



Via email: rule-comments@sec.gov

August 26, 2016

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

File Reference No.: S7-10-16

SEC Release No. 33-10098, Modernization of Property Disclosures for Mining Registrants

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 view climate change through the lens of financial materiality to registrants, focusing on the low-carbon implications for the extractives industry.

We write to offer comments on the Release No. 33-10098, "Modernization of Property Disclosures for Mining Registrants" (the Release).

The Release takes important steps to improve the disclosure of mining reserves

We laud the Commission for seeking to improve mining property disclosures and ensure their consistency with global standards, allowing for the flow of meaningful and reliable information to the markets. It is sensible also for the Commission to amend and integrate Industry Guide 7 into subpart 1300 of Regulation S-K to provide for consistent disclosure requirements.

We recognize that changing reporting standards is no small feat; the roughly 30 years since Industry Guide 7 was last updated suggests that these standards may not be revisited for decades, making it important that the revision in hand addresses all relevant current issues and anticipates future developments. Investments may carry different time horizons, but all investors are forward-looking and regulation should follow that outlook. Therefore, in amending reserves disclosure today, the Commission

should consider how the world may change tomorrow and set disclosures in a way that can anticipate the informational needs in light of those changes.

The Release should consider the implications of a carbon budget for reserves reporting

Unabated climate change has the potential to create severe and widespread disruption. In December 2015, signatories to the Paris Agreement¹ committed to limiting average global temperature increases to “well-below 2°C above pre-industrial levels”. This commitment to a ‘2°C Goal’ was significant in that it implied a global ‘budget’ for future carbon emissions. The many emissions reductions targets set at national and sub-national levels below this further support the global carbon budget and offer a clear statement of the direction of travel towards a lower-carbon economy.

For the fossil fuel industry, these trends imply a limit to the demand for its products.² This, in turn, may impact the economic recoverability of fossil reserves and resources, particularly when those (potential) assets are considered over the lifetime of a mine.

As coal is the most carbon-intensive fossil fuel, the coal industry is most at risk from the transition to a lower-carbon economy. Very few if any megatrends have similar potential to disrupt the economics of a particular industry as clearly as climate mitigation efforts will impact coal mining.³ While the macro-trends are evident, the impact that those trends will have on particular companies, and the valuation of recoverable reserves, is not.

We believe that the Release provides an opportunity for the Commission to consider how the carbon budget will be reflected in new standards. In particular, we believe that the Commission should require that mining companies consider the implications of international climate targets upon future reserves recoverability in a manner that clearly articulates the sensitivity of reserves estimates to changing dynamics.

¹ UNFCCC, ‘Adoption of the Paris Agreement’, <http://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>, 2015

² In June 2015, the G7 leading industrial nations committed to phasing out the use of fossil fuels entirely by the end of the century. <https://www.theguardian.com/world/2015/jun/08/g7-leaders-agree-phase-out-fossil-fuel-use-end-of-century>.

³ While climate change mitigation efforts will most heavily fall upon coal mining, it is possible other mining sectors will be impacted, as major diversified miners such as BHP Billiton have acknowledged. This may make some of the recommendations here applicable, to varying degrees, to other sectors. However, our discussion here focuses solely on coal mining.

The Release seeks to update standards so that reporting better reflects underlying economic reality, facilitating more efficient capital markets

SEC disclosure rules aim to “facilitate capital formation and maintain fair, orderly and efficient capital markets.”⁴ The Commission’s proposal seeks to achieve precisely this, by updating standards to better reflect the quality and quantity of a registrant’s resource base.

Modifying factors should incorporate factors such as climate risk

Circumstances affecting the underlying economics of a mining company’s reserves are subject to a range of financial and non-financial factors; these should be adequately reflected in their estimation. One important element of this process is the review of modifying factors. These factors are considered by a qualified person to “establish the economic prospects of mineral resources, or the economic viability of mineral reserves”. The Commission helpfully draws attention to a range of important factors, which include but are not limited to environmental issues.

However, the Commission should clarify how emerging economic factors related to climate change will impact the determination of reserve and resource recoverability and anticipate forthcoming changes to international standards. For coal mining, the pressing consideration is the economic viability of mines in the context of climate targets, which imply drastic reductions in carbon dioxide emissions. We refer to the limited potential for further emissions in line with these climate targets as the “carbon budget.”⁵ We believe that such a budget would impact both expected demand for and price of such commodities; the Commission should ensure that the sensitivity of reserves estimates to such developments are accounted for in corporate reporting.

Carbon budget implies significant fossil fuel reduction, particularly for coal

The 2°C Goal agreed in Paris was the crystallization of targets that emerged seven years earlier at the Copenhagen Conference.⁶ It implies significant reductions in global

⁴ SEC Release No. 33-10064, at 22.

⁵ Climate models can be used to estimate, for any given probability, the amount of warming that will result from a given level of emissions. For additional information, see <http://www.carbontracker.org/resources/>.

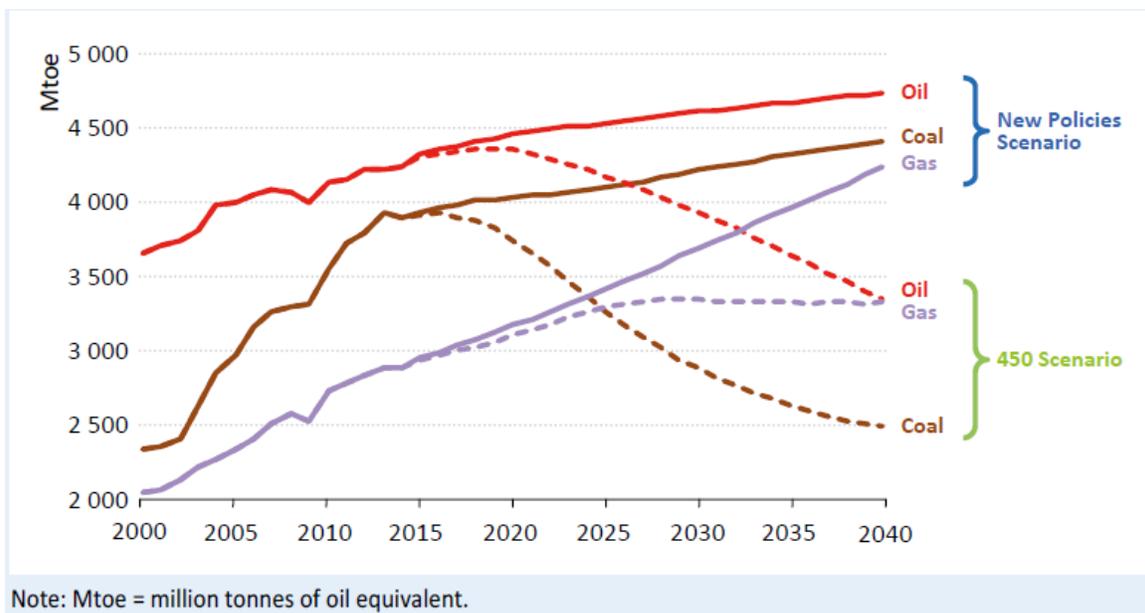
⁶ Importantly, the Paris Agreement also took the additional step of identifying the ambition for an even more aggressive climate target of 1.5°C, suggesting the potential for further downside risk to the fossil fuel extractives industry. UNFCCC, ‘Adoption of the Paris Agreement’, <http://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>, 2015.

emissions from current levels. This carbon budget implies a limit to the combustion⁷ and therefore demand for fossil fuels, regardless of whether those developments are achieved by policy, technology, or both. Further, reduced prices and increased competition can be expected to accompany dwindling demand.

The International Energy Agency (IEA) and International Panel on Climate Change (IPCC), among others, have shown the extent of the challenge for companies. To have a reasonable chance (66%) of limiting average temperature increase to 2°C, the carbon budget is roughly 1000 GtCO₂ between 2011-2100.⁸ Yet, an estimate of potential emissions from all existing global fossil fuel reserves is 2860 GtCO₂.⁹ Fossil fuel resources far exceed this.

