Via email: rule-comments@sec.gov

July 20, 2016

Mr. Brent Fields
Secretary
U.S. Securities and Exchange Commission
100 F Street, NE
Washington, DC 20549

File Reference No.: S7-06-16

SEC Release No. 33-10064, Business and Financial Disclosure Required by Regulation S-K

Dear Mr. Fields:

The Carbon Tracker Initiative is a financial think tank focused on capital markets and climate change. Our research and analysis contributes to a widening dialogue between fossil fuel companies, investors, and policy-makers on securing an orderly transition to a low-carbon future. We submit these comments in connection with the SEC's Concept Release.[1]

We laud the Commission for seeking to streamline and improve disclosures to ensure the flow of meaningful and reliable information to the markets. This enables investors to efficiently allocate capital and make informed proxy voting decisions. We view climate change through the lens of financial materiality to registrants, focusing on the low-carbon implications for the extractives sectors. As detailed below, we believe that the climate problem has implications for the application of existing regulations and further suggests ways of making disclosure more effective--to varying degrees, those suggestions may also have general application.

To these ends, we identify investor concern and address three broad questions:

- How can the key material risks from climate change best be characterized?

[1] Release No. 33-10064.

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- Why are current disclosures insufficient and why is more not disclosed?
- How could disclosures be made more useful?

In the Appendix we respond to selected questions from the Concept Release.

Investors are demanding decision-useful climate analysis

The Concept Release acknowledges that investors need information for both investment and voting decisions. The importance of the former goes without saying but the latter, as the Concept Release notes, is also significant, especially for energy sector stocks, which make up a meaningful portion of indexed and passive funds. For example, it is estimated that $7.8 trillion is benchmarked against the S&P 500, 11% of which is comprised of energy and utility companies.[2] Asset owners need to may find it difficult to exit such stocks, making it more important to be able to understand management decision-making and engage, particularly with respect to enterprise-level risks. Having decision-useful information on climate risks would serve both purposes.

The largest oil and gas companies are not immune from these concerns

These needs explain why many institutional investors are seeking to understand the degree of alignment between company business plans and the commitment of governments around the world to limit warming to no more than two degrees Celsius above pre-industrial levels (2°C Goal). As the Commission is well aware, in the last year shareholders filed resolutions at many of the largest oil and gas extractives companies asking them to analyze their businesses against the 2°C Goal. These resolutions garnered significant shareholder support at even the largest companies—38.1% at Exxon, 40.8% at Chevron, 42% at Anadarko and 49% at Occidental.[3] These levels of support are uniquely high compared to historic voting totals for what have traditionally been considered "social policy" issues; they demonstrate deep concern from many mainstream investors on how these companies are managing climate risk.

Importantly, each of the above-referenced shareholder resolutions sought information on how efforts to achieve the 2°C Goal would impact the company—not

[2] *See* http://us.spindices.com/indices/equity/sp-500

[3] *See* https://www.ceres.org/investor-network/resolutions/shareholder-resolutions#!/subject=&year=2016&company=&filer=&sector=Oil%20and%20Gas&status=&memo=&all= (compiling vote totals).

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how company activities will impact the climate. Disclosure of how social policies may impact company results and strategy is core to the Commission's mandate.

Investors believe current company efforts raise governance concerns

Concerns about climate change have now extended into governance, and whether adequate controls are in place to properly evaluate the risks. The New York City Common Retirement Fund has sought the right of proxy access at companies with significant climate change-related risks (one of three areas of focus), resulting in a focus on registrants in the extractive sector. Those resolutions have garnered a majority of shareholder support at two-thirds of the 75 companies where resolutions were filed, notwithstanding board recommendations to the contrary.[4] A majority of shareholders at the country's largest integrated oil and gas companies—Exxon and Chevron—have supported the right of proxy access, notwithstanding the boards' recommendations to reject such resolutions. The rapidly changing dynamics are evident—nearly 62% of Exxon's shareholders voted in favor of proxy access this year, up from roughly 49% the year prior.

In our view, these concerns reflect not just an effort to increase shareholder participation, but increasing concern about the way in which carbon-intensive registrants are considering climate risks; current disclosures, spread across SEC filings and voluntary papers, have failed to quell that concern.

That the climate is changing is a well-known fact, but the specific implications for a given company's strategy and results are not, nor is it always evident how a company is managing the risk or how those activities can be tracked in a meaningful way. These are proper questions for consideration in capital markets regulation and touch upon many of the questions asked in the Concept Release.

How can the key material risks from climate change best be characterized?

Climate problem is unique

All sectors are subject to disruption, but climate change is unique in that governments have established emissions reductions goals that imply certain levels of overall fuel consumption if those targets are met. In short, the Paris Agreement's

[4] http://comptroller.nyc.gov/boardroom-accountability/

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goal of limiting warming to no more than two-degrees above pre-industrial levels, (2°C Goal), implies a global "budget" for future carbon emissions. The many emissions reductions targets set at national and sub-national levels below further support the global carbon dioxide budget. These "budgets" offer the opportunity for companies to engage in a quantitative way with their potential exposure.

This does not mean that all climate related risks flow from such budgets themselves. Rather, it is that emissions reduction targets – whether achieved by policy, technological progress, or other means – offer a clear statement of the direction of travel and level of global ambition and therefore a useful proxy for quantifying the extent of the risk, even when the particular contours of that development are subject to fits and starts in policy and technological development.

We believe that the macro-picture is not lost upon companies, though very few have discussed the risk in this way.

Risk factor disclosures exist, but fail to convey how the registrant is analyzing the impact of and address the limited carbon budget

We recognize that, for years, some companies have offered some level of disclosure regarding climate change—primarily in the form of "risk factor" disclosure. Moreover, in 2010, the Commission took the salutary step of considering how existing disclosure obligations applied in the context of climate change. The problem is that for risks such as climate change, the key details are not the identifying the risk, but discussing its potential implications for the registrant. The connections between fossil fuels and warming are generally understood but the financial implications for the extractives industries, for example, are not.

Most carbon-intensive companies' corporate reports contain climate change risk-factor disclosures but few if any provide quantitative detail. Those disclosures typically identify international, national and sub-national treaties, laws and regulations to limit greenhouse gas emissions, competition from renewables, and subsidies and portfolio standards that encourage the construction of low-carbon sources of power. Some acknowledge that there are demand and price implications of such developments. Such disclosures may comply with company reporting obligations for risk factor disclosure, but reveal very little beyond the connection between mitigating carbon dioxide emissions and reducing fossil fuel usage.

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This lies in contrast to the burgeoning array of more detailed information concerning the specific climate goals and emissions reductions targets and mandates, which could be used to quantify the impact on fossil fuel, demand. Investors generally have third-party analysis of this information, but this only raises the question of how the companies they own are managing these risks and, to the extent they claim to be managing them, how investors can verify those claims.

Very few companies discuss the demand implications of emissions reduction targets with any level of granularity. However, many of the largest fossil fuel companies provide significant forward-looking information, extending out decades, that projects robust demand for their products. Most companies that provide such projections recognize that they are inconsistent with the 2°C Goal, but offer no meaningful discussion of the risk to the company should that goal be achieved. Here, we believe the Commissions could play a role.

The particular implications of the 2°C Goal are significant

The 2°C Goal announced in Paris was not new—it was the formalization of a climate target that was agreed upon in principle in the 2009 Copenhagen Accord. Though the target has been a key international climate policy focus for more than 7 years, few companies have analyzed it in corporate reports. The target implies a substantial reduction in emissions[5] and therefore fossil fuel combustion and demand—in effect, a limited remaining "carbon budget" that cannot be exceeded. Many companies have recognized the basic connection between emissions reductions and demand for their products, but few have highlighted in corporate reports the significant the implications of the 2°C Goal in particular.[6]

A first order analysis suggests they are significant (the 450 Scenario represents a 50% chance of limiting warming to no more than 2°C above pre-industrial levels):

[5] Researchers at the University College, London have concluded that a third of oil reserves, half of gas reserves and 80% of coal reserves must remain unused if the 2°C target is to be achieved. Christophe McGlade and Paul Ekins, "The geographical distribution of fossil fuels unused when limiting global warming to 2°C", 517 *Nature* 187 (Jan. 2015). (Note that their definition of "reserves" is more expansive than the SEC definition and includes elements of the resource base.)

[6] Vague warnings of the potential materiality of climate mitigation efforts are reminiscent of the Second Circuit's admonition that the safe harbor provisions do not protect from liability a person "'who warns his hiking companion to walk slowly because there might be a ditch ahead when he knows with near certainty that the Grand Canyon lies one foot away.'" *Rombach* v. *Chang*, 355 F.3d 164, 173 (2d Cir. 2004).

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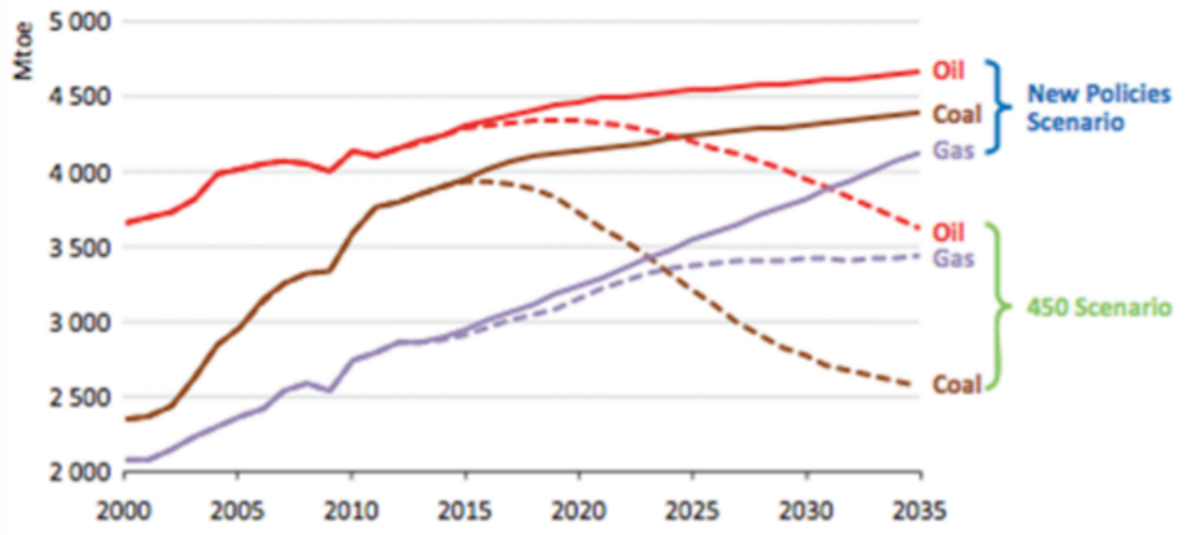
Figure 1: IEA Demand profiles under various scenarios



Source: IEA World Energy Outlook, 2014

The 2°C Goal is at odds with company demand projections; investors need to understand the delta

Figure 1 makes clear that the climate targets imply an inversion in oil and coal markets, with a flat-lining of demand for gas through 2035. The central climate risk to investors in the extractive industries is that earnings from relatively lower costs assets are redeployed towards higher cost assets that are unnecessary in a low-demand scenario, resulting in oversupply, depressed prices, and sub-economic shareholder returns. A key measure of that risk is the delta between company planning parameters and scenarios and a climate-safe demand pathway. This may result in different price assumptions and consequently capital allocation decisions.

Substantial capital allocation at risk—key is to understand potential demand misread

Carbon Tracker's research has examined potential production out to 2035 and found that more than 2.1$ trillion in potential capital expenditures (oil, gas, and coal) through 2025 might not be needed in a 2°C-compliant demand scenario.[7] Our analysis further recognizes that a substantial amount of capital must still be

[7] Carbon Tracker and Energy Transition Advisors, *The $2 trillion stranded assets danger zone, How fossil fuel firms risk destroying investor returns*, (Nov. 2015); Available at: http://www.carbontracker.org/wp-content/uploads/2015/11/CAR3817_Synthesis_Report_24.11.15_WEB2.pdf . Importantly, that figure does not include any price impact that oversupplied commodities markets might have on assets needed to satisfy production.

