



## **Applying a Global Carbon Budget to the Federal Coal Program**

**A Comment to the Department of the Interior  
Re: Programmatic Environmental Impact Statement Scoping  
to Review the Federal Coal Program**

**Delivered via email to: [BLM\\_WO\\_Coal\\_Program\\_PEIS\\_Comments@blm.gov](mailto:BLM_WO_Coal_Program_PEIS_Comments@blm.gov)**

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### **SUMMARY**

NextGen Climate America is grateful for the opportunity to comment on the scoping process for the programmatic review of the federal coal program. This comment addresses the need for the Programmatic Environmental Impact Statement to fully address climate change issues. Based on our analysis and the analysis of experts at the Carbon Tracker Initiative, we recommend that Interior adopt a carbon budget framework for assessing reform alternatives within the coal program.

The principle finding that informs our recommendation is that more recoverable coal is currently under lease than can safely be developed under a carbon budget that limits global warming to 2°C. Interior has the legal authority and a strong policy basis to align the federal coal program with U.S. commitments on climate change. Interior should therefore reject any reforms to the coal program that imply a level of coal production that is inconsistent with a scientifically sound carbon budget. Ultimately, the agency must end the practice of issuing new coal leases and undertake other necessary reforms to conform the program to the United States' policy goals and international commitments to limit global warming to well below 2°C.

## INTRODUCTION

On January 15, 2015, Secretary of the Department of Interior Jewell issued a Secretarial Order directing the Bureau of Land Management (“BLM”) to undertake a comprehensive review and Programmatic Environmental Impact Statement to determine whether and how the federal coal program should be modernized. The Secretarial Order acknowledges concerns about the program’s impact on climate change, and designates the Programmatic Environmental Impact Statement (“programmatic review”) as a vehicle to improve the federal coal program “in a manner that gives proper consideration to the impact of that development on important stewardship values.”<sup>1</sup>

Because net CO<sub>2</sub> emissions are directly related to temperature increase, limiting global temperature increases also implies an upper-limit on cumulative CO<sub>2</sub> emissions. This finite level of cumulative emissions provides a “carbon budget” that is associated with a given level of global warming.

Interior and BLM should adopt the concept of a global carbon budget as an instructive framework for understanding the climate impact of its coal leasing decisions and the federal coal program more broadly. A scientifically-sound carbon budget provides a strong basis for modernizing the federal coal program in a carbon constrained world.

As this comment demonstrates, more recoverable coal is currently under lease than may safely be developed if the United States is to achieve its stated administrative policy and international commitments to limit global warming. A programmatic review that contemplates leasing even more coal implies that our country will fail to live up to these commitments, and condemn our citizens to the dire consequences of even more damage to our climate than is already occurring. Interior should reject the assumption that this catastrophic scenario is acceptable or inevitable.

Interior should instead undertake reforms to the coal program that will bring coal production into line with the limitation that must necessarily exist if the United States lives up to

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<sup>1</sup> U.S. Department of the Interior, Secretarial Order No. 3338 (Jan. 15, 2016). *Available at* [http://www.blm.gov/style/medialib/blm/wo/Communications\\_Directorate/public\\_affairs/news\\_release\\_attachments.Par.4909.File.dat/FINAL%20SO%203338%20Coal.pdf](http://www.blm.gov/style/medialib/blm/wo/Communications_Directorate/public_affairs/news_release_attachments.Par.4909.File.dat/FINAL%20SO%203338%20Coal.pdf) (hereinafter, “Secretarial Order”).

its climate commitments. These reforms should include ending the practice of issuing new coal leases and lease renewals on federal lands.

**Part I** of this comment explains why the Department of the Interior (“Interior”) should apply a carbon budget framework to its decision scenarios for the programmatic review, and describes recent analysis by the Carbon Tracker Initiative that applies the carbon budget framework to the federal coal program.