Analysis from the IEA suggests a significant reduction in demand for fossil fuels under a 2°C-compliant scenario (the 450 Scenario) versus their central New Policies Scenario:

Figure 1. IEA demand profiles under various scenarios



Note: Mtoe = million tonnes of oil equivalent.

Source: IEA, *World Energy Outlook 2015*

⁷ The IEA argues that, absent significant deployment of Carbon Capture and Storage (CCS), roughly two-thirds of existing fossil fuel reserves will not be commercialized through 2050 under a 2°C pathway. Currently, CCS is widely considered not to be commercially viable for deployment at scale. See Carbon Tracker Initiative, *The \$2 trillion Stranded Assets Danger Zone*, 2015, for a more detailed discussion.

⁸ IPCC, Fifth Assessment Report, 2014.

⁹ IEA, *World Energy Outlook*, 2012.

Among fossil fuels, the outlook is most significant for coal. Using the carbon budget analysis, researchers at University College London have concluded that more than 80% of coal reserves must remain unused if the 2°C target is to be achieved.¹⁰ The carbon intensity of coal renders it significantly more at risk than oil and gas from tighter climate policy and regulation and its abundance means that a large quantity is likely to remain unused. Therefore, coal companies' acknowledgement of climate change as a material risk to future operations is all the more pertinent.

2°C leaves little room for thermal coal expansion

Carbon Tracker's work examines the impact that the carbon budget has on fossil fuel demand and analyzes the financial risk for companies and investors. Our recent analysis noted that under a 2°C pathway, global demand for thermal coal through 2035 could be satisfied by existing mines.¹¹

A more granular analysis of the United States drew similar conclusions. In view of the US Department of Interior's review of its coal leasing program, we noted that supply from existing reserves in the Powder River Basin¹² (PRB) more than satisfied 2°C demand through 2040, meaning that no new federal acreage would be required to be leased.¹³

In both of these contexts, investing in new mines or expanding existing mines risks stranding company capital and damaging investor value. Our global analysis suggested that in excess of \$200 billion of capital invested in new and existing thermal coal through 2025 would be wasted in a 2°C pathway.¹⁴ This suggests that the development of additional mine sites is likely only economically viable if either (a) governments fail to meet their pledged climate targets, or (b) the new supply can be produced more economically than the supply available from producing mines. This context should be central to any fair consideration of whether a given mineral deposit is economically viable.

¹⁰ 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.)

¹¹ Carbon Tracker Initiative, *The \$2 trillion Stranded Assets Danger Zone*, 2015.

¹² 90% of US domestic coal produced on federal lands is leased in the Powder River Basin.

¹³ Carbon Tracker Initiative, *Enough Already: Meeting 2°C PRB coal demand without lifting the federal moratorium*, 2016.

¹⁴ Carbon Tracker Initiative, *The \$2 trillion Stranded Assets Danger Zone*, 2015.

Climate mitigation efforts are already presenting problems to the expansion of coal markets

There is evidence that systemic changes are already underway in the United States. A misread by the US coal industry of China and India's ability to sustain future demand – expectations were of a continuing “coal-supercycle” – instead saw overleveraged balance sheets give way to steep declines in demand and price and yielded a wave of bankruptcies. Undoubtedly, the loans that funded peak-of-the-market mergers were built upon the assumption that companies would be able to extract a vast majority of the required reserves. Such prospects are looking increasingly unlikely in light of climate targets.

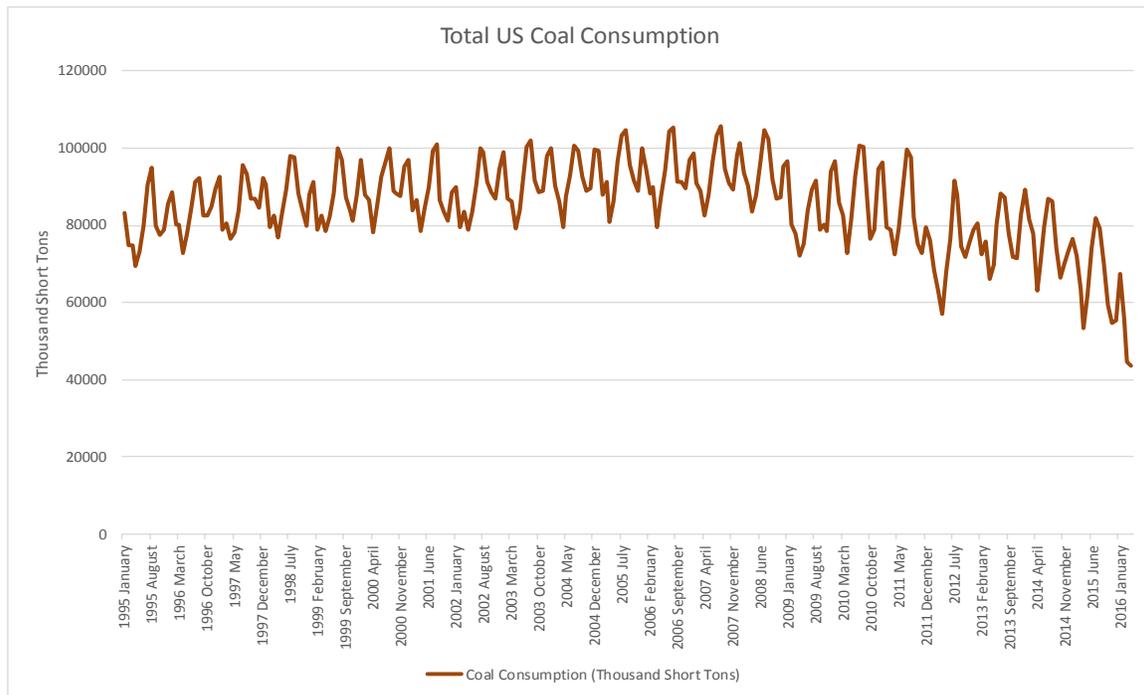
Global coal market is highly uncertain for US companies

A combination of factors, including but not limited to more stringent environmental regulation and cheap natural gas, present structural headwinds to the global coal market, particularly thermal coal. For US companies, this is significant domestically – cleaner and cheaper power supplies are replacing coal – and internationally – 21% of total coal market revenue for the United States comes from its export market.¹⁵ This means that both domestic and international action on climate change may impact US coal producers.

Domestically, coal consumption has dropped precipitously over the past five years (see Figure 2). Figure 3 demonstrates that similar impacts are occurring in the export market.

¹⁵ US Energy Information Agency, 2016. For 2014, the latest available data, the share of US coal market revenues split between domestic, export and import were 77%, 21% and 2%, respectively. This covers both thermal and metallurgical coal. For export revenue only in 2014, 29% came from thermal coal.