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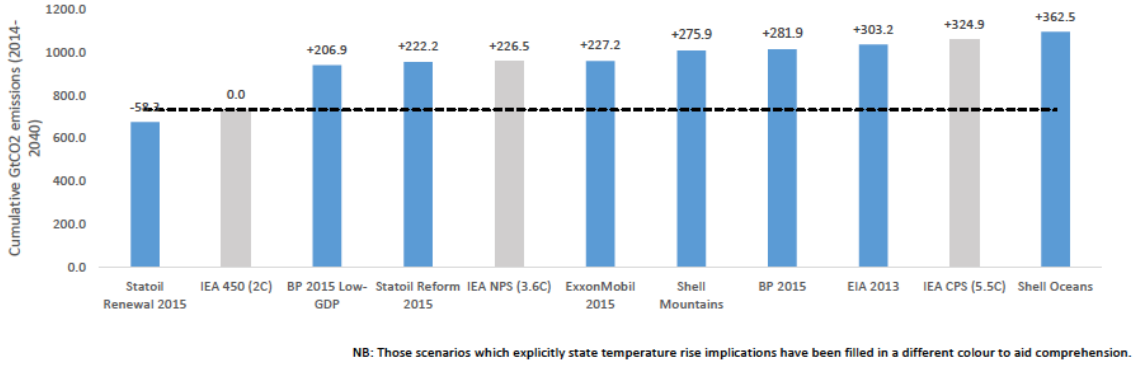
deployed for oil and gas development even in such a scenario—up to $7.4tr through 2025.[8]

The question is which projects are 2°C-compliant, and which aren't? Existing disclosure regulations have not compelled companies to specify whether their current capital allocations are towards projects that would or would not be needed in a 2°C demand scenario.

Nevertheless, companies recognize that there is a gap between their planning cases and the lower demand case needed to achieve the 2°C Goal. Here, we have translated company forecasts for fossil fuel usage into an embedded emissions figure and compared that to the IEA 450 Scenario:

Figure 2: Industry forecasts expressed in terms of Gt CO_2 (2014-2040)



Source: CTI, Lost in Transition[9]

This illustrates the potential for a misread of demand. Such a chain of events is not entirely hypothetical. The oil price collapse demonstrates how a slight imbalance in supply in demand can cause a significant drop in price—in this case a mere c.2% oversupply helped trigger a temporary >75% drop in price. While prices have risen from a low of $28/bbl, the ensuring supply glut has kept prices low when compared to the last decade. In a declining demand scenario, balancing the market would only be more difficult.

While the recent, sustained decline in oil prices is not indicative of a full-blown transition away from oil, it does show how even a slight state of oversupply can

[8] *Danger Zone*, at 14, 18.

[9] Luke Sussams, James Leaton and Tom Drew, *Lost in Transition, how the energy sector is missing potential demand destruction*, at 39 (Oct. 2015), http://www.carbontracker.org/report/lost_in_transition/

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dramatically impact the oil price and so represents precisely the type of misread that might occur if policy and/or technology drive towards the 2°C Goal.

Investors need to understand the business case for risking capital on projects that exceed government climate targets

In our view, it is not merely a matter of describing potential risks from climate change, but considering and detailing how the company is assessing its potential prospects in light of global climate goals. Investors are more concerned with the value of the company rather than the volumes of oil it produces. To this end, understanding how the companies' projects align with the 2°C Goal is one element, another is understanding the financial justification for taking additional risks in sanctioning projects that are not 2°C-compliant.

A recent Carbon Tracker report examined the discounted net present value of company cash flows from the oil majors as a whole under two scenarios—one where the company only runs two-degree compliant projects, and a second where the companies run all projects.[10] We conducted a sensitivity analysis of those projects at different prices and discount rates. That analysis suggested that the upstream cash flows from the oil majors might collectively be worth more if they limited capital investment to the two-degree compliant scenario than if they ran the full range of projects (including the 2°C-compliant projects), provided the oil price did not consistently exceed $120/bbl long term—an unprecedentedly high oil price. This is primarily because producing greater volumes of oil would require the development of particularly costly projects. This point is demonstrated in Figure 3, below, focusing on new assets as most existing producing assets will be needed even in a 2°C demand scenario ("2D" representing the 2°C compliant projects, and "BAU" including the higher cost projects that aren't needed under 2°C):

[10] Andrew Grant and James Leaton, the Carbon Tracker Initiative, *Sense & Sensitivity: Maximizing value with a 2D portfolio*, (May 2016). Available at: http://www.carbontracker.org/report/fossil-fuels-stress-test-paris-agreement-managed-decline/

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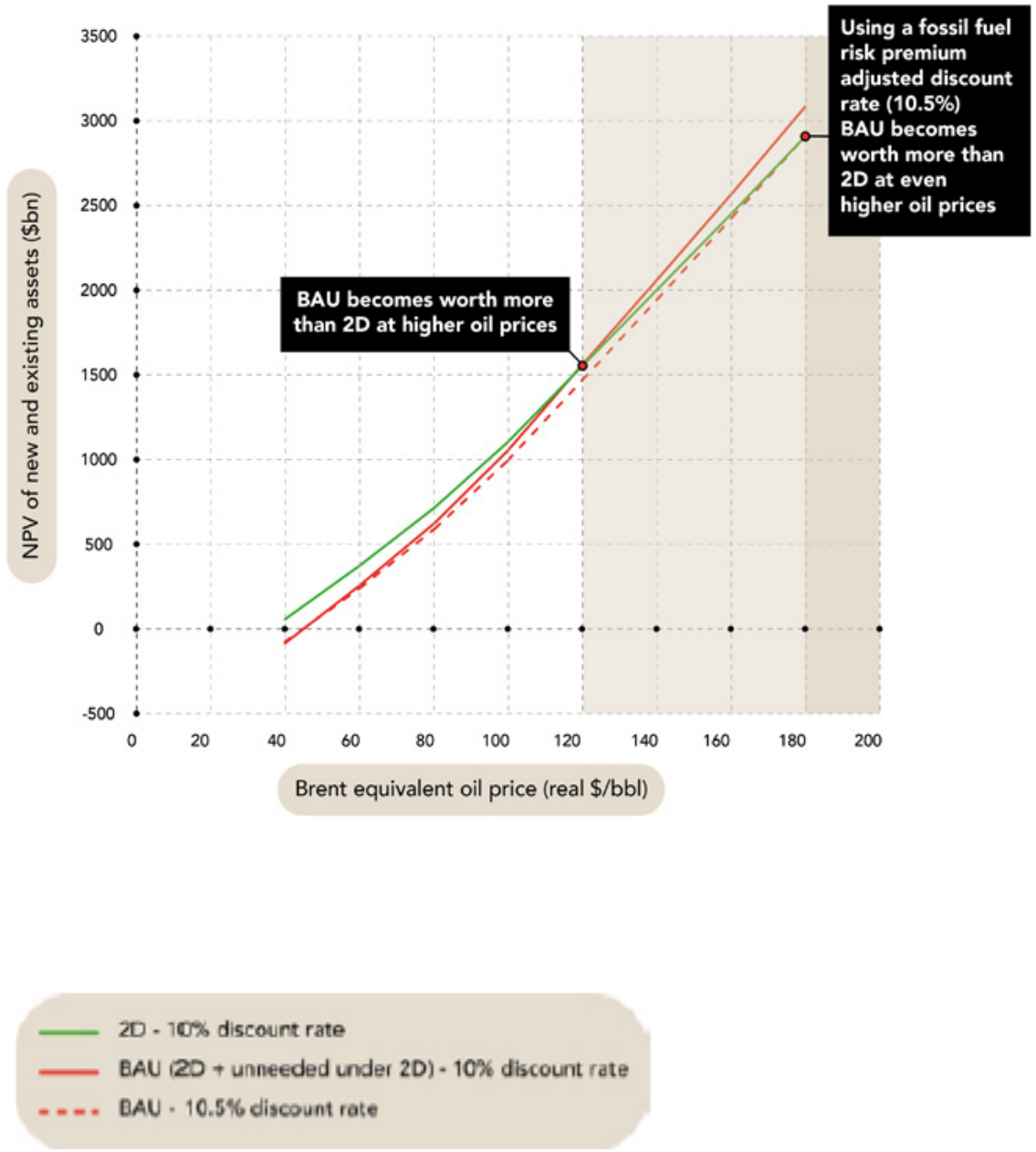
Figure 3: NPV of new assets at the seven oil and gas majors ($bn)



Source: Rystad Energy, CTI analysis[11]

The results suggest that, regardless of a company's beliefs about climate change or the likelihood of policy action, it may be more value additive for companies to constrain project sanction to the lowest-cost, value producing projects.

[11] *Sense & Sensitivity*, at 6.

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Why are current disclosures insufficient and why is more not disclosed?

In general, current risk factor disclosures identify climate risks and, on occasion, those risks are discussed in the MD&A. However, there is less discussion in corporate reports as to how their investment and planning decisions are and will be impacted by the carbon budget implied by emissions reduction targets. Much of the most pertinent information is found in *ad hoc* reports, including sustainability reports and publications responsive to shareholder resolutions. These discussions are often incomplete and incomparable; the lack of clear regulatory requirements and standardization may be one reason that companies are failing to do more. Concerns about commercial sensitivity and feasibility should be considered but ultimately we do not believe they would impede a more robust disclosure regime.

Structural problems

Risk factor disclosure

The most obvious place or a discussion of climate risk is in the risk factor disclosure section of corporate reports. Risk factor disclosure is intended to reflect a concise statement of the most significant risks. It is not un-reasonable to focus corporate reporting on key threats to the company's financial prospects.

But its utility may be circumscribed by this focus. Risk factor reporting too often yields a boilerplate discussion, providing little information beyond what can be gleaned from the markets at large. Forcing the discussion of every risk, regardless of its potential impact, runs the risk of burying essential information in meaningless details, overburdens management and makes the reporting process unwieldy. It is no secret that corporate reporting of risk is often directed by outside counsel whose primary concern is not to provide investors with the most useful information, but offer the widest possible shield to potential investor litigation.

Investor knowledge and understanding varies, as does reliance on corporate reports. It cannot be assumed that individual investors appreciate all potential risks, and corporate reports must also consider the needs of retail investors, so it makes sense to at least provide a general discussion of the material risks.

In this vein, the Commission has historically discouraged the use of mitigating language in corporate reports as such language runs the risk of misleading investors as to the riskiness of the investment. As a consequence, risk factor disclosure is

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normally exclusively focused on a top-level *identification* of key risks. It imposes no obligation to *quantify* the potential impact, much less discuss what the company is doing to *mitigate* the risks.

But mere risk identification does not provide meaningful information for problems such as climate change, where the crux of the problem is already in the public domain and the key issue is how that problem will specifically impact the company and how the board is considering it. Such disclosure is forward-looking and strategic and suggests that it might be better suited to other sections of the corporate report, especially the MD&A (discussed below).

Disconnect between forecasts and risk factors

Though not properly part of risk factor disclosures, another concern is the way that those disclosures interact with other elements of the corporate report, in particular, company projections and forecasts. Our recent research suggests that there may be dissonance in corporate reports between the discussions of climate risk and the assumptions used in scenario analysis typically provided in corporate reports.[12] In practice, this means that companies may disclose certain risk factors but discount them completely with regard to forecasts.

While it is the case that Commission guidance encourages registrants to release their own forecasts, provided they are based on reasonable assumptions, and recommends that critical assumptions and the historical accuracy of such forecasts be disclosed,[13] it is not clear that such disclosure always occurs, that the reasonableness of those forecasts has been fairly considered, or that such guidance applies to the use of third party forecasts (though, in principle, we believe that it should). This leaves open the possibility that companies can provide projections and forecasts that simply ignore identified risks, raising the question of whether those forecasts are reasonable and, relatedly, whether they are reflective of management's beliefs.

Coal company disclosures have not kept pace with emerging trends or scientific knowledge

This very problem has occurred with respect to coal company reports over the last several years. A recent Carbon Tracker report examines selected coal company

[12] *See No Rhyme or Reason*.
[13] 17 CFR 229.10(b).

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disclosures over the period 2010-2015.[14] Our conclusion is that there were many risk factor disclosures, but little effort to consider publicly announced climate targets, quantify the risk, explain management's views on the likelihood of those targets, or describe the extent to which they were being managed and planned for.

Counterbalancing the risk factor disclosures were references to forward-looking statements that painted a reassuring picture of steady coal demand over the next several decades. Those statements, based on third party projections, were built on business-as-usual assumptions that, in effect, ignored the identified risk factors.

Specifically, these disclosures often cited the EIA Reference Case, a business-as-usual projection of trends over a 20-25 year period that assumes no new policies, regulatory interventions, or disruptive technological developments. The EIA makes clear that the Reference Case is a *projection* of trends, not a *forecast* of what will likely happen. Even this distinction was not always clear in the corporate reports.

Only rarely were such assumptions disclosed. Indeed, only a few of the corporate reports examined identified the key assumptions underlying the EIA projections or included other EIA projections that considered the impact of proposed and imminent policies. Furthermore, while many companies cited the EIA Reference Case, few made clear whether they thought them more or less likely than the numerous countervailing risk factors cited.

While the EIA Reference Case was never intended as a forecast, the key question is whether investors mistakenly assumed it to be one. As demonstrated in Figure 4, the EIA Reference case was a poor predictor of the actual course of events:

[14] Rob Schuwerk and Luke Sussams, *No Rhyme or Reason, Unreasonable projections in a world confronting climate change*, (July 2016). Available at: http://www.carbontracker.org/report/no-rhyme-or-reason-eia-energy-outlook-coal-companies-risk-disclosure/ .

