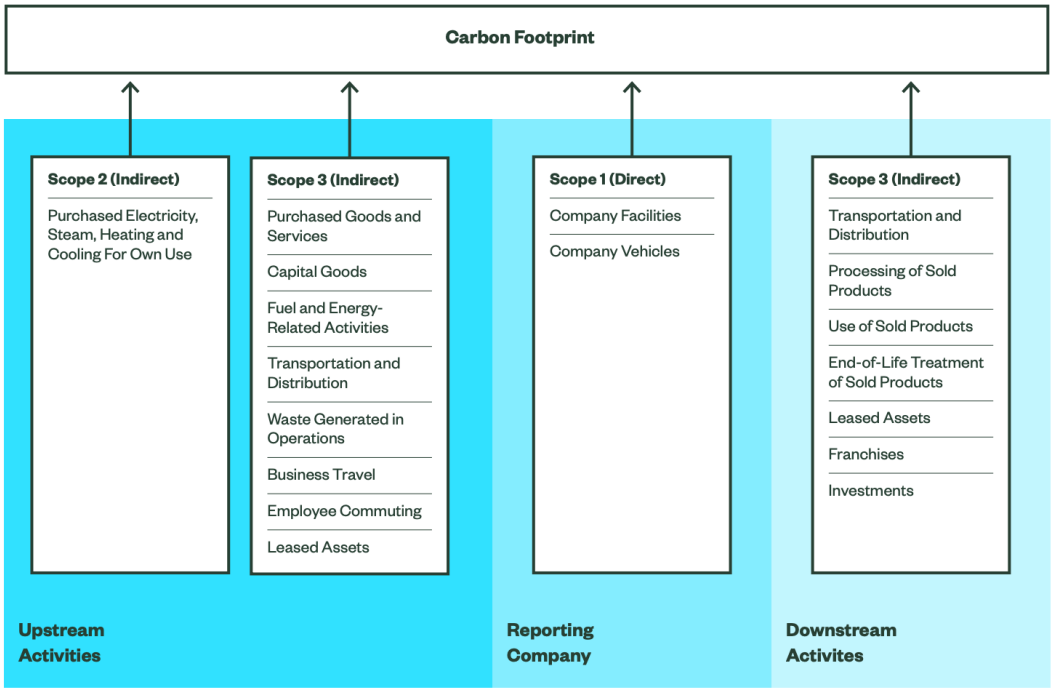
[39] See: https://carbonaccountingfinancials.com/files/downloads/PCAF-Global-GHG-Standard.pdf

[40] By no means an exhaustive list, we note that the largest asset managers all use carbon as an input to their capstone carbon management investment strategies. Blackrock, for example uses an MSCI carbon intensity ratio of GHG emissions to revenue (https://www.ishares.com/us/literature/product-brief/blackrock-carbon-transition-readiness-product-brief-en-us.pdf). J.P. Morgan prefers a slightly different metric, weighted average carbon intensity (WACI), that still requires CO_2e as an input (https://am.jpmorgan.com/content/dam/jpm-am-aem/emea/regional/en/etfs/jpm52996-carbon-footprint.pdf). State Street Global Advisors looks at both emissions-to-revenues and embedded emissions to revenues (https://www.ssga.com/us/en/institutional/ic/capabilities/esg/investment-solutions/sustainable-climate-strategy). Wells Fargo Asset Management, in settings its own targets, looks to scope 1-3 emissions and financed emissions and is actively supporting efforts by its clients to quantify their emissions as a key input to this process (https://newsroom.wf.com/English/news-releases/news-release-details/2021/Wells-Fargo-Sets-Goal-to-Achieve-Net-Zero-Greenhouse-Gas-Emissions-by-2050/default.aspx#:~:text=Wells%20Fargo%20Sets%20Goal%20to%20Achieve%20Net%20Zero%20Greenhouse%20Gas%20Emissions%20by%202050,-03%2F08%2F2021&text=SAN%20FRANCISCO%2D%2D(BUSINESS%20WIRE,its%20financed%20emissions%20%E2%80%94%20by%202050.).

[41] Vitali Kalesnik, et al., (Draft), Green Data or Greenwashing? Do Corporate Carbon Emissions Data Enable Investors to Mitigate Climate Change? (Nov. 2, 2020). Available at: https://ioandc.com/wp-content/uploads/2020/11/3-Research-Affiliates-carbon-paper.pdf

And while definitions exist as to scope, there are several different components to each scope (as seen in Figure 01). Since no standard setter has provided, or pointed to, definitions that would make these comparable, issuers are free to select amongst them or even selectively exclude parts of them, leading to uneven results.[42]

Figure 01: GHG reporting scope activities includes in scopes 1, 2 & 3



Source: Greenhouse Gas Protocol.