Figure 2: Total United States consumption of coal



Source: US EIA, *Monthly Energy Review*, July 2016

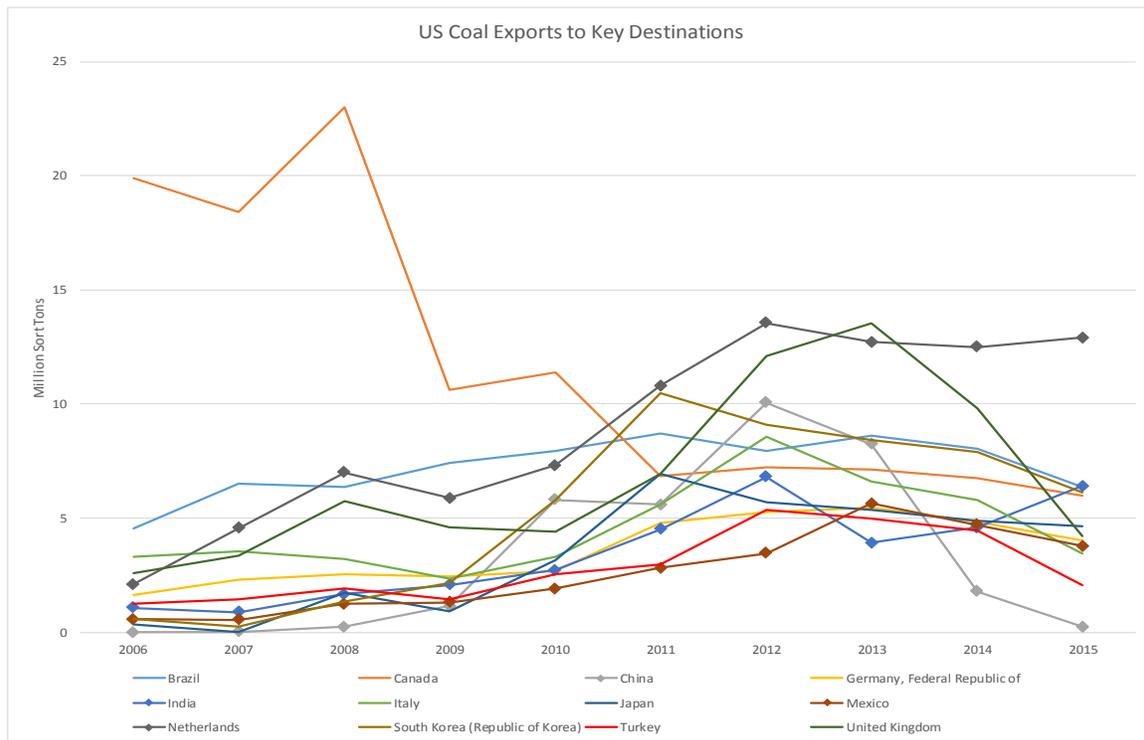
Internationally, the picture is also fraught with uncertainty. With OECD coal consumption continuing to fall, coal producers have focused on Asian markets as stable guarantors of future demand. Yet, Figure 3 shows a trend over the past several years of declining demand among key export countries; of these, changes in China are most notable. Further, contrary to the trend that Figure 3 implies, India too might not be the source of future exports underpinning bullish market projections, which are typically referenced by US coal companies.¹⁶ In addition to India's declining coal imports¹⁷, its ambitious domestic renewable energy targets and the continued expansion of its services-based economy (which is less energy intensive) would present significant downside risk.¹⁸

¹⁶ For example, Peabody Energy's 2014 Annual Report describes their confidence in the future of the global seaborne export market, citing in particular demand from China and India and the IEA Current Policies Scenario's projection for significant increase in coal demand. See <https://mscusppegrs01.blob.core.windows.net/mmfiles/files/investors/2014%20peabody%20annual%20report.pdf>.

¹⁷ Coal markets analysis in 2016 showed that India's coal imports had declined 15% year on year following five years of 20-30% annual growth. <http://ieefa.org/wp-content/uploads/2016/05/20160516-Indian-coal-imports-fall-again.pdf>

¹⁸ For more detail on downside risks to global coal markets, see Carbon Tracker Initiative, *Lost In Transition: How the energy sector is missing potential demand destruction*, 2015.

Figure 3: Comparison of US coal exports to selected key countries



Source: US EIA, Monthly Energy Review, July 2016

Applying a carbon budget requires future assumptions, but those are at least as reasonable as the assumption of business-as-usual; the use of a carbon budget would add an element of precaution to the statement of reserves

Applying a carbon budget to coal demand requires making certain assumptions about how emissions limitations may further reduce demand for that fuel, since emissions reductions can come from a number of sources that would, to varying degrees, impact coal markets specifically. In the disclosure context, the point is not to definitively forecast future events, but instead offer a first order consideration of the impacts that such limitations might have on the registrant.

An analysis of prior EIA scenarios suggests the utility of such an approach. As we noted in a recent paper,¹⁹ the downward spiral of the US coal industry was actually foreseen by modeling efforts that sought to model proposed climate bills and, most importantly, the emissions reduction targets specified by those bills.

¹⁹ Carbon Tracker Initiative, *No Rhyme or Reason: Unreasonable projections in a world confronting climate change*, 2016. Reference to EIA forecasts was made in various places throughout the 10-Ks.

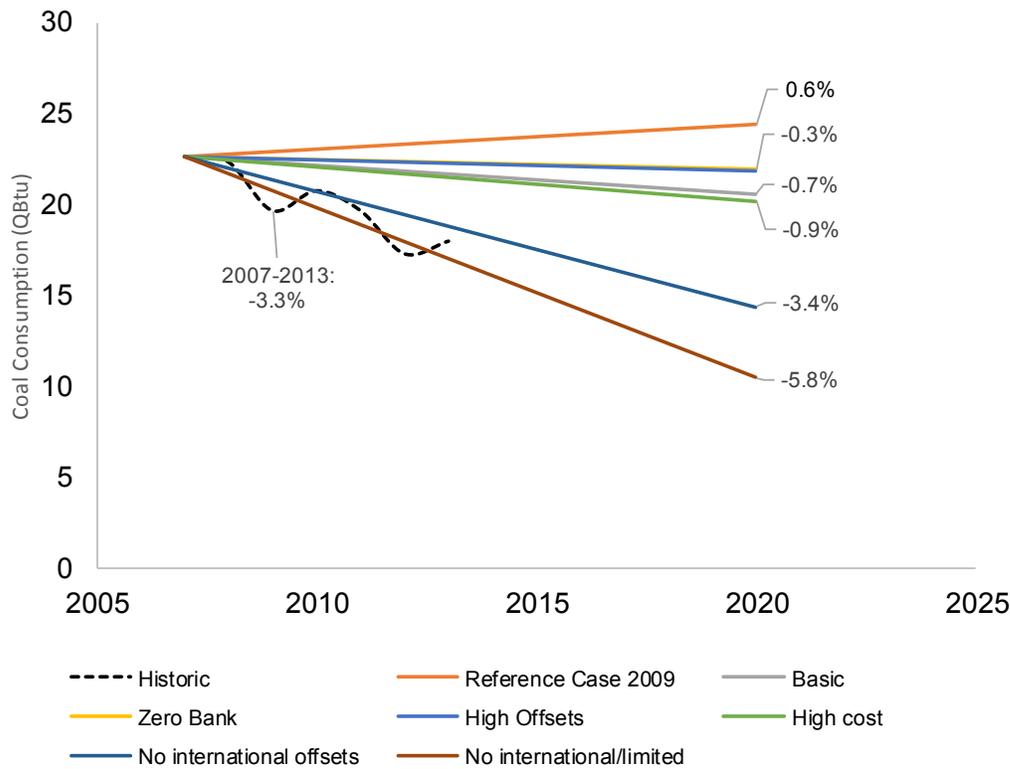
The US Energy Information Agency (EIA) produces its Annual Energy Outlook to provide a range of scenarios, from one reflecting only existing policies and steady technological change (the Reference Case) to one that assumes economic conditions that drive accelerated coal plant retirements (Accelerated Coal Retirements Case). These scenarios are projections of certain model inputs, not forecasts.

The EIA also models dozens of scenarios alongside the Reference Case, including proposed legislation and regulations. Figure 4 compares the EIA Reference Case from 2009 with its modeling of the implications of the American Clean Energy and Security Act (ACESA). The EIA's modeling of this bill is instructive as it closely mirrored President Obama's pledge to significantly reduce US greenhouse gas emissions, thus providing a reasonable consideration of the future landscape of the US coal market. This focus on emissions reductions targets is critical since in the modeling, they act as a constraint on carbon intensive power supply. Effectively, this means they imposed a carbon budget (per the emissions constraints in the bill) on the use of carbon intensive fuels. This had significant implications for coal.²⁰

ACESA was never enacted. However, its projections of its impact on US coal demand were far more prescient than the Reference Case relied upon by industry. See Figure 4:

²⁰ For more detail, see Carbon Tracker Initiative, *No Rhyme or Reason: Unreasonable projections in a world confronting climate change*, 2016.