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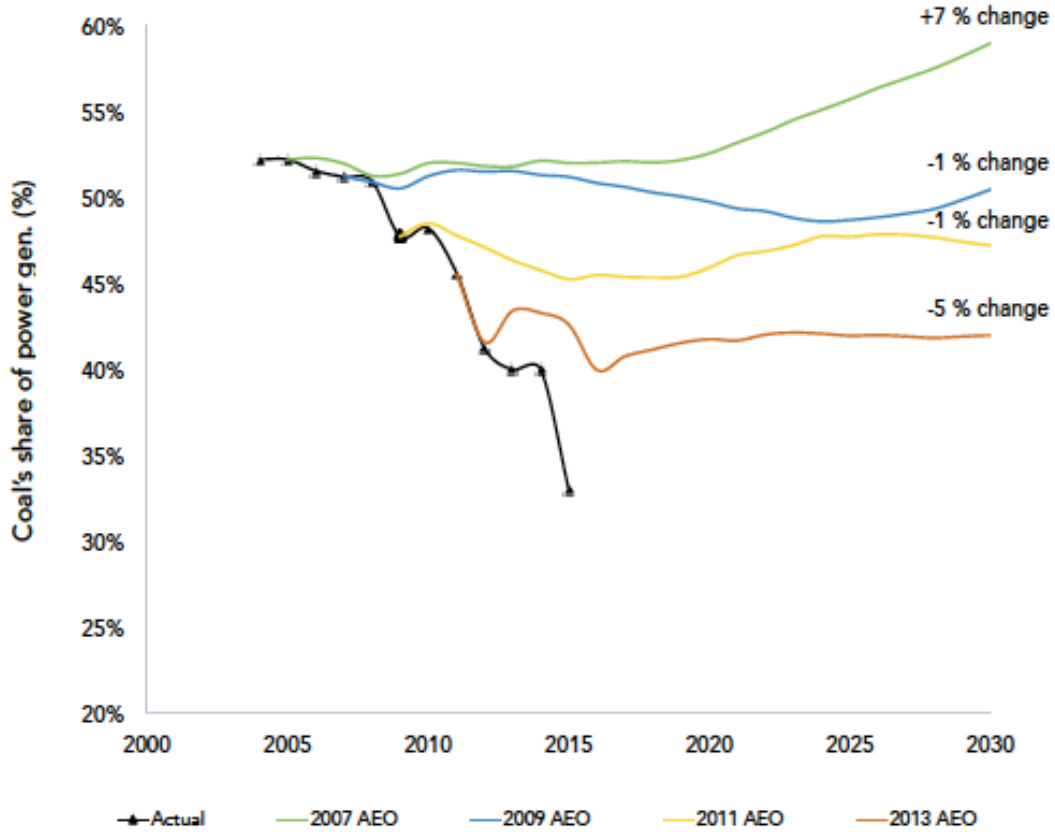
Figure 4: Coal's share of electricity generation in US, EIA scenarios vs. actual



Source: EIA Annual Energy Outlook 2007-2016[15]

MD&A

MD&A is principally focused on emerging risks and opportunities, and asks registrants to consider even risks that they believe do not reflect the most likely outcome. It is and should be reflective of management's views, but it does require management, acting in the best interests of the company, to make an impartial assessment of the risks.

In this context and as we noted in our previous letter to the Commission, we believe that Item 303 already may require the disclosure of the potential impact of the 2°C Goal on the results of company operations.[16] The direction of travel is clear—

[15] *No Rhyme or Reason*, at 41.
[16] Carbon Tracker letter to the SEC (Feb. 2015). Available at: http://www.carbontracker.org/report/letter-to-the-u-s-securities-and-exchange-commission/

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indeed, many fossil fuel companies agree that the trend is towards increased efficiency and decreased emissions, they have simply rejected the likelihood that governments will fulfill the specific targets they have set for themselves. This is tantamount to declaring an unprecedented agreement between the governments of the world to a specified policy target as too "remote" to be considered in the company's risks assessment. We believe this conclusion is at odds with what could reasonably be expected from an impartial application of the MD&A two-step test and perhaps at odd with company practice, to the extent that such considerations are being incorporated into the planning process.

The goal is not simply to reduce emissions, but to do so sufficiently to limit warming to no more than two degrees Celsius above pre-industrial levels. Whether those efforts succeed, fall short or exceed expectations cannot be determined today, but it does provide a quantitative measure of where those energy trends are heading and therefore a basis for considering how future returns differ from the past.

A quantification of at least some portion of the impact—the impact on upstream portfolios—should be "reasonably available" and therefore an element of required disclosure under Item 303. This suggests that additional guidance or comment on company disclosures under this provision may immediately improve transparency.[17]

The market is making progress, but it is impeded by the lack of a standard

While we believe that there is value in ensuring that MD&A disclosure is robust, we recognize that the market is changing rapidly and greater standardization may be needed. Efforts by the FSB Task Force to produce voluntary standards may result in additional voluntary disclosures that provide a *de facto* standard to the markets. The emerging body of company reports in response to shareholder resolutions may increase the need for standardization, given the lack of comparability. In this case, current MD&A standards may not be sufficient.

Some companies are beginning to treat the 2°C Goal as at least sufficiently likely to be incorporated into their planning considerations—an important suggestion of its materiality. Total whose shares are traded in the US via ADRs, has expressly linked its business plan to the "ambition" to achieve the 2°C Goal.

[17] Companies have provided a number of reasons why additional disclosure related to the 2°C Goal may not be needed; those are discussed in the following section.

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ConocoPhillips (COP) considers multiple two-degree scenarios in the project planning and sanction process.[18] Although few details have been provided, the company has noted on its website that it considers several potential 2°C-compliant pathways out to 2030, including scenarios in which rapid technological development occurs without government support and one in which it develops with the support of a moderate carbon price. It includes a scenario analysis in which no carbon capture and storage (CCS) is required, and considers how government legislation and regulation might drive additional renewables deployment, despite higher costs.[19]

While COP is likely an industry leader in this regard, the scenario details and results are not public. Their internal use of 2°C scenarios in the planning process is indicative of the importance of the issue; this should also be represented in company disclosures, though it does not appear to be.[20] COP's reticence to disclose more is symptomatic of the need for a standard that would apply to all industry participants in order to ensure a level playing field for registrants and comparable information for investors. This, however, suggests that the SEC should also consider how to go beyond the precepts of MD&A analysis to standardize disclosure of the scenarios and key assumptions used.

Company concerns

Disclosure imposes burdens upon registrants and so objections to such disclosures should be considered. Here, we focus on three potential concerns with disclosing the quantification of the 2°C Goal:

- That the 2°C Goal is long-term and therefore can be anticipated or is immaterial to current investor decisions (making additional disclosure unnecessary),
- That it is too unlikely to be considered in company planning or reporting, and

[18] http://www.conocophillips.com/sustainable-development/environment/climate-change/climate-change-strategy/Pages/carbon-scenarios.aspx

[19] *Id*.

[20] COP's FY 2015 10-K, for example, discusses risks from climate change in the risk factors and MD&A but does not contain a discussion of the two-degree target much less how it might impact the company--even though the company applies such a target in its investment decision making process. For example, COP's MD&A analysis notes that, "[t]he ultimate financial impact arising from environmental laws and regulations is neither clearly known nor easily determinable as new standards, such as air emission standards, water quality standards and stricter fuel regulations, continue to evolve. However, environmental laws and regulations, including those that may arise to address concerns about global climate change, are expected to continue to have an increasing impact on our operations in the United States and in other countries in which we operate." COP FY 2015 10-K, at 63.

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- That without specific policy prescriptions, there is no reasonable way to conduct the analysis.

The 2°C Goal is long-term, but it implicates capital allocation in a shorter time frame

Completing a transition to low-carbon energy system may take decades, raising the question of whether it can easily be anticipated and planned for. However, project planning in the oil and gas industry is also a long-term process, where some projects, such as oil sands developments, may have 50-year life spans. Consideration of how markets will evolve over project lifetimes is therefore reasonable prior to the project being sanctioned. Once development capital is sunk, projects will likely proceed as long as their revenues exceed cash costs, even if the overall project returns ultimately fail to satisfy expectations. But investments built upon a misread of future demand might result in lower returns than a strategy that resulted in greater capital discipline at the beginning of the investment process. It thus makes sense for investors to consider how long-term targets may impact the project sanction process today.

The key question for investors is whether projects being sanctioned today are at risk of generating sub-economic returns tomorrow; answering that question involves understanding how foreseeable policy objectives—such as the 2°C Goal—impact project selection, development and performance.

An assurance that management will anticipate new developments is an insufficient reason to avoid making relevant disclosure, particularly in light of the recent collapse in commodity prices, which by many accounts caught management and the markets by surprise. Disclosures aimed at highlighting potential exposure might, therefore, mitigate the impact.

Change can come rapidly and surprise

Forecasting is difficult if not impossible to do reliably. For this reason we believe investors should be given company views on plausible downside scenarios, including that governments do what they have committed to doing.

Policy changes are not the only area of potential uncertainty. Abrupt regulatory developments and disruptive advances in technology have the potential to surprise. Even the IEA, a standard-bearer for projecting energy trends, has historically

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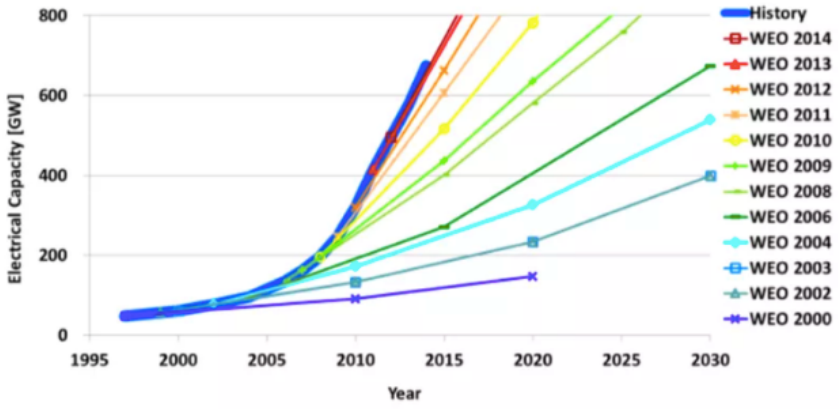
underestimated the rapid growth of renewables in electricity generation. It should be noted that these projections, drawn from the IEA's scenario modeling, are built around certain assumptions and so should not be considered as a forecast by IEA of expected developments; importantly, it can also be seen that its forecasting has grown more aligned with actual results over time. However, it does demonstrate that even the most experienced observers can fail to identify the rate of change:[21]

Figure 5: IEA WEO Projections for Renewables Growth



(Source: Energy Watch Group)

The US coal collapse also demonstrates how rapidly change can come and suggests companies and investors may similarly fail to foresee and prepare for it. In the 2010-2015 period, the US coal sector went from assertions of a coal super-cycle to market peak mergers to a wave of bankruptcies. The rapid pace of change and subsequent equity losses were drastic, as shown in Figure 6:

[21] http://climatenexus.org/learn/energy-transition/iea-historically-underestimates-renewables-overestimates-fossils .

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Figure 6: US coal company performance

Company	Last 18m share price perf. (as of 2 Jun. '16)	Last 5y share price perf.	Net debt (USDm) (3 Jun. '16)	EBITDA (USDm) (3 Jun. '16)	Peak Market Acquisitions	Bankrupt?
Westmoreland Coal	-73%	-49%	1278.5	150.9	-	No
Hallador Energy	-61%	-56%	249.9	84.9	-	No
Alliance Resource Part.	-64%	-60%			-	No
Consol Energy Inc.	-55%	-69%	3615.8	600.8	-	No
Cloud Peak Energy Inc.	-77%	-90%	491.5	71.9	Youngs Creek Mining Co. - $241m (Jun 2012)	No
Peabody Energy Corp.	-99%	-100%	7187.2	303.2	MacArthur Coal - $5.2bn (Nov 2011)	Yes
Arch Coal Inc	-98%	-100%	5487.3	158.3	Int'l Coal Grp. Inc - $3.4bn (Jun 2011)	Yes
Alpha Natural Resources Inc.	-92%	-100%	1342.5	-84.9	Massey Energy Co - $8.4bn (Jun 2011)	Yes
Rhino Resource Partners Lp	-91%	-99%	46.4	11	Elk Horn Coal Co. - $128m (Jun 2011)	Yes
Walter Energy Inc.	-93%	-100%	0.2	-178.3	Western Coal Corp. - $3.4bn (April 2011)	Yes
James River Coal Co.	DELISTED				Int'l Resource Part. LP - $519m (April 2011)	Yes
Foresight Energy Lp	-90%	N/A	1404.9	269.7	-	No

Source: CTI Analysis[22]

As Figure 6 demonstrates, some of the worst impacted companies were those with overleveraged balance sheets. Those leveraged positions would have been difficult to establish without a belief in the long-term viability of the coal markets, demonstrating the potential importance of the long-term view in near-term decision-making.

Not all investors consider the long-term implications for a company but some do and others, especially passive and indexed fund investors and managers, need decision-useful information to differentiate between market competitors and engage with management informally and through voting decisions.