Issuer reporting on supply chain emissions is necessary because emissions are a proxy for risks the company faces.

As is evident from Figure 01, a company's emissions profile extends beyond emissions over which it has direct control. Many in industry would seek to exclude reporting emissions from activities upon which their supply and value chains depend simply because they are not the legal owners of the emissions-producing assets. But this ignores the fact that even if the company does not control emissions in its value chain, it can still be financially impacted by, efforts to reduce those emissions. For example, even if oil and gas companies were not deemed legally responsible for

[42] Indeed, it was only in the past year that the United States' largest oil and gas producer began to provide scope 3 disclosures.

their scope 3 emissions (i.e., customer use of its products),[43] their scope 3 emissions profiles are still relevant to investors; they are a proxy for market risk, i.e., exposure to declining demand for emissions-producing products and assets. The reporting of supply-chain emissions is most akin to reporting on market risks under Item 305—most companies have no control over the pricing of their derivative positions, but the Commission's rules require reporting nonetheless so that investors can understand how changes to those positions will impact the firm.

In deciding requirements, the Commission should go to what is important to investor understanding of the issuer, not just what emissions the issuer might be potentially legally responsible for today. That means including emissions in the entire value chain.[44] Investors who are focused on alignment with climate targets have already identified that information on scope 3 emissions is required.[45]

The Commission can reduce costs on investors by mandating use of a single standard.

The world of GHG emissions reporting is built on a combination of actual measured emissions and emissions constants and factors. The latter is used when when tallying actual emissions is impractical (or not done by the issuer). Data providers typically aim to close the gap for non-reporters by "filling in" emissions with estimates. The use of emissions factors is in some cases unavoidable and justified when actual data is not available, but some studies suggest that this information can result in a high variance in reported emissions given the number of different reporting standards that are used.[46]

If the Commission leaves this to the market to resolve, issuers will have every incentive to pick and choose amongst various reporting options and scopes. Many may not voluntarily use the most robust and rigorous reporting standards without significant shareholder pressure. The Commission can save time and expense by mandating these disclosures (and the standards that companies should follow).

The rationale for assurance—quality (and comparability).

[43] A court in the Netherlands recently found Royal Dutch Shell legally responsible for reducing emissions, including its scope 3 emissions. https://www.axios.com/shell-ruling-emissions-greenhouse-court-orders-7749a980-1613-4a1c-b2f0-4bc72c7bb5dd.html

[44] Some argue that reporting of emissions in a company's supply chain (upstream or downstream/scopes 2 & 3) may result in "double counting". This is technically correct but irrelevant. Corporate reporting of emissions is for investor analysis, not summing emissions at global or national levels which is conducted by other scientific bodies. Investors want to understand how emissions mitigation will impact firms financially, and whether they are meeting investor (or issuer) emissions reductions goals. Consider a shipping company's emissions. The costs of eliminating that company's emissions will likely impact the shipping company and every retailer whose goods it transports. Investors holding interests in both the shipper and the retailer may be exposed twice to the same financial risk. In addition, investors seeking to align portfolios with the Paris outcome will want both issuers to be incentivized to work to reduce these emissions.

[45] See: https://www.climateaction100.org/. CA100+ membership represents $54 trillion AUM globally.

[46] Kalesnik, at 2.

The Commission should also require assurance over emissions reporting. The European Commission has already proposed such requirements over sustainability reporting[47].

Emissions reporting will involve several internal processes, calculations, and internal controls that would be difficult for investors to evaluate on their own, making it a perfect candidate for assurance. Assurance is critical because, as CERES notes, it is neither practical nor efficient for SEC staff to review all filings, and staff cannot access internal corporate data to validate disclosures.[48]

Some companies are now seeking limited assurance on voluntary emissions disclosures (e.g., using the GHG Protocol, discussed below). In many cases only "limited" assurance is obtained, meaning no opinion is rendered by the auditor that the disclosure is fairly presented in accordance with the applicable reporting framework.[49]

In addressing how companies should account for GHGs, the SEC should, by working with the PCAOB, lay out a protocol for ensuring that emissions reporting is standardized. This should either be part of the required audits of companies' financial statements and internal control over financial reporting (ICFR) or conducted in a way that relates to and is taken into consideration in those audits.[50]

How the SEC can achieve this—the Greenhouse Gas Protocol.