Figure 4: US EIA's ACESA modeling compared to Reference Case (CAGR)



Source: EIA, 2009, *Energy Market and Economic Impacts of H.R. 2454, the American Clean Energy and Security Act of 2009*

An analysis of 2°C demand can provide key information for investors

The EIA's modeling efforts are one example of how the implications of future policy could be considered. We believe that a basic approach could be taken to disclosure that would allow investors insight as to whether a registrant's reserves would or would not be consistent with the 2°C Goal.

In its simplest form, such an analysis would apply a demand profile consistent with the 2°C Goal to a cost curve of potential supply to identify the lowest cost projects sufficient to meet that demand. The cheapest projects sufficient to meet demand would be considered two-degree compliant; the higher cost projects would not. This provides one clear way of considering the reserves implications of carbon budgets and, by extension, value.

Cost curves are already commonly used to analyze the economics of coal extraction.²¹ Cost curves may also incorporate a minimum level of return via the discount rate used to calculate the cost of supply over the remaining life of the mine. Our focus simply adds a fixed demand component derived from the emissions reduction target. The intersection of the demand level and supply cost therefore yields a market clearing price equivalent to the production cost of the marginal unit of supply.

We believe that the 2°C Goal has important disclosure implications for company planning and strategy as well as reserves reporting and accounting. As laid out above and in our submission to the Concept Release,²² we believe that companies could offer greater consideration of the implications of the 2°C Goal by delineating those projects that do and do not fit into such a scenario. This would leave the task of assigning the riskiness of such investments to the markets.

The 2°C Goal's carbon budget provides an indication of the direction of travel for energy markets and an important proxy for measuring the sensitivity of reserves. Companies have inadequately demonstrated both the carbon budget impact upon their existing business model and how new projects fit within the carbon budget. Even if companies maintain that such an outcome is unlikely, markets would best be served by understanding the sensitivity of the resource base to such a scenario.

Recommendations

The assumptions that generate reserve and resource estimates are nearly as important as the top-line estimates

Evaluating geologic recoverability and economic viability of a mineral deposit is a complex process. It requires many assumptions based upon expertise from several disciplines. This raises the risk that aggressive assumptions may present a mistaken picture of a registrant's reserve and resource base.

Historically, the Commission has addressed this concern by prohibiting resource estimates in SEC filings; this may have mitigated concerns regarding overzealous resource reporting, but also deprived the markets of information about the registrant's

²¹ See USGS analysis of PRB coal. <https://pubs.usgs.gov/of/2006/1072/2006-1072.pdf>

²² In a submission to the Commission's recent Concept Release, Carbon Tracker discussed potential carbon budget scenario analysis. <https://www.sec.gov/comments/s7-06-16/s70616-185.pdf>. See pages 22-30 for detailed discussion on carbon budget analysis. We incorporate that submission by reference. Further, our similar analysis on PRB coal was incorporated into a comment by NextGen Climate America to the Department of Interior regarding their Review of the Federal Coal Program. <https://nextgenamerica.org/wp-content/uploads/2016/07/NGCA-Coal-Scoping-Comment.pdf>

future prospects. The Release represents a shift in thinking about such uncertainties by making more information available to investors while also better classifying the critical assumptions those disclosures rely upon. Further, by standardizing certain assumptions and generally aligning them with CRIRSCO standards, the Release adds a level of comparability to the disclosure and consistency with international standards. These are important improvements.

The Release continues to permit tabular disclosure of reserves and resources under fixed definitions. Continuing to distill the complex assessments of economic value of mineral deposits into reserve and resource estimates provides value by offering a single point-of-comparison metric. However, it must be acknowledged that tabular disclosures are the end product of a complex process of evaluating and quantifying extractable mineral deposits and analyzing the costs, marketability, and legal limitations of extracting those materials economically using available technology. Given these complexities, the assumptions made may be almost as important as the results they yield.

We believe that market efficiency would be best served by a demonstration of the sensitivity of those top-line estimates to changes in underlying assumptions and price expectations—including those outside management’s expectations. This includes accounting for the range of factors that may impact underlying valuations—for coal companies, this makes the carbon budget relevant.

Similarly, management decisions will likely be guided by future price expectations, not historic average spot prices. There would be additional value in obtaining management’s views on future prices.

Comparability is an important element of reporting, but standing alone it does not capture the range of market uses for reserves and resource disclosure

In improving the transparency and quality of reserve and resource reporting, the Release seeks to strike a balance between revealing a fair reflection of underlying asset values, maintaining consistency with international standards, fostering comparable disclosures, and ensuring that qualified persons address the full spectrum of potential costs and factors. Unsurprisingly, no single standard can perfectly incorporate each of these purposes.

The Release emphasizes comparability by requiring that, barring contractual terms to the contrary, qualified persons may not utilize commodity prices higher than the rolling 24-month rolling average spot price. This also discourages the use of over-optimistic assumptions regarding future markets, but, as the Release notes, may not capture a

structural break in pricing²³ and is not aligned with CRIRSCO standards, which permit the use of management’s reasonable price forecasts.

We believe there may be value in centering disclosure on comparability, but there is also value in understanding both how management views its resource base and how resilient that base is to future developments. Adding a sensitivity analysis would add this value without sacrificing comparability.

We therefore believe that significant improvements could be made in two principal areas: (1) the explicit inclusion of a carbon budget analysis in the economic viability determination for proven reserves and (2) standards for the use of a spectrum of price forecasts/sensitivity analysis in assessing economic recoverability. Making the changes discussed below would enhance transparency as to the real factors underlying the viability of coal mining operations and provide valuable context for assessing tabular disclosure of reserves and resources.

Point 1: The release recognizes the importance of non-geologic factors, including environmental factors, in determining economic recoverability, but does not go far enough because it makes no explicit provision for the limitations imposed by climate targets.

We believe that, as part of the coal resource²⁴ and reserve determinations, the final rule should require the qualified person to consider, as a modifying factor, whether the reserve could be economically produced in a scenario in which demand is consistent with the 2°C Goal established by the governments of the world.

The Release requires that qualified persons consider a range of modifying factors, but does not specify that coal mining companies should consider the carbon budget

The Release defines a “proven mineral reserve” as “the economically mineable part of a measured mineral resource.”²⁵ A determination of a proven mineral reserve requires a qualified person to determine, with a “high degree of confidence,”²⁶ that the reserve is geologically recoverable and economically viable. A reserve is “economically viable” if a

²³ Release, at 206.

²⁴ For consistency, we believe that at least a qualitative assessment of the carbon budget should be conducted for resource determinations, the Release considers resources to be those mineral deposits where economic viability has not been affirmatively determined with sufficient certainty. We believe this reduces the need for a full-blown analysis of whether those reserves could also be produced in a 2°C Scenario. We focus the remainder of our discussion on the reserves determination.

²⁵ Release, at 101.

²⁶ Release, at 101.

qualified person has “determined, using a discounted cash flow analysis, or has otherwise analytically determined, that extraction of the mineral reserve is economically viable under reasonable investment and market assumptions.”²⁷ The “investment and market assumptions” include all assumptions about the prices, exchange rates, sales volumes and costs that are necessary and are used to determine the economic viability of the reserves.”²⁸ Further, as part of the economic viability determination for a reserve, the qualified person would have to establish “a life of mine plan that is technically achievable and economically viable....”²⁹

In making a reserve (or resource) determination, a qualified person must apply “modifying factors” “at the time when the qualified person converts a measured mineral resource to a probable measured reserve.”³⁰ “Modifying factors” are “the factors that a qualified person must apply to mineralization or geothermal energy and then evaluate in order to establish the economic prospects of mineral resources, or the economic viability of mineral reserves.”³¹ These factors include but are not limited to “mining, energy recovery and conversion, processing, metallurgical, *economic*, marketing, *legal, environmental*, infrastructure, *social* and *governmental* factors.”³² (emphasis added).