An international agreement is sufficiently likely that it should be incorporated into reporting

Some companies have suggested that the 2°C Goal is unlikely to be achieved even while conceding that increasing action on climate change is likely.[23] It is important

[22] *No Rhyme or Reason*, at 34.

[23] ExxonMobil provides one example. It believes that there will be increasing action on climate change ("We believe that global energy-related carbon emissions will peak and start to decrease starting around 2030 as energy efficiency spreads and as various carbon-reduction policies are enacted around the world."), but that the two-degree scenario is unlikely ("ExxonMobil believes that although there is always the possibility that government action may impact the company, the scenario where governments restrict hydrocarbon production in a way to reduce GHG emissions 80 percent during the Outlook period is highly unlikely.") *Compare* http://corporate.exxonmobil.com/en/current-issues/climate-policy/climate-perspectives/energy-developing-new-technologies-to-reduce-ghg, *with*

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that management's beliefs be reflected in corporate reports. But from a risk assessment point of view, this should not excuse consideration and discussion of reasonable (or likely) downside cases such as the demand reduction implied by the 2°C Goal and policy and technological trends towards achieving that goal should in our view be considered as part of a company's Item 303 disclosures, as we noted in the context of the recent Disclosure Effectiveness Review.[24] Indeed, many registrants do believe more will be done to combat climate change—the direction of travel is fairly clear even if the ultimate outcomes remain uncertain.

Comparison against the 2°C Goal takes on added significance in light of the commitments in the Paris Agreement.[25] The failure to analyze the implications of the 2°C Goal post-Paris necessarily implies that companies believe there is, at best, only a remote possibility that governments of the world will do what they agreed to do—an unprecedented position to take and arguably contrary to the SEC's climate risk related guidance that compels consideration of "known uncertainties" which may include even pending legislation and treaties.

A lack of specificity in proposed regulations should not hinder better disclosure—companies should directly analyze the demand implications of the 2°C Goal

As the IEA's work demonstrates, it is difficult to plot the course of technological change decades in advance. Forecasts of the exact contours of regulatory policy are similarly difficult. For this reason, many corporate reports have noted the lack of policy certainty as one reason that the risks cannot be analyzed further.[26] But examining the business in light of emissions reductions targets need not require a prediction of all policy and technology uncertainties; companies could consider the demand profiles identified by the targets themselves, or provide enough informational details for investors to be able to quantify the impacts themselves.

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http://cdn.exxonmobil.com/~/media/global/files/energy-and-environment/report---energy-and-carbon---managing-the-risks.pdf

[24] *See* Carbon Tracker's letter to SEC as part of disclosure effectiveness review (Feb. 2015). Indeed, Moody's recently announced that it would now be incorporating an analysis of energy transition risk into its ratings considerations. https://www.moodys.com/research/Moodys-to-use-greenhouse-gas-emission-reduction-scenario-consistent-with--PR_351269. Moody's has indicated that it will focus on the INDC pledges under the Paris Agreement (which are currently insufficient to reach 2°C), but also consider a 2°C scenario and the potential technological breakthroughs that will have implications for the sector going forward.

[25] Available at: http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf

[26] *See, e.g.*, *No Rhyme or Reason*, at 54.

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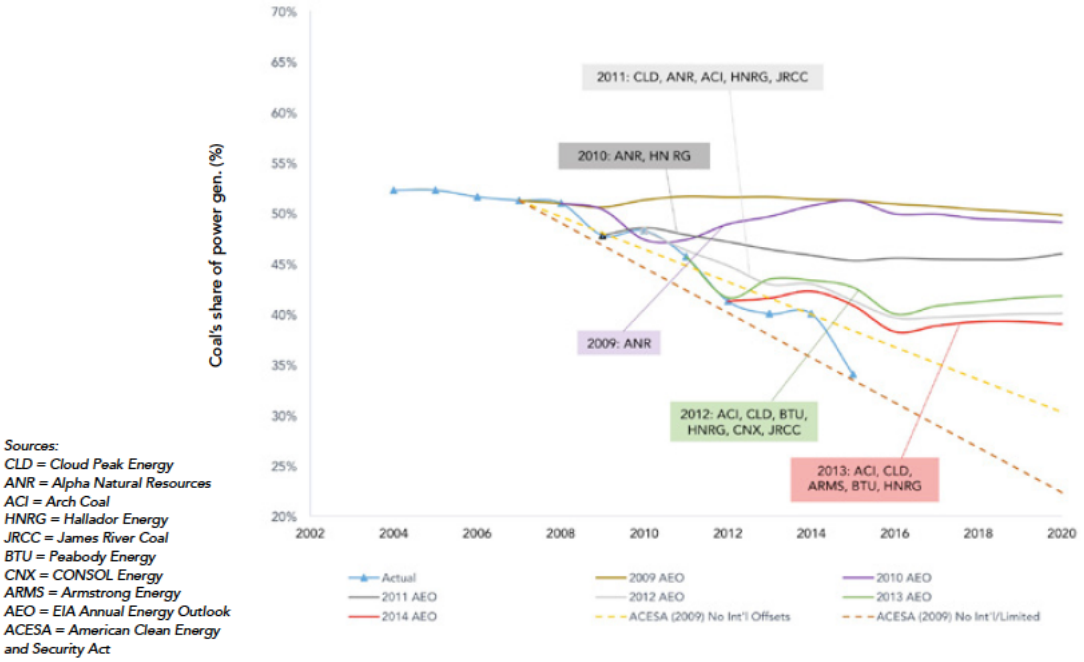
Here, EIA modeling is instructive. Occasionally, the EIA is asked to examine the impact of proposed legislation over the longer-term. For example, in 2009 and 2010 the EIA modeled the American Power Act (APA) and American Clean Energy and Security Act (ACESA). In each instance, the EIA used the NEMS model to evaluate the proposed policy changes including the emissions reduction constraints imposed by the bills. The NEMS model is the same model EIA uses to develop its "Reference Case," which assumes no changes in policy or disruptive technological developments. As can be seen in Figure 7, the APA/ACESA projections have more accurately forecast proposed legislation than the EIA's Reference Case Scenarios—even though the legislation modeled was never passed.

Figure 7: EIA's projections of coal's share of power generation cited in coal company 10-Ks



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Clearly, the accuracy of these projections is not predicated upon the details of the underlying polices modeled as they weren't implemented. Moreover, natural gas prices played a starring role that was not foreseen by the models.

But one key element of these models should not be overlooked: in each case, the EIA include the legislative emissions reductions targets as constraints in the model. In a sense, then, the models were evaluating the impact of those top-level

[27] *No Rhyme or Reason*, at 62.

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constraints would have on power generation markets. Such constraints do not *per se* imply consumption reductions for any particular fossil fuel, but the EIA was nonetheless able to project how they might impact coal.

Figure 7 demonstrates that those predictions were far more accurate than the Reference Case scenarios, which assumed no policy changes but were often cited by US coal companies. It is possible, then, that climate targets are *leading* indicators of the direction of travel, and the EIA's work suggests that evaluating the potential impact of emissions reduction targets can provide a reasonable estimate of exposure. Indeed, focusing too much on specific policies may ignore the real exposure implied by emissions reductions targets, where change will be driven by both technology and policy.

Registrants may continue to believe that such a transition is unlikely and take risks accordingly. But investors should be given the information sufficient to identify the extent to which the company is diverging from existing emissions reduction targets and the potential financial risk. Such discussion should start with an understanding of what agreed-upon climate and emissions reduction targets mean for the business.

How could disclosure be made more useful?

Disclosure standards are understandably a product of competing priorities

Disclosures provide a snapshot of one or more company attributes, giving the market greater insight into company operations, strategy, and/or results. It is unlikely that any given disclosure can provide complete transparency; this suggests utility in a range of approaches.

As the Commission is well aware, developing new disclosures standards is subject to competing priorities. For example, there are questions of whether the din of too much disclosure may mute the truly material information, and whether companies may suffer competitive harm from being forced to disclose sensitive information.

Every industry faces unique challenges, making it important for disclosure standards to account for those differences. As the Commission recognized in its oil and gas reporting release from 2008,[28] there is also the need for disclosure to balance the

[28] Release No. 33-8995.

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needs of consistency with true and fair estimates in the financial accounts and the need for disclosures to provide comparable data across a sector.

It is therefore sensible that corporate reporting include (as it does) a variety of means of expressing risks and uncertainties to the market, including quantitative and qualitative disclosures, at a level of detail that balances the needs for information with the commercial sensitivity concerns of registrants.

Below, we suggest both a focus for additional climate related disclosures and some possible avenues for affecting them, drawing upon existing disclosure requirements. We do not presume to definitively resolve these competing needs and priorities here, but do address some of the key issues where relevant. Similarly, we do not suggest that these are the exclusive or exhaustive means of forcing better information to market; however, we do believe that decision-useful disclosure related to climate change must provide the markets with information that assesses the degree of company alignment with government climate policy targets.

What is clear, however, is that the transition risks for the extractives sector from the 2°C Goal have disclosure implications beyond traditional sustainability-oriented disclosure. The 2010 Climate Guidance recognized the crosscutting climate risk implications for Items 101, 103, 303, and 503 of Regulation S-K and related elements of 20-F disclosure. As we discuss below, they may also have implications for registrant discussion of planning and strategy as well as reserves reporting and accounting.

The 2°C Goal implicates the reasonableness of forecasting and planning assumptions

Recognition of the 2°C Goal implies lower expected levels of future fossil fuel demand and therefore may impact internal company demand projections and long-term price forecasts. Among other things, this might alter the selection and timing of final investment decisions. Revised disclosures could focus on the primary implications of a lower demand scenario—changed demand expectations, changes in planning and strategy, the degree of alignment of future projects with the 2°C Goal—and the likely secondary effects of the 2°C Goal, lower prices—that would provide greater clarity as to how those changes might impact company performance.

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In this rubric, primary disclosures would entail testing company business plans against a 2°C demand scenario. Carbon Tracker's analysis focuses precisely on this issue and is illustrative of one approach that the use of a registrant's internal estimates and data could improve upon. This would link to actual political developments through the UNFCCC process and provide a single reference point for companies, enhancing comparability.

Using the International Energy Agency's "450 Scenario," which identifies a scenario in which emissions are limited such that they yield a 50% chance of limiting warming to less than 2°C (hence quite conservative), we have identified the respective demand profiles for coal, oil and gas consistent with a 2°C outcome.

We have then established a supply cost curve using data from an iterated third-party data provider, Rystad, and identified potential production, starting with the lowest-cost production, sufficient to meet the 2°C demand scenario over time. This allowed us to sort projects between those that would and would not be needed in a 2°C demand scenario. We have utilized project cost as the key mechanism for sorting projects because we believe this would most closely approximate how companies seeking to ensure healthy profit margins would analyze projects, though other factors beyond costs might be considered. Figure 8 identifies our process for allocating the carbon budget.

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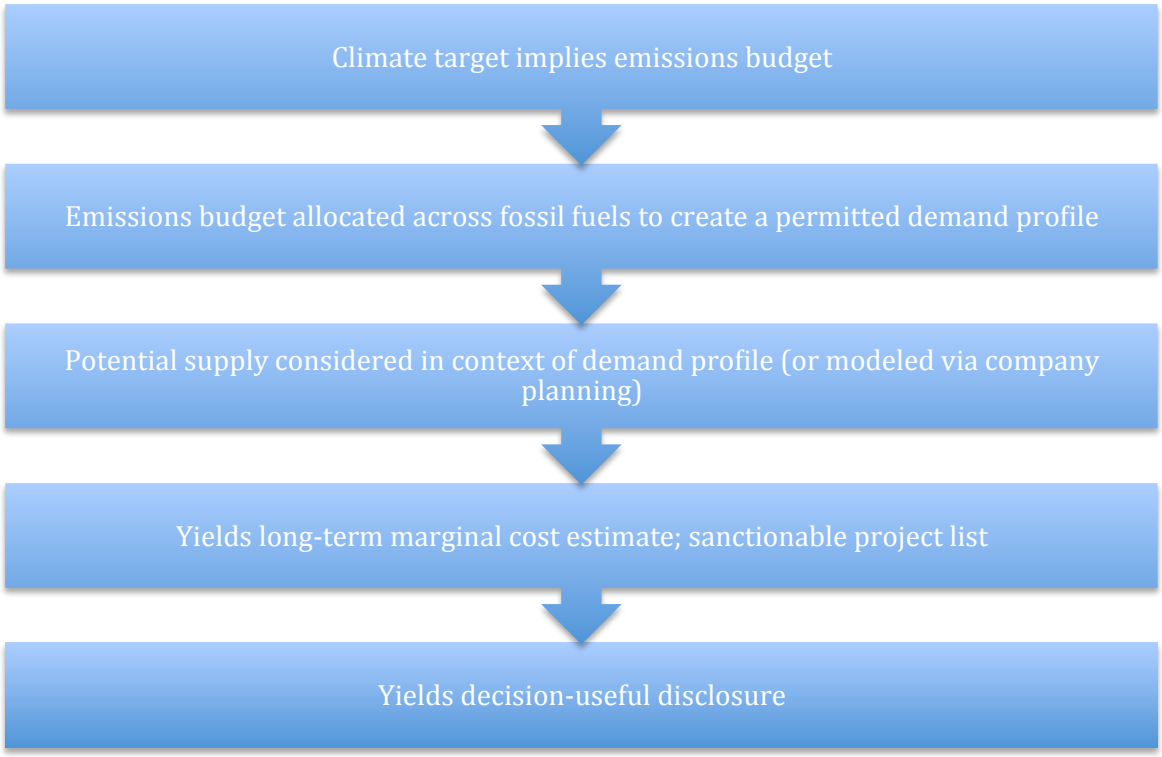
Figure 8: Allocating the Carbon Budget



We believe that in testing against a 2°C demand scenario fossil fuel companies could reasonably delineate each of the aforementioned elements.