While there is a need for standardization, universal compliance and assurance—all attributes the Commission can provide—it does not need to start from a blank slate. The Greenhouse Gas or GHG Protocol[51] has already addressed technical and scientific issues that would lie outside of the SEC staff's expertise and is the most widely used reporting tool. The GHG Protocol is a global standardized framework for measuring GHG emissions from private and public sector operations, value chains and mitigation actions.

For all its success and uptake, however, the GHG Protocol remains one voluntary regime among several and subject to the issues discussed above. The Commission can help provide standardization, universal compliance and assurance by:

- mandating that all issuers report scope 1, 2 & 3 emissions to a specific set of standards such as the GHG protocol (or one the Commission has set),

[47] https://ec.europa.eu/info/business-economy-euro/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en
[48] Ceres, "Re: Public Input on Climate Change Disclosures," (Letter to the Commission dated Jun. 10, 2021) (hereinafter, "Ceres Submission").
[49] Ceres Submission at 48.
[50] Ceres Submission, at 47-8.
[51] See: https://ghgprotocol.org

- establishing a tabular presentation of these disclosures by scope, including disclosure sufficient to allow investors to identify carbon-dioxide equivalent measures (i.e., for different global warming potentials)[52],

- providing a hierarchy of data sourcing akin to PCAF's scoring of the quality of the data used for estimating financed emissions based on the type of input (i.e., measured or estimated emissions) on a scale of 1-5.[53] This is, by analogy, not too dissimilar to the fair value hierarchy under ASC 820[54], and

- pointing to current scientific practice on which constants should be used when creating emissions estimates. This includes, for example, the use of the latest Intergovernmental Panel on Climate Change (IPCC) constants.

B. Require companies to disclose any remission reduction/intensity reduction targets and paths to achieve them in their filings.[55]

Companies are now disclosing emissions reduction targets and increasingly investors are asking how and whether these targets relate to company business plans.

A company's targets and related paths to achieve such targets should be included in its filings with the Commission (e.g., 10-Ks) to ensure that auditors will read and determine whether such information, or presentation of such information, is materially consistent with the information in the company's audited financial statements[56]. When this information is included in other reporting documents, the auditors may not read this information or it may be published at a different time than the SEC filing.

- For example, if a company has set targets aligned with the CA100+ net-zero company benchmarks[57], they would include:

    - long-term (2036-2050) GHG reduction targets,

    - medium term (2026 to 2035) GHG reduction targets, and

[52] There are six primary greenhouse gases with different global warming potentials. Global warming potential (GWP) is defined as, "how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (CO_2)." GWP is defined as "carbon dioxide equivalent" (CO_2e). Because warming potential for greenhouse gases may vary over time (as gases degrade into constituents), the time period over which they are measured may impact these calculations. For example, the GWP of methane over twenty years (GWP20) is approximately three times higher than when evaluated over 100 years (GWP100), since methane as CH_4 traps far more heat than CO_2, but it also degrades quite rapidly over time. This is merely a measure for converting GHG emissions to CO_2e emissions. The SEC can simply require both conversions shown to satisfy both GWP100 and GWP20 users.
[53] See: https://carbonaccountingfinancials.com/files/downloads/PCAF-Global-GHG-Standard.pdf
[54] See: https://asc.fasb.org/imageRoot/81/118196181.pdf
[55] https://www.sayonclimate.org/climate-action-plans/
[56] https://pcaobus.org/oversight/standards/auditing-standards/details/AS2710
[57] https://www.climateaction100.org/progress/net-zero-company-benchmark/

  - short-term (2020 to 2025) GHG reduction targets.

- Companies should also include how their planned capital allocation and assumptions and estimates are aligned with their GHG emissions reduction targets.

Question 3: What are the advantages and disadvantages of permitting investors, registrants, and other industry participants to develop disclosure standards mutually agreed by them? Should those standards satisfy minimum disclosure requirements established by the Commission? How should such a system work? What minimum disclosure requirements should the Commission establish if it were to allow industry-led disclosure standards? What level of granularity should be used to define industries (e.g., two-digit SIC, four-digit SIC, etc.)?

The de facto state of climate disclosure (i.e., outside of the audited financial statements) has been an industry-led disclosure regime—at least since the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD) was launched in 2015. Progress has been uneven and largely driven by time-intensive, individual engagements by individual investors.[58] Preliminary results from a Carbon Tracker paper to be published in August 2021 further suggests that once again U.S. companies lag European peers.