By way of illustration, the Release states that legal and environmental factors might include mining, environmental and reclamation regulations,³³ and that a technical report summary might consider additional environmental and compliance factors such as a “detailed analysis of requirements or interests of agencies, NGOs, communities and other stakeholders.”³⁴

The foregoing recognizes that the economic value of an in situ mineral deposit can only be considered in an economic and social context, giving due consideration to the costs of extracting, processing and bringing the mineral deposit to market. Further, such an analysis must occur in the context of reasonably anticipated prices and other non-legal factors, such as environmental, social and governmental factors, that might ultimately impact the economic viability of the project. The release further recognizes that costs and potential revenues must be considered over the life of the mine. This recognizes the importance of future developments.

²⁷ Release, at 99.

²⁸ Release, at 99.

²⁹ Release, at 98.

³⁰ Release, at 100.

³¹ Release, at 101.

³² Release, at 101-102.

³³ Release, at 103.

³⁴ Release at 87-88.

This recognition is a significant step, but may not go far enough, since the examples offered by the Commission do not include a discussion of the key impact that emissions reductions targets may have (and may already be having) on the demand for coal.³⁵

Recommendation 1: Require an assessment at the reserves stage of the recoverability of those reserves in a two-degree demand scenario

We therefore believe that, as part of the economic viability assessment, a qualified person should include an analysis of the economic viability of developing that deposit in the context of the 2°C Goal.

Such analysis should first consider projected coal demand in a two-degree scenario for the market or markets which that reserve might service and then consider whether, in light of competing sources of supply, the subject mineral deposit could be economically produced to meet that level of demand. The key assumptions and conclusions of that analysis should be included in the technical report summary.

We recognize that there are a variety of views in the market as to whether the combination of policy action and technological development will succeed in limiting warming to well-below two degrees Celsius. Qualified persons may similarly express a range of views. Disclosure of projected coal demand in a two-degree scenario, however, would not be an endorsement of any view on its likelihood. The resulting disclosure would be an estimate of the potential changes in reserve and resource estimates due to this factor or, in conjunction with the second recommendation, below, a table of reserve estimates similar to the table generated using the 24-month rolling average spot price.

Point 2: For comparability, the 24-month rolling average spot price is useful, but it is neither reflective of the impact of a carbon budget nor, potentially, management's views on recoverability in the future. The SEC should provide a mechanism for the disclosure of such information.

The Release's proposed 24-month rolling average spot price model will curb over-zealous estimates, but is backward-looking and cannot reflect future developments

³⁵ We recognize that the Release pertains to all mining activities and therefore encompasses the extraction of mineral deposits that are not likely to be affected by (or may benefit from) climate mitigation efforts. Nevertheless, coal extraction activities make up a significant portion of mining activities in the US, suggesting that further clarification for that sector should be provided as part of the final rule.

As the Release notes, commodity prices are a critical input to a reserves determination. When analyzing the economic viability of exchange-traded commodities, the Release requires a qualified person use a price no higher than “the unweighted arithmetic average of the daily closing price for each trading day within the 24-month period preceding the last day of the fiscal year covered by the SEC filing”³⁶ unless the company has “a sales contract in place that has defined the price of the commodity.”³⁷ As the Commission notes, this standard departs from the “reasonable or justifiable” forecasts permitted by CRIRSCO.³⁸

We agree that this pricing model will prevent the use of overly optimistic price assumptions during market troughs.³⁹ The recent spate of fossil fuel related impairments demonstrates the potential that overly optimistic long-term forecasts might significantly overstate reserves—one source estimates that over \$15 billion in fossil fuel related impairments have been incurred globally in FY 2016 alone.⁴⁰ It will also likely make estimates more comparable.⁴¹ However, it may also exaggerate resource and reserve numbers during market peaks.

We recognize the importance of comparability and believe the Commission should maintain the 24-month rolling average price standard, but suggest that as a backward-looking price model, it may fail to capture ongoing climate mitigation efforts that will likely impact the demand for and price of coal in the future. This is especially important to the extent that the pricing model is used as part of any permitted cash flow analysis that a qualified person produces in conjunction with an initial assessment, pre-feasibility study, or feasibility study.⁴² Requiring disclosure of reserves estimates in the context of a two-degree demand scenario would provide the missing data point and provide the markets with a simple metric for valuing companies based on the recoverability of reserves in a climate context.

Recommendation 2: Require an assessment at the reserves stage of the economic viability of those reserves based on the market clearing price in a two-degree demand scenario and permit a similar estimate compared to management’s price expectations.

These issues could be addressed by requiring that the qualified person test the economic viability of mineral deposits against anticipated volumes and prices in a two-

³⁶ Release, at 85.

³⁷ *Id.*

³⁸ Release, at 206-207.

³⁹ See, e.g., Release at 204.

⁴⁰ <https://www.marketforces.org.au/fossil-fuel-assets-taking-huge-hits/>

⁴¹ Since the 24-month average spot price is a ceiling, registrants may use lower prices. Release, at 204.

⁴² *Cf.* Release, at 91.

degree demand scenario and permitting a similar assessment, if management elects to provide one, against management price forecasts. These disclosures would yield reserve estimates alongside the 24-month rolling average spot price reserve calculations. As discussed above, the two-degree scenario price would be set at the market clearing price which would be derived from the marginal cost of supply sufficient to meet a two-degree demand scenario over a fixed period of time. As elsewhere, the key assumptions would be disclosed in the technical report summary.

This disclosure requirement would provide depth and context to the reserves analysis while maintaining the rolling average price standards used by the Commission here and in the impairment context.

Requiring a qualified person to consider pricing in a two-degree demand scenario (2°C Scenario) and allowing management to present reserve estimates under its own pricing forecasts (Management Scenario) would provide valuable information to the markets. The former would provide an analysis of the impact that climate targets may have on the economic viability of the registrant's resource base while the latter would indicate management's estimate of the course of future events. In effect, it would provide the markets with a downside sensitivity case and a management case, both essential to understanding the registrant's future prospects.

As the standard would be imposed via regulation, registrants would not be required to evaluate the likelihood of such scenario coming to pass, nor would it be an endorsement by the Commission or the registrant of any view on the likelihood of achieving the 2°C Goal. Indeed, registrants would be free to offer their views of the likelihood of such a scenario transpiring. By mandating and standardizing such disclosure, the Commission would improve transparency and foster efficient capital market allocation.

There are other means of providing a sensitivity, but focusing on the 2°C Goal would be most valuable to the markets

We recognize that a sensitivity analysis might include any of a number of downside and upside cases, but we believe that the 2°C and Management (should it be higher than the 24-month rolling average spot price) Scenarios are the most helpful parameters for investors as they tie into plausible downside and upside cases for the registrant.

The 2°C Scenario is both the focus of governmental action and investor interest. As discussed above, it would model the demand and price implications of the "well below 2°C" climate target encapsulated in the Paris Agreement.⁴³ The Financial Stability