While company reports suggest that scenario planning proceeds from bottom-up projections of drivers of demand such as population growth and GDP, for the purposes of disclosure, the salient question is not how companies believe the future will unfold, but the impact on company performance to the extent that the 2°C climate targets are achieved. This implies the need to start from a focus on the fossil fuel demand impact of those targets to measure the extent of the risk. Companies and investors may then offer their views, and allocate capital, based on their own views of the probability of those risks materializing.

In this sense, examination of a 2°C demand scenario is a proper exercise of risk analysis and management. Furthermore, it provides a range of outcomes for the company, allowing investors to apply their own assessment of what they believe to be the most likely outcome.

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It is telling that although the construction of those scenarios may differ from what is described below, there is some suggestion that companies are already beginning to conduct such analyses.

Such modeling would require inputs exogenous to the company, including a scientific assessment of the emissions available to remain within warming targets and anticipated costs of global supply. This should not be an impediment to disclosure. Even if for certain elements companies would have to rely on exogenous data, companies must consider such data in business planning and, as the 2010 Climate Guidance notes, in evaluating the horizon for key risks, even if that information itself need not be disclosed.[29]

Below, we discuss how our analysis could be modified and used by companies to provide a means of displaying the degree of alignment with the 2°C Goal.

1. **Climate Targets Yield Emissions Budgets**

The 2°C climate target is relatively well defined. The Paris Agreement further notes the "ambition" to achieve 1.5°C, which would provide another potential target against which to test company plans.

Using integrated assessment models (IAMs), climate scientists have analyzed the climate sensitivity to various emissions trajectories and identified the probability that a given emissions profile will result in a given amount of surface temperature warming above pre-industrial temperatures. Monte Carlo analyses have been run across many IAMs to identify a consensus estimate. One potential survey was conducted in the IPCC Fifth Assessment Report (AR5) and could be the basis for such analysis.

The Paris Agreement specifies a target of "well below" 2°C—we have focused on permissible emissions that would yield a 50% probability of limiting warming to no more than 2°C, following the probability used in the IEA's "450 Scenario," even though "well-below" may imply that a greater than even chance of achieving the target should be used. Clearly, a higher chance of achieving the target implies a lower emissions trajectory, further restricting potential demand. If the assumptions are made clear, companies could consider one of a number of probabilities for the target.

[29] 2010 Climate Guidance, 75 Fed. Reg. 6295 (Feb. 8, 2010).

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There is no significant controversy surrounding carbon budgets, with a general consensus that the remaining budget is roughly 1,000 Gt CO_2 through 2100.[30] Companies have considered similar targets in unfiled reporting to shareholders, focusing primarily on the IEA's 450 Scenario.[31]

We do not believe that companies have greater expertise in modeling climate sensitivity than the scientific community and so would expect that scientific consensus views would be utilized to establish a carbon budget in the absence of any standardized scenario.

After defining an emissions budget from IAMs, registrants would then need to allocate that budget across fossil fuels.

2. The Emissions Budget Can Be Allocated Across Fossil Fuels

The emissions budget must then be allocated across fuels to generate a demand profile. Here again, this work has already been done in numerous third-party modeling exercises such as the IEA 450 scenario. It would also be plausible to consider multiple scenarios provided that those scenarios identify outcomes consistent with the overall emissions budget and that key assumptions are transparent. Companies such as COP (which examines the business using three separate 2°C demand scenarios) may have already conducted this type of analysis, even if they have arrived at 2°C-compliant demand scenarios by considering accelerated technology and/or policy developments:

[30] *See, e.g.*, IPCC, Fifth Assessment Report (AR5). Available at: https://www.ipcc.ch/news_and_events/docs/COP20/LCAHLD.pdf .

[31] Companies that have evaluated portions of the IEA 450 Scenario include ExxonMobil, Royal Dutch Shell, Statoil, Glencore and BHP Billiton, among others.

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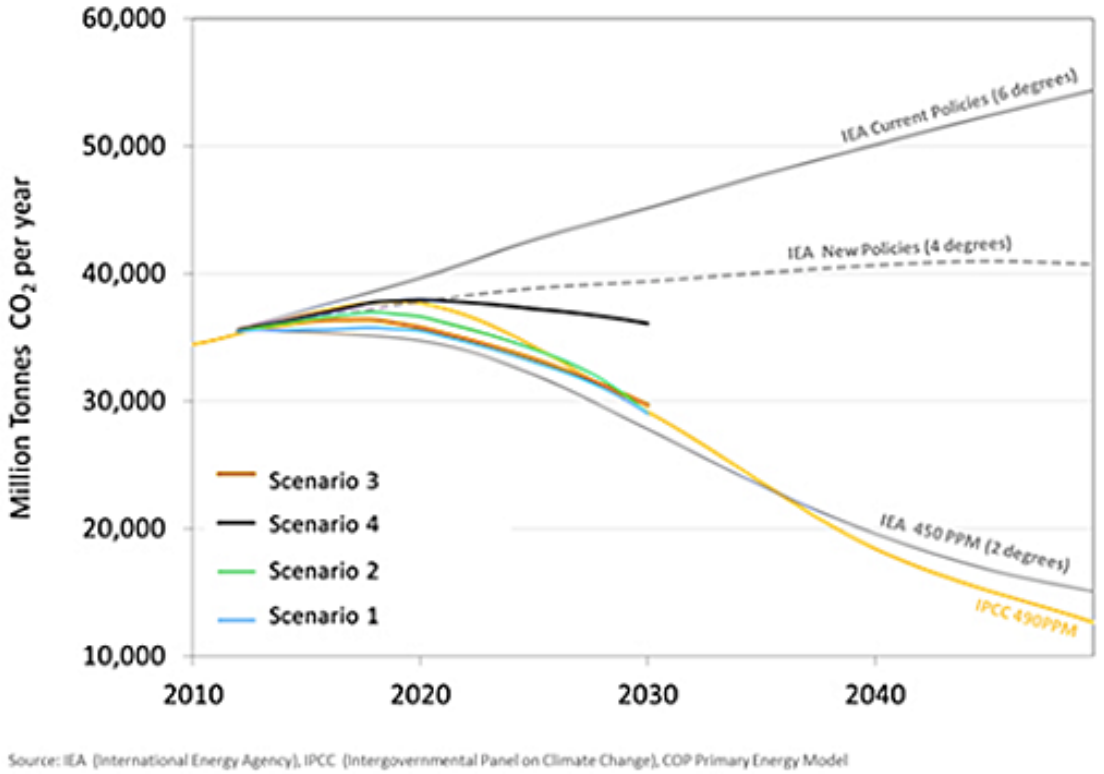
Figure 9: Conoco-Phillips' Two-Degree Scenarios



Source: Conoco-Phillips.[32]

3. Allocating demand across potential supply/long-term price forecasts and project sanction list

Once the budget has been allocated to produce a demand profile for each fossil fuel, we consider which projects would and would not be needed in that scenario. For a given company, this requires consideration of its potential project base in light of potential supply, and requires an understanding of the relative costs of global supply. The most relevant consideration, in our view, is the cost of supply, on the assumption that the lowest cost supply sufficient to meet that demand will be able to outcompete higher cost sources.

We have obtained that data from a third-party provider; many companies may already purchase and utilize this information or, alternatively, utilize their own estimates of project costs in analyzing the competitive position of their potential projects. However, it is not made fully available, for free, to the general public. In

[32] Available at: http://www.conocophillips.com/sustainable-development/environment/climate-change/climate-change-strategy/Pages/carbon-scenarios.aspx

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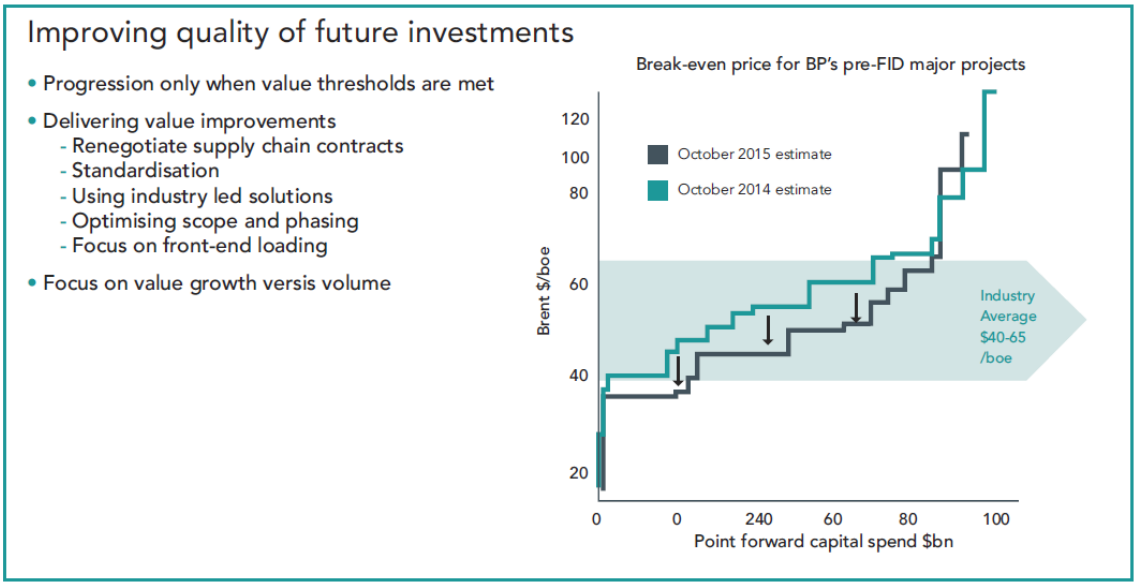
considering relative cost of supply, companies might rely upon such third-party sources or their own estimates of the costs of global supply.

We believe that this process is not incompatible with a company planning process that identifies a long-term marginal cost based upon a projected demand curve and makes capital allocations to value-producing projects within such a curve—even if registrants typically rely upon bottom-up forecasts in generating a long-term demand profile or incorporate other geopolitical considerations.

Establishing a long-term demand profile in this way would then allow companies to consider the supply needed to meet that demand and, potentially, the long-term cost of supplying the last marginal barrel. This might result in long-term price expectations that differ from planning or other scenarios and consequently a sorting of projects between those that would and would not be sanctioned in a 2°C demand scenario. Again, there are suggestions that some companies may already perform such an exercise, even if they deem such a scenario unlikely. BP, for example, has produced a chart of break-even prices for its pre-FID major projects:

Figure 10: BP pre-FID major projects cost curves



Source: BP 3rd quarter results and update. 27 October, 2015. Page 24

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4. Decision-useful disclosure

This process could therefore yield potentially useful disclosures to investors. Those might include:

- A list of projects that would/would not be sanctioned in a 2°C demand scenario.
- An alternative long-term price forecast or forecast range
- An alternative hurdle rate for project sanction

As is clear from above, such an analysis would require certain assumptions and the examination of data exogenous to the company. However, we believe that many companies already do consider such information. Furthermore, the largest oil and gas companies already produce disclosures (most of them outside of corporate reports) that provide long-term energy supply and demand forecasts.[33] Having placed the discussion of these topics in the public domain, it is fair to ask whether a searching analysis of the downside risks also be provided.

Companies appreciate the need for improved disclosures, but current disclosures are insufficient, incomparable, and incomplete

Due in large part to increasing investor demand, companies have begun to offer additional disclosure of climate risk focused on the 2°C Goal. Those disclosures, primarily outside of the financial reports and in many cases provided by non-US registrants, demonstrate that a focus on the 2°C Goal is important and that alignment with that goal can be provided. However, they also disclose that some companies could be doing more and that without regulatory standards, such disclosures may be insufficient, incomparable and incomplete.

Companies have offered analyses of the 2°C Goal, but some results are incomplete.

In 2015, the boards of Royal Dutch Shell, BP, and Statoil agreed to produce reports responding to investor requests that they test their assets against the IEA 450 Scenario. The IEA 450 Scenario produces both a demand profile that yields a 50% chance of limiting warming to 2°C as well as a price assumption under such a demand scenario.