This is consistent with other reviews. The FRC's thematic review observed inconsistences in how companies are identifying climate related risks, but seemingly not addressing them in their strategic report and/or financial statements.[59] The Association of Chartered Certified Accountants (ACCA) has also drawn similar conclusions, finding that only 10% of the companies reviewed incorporated climate-related risks into cash flows for purposes of impairment testing.[60]

The problem is that a range of market-led individual practices is no substitute for the role that the actual regulator can play in setting and standardizing disclosure requirements and enforcing compliance. Shifting this burden to market participants results in uneven and incomparable practices, as evidenced in the studies above. This holds true for disclosures applicable to all issuers as well as those that are industry-specific. In either case, regulators like the SEC are best placed to run a consultation process that proposes rules, consults stakeholders, and develops a final requirement.

Question 4: What are the advantages and disadvantages of establishing different climate change reporting standards for different industries, such as the financial sector, oil and gas, transportation, etc.? How should any such industry-focused standards be developed and implemented?

As noted above, some items, such as emissions reporting, should apply to all issuers; the SEC can reduce the costs of acquiring information and facilitate market pricing by standardizing disclosure. But industry specific disclosures are also needed, either because of the systemic role

[58] For example, Shell indicates in its 2020 Annual Report that its CEO meets twice a year with the Institutional Investors Group on Climate Change (IIGCC) as part of its engagement and collaboration with both IIGC and CA100+. Shell Annual Report and Accounts 2020, p. 136.
[59] See: https://www.frc.org.uk/getattachment/ab63c220-6e2b-47e6-924e-8f369512e0a6/Summary-FINAL.pdf
[60] See: https://www.accaglobal.com/gb/en/professional-insights/global-profession/climate-change-risk-related-disclosure-extractive-industries.html

those industries play (i.e., the financial sector), or because of the asymmetrically large impact that decarbonization will have on the sector (i.e., fossil fuel extraction).

There are no impediments to developing industry-specific disclosure requirements as the SEC already has them (i.e., Item 1200 et seq.). Such requirements are necessitated by the unique attributes of an industry that are material to investors and where useful and comparable disclosure cannot be derived from a principles-based regime alone. Current industry-specific requirements are not fully responsive to informational needs in the context of decarbonization.

An efficient use of the Commission's resources would be to improve existing industry standards. Next, the Commission could identify which sectors are most likely to be impacted by decarbonization and how and conduct rulemakings in sequence.

We do not believe this would lead an exponential growth in industry guidance since, for many sectors, electricity consumption is the key driver of emissions. In those cases, it is unlikely that sector-specific guidance is needed.

I. Item 1200 et. seq.—test case for sector specific disclosure

Below, we examine selected Regulation S-K Item 1200 disclosures which are geared towards the oil and gas production sector. We identify their shortcomings in this area and how the SEC could improve them through rule-making consultations.

Item 1202

Item 1202[61] covers the disclosure of companies' reserves by type, volume and geography. The company could translate these estimates readily into the emissions "embedded" in those reserves, i.e., the emissions that will be generated when the reserves are used. We recognize that historically, the Commission has restricted disclosure of contingent resource information given the greater uncertainty that they would be extracted. That said, both governments and companies factor contingent resources in when estimating expected ultimate recoveries as well as in forward planning.

Item 1202 also requires the disclosure of developed and undeveloped (proved) reserves using current estimated costs and prices allowing comparisons across companies (referred to as PV-10 and herein as the standardized measure of oil and gas ("SMOG")). This gives a snapshot of the current value of reserves that can be used to compare companies but, as many companies are at pains to point out in filings, this is neither indicative of the value they ascribe to the reserves nor an estimate of fair value.

Though it was not the intention of the Commission, the Covid pandemic manufactured a "stress test" from existing disclosure requirements. The SMOG requires companies to disclose the discounted present value of proved reserves under average spot prices over the past year and a fixed 10% discount rate. The pandemic caused these prices to be low—from our review of the few U.S. corporate disclosures that reveal this—dollar amounts used are on the order of $35/bbl.

[61] 17 C.F.R. §229.1202.

Those prices are on par with those from the "Accelerated Energy Transition" (AET-2) scenario produced by industry data provider Wood Mackenzie.

Figure 02: Wood Mackenzie AET-2 Oil Price Forecast[62]

Year	Price Range
2030	$37-$42
2040	$28-$32
2050	$10-$18

TEP CLIP.xlsx

Every U.S. company had to express the value of its proven reserves based on these low oil prices. And they did. And universally, those numbers are below the carrying costs of the current net upstream PPE recorded by these companies.