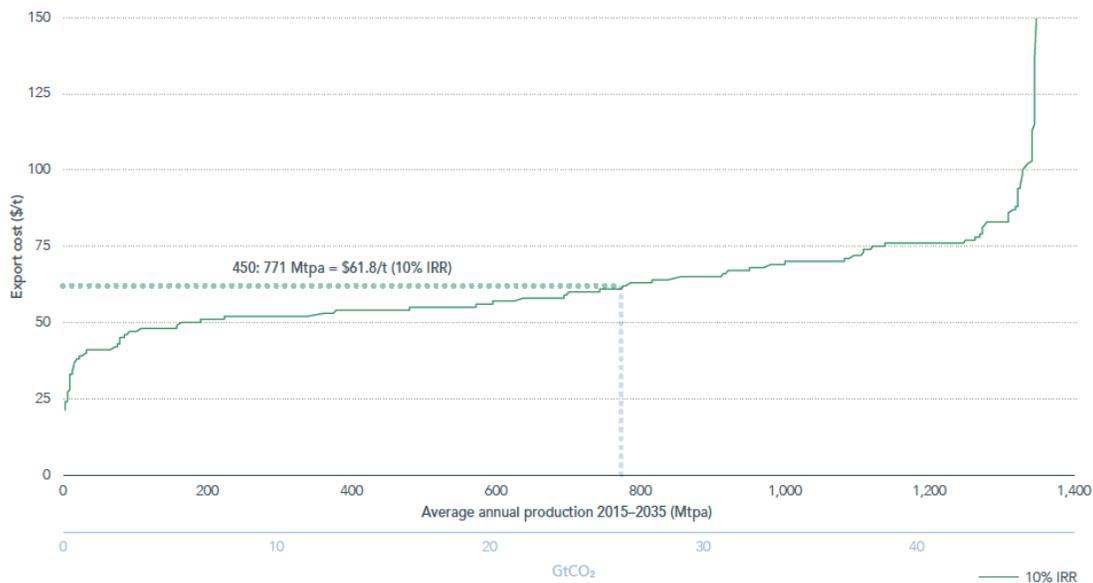
⁴³ We recognize that this is not the only plausible downside case; the Paris Agreement further identifies the "ambition" to limit warming to 1.5°C, implying even steeper reductions in fossil fuel demand.

Board’s Task Force is similarly considering the disclosure implications of the 2°C Goal for carbon-intensive investors.⁴⁴ Shareholders are clearly concerned as demonstrated by high vote totals in favor of two-degree “stress-testing” at major fossil fuel companies.⁴⁵

To conduct this analysis, a qualified person would establish a cost curve of existing and potential projects within a given market.⁴⁶ Taking the cheapest supply first, the qualified person would identify the marginal cost of supply necessary to satisfy the expected level of demand in the 2°C Scenario (based on a standardized internal rate of return). An example of such an analysis from Carbon Tracker’s work is here:

Figure 5: Coal demand 2°C scenario—global seaborne thermal coal market

Figure 4: Carbon supply cost curve for seaborne coal market – potential production from existing mines only 2015–2035



Source: Carbon Tracker & ETA analysis of Wood Mackenzie Ltd GEM

Figure 5 indicates Carbon Tracker’s estimate that, as of November 2015, the marginal cost of supply in a 2°C scenario through 2035 would be \$61.80/tonne.⁴⁷

⁴⁴ See https://www.fsb-tcfd.org/wp-content/uploads/2016/03/Phase_I_Report_v15.pdf

⁴⁵ See <https://www.sec.gov/comments/s7-06-16/s70616-185.pdf>

⁴⁶ We also note that the use of a cost curve to produce an ordinal ranking of the cheapest to most expensive projects is common practice with analysts and is used by the USGS to readily adjust reserve estimates based upon a range of commodity prices. See <http://pubs.usgs.gov/pp/1809/pdf/pp1809.pdf>, at 34.

⁴⁷ Our calculation used conversion factors to standardize coal grade and was made based upon data obtained from Wood Mackenzie as of the date of the report. We cite the figure to illustrate the output of the analysis rather than indicate a current market clearing price in the 2°C context.

We believe that this methodology would provide the clearest and most objective way of evaluating whether a given mineral deposit would be economically viable in a 2°C scenario. In theory, market clearing/equilibrium prices will converge on the marginal cost of supply in a perfectly competitive market, putting aside other factors.⁴⁸ This makes the marginal cost of supply in a two-degree scenario an important first-order measure of whether a given mineral deposit is likely to be economically viable. The use of the marginal cost of supply has an additional benefit in that it utilizes the qualified person's analysis of the costs of extracting the mineral deposit, all factors considered, as the point of comparison with other sources of supply to determine whether the deposit is economically viable.

Using a similar methodology, the qualified person would then test the viability of the registrant's resource base against this price, relying on the same considerations used in analyzing economic viability against a 24-month rolling average spot price.

Recommendation 3: Prescribe a price or range of prices above and below recent historic average prices against which companies must test their reserves and require tabular disclosure of the results as part of Item 1300 disclosures.

We further propose, as an alternative to requiring the testing of reserves against the marginal cost of supply in a two-degree scenario, that the Commission require a sensitivity analysis of reserve levels based upon a range of prescribed commodity prices. We recognize that proposed Item 229.601(b)(96)(B)(21) requires the qualified person to include a sensitivity analysis as part of the technical report summary. However, we believe that, given the value of this information, it should be placed more prominently alongside reserves disclosures using the 24-month rolling average spot price. Furthermore, the release does not specify any range of prices to be considered; we believe this may be necessary to ensure that the test prices encompass potential downside cases—thermal coal CAPP prices have nearly halved since July 2011,⁴⁹ suggesting that a wide range of prices are needed to capture market conditions.

The regulation would identify the range of sensitivities, which could be a percentage deviation above and below the 24-month rolling average spot prices (i.e., +/- 10%, 20%, 30% 40%) for the relevant spot market, an absolute range of prices for specified markets, or by some other means, provided that it identify a sufficiently wide range of potential prices. Registrants would include such the results in tabular form alongside other Item 1300 disclosures.

⁴⁸ For this reason, we are treating the "marginal cost of supply" and "market clearing price" as equivalent in this letter.

⁴⁹ <http://www.infomine.com/investment/metal-prices/coal/all/>

While this sensitivity analysis would not be tied to potential prices in a 2°C Scenario, it would still provide a sense of the quality of a registrant’s reserves. It would also reduce the reporting burden by eliminating the need to estimate marginal costs of supply for a particular market by specifying the prices against which the reserves should be tested. This would mimic reflect the optional disclosures permitted for oil and gas reserves under Item 1202.

Additional Considerations

There are obstacles to such an approach but we believe they could be overcome.

We would anticipate that the explicit incorporation of a requirement to consider a carbon budget in the analysis of “modifying factors” and the use of a 2°C scenario would raise a number of questions, which we address below.

1. Should the Commission require a carbon budget analysis, it should also consider how it defines “qualified persons” and provide sufficient lead time for the introduction of the new standards to permit development of the necessary expertise.

The Release defines a “qualified person” as “a person who is a mineral industry professional with at least five years of relevant experience in the type of mineralization and type of deposit under consideration and in the specific type of activity that person is undertaking on behalf of the registrant.”⁵⁰ In addition, the person must be a member of a “recognized professional organization,” meaning, “either recognized within the mining industry as a reputable professional association, or be a board authorized by U.S. federal, state or foreign statute to regulate professionals in the mining, geoscience or related field.”⁵¹

We would anticipate that any analysis of the economic viability of a mineral resource in the context of potential market supply and a fixed level of demand might lie outside of the expertise of members of professional mining organizations. However, for a number of reasons we believe it would be reasonable to require such expertise.

First, we note that range of expertise already required by the Release is quite wide, covering economic analysis, tax expertise, cash flow forecasting, calculation of operating costs, as well as knowledge of geological and infrastructure matters. Expertise in understanding carbon implications, though new, would not be more removed from fundamental engineering issues than some of the matters referred to above.

⁵⁰ Release, at 43.

⁵¹ *Id.*

Second, the Release envisages the appointment of qualified persons who have expertise in the specific matter being investigated but allows a series of individuals to be appointed to address different specialist issues. Accordingly, it should not be seen as a problem that one person might not have the complete range of qualified person skills and experience.

Third, the ‘flexible’ approach proposed in the Release (i.e. not specifying which organizations qualified persons should be members of) would – in principle - facilitate the recognition of bodies that could attest to an individual’s possession of carbon expertise.

Fourth, much of the additional work required would involve consideration of the costs of competing sources of supply and analysis of the available carbon budget for coal. The development of this information would be of general applicability in all qualified person activities, suggesting that the cost of obtaining that information would shrink over time. In addition, information on the cost of competing sources of supply is likely already considered by companies and, at any rate, falls squarely within areas of expertise that are already expected of a qualified person.