[33] The most notable company forecasts and scenario analyses include those from ExxonMobil, BP, and Royal Dutch Shell.

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Shell maintains its own range of scenarios, including a planning case for demand and price (or range of prices) that serves as the focus for investment decisions. Shell (a 20-F filer) compared its base case against the *prices* in the IEA World Energy Outlook 2015 450 Scenario through 2030, though the WEO 2015 projects demand out to 2040. Shell contended that under the IEA 450 scenario, it would actually fare better in the IEA 450 Scenario than in its planning case because the IEA projected higher oil prices: "Our preliminary view, looking at 2030, is that the aggregate impact under the IEA's 450 Scenario would be more positive overall for us than our own outlook. This is primarily due to the higher oil and gas prices assumed by the IEA than in Shell's planning."[34]

The primary reason that Shell would do better, as the company notes, is that even though its planning case is based on higher levels of demand, it assumes lower long-term prices than the 450 Scenario. This may have complied with the letter but not the spirit of the investor request as it yields an obviously anomalous result; were Shell to have analyzed the IEA 450 Scenarios demand profile, it might have yielded a lower price point and, potentially, precisely the opposite conclusion arrived at. As the detailed assumptions and results in the planning scenario are not publicly available, it is impossible to know whether this would be the case. However, this anomalous result suggests the need for standardization in such disclosure.

Companies can measure potential financial impact of the 2C Goal

Figure 11 is reproduced from BHP Billion's report on the implication of the 2°C Goal. The Figure indicates that EBITDA from its energy coal group would be 20-35% lower than in its baseline case. For BHP Billiton as a diversified miner, this impact would be diluted by margins in the non-carbon intensive elements of its portfolio. However, for pure play coal companies—the dominant form for US listed companies—such an impact might be quite significant, raising the question of whether those companies considered such a scenario and could estimate the impact. BHP Billiton's analysis graphic suggests that such an analysis could be performed.

[34] Available at: http://www.shell.com/investors/environmental-social-and-governance/environmental-and-social/sri-presentations/_jcr_content/par/expandablelist/expandablesection_1995856977.stream/1464169346892/f26a997fc9a8ca5f6117e9f44866f5114a0c424de7b16a05e37f0f74ee4af506/shell-energy-transitions-and-portfolio-resilience.pdf .

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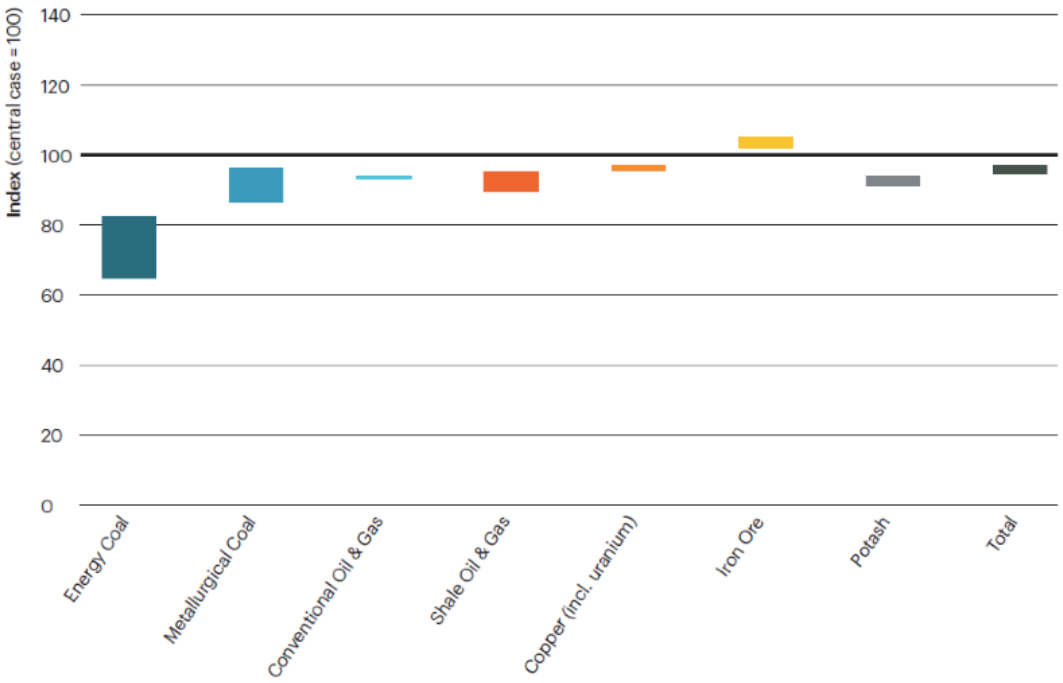
Figure 11: BHP Billiton's Estimated 20-year average EBITDA margin ranges in a 2°C world



Source: BHP Billiton[35]

Companies discuss the project pipeline, but how does it align with the 2°C Goal?

The recent low-oil price environment and questions regarding "lower for longer" pricing have forced companies to provide greater detail on their efforts to conserve capital. This has resulted in some project level detail including this chart from Shell:

[35] BHP Billiton, Climate Change: Portfolio Analysis, at 15 (2016). Available at: http://www.bhpbilliton.com/~/media/5874999cef0a41a59403d13e3f8de4ee.ashx

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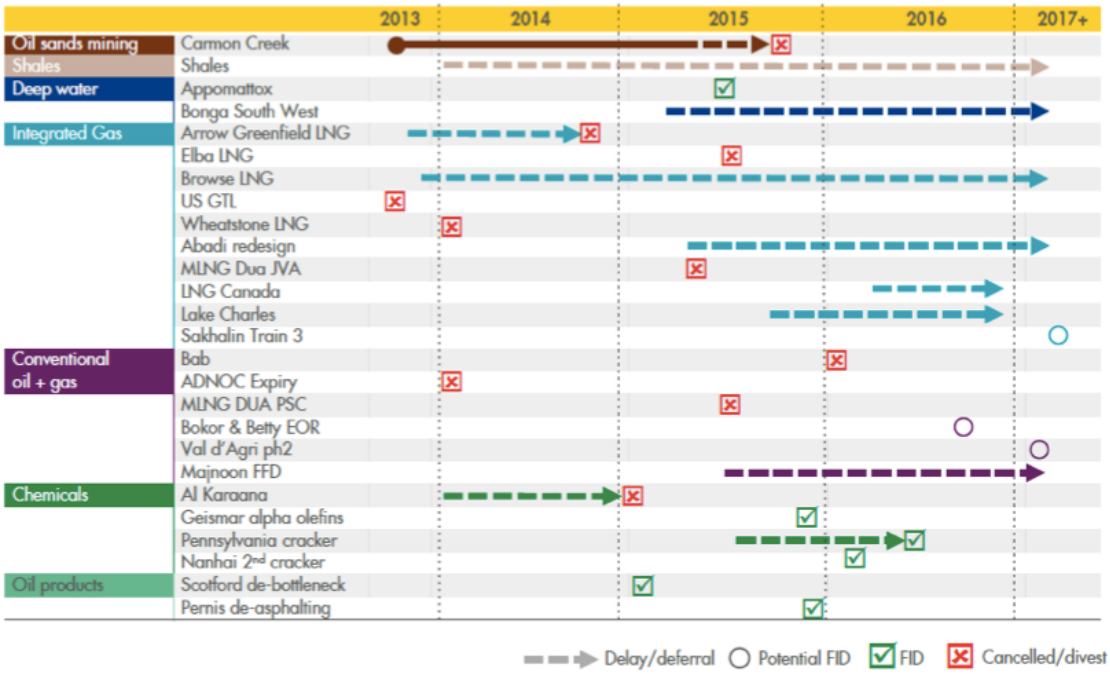
Figure 12: Shell slide: "Significant reduction in project flow"



Source: Royal Dutch Shell[36]

The chart provides useful information about the types of projects that Shell has considered, rejected and selected. If companies can consider the demand implications of a 2°C demand scenario, we would suggest that they could provide similar information indicating whether such projects would or would not be consistent with a 2°C demand scenario.

This disclosure would make the risks of the 2°C Goal more transparent. Shell makes clear that while it is analyzing the 'net-zero' emissions targets set out in the Paris Agreement it has "…no immediate plans to move to a net-zero emissions portfolio over our investment horizon of 10-20 years."[37] This may suggest that in such a scenario, it would assume lower demand and therefore impose higher hurdles for project sanction, though it is not entirely clear. This would indicate an important delta between company planning and the 2°C goal, disclosure that concretely identified investments within that gap would therefore be useful to investors.

[36] http://www.shell.com/investors/investor-presentations/2016-investor-presentations/capital-markets-day-webcasts/_jcr_content/par/textimage.stream/1465294267153/dba1946b966b7b6f3c9f73297d667ff24a8c1cf5795a1e7dfdc8d3ca6a2859b5/shell-capital-markets-day-2016-analyst-webcast-presentation-slides.pdf

[37] Royal Dutch Shell, *Shell: Energy Transitions and Portfolio Resistance*, (2016).

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Additional disclosures would focus on the secondary effects of a 2°C demand scenario

The degree of alignment with a 2°C demand profile is a crucial element to making the risks from the 2°C Goal more transparent. However, disclosures could also focus on the likely secondary effects of a lower demand profile without having to apply or develop 2°C demand scenarios. We believe two critical disclosures would be an oil price sensitivity analysis of the company's potential production and a cost curve of potential production (preferably in the context of the costs of global supply). These would give a snapshot of the company's project portfolio, its resilience, and how it might perform in a low-demand/low-price environment.

The sensitivity analysis would examine NPV impact on the portfolio of different oil prices. For example, companies could provide disclosure of the sensitivity to oil prices of their proven, probable and possible developed and undeveloped reserves. Disclosure of the implications for the resource base should also be considered. Such an analysis would identify the net present value, using one or more reasonable discount rates, of the cash flows of the projects at different oil prices. This would give investors a sense of the potential impact that changes in the oil price would have upon company returns and assist investors and fund managers who may have long-term price forecasts based on different levels of future demand. Such an analysis might further allow some degree of comparability across companies.

Existing disclosure requirements are instructive and could be modified to make the risk more transparent. Item 1202(b), for example, makes it optional for companies to disclose a reserves sensitivity analysis. The sensitivity analysis identifies how changing price assumptions would interact with the expected costs of reserves to impact economic recoverability.[38] Instead of revealing changes in volumes, such an analysis could consider how different price scenarios might impact discounted net present value of those reserves. A standard discount rate, such as the 10% rate used for reserves accounting under the "PV-10" test, could be applied for comparability purposes. The disclosure could also be made mandatory.

A similar test is already an option for market risk sensitive instruments under Item 305(a)(ii).[39] While the focus there is on financial instruments, the test allows disclosure of the sensitivity of such instruments to commodity price changes, among other things, expressed in terms of changes in cash flows, earnings or fair values.

[38] 17 CFR 229.1202(b).
[39] 17 CFR 229.305(a)(ii).

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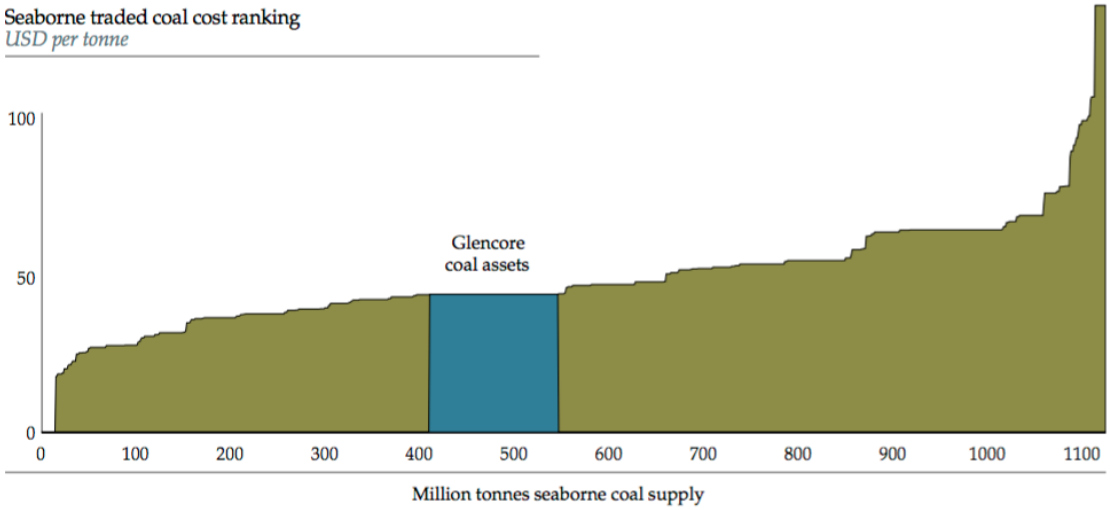
We would suggest that such a test could be applied to changes in the commodity prices themselves.