Figure 03: SMOG Valuation vs. Upstream PPE[63]

Company	CAPITALIZED COSTS Net Upstream PPE as of Dec. 31, 2020	NET CASH FLOWS (Discounted SMOG Value + AROs)[64]	SHORTFALL (Net PPE > SMOG Value)	% of PPE
BP	$74bn	$44bn	$30bn	40%
Chevron	$140bn	$62bn	$78bn	56%
Conoco Phillips	$39bn	$10bn	$29bn	74%
Continental Resources	$14bn	$5bn	$9bn	65%

[62] https://carbontracker.org/can-you-see-stranded-assets-through-the-smog/
[63] https://carbontracker.org/can-you-see-stranded-assets-through-the-smog// This includes both 10-K and 20-F filers.
[64] We have added the discounted ARO liability from company reports back into the SMOG discounted cash flows as a proxy for what would occur under U.S. GAAP for assets with retirement obligations that have been capitalized into the asset. See ASC 360-10-35-18: "Estimated future cash flows related to the liability for an asset retirement obligation that has been recognized in the financial statements shall be excluded from ….[t]he discounted cash flows used to measure the asset's fair value."

Company	CAPITALIZED COSTS Net Upstream PPE as of Dec. 31, 2020	NET CASH FLOWS (Discounted SMOG Value + AROs)[64]	SHORTFALL (Net PPE > SMOG Value)	% of PPE
Eni	€48bn	€34bn	€14bn	42%
EOG Resources	$29bn	$13bn	$16bn	55%
Equinor	$48bn	$36bn	$12bn	26%
Exxon	$167bn	$37bn	$130bn	77%
Marathon Oil	$15bn	$4bn	$11bn	73%
Occidental Petroleum	$58bn	$15bn	$43bn	74%
OMV	€10bn	€8bn	€2bn	18%
Pioneer Natural Resources	$14bn	$7bn	$7bn	48%
Royal Dutch Shell	$142bn	$53bn	$89bn	63%
Total	$84bn	$40bn	$44bn	52%

The comparison above suggests a stark difference between recorded net carrying values and the pandemic-induced low oil price scenario. Current accounting requirements allow management to set the prices used for their asset impairment testing. Management can also make assumptions about the successful development and production of probable (50% chance of recovery) and possible (10% chance of recovery) reserves, increasing the volumes that are the basis for future cash flows. And, management can use entity-specific discount rates, including those lower than the 10% in SMOG, giving more value to out-year volumes.

In short, Companies need not conform the SEC approach under SMOG when testing for impairments, and the SMOG test is not perfectly comparable to an impairment test. In addition, oil prices are volatile, so as prices rise post-pandemic, SMOG will no longer serve this purpose.

However, Item 1202(b) also gives oil and gas companies the option to include a reserves sensitivity analysis table,[65] provided that the company, "disclose[s] the price and cost schedules and assumptions on which the disclosed values are based."[66] Virtually no companies[67] have exercised this option to provide any scenarios—much less have they endeavored to use the optional sensitivity to provide insight on the financial impact of lower commodity prices in a climate-constrained scenario.

From this, we draw three conclusions: First, differences between a company's impairment testing and the SMOG are driven by differing assumptions regarding discount rates, future commodity prices, and the reserves/ resources upon which the calculations are based. Second, in the SMOG the Commission has a ready-made stress test for oil and gas in its rules, but it needs to be adjusted to make it comparable to the second step of an impairment test (which measures the amount of an impairment). Therefore, the Commission should mandate this disclosure requirement in order to facilitate a "stress test" scenario for upstream oil and gas assets at specified levels expected to be consistent with a decarbonization trajectory (using either specified commodity prices or formulas, as under FASB ASC Topic 932 for deriving them). Third, the SEC should introduce a low oil price scenario (consistent with net-zero emissions by 2050) in the sensitivity analysis as a permanent disclosure feature, to clarify the delta between management's expectations and those of a low-carbon scenario. This allows management to use any reasonable projections it chooses but provides a Paris-aligned point of comparison.

In summary, the Commission should consider the following revisions to Item 1202:

- **Embedded emissions**: The (scope 3) disclosure of emissions embedded in all reserves/resources held by the issuer (depending on whether the Commission requires emissions reporting elsewhere).