While the carbon budget analysis may require additional expertise, we would note that some oil and gas companies such as ConocoPhillips purport to carry out robust two-degree scenario modeling. We believe there is no impediment for coal mining companies to do the same.

We would expect that those companies would focus on the financial implications of climate change, and some may already be conducting this analysis internally. For example, the New York Attorney General’s investigation into Peabody Energy’s disclosures revealed that in March 2014, “Peabody hired an outside consulting firm, which projected that enactment of a \$20 per ton carbon tax would reduce the demand for coal as a fuel source in electric power generation in the United States in 2020 by between 38% and 53% compared to 2013 levels.”⁵²

However, should the Commission consider requiring a carbon budget analysis, it may be necessary to expand the definition of a “qualified person” and provide sufficient time for that expertise to be developed in the market. We believe that if regulations required such disclosures, professional services firms would fill the gap. Something similar is already happening with “integrated reporting” – which, arguably, highlights the deficiencies of traditional accounting and auditing. Nevertheless, it is largely supported

⁵² AOD, *In the Matter of Investigation by Eric T. Schneiderman, Attorney General of the State of New York, of Peabody Energy Corporation*, Assurance No. 15-242, at ¶ 5.

by the accountancy profession and new assurance services for integrated reports are being developed. Finally, we would note that the proposed rule makes provision for the technical summary to discuss assumptions and other information that were derived from other sources—a similar principle could apply here and might be helpful in leaving open the possibility of using a standardized carbon budget scenario developed by a standard setter or government agency.

2. Although CRIRSCO does not provide for consideration of the carbon budget as a “modifying factor” nor use it in estimating economic recoverability, the Commission should consider the extent to which CRIRSCO may also need to revisit these issues in light of climate change developments.

Utilizing a carbon budget analysis in the “modifying factor” analysis and considering market clearing prices in a two-degree demand scenario would depart from current CRIRSCO standards. However, given the global nature of the climate problem and the determinations of the Paris Agreement, we believe that CRIRSCO will have to similarly consider the implications for its current standards.

It may be decades after this modernization effort before the Commission reconsiders standards for reporting on mining properties. A failure to reconsider climate change implications in the current reporting framework may therefore risk premature obsolescence of the standards.

Moreover, we note that as proposed, the Release departs from the current CRIRSCO standard that allows “reasonable and justifiable” price expectations to be used as part of the economic recoverability analysis. Our recommendations would allow companies that use management forecasts under CRIRSCO to provide additional tabular disclosure using those forecasts.

3. Long-term prices are subject to a variety of factors beyond supply and demand, but focusing on the supply-demand fundamentals in the context of governmental climate targets is the clearest and most objective means of evaluating economic viability.

We recognize that future prices are subject to a variety of factors that go beyond long-term supply and demand fundamentals and therefore do not suggest that any prices used in conducting this analysis should be treated as forecasts. However, for disclosure purposes we believe that, in the face of climate targets that identify a fixed constraint on demand, a first order approach should be taken to consider whether the given supply could be produced economically at the expected marginal cost of supply in a 2°C Scenario.

The proposed carbon budget methodology would best reflect the competitive conditions that every commodity producer will face and recognizes the competitive advantage of those producers at the low end of the cost curve.

4. Carbon budget considerations do not assume that demand is formally constrained by either demand or supply side regulation, but do recognize the structural shifts confronting the extractives industry.

Policy and regulation focused on emissions reductions targets need not result in moratoria or prohibitions on mining to be material to an economic recoverability analysis. Even though such regulations are currently under consideration⁵³ and should be a factor in any qualified person's analysis of the likelihood that a given mining resource may ultimately be monetized, incentives that promote alternatives to coal, or to use coal more efficiently, will directly impact coal demand, creating conditions of oversupply, heightened competition, and depressed margins that may jeopardize the ability to economically produce coal from more expensive sites. These are structural shifts in the industry and there should be a mechanism for those shifts to be captured in reporting and disclosure.

It may be difficult to predict the details of how policies and regulations reducing emissions may unfold. However, climate change and mitigation targets are a special case. Climate targets are relatively well-defined and yield a fixed carbon budget; from this, reductions in demand and the potential implications for market size can be inferred. Disclosing against such a budget would capture much of the potential transformation without having to make assumptions on what policy measure or technological developments occur.

Conclusion

Reserves are the lifeblood of extractives companies. An accurate accounting of the quantity and quality of those reserves is necessary for investor capital allocation and overall market efficiency. Action to mitigate greenhouse gas emissions implies reductions in the use of fossil fuels; as the most carbon intensive fuel, coal is especially at risk. The extent of the risk can be inferred from the climate targets agreed to by the governments of the world; these targets imply significant reductions in fossil fuel demand which can be translated into an available "carbon budget."

⁵³ The Department of the Interior has imposed a moratorium on new coal leases on federal lands as it considers whether and how to continue the program, for example. See http://www.blm.gov/style/medialib/blm/wo/Communications_Director/public_affairs/news_release_attachments.Par.4909.File.dat/FINAL%20SO%203338%20Coal.pdf



While the release takes important steps to standardize and improve reserves reporting, it should also provide the markets with information on the quality of a registrant's reserves in light of the available carbon budget. We believe this can be addressed by ensuring that qualified persons consider carbon budgets as a modifying factor and that any final rule require that registrants disclose a sensitivity analysis of their reserve base.

We thank the Commission for consideration of these comments.

Sincerely,

A handwritten signature in black ink, appearing to read 'R. Schuwerk'.

Robert Schuwerk
Senior Counsel, The Carbon Tracker Initiative

A handwritten signature in black ink, appearing to read 'Mark Campanale'.

Mark Campanale
Founder & Executive Director, The Carbon Tracker Initiative

A handwritten signature in black ink, appearing to read 'Tom Drew'.

Tom Drew
Research and Policy Associate, The Carbon Tracker Initiative

Appendix: Answers to Specific Questions

22. Should we, as proposed, require a registrant to obtain a technical report summary from the qualified person, which identifies and summarizes the information reviewed and conclusions reached by the qualified person about the registrant's exploration results, mineral resources or mineral reserves, before it can disclose those results, resources or reserves in SEC filings? Why or why not? Should we instead require a registrant to obtain an unabridged technical report, rather than a technical report summary, before it can disclose exploration results, mineral resources or mineral reserves in SEC filings? Should we require the technical report summary to be dated and signed, as proposed? Why or why not?

We agree that the Commission should require a registrant to obtain a technical report summary from a qualified person before exploration results can be disclosed in SEC filings. While there is value in distilling complex estimates to a single data point, any such analysis relies upon numerous assumptions and uncertainties that provide critical context.

We further agree that such reports should be signed and dated as this incentivizes qualified persons to provide an objective view of the recoverability of identified resources and reserves—an important counterbalance to any potential incentive to present an overly optimistic view of the registrant's resource and reserve base.

Not all investors will conduct a detailed review of a company's technical report summaries. However, even those investors that don't may still rely upon assessments by financial intermediaries that will. We therefore believe that the registrant should be required to obtain an unabridged technical report that would serve as the basis for the technical report summary. Whether or not the Commission requires that an unabridged technical report be filed with the SEC, the Commission should require that such a report be made available through the registrant's website or by other means.

23. If we require, as proposed, that a registrant obtain a technical report summary from the qualified person, should we also, as proposed, require that the registrant file the technical report summary as an exhibit to the relevant registrant statement or other Commission filing when one is required? Why or why not?

For the reasons stated in response to question 22, we believe that the registrant should file the technical report summary as an exhibit to the relevant registration statement or other Commission filing.

69. Should we require, as proposed, the same ceiling price for mineral resource and reserve estimation? If not, how should the prices used for mineral resource and reserve estimation differ? Would such criteria meet the goals of transparency, cost efficiency

and comparability?

We believe the Commission’s use of the same ceiling price model is an appropriate focal point for reserves disclosure but believe that the Commission should further require, as part of the reserves determination, a sensitivity to market clearing prices in a 2°C Scenario and permit a similar analysis in a Management Scenario, as defined above. Reserve estimates are significantly impacted by expected commodity prices; a key question therefore is how resilient the estimates are to structural changes in those prices. As an alternative, a simple price sensitivity analysis to prescribed prices would yield beneficial information.