Break-even cost curve disclosures would be useful

Another option would be for registrants to identify the break-even costs of projects along a cost curve, where "break-even prices" are defined as the oil/gas/coal price that delivers an NPV of future free cash flows of 0 at a given discount rate, for example 10% p.a. (which is frequently used as a standard basis). This disclosure could apply across the reserve base or be segmented by volumes of existing and potential projects. This would provide investors a snapshot of the registrant's likely costs of supply going forward, and thus its competitive position (of particular interest in a lower price scenario).

Some companies already provided limited forms of this information. For example, in an effort to demonstrate the resilience of its coal portfolio to investors, Glencore produced this global cost curve of the seaborne coal trade, highlighting what appear to be the average costs of Glencore's supply:

Figure 13: Seaborne traded coal cost ranking (Glencore)



Source: Glencore[40]

It appears that Glencore has used an average of costs across its portfolio rather than specifying the range, since a single cost figure has been given for the company's

[40] Glencore, *Climate Change Considerations for Our Business*, at 22 (June 2016). Available at: http://www.glencore.com/assets/sustainability/doc/sd_reports/2016-Climate-change-considerations-for-our-business.pdf

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multiple projects. This is unfortunate since it does not provide investors with critical detail on the company's range of projects along the cost curve. But it does demonstrate the essential focus on costs in a potentially declining demand scenario and is proof of concept that companies can offer disclosure of their relative position along a global supply curve.

Commercial sensitivity concerns exist but are not an impediment

Such a disclosure raises considerations of commercial sensitivity, but this should be considered in context. First, as noted above, some companies already provide limited information regarding potential project costs, suggesting that the commercial sensitivity is limited. Second, there already exists a wide variety of iterated third-party data on potential project costs, including databases from Wood Mackenzie, Rystad and Global Data available to feed competitive analysis. It is unlikely that disclosures would be more granular than this data and therefore unlikely to pose a new threat to commercial sensitivity. Finally, some projects could be aggregated into price bands, concealing project-level details while still identifying the registrant's range of potential exposure along a cost curve.

Implications for the financial statements and related accounting standards

Though beyond the scope of the Concept Release, we note that the 2°C Goal has implications for reserves reporting and accounting. Carbon Tracker's research has concluded that no new coalmines are needed in a 2°C demand scenario.[41] This raises the question of how supply from new coalmines should be reflected in financial reports.

The Commission's recent rule-making proposal regarding minerals reporting contemplates the use of "qualified persons" to classify reserves and resources and potentially consider "modifying factors," including environmental factors, in conducting an initial assessment of the economic recoverability of the resource base.[42] The limited carbon budget available to achieve governmental climate targets implies that the greenhouse gas emissions embedded in such reserves be one modifying factor among many considered by qualified persons and discussed in technical summaries.

[41] *Danger Zone*, at 10.
[42] *Id*.

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A slightly different situation exists with respect to oil reserves. Carbon Tracker's analysis indicates that the bulk of proven reserves would likely be needed in a 2°C demand scenario—the risk is primarily to lower confidence reserves and the resource base that, currently, is not disclosed in corporate reports. However, the Commission's mineral's reporting release raises the possibility of similar standards for oil and gas resources.[43]

In the oil and gas context, the critical question is the extent to which capital is being expended on projects that would not be needed in a 2°C demand scenario. Carbon Tracker's examination of this question suggests that up to $530 billion of potential expenditures in gas and $1.42 trillion in oil through 2025 would not be needed in a low-carbon scenario.[44] It would benefit investors to demonstrate alignment in this regard and to further ask how these risks are being considered as regards the economic recoverability of these resources.

Conclusion: Better disclosure is needed

We appreciate the Commission's focus on disclosure as means of ensuring transparency and allowing the efficient allocation of capital. Climate change presents an unprecedented social challenge. Governments have committed to meeting the challenge; investors are now focused on considering the full range of potential outcomes for the companies in which they invest. This has implications for capital markets disclosure, particularly for carbon intensive industries where the first order implications are apparent but company-level effects are not. We believe therefore that regulation has a role to play.

[43] *See* Release No. 33-10098.
[44] *Danger Zone*, at 2.

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We thank the Commission for consideration of these comments.

Sincerely,

Robert Schuwerk
Senior Counsel, The Carbon Tracker Initiative

Mark Campanale
Founder & Executive Director, The Carbon Tracker Initiative

Cc: Mary Jo White, Chair
Michael S. Piwowar, Commissioner
Kara M. Stein, Commissioner
Keith Higgins, Director, Division of Corporate Finance
James Schnurr, Chief Accountant

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Appendix: Answers to Selected Questions from the Concept Release

35. Should we require additional specific disclosure relevant to particular industries, such as manufacturing or technology companies? If so, which industries and why? What are the benefits and challenges of requiring industry-specific disclosure?

The Commission should consider industry-specific disclosure for the extractives industry and potentially other carbon-intensive industries, such as utilities and industrials. Certain risks have particular sector-specific implications that may then require more than general standards applicable to all registrants and climate change is one of them. There is a precedent for industry-specific disclosure; Item 1200 *et seq*. already imposes a level of industry-specific disclosure, a necessity given the peculiarities of the industry given the central role that reserves reporting plays in valuing oil and gas companies.

Such disclosures should focus on how the business plans of companies within carbon-intensive sectors align with the emissions reductions implied by climate targets. This would give investors a better understanding of potential exposure to an energy transition. Where the first order implications of trends such as efforts to mitigate climate change are apparent but the impact on particular companies are not, the Commission should consider industry-specific disclosures.

Establishing such disclosures could be challenging but the Commission's rule-making process provides an effective means of soliciting feedback from key stakeholders. The Commission could also consider an intermediate step of first developing guidelines similar to the "Industry Guides."

38. Is there any information currently disclosed in the description of business that should be presented in a different context such as MD&A or risk factors? Why?

A review of coal company reports over the period 2010-2015 indicates that many companies included EIA projections of long-term demand as part of their Item 101 disclosures; it is unclear if these were indeed reflective of management's views. The Commission should consider whether such forward-looking disclosures should be moved to or discussed in the MD&A and whether management should opine on their beliefs related to the validity of such projections and forecasts. Companies should consider long-term trends in the MD&A on time frames consistent with the

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long-lived nature of their projects and other forecasting materials that they place in the markets.

50. Is disclosure about the material effects that compliance with provisions regulating the discharge of materials into the environment, or otherwise relating to the protection of the environment, may have upon a registrants capital expenditures, earnings and competitive position important to investors? If so, should we require registrants to present this disclosure in a specific format? Would this disclosure be more appropriate in MD&A or the business section?

We believe such disclosure is important. Environmental regulations typically impact companies by increasing compliance costs in their operations—this may be important but for the extractive sector confronting climate change, 80-90% of the emissions for which they are responsible comes from the combustion of their products rather than their extractive operations—suggesting that disclosure should focus on the implications of changed demand for their products.

The connection between GHG emissions policies and demand is often discussed at a general level, but few companies mentioned, much less discuss, how the 2°C Goal would impact capital expenditures and earnings and how the company's project portfolio is positioned to compete for potentially dwindling demand. The disclosures mentioned in this letter would make those risks more transparent. We believe this would be most appropriate in the MD&A, though recognize that if the disclosure is sector-specific, it might make sense to include it within a sector-specific subpart.

51. Should we require specific disclosure about the material effects that other regulations may have on a registrant's capital expenditures, earnings and competitive position? If so, are there specific laws and regulations that our rules should cover?

The 2010 Climate Guidance already provides that, "[r]egistrants also should consider, and disclose when material, the impact on their business of treaties or international accords relating to climate change." We believe this should include the requirement to disclose the impact of the particular policy objectives of the Paris Agreement, which is to limit global temperature increases to "well below 2°C." Companies have already demonstrated some ability to evaluate the potential demand impact, though those disclosures provide an incomplete picture and are in many cases incomparable; the next step is to understand how

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planning, capital expenditures, earnings, and competitive position would be impacted.

88. What requirements in Item 303 are important to investors? How could Item 303 be improved?

We believe the first step in improving fossil fuel sector disclosures is to examine company analysis of "likelihood" prong of the two-step MD&A test. The 2°C Goal is now incorporated into the Paris Agreement that is currently in the ratification stage. Few companies discuss its implications. A failure to discuss the Accord's implications suggests a determination that its implementation is "remote," based, presumably, on the contention that implementing laws and regulations around the globe have yet to be passed and promulgated. This view, however, adds an unwarranted barrier to disclosure and frustrates the purpose of the MD&A, which is to force company consideration of potential future outcomes that may differ from the past.

Item 303 could be further improved by requiring companies to discuss the potential impact of the risks from climate change that are identified in the "risk factors" section of corporate reports and discuss how they have managed them in the context of their capital allocation decisions. Such disclosure might naturally occur if companies were required to provide quantitative disclosure on the degree of business plan alignment with the 2°C Goal.

99. Does the two-step test for disclosure of a known trend, demand, commitment, event or uncertainty result in the most meaningful forward-looking disclosure? Why or why not? How do registrants determine when something is "reasonably likely" to occur?

We believe the test is sufficiently robust that it need not be changed, even if we believe some current practices fails to meet the standard. Quantitative targets in international agreements should be considered sufficiently likely to trigger mandatory consideration in corporate reports where the implications are material to the registrant. At the least, where the governments of the world have committed to a specific target, we believe that as a matter of risk disclosure, there should be a strong presumption that such target is "reasonably likely" to occur.

100. Should we revise the two-step test to apply a different standard in the first prong and if so, how? For example, should we require disclosure when a trend, event or uncertainty is more likely than not, probable, or reasonably possible to

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occur, rather than "reasonably likely" to occur?

Under current guidance, a material trend, event or uncertainty must be disclosed when it is more likely than "remote." We believe greater clarity would not be provided under any of the possibilities raised. We therefore do not believe that the two-step test should be modified.

101. Should we eliminate the two-step test in favor of a different standard for identifying required and optional forward-looking disclosure and, if so, what test would be appropriate? For example, should we revise Item 303 to incorporate the probability/magnitude standard from *Basic v. Levinson*? Which standard – the two-part test, *Basic's* probability/ magnitude standard, or some other standard should we require, and why? Would any particular formulation be more or less burdensome for registrants?

As noted above, we do not believe that the two-step test should be modified. Making no change would represent the least burdensome option for registrants.

However, we do believe that even under the probability/ magnitude test, fossil fuel companies would clearly have to disclose the implications of the 2°C Goal. This is because results may differ materially in a 2C demand scenario.

In our *Sense & Sensitivity* report, we examined the relative discounted NPV of two project portfolios for the oil majors as a whole—a "two-degree" project set and the business as usual ("BAU") set of all potential company projects. This found that limiting expenditures to the "two-degree" set would be worth 15-21% more than the "BAU" project set at long-term prices of $80/bbl (depending on whether a risk premium was applied to the larger BAU project set to account for its greater volatility/leverage to the oil price).

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Figure 14: Comparison of NPV sensitivity between "2D" and "BAU" project portfolios—oil majors.

Table A: NPV uplift of 2D portfolio compared to BAU portfolio (new and existing projects), 10% and FFRP adjusted discount rates

	Oil price ($/bbl)							
NPV uplift in 2D compared to BAU (%)	$40	$60	$80	$100	$120	$140	$160	$180
2D vs BAU (10% discount rate)	-	43%	15%	5%	0%	-3%	-5%	-6%
2D vs BAU (FFRP adjusted, 10.5% discount rate)	-	51%	21%	11%	6%	3%	1%	0%

Source: Rystad Energy, CTI analysis

45

As Figure 14 notes, the impact is even more severe under sub-$80/bbl conditions such as the prevailing oil prices. The magnitude of impact would then appear significant, even if companies do not assign it a high probability.

102. We have stated previously that quantification of the material effects of known material trends and uncertainties can promote understanding and may be required to the extent material. Should we revise Item 303 to specifically require registrants, to the extent practicable, to quantify the material effects of known trends and uncertainties as well as the factors that contributed to those known trends and uncertainties? Why?

We believe that, as a factual matter, a quantification of the impact of the 2°C Goal is already reasonably available to registrants in the extractive sectors and therefore under current guidance, should be disclosed. However, as many companies have not disclosed the quantified impact, we believe it would make sense to require quantification of known trends and uncertainties and to identify the relevant factors that have contributed to them.

As discussed above, we believe that this can be done, and that some companies may be performing such tests internally. Such disclosure would serve two purposes. First, market participants may already have their own assessments of the probability of certain risks transpiring. Registrants have the best, most detailed knowledge regarding the company. Requiring the quantitative disclosure would thus provide key information on the magnitude of the risk. Second, performing such an assessment would help investors understand how management is assessing the risk.

[45] Andrew Grant and James Leaton, *Sense & Sensitivity, Maximising Value with a 2D Portfolio*, at 7 (May 2016) www.carbontracker.org/report/fossil-fuels-stress-test-paris-agreement-managed-decline/ .

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137. Should we revise Item 303 to require disclosure about critical accounting estimates? If so, what information would be important to investors?