- **Probable and possible reserves and contingent resources**: Mandatory (as opposed to optional) reporting to include probability-weighted/adjusted probable and possible reserves. The SEC should further consider requiring companies to provide the currently prohibited disclosure of contingent resources, particularly if those resources are being factored into company development and business planning and elsewhere in the financial statement assumptions.

- **Make the standardized measure comparable to financial tests**: Conform the standardized measure (SMOG) to be more comparable to the second step of impairment testing (i.e., comparing discounted future cash flows to the carrying value of an asset for the purpose of calculating an impairment). That would involve ensuring that the relevant assumptions (i.e., forecast prices, forecast costs and development plans, discount rates, and recoverable resource bases) are sufficiently disclosed and that the sensitivities are conducted in a

[65] SEC Release Nos. 33-8995,34-59192, Modernization of Oil and Gas Reporting (Dec. 31, 2008) at 101-102 (finding that [m]ost of the information called for" by the rule "is readily available to oil and gas companies and includes information that is regularly used in their internal management systems . . . includ[ing] . . . [o]ptional disclosure of oil and gas reserves' sensitivity to price.").
[66] 17 C.F.R. Sec. 229.1200(b)(3).
[67] We found one entity, Newfield, that in 2015 deployed this price sensitivity. See: https://www.ceres.org/resources/reports/carbon-asset-risk-rhetoric-action (p. 28).

comparable way. This would include segmented disclosure of asset retirement obligations used in the standardized measure context, since those would not be considered in calculating future net cash flows for impairment testing purposes.

    - Requiring an appropriate level of disaggregation for the assumptions and estimates used, as well as the related asset values (e.g., for both impairment testing and calculation of AROs) that have been allocated to their various segments so that investors can recreate this information using different climate-related assumptions as relevant.

- **Future commodity price stress test**: In a world with fossil fuel demand declining by 2 million barrels a day each year,[68] companies might expect crude oil sales to fetch far lower prices. Indeed, this is what the aforementioned modelling from the IEA suggests. The SEC could help investors see this through mandatory sensitivities—with certain modifications to Item 1202(b).

    - Mandatory stress testing of assets using commodity prices deemed to be consistent with a low carbon trajectory—already specialist energy groups (Wood Mackenzie) and multilaterals (IEA) are producing such forecasts. The SEC could further require companies to provide a similar test.

Items 1205 & 1208

Item 1205 covers the disclosure of company exploratory and drilling activity, while Item 1208 covers oil and gas properties coverage and acreage. The focus of both Items relates to disclosures pertaining to new and producing wells—a sensible focus for a growing industry, but not for one facing sunset. A true and fair view would include inactive, unproductive, and/or ancillary or service wells. Just as productive wells are a proxy for future revenues, unproductive wells are a proxy for future liabilities. At the least, investors should be able to readily ascertain the number of unplugged, unproductive wells held by individual companies.

Therefore, the Commission should consider the following revisions to Items 1205/1208:

- **Inactive Well Count:** Mandate disclosure of non-productive well types, including inactive, idled, shut-in, injection, disposal and other wells that the entity is legal required to plug.

- **Standardized Measure of AROs**: Given the variability of assumptions companies can deploy, consider producing a standardized measure of asset retirement obligations similar to the SMOG, i.e., a means of identifying each company's asset retirement obligations using standardized assumptions for discount rates and a formula for estimating useful lives (i.e., plugging and abandoning a well that is no longer producing oil).

Question 7: What is the best approach for requiring climate-related disclosures? For example, should any such disclosures be incorporated into existing rules such as Regulation S-K or

[68] Of course, no one knows this with precision, but many models of the economy decarbonizing in line with the Paris Agreement contemplate annual declines of this magnitude. See, e.g.: https://www.forbes.com/sites/woodmackenzie/2021/05/20/what-does-a-net-zero-pathway-mean-for-the-oil-and-gas-industry/?sh=3f0518cd44a0

Regulation S-X, or should a new regulation devoted entirely to climate risks, opportunities, and impacts be promulgated? Should any such disclosures be filed with or furnished to the Commission?

As we note in response to Question 1, climate-related disclosures can be seamlessly integrated into current corporate financial reporting. Some disclosures are already required by U.S. GAAP and Regulations S-K and S-X. All such information should be included in company filings. If it is important enough to be disclosed, it is important enough to be included in filed reports.

Question 10: How should disclosures under any such standards be enforced or assessed? For example, what are the advantages and disadvantages of making disclosures subject to audit or another form of assurance? If there is an audit or assurance process or requirement, what organization(s) should perform such tasks? What relationship should the Commission or other existing bodies have to such tasks? What assurance framework should the Commission consider requiring or permitting?