An analysis of the reserves’ price sensitivity to the 2°C Scenario would provide transparency and depth to the reporting of reserves. Similarly, as management investment decisions may be based upon expected future prices rather than historic averages, it makes sense to permit such analysis alongside the average historical prices and a two-degree demand scenario.

We believe the need for comparability is largely satisfied by the use of the Commission’s average price model. The use of additional scenarios or sensitivities, however, would capture added dimensions of the quality and resilience of those reserves estimates. It would also capture management’s view of the economic potential of their reserves. Neither of these attributes would be revealed by the use of the average price model proposed in the Release.

Such additional disclosures would carry costs, though we believe they would be minimal when compared to the value of the disclosure. The Management Scenario would be optional rather than required, allowing management to determine whether the benefits of disclosure outweighed the costs. The 2°C Scenario would be mandatory, and therefore pose additional costs. However, given the results of the Paris Agreement and evidence that some fossil fuel companies are beginning to apply this lens to their investment decisions, we believe that such costs might increasingly be incurred as part of the company’s own risk management and sensitivity analysis—regardless of the rule. Moreover, we believe that consideration of the long-term equilibrium price may already be a part of company business practice.

Alternatively, if a price sensitivity analysis were required, the qualified person would only be required to test the reserves against alternative prices.

The spate of bankruptcies in the largest US coal companies demonstrates the potential for rapid structural shifts to occur and result in losses of investor capital investments. More transparency on the economic viability of coal companies reserves might have mitigated some of those losses by providing greater transparency on reserves sensitivity and increasing the cost of capital for acquiring what, in hindsight,

appear to be expensive coal reserves.

70. Should we require that for purposes of the initial assessment a qualified person must provide at least a qualitative assessment of all relevant modifying factors to establish economic potential and justify why he or she believes that all issues can be resolved with further exploration and analysis, as proposed? Are the modifying factors provided as examples in the proposed instruction and table the most appropriate factors to be included? Are there other factors that should be specified in the instruction and table in lieu of or in addition to the mentioned factors? Would presentation of the modifying factors in a table benefit investors, registrants and qualified persons?

We believe that a qualitative assessment of all modifying factors at the initial assessment stage is appropriate, and that the carbon budget implied by climate targets be considered an additional “modifying factor.” Either tabular or narrative discussion in the technical summary of how those factors were analyzed would benefit investors, as they would add to information about the quality of reported resources (and reserves).

71. Should we permit the qualified person to make assumptions about the modifying factors set forth in the proposed table at the resource determination stage, as proposed? Why or why not? Are there other assumptions that we should specify in lieu of or in addition to those already mentioned in the proposed table?

We believe that the Commission should further provide that the carbon budget implied by climate targets be considered an additional “modifying factor” at the resource (and reserve) determination stages. As with all modifying factors, the qualified person would consider it only to the extent applicable. We agree with the Commission’s view that at the resource stage, a qualitative assessment may be sufficient. For reserves determination, we believe the additional step of considering whether a given mineral deposit could be produced at expected market clearing prices in a 2°C Scenario and providing a sensitivity analysis would be important.

78. Should we explicitly include a life of mine plan disclosure requirement in the technical studies required to support a determination of mineral reserves, as proposed? Why or why not?

We believe a life of mine plan should be included. As the Commission notes, many companies already perform and disclose such an analysis, which is critical in establishing a timeline of production necessary to establish the timing of cash flows to conduct a discounted cash flow analysis. In the context of climate targets, such an analysis is particularly important to the extent that the requisite emissions reductions become more ambitious over time, making future production less certain.

79. Should we require the use of a discounted cash flow analysis or other similar analysis to establish the economic viability of a mineral reserve's extraction, as proposed? Why or why not? If so, should we require the use of a price that is no higher than a trailing 24-month average spot price in the discounted cash flow analysis, except in cases where sales prices are determined by contractual agreements, as proposed? Is there some other period (e.g., 12 or 36 months) or measure that should determine the price used in the discounted cash flow analysis?

We believe that registrants should continue to be required to establish economic viability of a mineral reserves extraction using a discounted cash flow analysis a trailing 24-month average spot price except in cases where sales prices are determined by contractual agreements. In addition, we recommend that registrants are required to present the a discounted cash flow on the same basis, but using an alternative price equivalent to a market clearing price in a 2°C Scenario instead of a trailing average. Companies should further be permitted, but not obliged to present an additional cash flow analysis using a Management Scenario price. Other assumptions, such as costs and discount rates, should remain consistent between scenarios.

80. Should we allow registrants to use an alternate price in addition to a price that is no higher than a trailing 24-month average spot price, as long as they disclose the alternate price and their justification? Alternatively, should we require every registrant to use a fixed 24-month trailing average price with the option to use an alternate price(s) that is reasonably achieved? Are there other pricing methods (e.g., management's long term view or using spot, forward or futures prices at the end of the last fiscal year to determine the ceiling price allowed) that we should require or permit registrants to use in discounted cash flow analysis? Would such pricing methods be transparent, easy for registrants to apply and investors to understand, and to the extent practicable, provide some degree of comparability?

As discussed above, we believe that registrants should be required to use an alternative price equivalent to a market clearing price in a 2°C Scenario and be permitted to use a Management Scenario price. Such disclosures would be in addition to, rather than in lieu of, analysis under the 24-month average spot price. The assumptions and justifications for such prices should also be disclosed. We further believe that these prices should be used as part of a discounted cash flow analysis that evaluated economic viability over the life of the mine(s). Such prices would be as simple to understand as the 24-month average spot price. Requiring at least the 2°C Scenario price would provide a sensitivity analysis reflective of a plausible climate downside scenario.

82. Should we define "modifying factors," as proposed? Are there any factors that we should include in the definition of modifying factors instead of or in addition to those

already included in the definition? Are there any factors that we should exclude from the definition?

We believe that the Commission should provide that the carbon budget implied by climate targets be considered an additional “modifying factor” at the reserve (and resource) determination stages. As with all modifying factors, the qualified person would consider it only to the extent applicable. For reserves determination, we believe the additional step of considering whether a given mineral deposit could be produced at expected market clearing prices in a 2°C Scenario and providing a sensitivity analysis would be important.

110. As previously noted, the qualified person would have to apply and evaluate relevant modifying factors to assess prospects of economic extraction or to convert measured and indicated mineral resources to proven or probable mineral reserves. These would include a variety of factors such as economic, legal, and environmental as discussed more fully above. For example, to apply and evaluate legal factors the qualified person must examine the regulatory regime of the host jurisdiction to establish that the registrant can comply (fully and economically) with all laws and regulations (e.g., mining; environmental, including regulations governing water use and impacts, waste management, and biodiversity impacts; reclamation; and permitting regulations) that are relevant to operating a mineral project using existing technology. Should we expand proposed Item 601(b)(96)(iv)(B)(19)(vi) to provide additional specific examples, in addition to those set forth in Items 601(b)(96)(iv)(B)(19)(i)-(iv), of “issues related to environmental, permitting and social or community factors” that the qualified person must include in the technical report summary? For example, should we expressly require that the qualified person include a discussion of other sustainability issues such as how he or she considered issues related to managing greenhouse gas emissions or workforce health, safety and well-being? Are there other items for which it would be appropriate to require the qualified person to include a discussion in the technical report summary? If so, please provide examples and explain why.

We believe the Commission should further define the types of factors that qualified persons should consider in the technical report summary. Specifically, the proposed regulation should require a discussion of how emissions reduction targets might impact the economic recoverability of the reserve base, as discussed in above. A discussion of the qualified person’s consideration of the carbon budget implications for the given mineral deposit, the market clearing prices implied by the 2°C Scenario, and the key assumptions made in the qualified person’s analysis should be included.