In the context of the extractives industry, we believe that demand assumptions, and the long-term price assumptions that are used should be disclosed to investors as these represent the basis for company determinations of the economic recoverability of their resources than simply a characterization of those volumes themselves. The recent impairments, largely a function of the requirement to test against the rolling 12-month price average, demonstrates both the volatility of oil prices and the sensitivity of reserves reporting to the oil price. Investors therefore need to understand the assumptions underlying those estimates.

138. Should we define "critical accounting estimates"? If so, should the definition be based on our 2001 guidance, the definition proposed in 2002, or something else? Why? Are there any other elements to a "critical accounting estimate" that have not been captured in prior definitions?

We believe that the 2001 focus on the sensitivity of financial statements to key assumptions is critical. For extractives companies this is largely the impact that swings in commodity prices would have upon the companies' reserves and potential profitability. Disclosure of the sensitivities would therefore be useful.

145. How could we improve risk factor disclosure? For example, should we revise our rules to require that each risk factor be accompanied by a specific discussion of how the registrant is addressing the risk?

A specific discussion of how the registrant is addressing key risks is important, particularly in the context of risks that are publicly recognized but where the impacts on particularly registrants are less clear. However, it may be that such discussion is better suited for the MD&A as part of overall strategic considerations. Risk factor disclosures are typically too general to provide decision-useful information so making this change without requiring more detailed analysis may not yield sufficient information for investment and engagement activities.

146. Should we require registrants to discuss the probability of occurrence and the effect on performance for each risk factor? If so, how could we modify our disclosure requirements to best provide this information to investors? For example, should we require registrants to describe their assessment of risks?

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A discussion of the probabilities that companies assign to particular risks would be valuable and it would be sensible to include that information within risk factor disclosure. This would further align reporting in the US with other jurisdictions, such as the UK, where probability estimates are often provided.

Similarly, the effect on performance would also be useful to investors and should be considered. Such an assessment may involve other considerations, including the registrant's ability to mitigate or hedge the risk. As discussed herein, risk assessment might be considered in the context of overall company activities (possibly in the MD&A) and/ or specific guidance or line item disclosures be considered for the most salient risks.

147. How could we modify our rules to require or encourage registrants to describe risks with greater specificity and context? For example, should we require registrants to disclose the specific facts and circumstances that make a given risk material to the registrant? How should we balance investors' need for detailed disclosure that is 'clear and concise'? Should we revise our rules to require registrants to present their risk factors in order of management's perception of the magnitude of the risk or by order of importance to management? Are there other ways we could improve the organization of registrants' risk factors disclosure? How would this help investors navigate the disclosure? (152-53)

The generality of risk factor disclosure is a legitimate concern; many risk factor disclosures do not delve into how the particular risks may impact the registrant and therefore only provide investors with information that could be gleaned from publicly available sources. This is particularly the case for risks that emanate from social policies. The key issue is how that risk will impact the particular registrant. Here, general standards regarding risk disclosure may be insufficient; without itemized standards for how such risks should be disclosed, risk disclosure may remain too general or vary across the sector, making disclosures difficult to compare. Identifying the most salient industry-specific risks and providing itemized disclosure requirements would be the best way providing investors with relevant, concise, comparable disclosures.

154. Risk profiles of registrants are constantly changing and evolving. For example, registrants today face risks, such as those associated with cyber security, climate change, and arctic drilling, that may not have existed when the 1964 Guides and 1968 Guides were published. Is Item 503(c) effective for capturing emerging risks? If not, how should we revise Item 503(c) to make it more effective

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in this regard?

As stated above, risk factor disclosure does not provide a level of detail that would allow investors to make informed investment and engagement decisions. The current rules incentivize risk identification but do not require discussion of the registrant's views on the probability, magnitude, or impact on performance from the risk, or efforts to mitigate it, and therefore do not provide investors with the level of detail needed to make decisions regarding the company's level of risk or risk assessment.

Some risks such as cyber security may impact registrants in all sectors. Other risks, such as climate change, are likely to have asymmetrically large impacts on particular sectors. This would suggest that guidance and/or line item disclosure tailored to particular risks and/or sectors is important.

In effect, this would treat risk factor disclosure as industry and context-specific—this is a departure from current use of a single risk factor disclosure item, but in our view more aligned with the nature of risk. In other areas where itemized disclosure has been needed, the Commission has not hesitated to require industry-specific disclosures (i.e., Item 1200 *et seq*. and recent rule-making proposals regarding mining i.e., Item 1300 *et. seq*.). It is, in fact, simply a reflection that there are meaningful sectoral differences.

159. Do the disclosure alternatives in Item 305(a) elicit adequate quantitative disclosure about market risk? Do the rules or the instructions discourage registrants from fully evaluating and disclosing their market risk exposures, such as in a sensitivity analysis? Should the rules be more prescriptive? If so, in what ways should we revise the rules and instructions to Item 305(a)?

For extractives companies, we believe the sensitivity analysis should apply not just to commodity-price sensitive financial instruments, but also to the value of their commodity-producing portfolios, and should give a forward-looking view on potential production. This would provide insight into the registrant's competitive position going forward. This would not require amendments and additions to Item 305(a), but instead to Item 1200 *et seq*. and, potentially, the recently proposed Item 1300 *et seq*. However, these changes could, in part, be modeled on the sensitivity analysis identified in Item 305(a).

160. Should additional or different principles guide the market risk disclosure requirements? Should we expand our definition of "market risk sensitive

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instruments" to require registrants to provide additional disclosure about other risks, including credit risk, liquidity and funding risk and operational risk?

The market risk disclosures under Item 305 provide a useful template for considering other risks. Commodity markets are volatile. An extractive company's exposure to overall commodity price fluctuations should be similarly disclosed, particularly given the delta between company forecasts of expanding commodity markets and the shrinking ones implied by the 2°C goal.

Just as Item 305's sensitivity test might require a company to test its financial instruments against a variety of oil prices, the SEC should consider having companies test the expected costs of their project portfolios against a variety of oil prices.

169. Should we require registrants to describe their risk management processes? If so, what level of detail would be appropriate? If a registrant has no formal risk management approach or process, should we require it to describe how it monitors and evaluates risk?

Understanding how a company is managing risk is important. But we believe that the focus should not be on how the company manages risk generally, but how the company has analyzed key risks. For example, on its website, Conoco-Phillips identifies how it integrates the 2°C Goal into its planning process, providing insight into how the company is managing stated climate objectives specifically. More general disclosures run the risk of providing investors with an assurance that the company is managing risk, but no indication of how it is doing so. Investors should be able to "trust but verify;" a lack of detail makes verification impossible.

172. Should we require registrants to disclose when risk tolerance limits or other fundamental aspects of its risk management approach are waived or changed, including any assumptions or relevant changes in business strategy that underlies the new limits or policies?

The disclosure of risk tolerance limits, and departures from those limits, would be useful context for investors. In the climate context, we believe the fundamental questions are: (1) whether the company's project sanction policy is compliant with a 2°C demand scenario and (2) whether sanctioned projects would or would not be compliant with a 2°C demand scenario.

174. How could we facilitate a more integrated discussion of risk exposure and risk mitigation? Should we require registrants to disclose management's view of how material risk exposures are related and how risk mitigation actions are

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connected?

As stated above, we believe that this could be improved by (a) considering itemized disclosures tailored to given industries/risks and (b) supporting and enhancing MD&A disclosure.

176. Should we require registrants to disclose their efforts to manage or mitigate each risk factor disclosed, similar to the risk management disclosure required for market risk under Item 305(b)(1)(ii)? What are the challenges, including those associated with preparation and competitive harm, with this disclosure?

We believe such disclosure should be required in the MD&A section. Coal company reports from 2010-2015 provide numerous risk factor disclosures alongside business as usual demand scenarios, with little consideration in the MD&A. This raises the question of what management's views truly are and how the registrant is addressing delineated risks. We believe that more specific disclosures in this area would not have significant commercial sensitivity implications, given the far more detailed commercially-relevant information available to competitors for purchase in the markets.

220. Are there sustainability or public policy issues for which line-item disclosure requirements would be consistent with the Commission's rulemaking authority and our mission to protect investors, maintain fair, orderly and efficient markets and facilitate capital formation, as described in Section III.A.1 of this release? If so, how could we address the evolving nature of such issues and keep our disclosure requirements current?

As discussed herein, we believe that climate risks, particularly for carbon-intensive industries, present the quintessential case of a publicly policy issue that falls squarely within the Commission's authority to require line-item disclosures. The materiality of these issues is implicit in the 2010 Climate Guidance. Vote totals on two-degree "stress-test" resolutions at fossil fuel companies demonstrate the materiality to investors.

By focusing disclosures on internationally agreed upon mitigation targets, such disclosures would naturally evolve with changing policy efforts. Our recommendations are summarized in response to question 223, below.

221. What, if any, challenges would registrants face in preparing and providing this information? What would be the additional costs of complying with sustainability

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or public policy line-item disclosure requirements, including the administrative and compliance costs of preparing and disseminating disclosures, beyond the costs associated with current levels of disclosure? Please quantify costs and expected changes in costs where possible.

Registrants may be better placed to identify the likely costs they would face in preparing disclosure. However, we would note the following:

- Carbon Tracker is a not-for-profit think tank. It has conducted an analysis of the global supply cost curves for existing and potential coal, oil and gas in considering what levels of supply would and would not be needed in a 2°C demand scenario. Large multinational organizations would likely have the financial capacity to conduct similar analysis.
- One of the more significant costs to producing such information is obtaining the underlying data on cost of supply. We suspect (without knowing definitively), that such data is already acquired by companies or developed in their normal business operations.
- At least one company, Conoco-Phillips, asserts that it is already conducting two-degree scenario analysis, suggesting that the marginal costs of additional disclosure would not be significant, or that the benefits of such analysis may outweigh the costs. We suspect (without knowing definitively) that other companies may also conduct such analysis.
- We further suspect that much of the additional disclosure might "piggy-back" on existing scenario planning processes within the company, further suggesting minimal additional costs.
- Finally, any costs should be considered in the context of the transparency benefits provided to the markets. Investors and registrants alike recognize climate change as a pivotal issue confronting global society, making such disclosure valuable.

222. If we propose line-item disclosure requirements that require disclosure about sustainability or public policy issues, should we scale the disclosure requirements for SRCs or some other category of registrant? Similarly, should we exempt SRCs or some other category of issuer from any such requirements?

The burdens of disclosure must be weighed against the benefits. We therefore believe that it is reasonable to consider scaling the disclosure obligation. We would note that many of the most prominent fossil fuel companies already provide significant long-term forecasting information to the market, suggesting that the

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burden of considering long-term climate targets alongside those disclosures would not be significant.

Other disclosures, such as an analysis of sensitivities to oil prices, would naturally scale to the size of the issuer, diminishing the case for scaled disclosure.

223. In 2010, the Commission published an interpretive release to assist registrants in applying existing disclosure requirements to climate change matters. As part of the Disclosure Effectiveness Initiative, we received a number of comment letters suggesting that current climate change-related disclosures are insufficient. Are existing disclosure requirements adequate to elicit the information that would permit investors to evaluate material climate change risk? Why or why not? If not, what additional disclosure requirements or guidance would be appropriate to elicit that information?

As discussed in this letter, we believe current reporting is insufficient, incomparable and incomplete. The stated policy objective of most governments of the world—the 2°C Goal—supplies the appropriate framework within which companies should be considering the risks of an energy transition. The 2°C Goal is a proxy for the potential technological and policy risks that carbon-intensive industries face.

Current disclosure in corporate reports goes little beyond identification of a public risk, companies need to provide decision-useful information of sufficient comparability to allow investors to make informed investment and engagement decisions.

As detailed in this letter, we believe that the following itemized disclosures would be useful; answers to these questions could then feed into disclosures required by existing disclosure items, including Item 303:

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Figure 15: Disclosure Recommendations

Alignment	
Disclosure	*Purpose*
Identification of changed long-term price forecasts, expressed as an absolute number or percentage change from the disclosed planning case, that would be applied in a 2°C demand scenario	Identify degree of alignment of planning forecasts with a 2°C demand scenario
Identification of changed hurdle rate[46] (or range), expressed as an absolute number or percentage change from the disclosed planning case, that would be applied in a 2°C demand scenario	Identify degree of alignment of planning parameters with a 2°C demand scenario
Identification of projects (pre-sanction and recently sanctioned) that would and would not be sanctioned in a 2°C demand scenario	Identify degree of alignment of present and future projects with a 2°C demand scenario
Sensitivity	
Disclosure	*Purpose*
Oil price sensitivity analysis of potential projects expressed as discounted NPV, using a standardized discount rate	Demonstrate resilience of company portfolio to a low demand, low price scenario
Cost curve of break-even prices of the company's potential projects, preferably in the context of a global supply curve.	Demonstrate resilience of company portfolio to a low demand, low price scenario

[46] By "hurdle rate" we mean the rate that the company expects will be returned from its investment sufficient to justify sanctioning the project.

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