We believe requiring assurance adds value to disclosures and therefore we support this, as noted in our responses to Questions 1 and 2. Assurance provides a level of verification and comparability for all market actors, increases confidence in the quality of the information and reduces the information-acquisition costs to individual market participants. It likely requires that companies incorporate these issues into their risk management systems. New disclosure requirements should be accompanied by assurance requirements and, if not, then at least be "assurable," i.e., capable of being assured.

Clearly, for disclosures added under Regulation S-X, the PCAOB should oversee audit standards. Where disclosures are placed outside of the PCAOB's remit, the SEC should consider either expanding its remit or sanctioning the development of privately ordered assurance standards.

Question 11: Should the Commission consider other measures to ensure the reliability of climate-related disclosures? Should the Commission, for example, consider whether management's annual report on internal control over financial reporting and related requirements should be updated to ensure sufficient analysis of controls around climate reporting? Should the Commission consider requiring a certification by the CEO, CFO, or other corporate officer relating to climate disclosures?

Yes, the Commission should consider other measures to ensure the reliability of climate-related disclosures. For example, the Commission should require issuers to identify how their climate risk mitigation efforts and targets/ambitions are integrated into internal processes, including investment decision-making and planning, and financial reporting.

Investors also need disclosure about how companies incorporate consideration of these issues (e.g., material climate-related risks) into their corporate governance and risk management practices. Investors need to understand the extent to which senior executives, and the Board of Directors, have oversight of these issues; accordingly, an indication of Board oversight and the integration of climate-related issues into the risk management process is vital.

As these issues span disclosure and audit/assurance, the Commission should work with the PCAOB to address these issues.

- For example, the Commission could require auditors to explicitly consider these issues when reviewing or auditing internal control reports.

- The Commission could also require the CEO and the CFO to certify that they include consideration of climate-related issues in their internal control process/preparation of the financial statements. They should further require them to certify that the effects any corporate emissions reduction commitments and/ or climate-related risk factors identified in corporate reports have been considered and addressed in financial reporting. From a supervisory review standpoint, staff should consider whether:

    - Proxy carbon prices and other measures of carbon risk are integrated into financial statements.

    - How carbon prices are expected to impact businesses.

Question 12: What are the advantages and disadvantages of a "comply or explain" framework for climate change that would permit registrants to either comply with, or if they do not comply, explain why they have not complied with the disclosure rules? How should this work? Should "comply or explain" apply to all climate change disclosures or just select ones, and why?

The Commission has never taken a comply or explain approach and now is not the time to start. Comply or explain allows non-disclosure, and in practice, "explanations" may be obtuse and/or difficult to assess. Moreover, assessing them shifts the onus of enforcing proper disclosure to investors, and deprives the market of comparable information.

Appendix B: Examples of Carbon Tracker Publications Relevant to Climate Change Risks and Disclosures

Publication title	Description	Relevance
[DRAFT-- Forthcoming-August 2021]	Summarizes a review of over100 company 2020 annual reports globally (including the 10-Ks of 19 large cap U.S. oil and gas companies). It assesses compliance with accounting and audit standards, consistency of climate-related risk discussions across risk factors, MD&A, and sustainability reports to the disclosures in audited financial statements and audit reports.	Will identify gaps between requirements and audit practice in the face of material climate-related risks.
Absolute Impact 2021: Why oil and gas 'net zero' ambitions are not enough [May 2021]	This report is the second in this series. It compares and ranks the emissions targets of ten of the largest oil and gas companies, revealing that all net zero targets are not the same. It specifies the importance of interim goals and absolute reduction targets (versus intensity targets). It also highlights the overreliance on unproven offsetting technologies.	Provides evidence for the need for industry standards for measuring and disclosing oil and gas emissions, emissions targets, and their pathways to achieving them.
Can you see the stranded assets through the SMOG? [April 2021]	This blog shows how investors could use last year's SMOG as a proxy for impairment. 2020 SMOGs are particularly relevant to climate change considerations since the oil and gas prices used are similar to those used in scenarios that align with Paris.	Provides evidence from current reporting that climate risks are material and that climate-related risks are not fully baked into recent oil and gas impairments.
A Tale of Two Share Issues: How fossil fuel equity offerings are losing investors billions [March 2021]	Indicates that globally investors have lost over $120bn between 2012 and 2020 on the values of fossil fuel producing and related companies post their initial public offerings. By contrast, the values of renewables/ energy utilities companies have increased more than $110bn.	Supports the need for clear and transparent climate-related information, including assumptions and estimates used, for prospectuses.
Groundhog Pay: How executive incentives trap companies in a loop of fossil growth [December 2020]	Highlights the importance of executive remuneration in the face of the energy transition. Of the 30 largest oil and gas companies reviewed, 90% continue to incentivize increased production (or reserves), despite stranded asset risks. Even those with net zero targets appear to continue to reward fossil fuel growth.	Supports the need for disclosure of climate targets and the pathways that companies will take to achieve them.

Billion Dollar Orphans: Why millions of oil and gas wells could become wards of the state [October 2020]	Explains how U.S. asset retirement obligations are under-estimated (possibly $280 billion in U.S. onshore wells, alone) and underfunded (1% of that value). Climate risks may accelerate these obligations, adversely impacting states and effectively passing large oil and gas companies' costs and responsibilities onto taxpayers.	Evidences the need for improved disclosures regarding AROs and corporate mechanisms for paying for them.
Fault Lines: How diverging oil and gas company strategies link to stranded asset risk [October 2020]	Quantifies at company level the potential financial risk of continued investments in oil and gas projects. Finds that U.S. oil and gas companies are significantly behind their EU counterparts in minimizing their stranded asset risk.	Further evidences why investors need more transparency about the commodity prices and planned capex used in asset impairment tests.
Proposals to enhance climate-related disclosures by listed issuers and clarification of existing disclosure obligations (CP20/3) [October 2020]	This is a joint response with AssuranceMark to the UK's Financial Conduct Authority's (FCA) consultation on climate-related disclosures. The response contends that there is the need for a clear "through-line" from financial planning to the financial statements.	Supports the need for consistency in assumptions used in planning and investments and the preparation of the financial statements.
The Impair State: The Paris Agreement starts to impact oil & gas accounting [June 2020]	This report identifies a correlation between a company's emissions targets, its unneeded potential upstream capex, and the commodity prices its uses to test for impairments. It also discusses how EU companies are still ahead of their peers.	Underscores that U.S. investors are receiving less information than their counterparts overseas. Evidences the need for more transparency of climate-related assumptions and estimates used in financial statements.
Decline and Fall: The Size & Vulnerability of the Fossil Fuel System [June 2020]	This report looks at the entire fossil fuel system (from extraction to end use). It highlights how "the decline of the fossil fuel economy poses a significant threat to global financial stability", particularly because the relevant risks are not priced into the markets.	This provides a whole system perspective of stranded asset risk and why it is important that the SEC deliver greater transparency (e.g., around the forecasted prices and discount rates that companies use).
How to waste over half a trillion dollars: The economic implications of deflationary renewable energy for coal power investments [March 2020]	Shows how new renewables costs much less than investing in new coal, and that it is cheaper in some places today to replace existing coal with new renewables. Forecasts these trends to continue in the future based on cost declines for renewables.	This enforces the need for disclosure of companies' investment plans and climate related strategies, particularly for companies that still have coal assets, as well as consistency with the inputs used in preparing the financial statements.

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2 degrees of separation – Transition risk for oil and gas in a low carbon world [June 2017]	Jointly produced with the UN Principles for Responsible Investment and institutional investors, this is one of Carbon Tracker's flagship reports. It "provides a snapshot of the potentially unneeded capex spend for 69 global oil and gas companies" by comparing their planned spending to their portion of the world's 'carbon budget'. It concludes that planned oil and gas industry investments (up to 2025), part of which are "business-as-usual", would be inconsistent with achieving no more than 2 degrees warming.	This report helps investors assess their climate risk exposure and compare oil and gas companies in the light of climate-related risks. This informs investment, voting and engagement strategies. The results of this further supports why greater transparency is so important in helping investors understand the extent to which their capital is or could be at risk.
Unburnable Carbon: Are the World's Financial Markets Carrying a Carbon Bubble? [July 2011]	One of Carbon Tracker's first reports on stranded assets and the carbon budget; this created the idea of a "carbon bubble". It analyzes fossil fuel companies' (and so investors') "stranded asset" risks, across global stock exchanges, in the face of the remaining amounts of CO2 that can be burned (the "carbon budget") in order to limit the extent of global warming.	Illustrates how PPE is at risk in a carbon-constrained future, which is a significant issue for all investors but particularly passive/indexed investors. This underscores the need for standardized disclosure of a company's scope 1, 2 and 3 emissions, as well as embedded carbon emissions.

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