Carbon Tracker Initiative’s analysis reveals that thermal coal reserves on existing Powder River Basin leases are sufficient to meet projected electric power generation demand in scenarios that align electricity demand profiles with carbon emissions consistent with limiting warming to no more than 2°C. Scenarios examined include demand profiles that anticipate development and deployment of carbon capture and sequestration (“CCS”) technology at a level that significantly outpaces current trajectories, as well as scenarios that assume CCS is deployed at lower rates that more closely approximate current market trends.

Carbon Tracker’s analysis also illustrates how carbon stocks in existing leases generate stranded assets because the current valuation of coal reserves does not account for the amount that is non-combustible under climate constraints. Additional reserves made available through new leases would therefore either subsidize production beyond safe levels, or result in deployment of investment and infrastructure on new leases that would prove unprofitable and expose taxpayers and landowners to the risks associated with unfunded liabilities in coal mining communities.

**Part II** of this comment discusses Interior’s legal authority to apply a carbon budget framework to its programmatic review, and describes how a carbon budget provides an appropriate framework for aligning Interior’s coal program with existing administration policy directives. Interior should revise its federal coal lease program to incorporate reforms consistent with a carbon budget pursuant to four legal authorities. First, the Mineral Leasing Act directs BLM to grant leases only when the lease aligns with the public interest. Second, the United States Intended Nationally Determined Contribution (“INDC”) to the United Nations articulates an emissions reduction target to which the agency should align itself. Third, the Energy Policy Act requires Interior to account for coal reserves in alignment with U.S. climate objectives.

Fourth, Interior should conform its coal lease program with federal executive actions on climate and climate policy directions set by President Obama, which are reflected in the activities of other administrative agencies.

**Part III** of this comment explains how a carbon budget framework should be applied to Interior's assessment of decision alternatives. Interior's scoping process should, from the outset, evaluate decision alternatives based on the climate impacts of each alternative and reject those alternatives that are inconsistent with the carbon budget. Interior should specifically develop scenarios for assessment that are likely to reflect and plan for the permanent structural decline of the domestic thermal coal industry, and that seek to minimize lock-in effects and potential stranded investments in new coal development, while ensuring a fair return for taxpayers and full reclamation and bond release on existing leases. The carbon budget criterion provides a quantifiable indicator of climate consistency that has otherwise not been considered by the federal coal program. Interior should employ integrated electricity resource planning models to help evaluate the carbon impacts of scenarios under consideration, but several potential reforms in addition to ending the practice of issuing new coal leases and lease renewals are likely to result in lower carbon emissions. These options include, among others, a carbon adder, progressive increases to royalty rates, more stringent enforcement of reclamation requirements, and ending leasing by nomination. These options may work separately or in combination.

In all cases, Interior should reject any decision alternative that exceeds the level of coal development that is consistent with remaining within the 2°C warming threshold.

## **I. THE ATMOSPHERIC CLIMATE BUDGET PROVIDES A FRAMEWORK TO MODERNIZE THE FEDERAL COAL PROGRAM**

The carbon budget represents a maximum CO<sub>2</sub> emissions level that is consistent with a 2°C warming scenario. Any eventual decision to grant new leases should be made with reference to what coal is unburnable within this global carbon budget. The level of production that is projected from existing leases already exceeds the production levels that are consistent with meeting U.S. climate goals. A coal program that grants leases on coal that cannot be recovered will result in assets that must eventually be stranded, and may result in additional liabilities to

taxpayers. Interior should therefore evaluate reform options that will limit unnecessary and harmful production from existing leases, and end the practice of issuing new leases and lease renewals.

**A. The atmospheric carbon budget represents the remaining amount of CO<sub>2</sub> emissions that can be emitted if global warming is limited to 2 °C**

The remaining available carbon budget for limiting temperature increase to 2°C depends on key physical and mathematical parameters, such as the modeled sensitivity of the atmosphere to carbon pollution, potential climate feedback effects, and other factors that affect the probability of successfully staying below the chosen temperature target.<sup>2</sup> Across a range of budgets based on a variety of reasonable and conservative inputs, expert analysis collectively identify a constraint imposed on fossil fuel production.<sup>3</sup> Extrapolating from a carbon budget that reflects a maximum level of atmospheric CO<sub>2</sub>, it is possible to assess energy demand scenarios for consistency with that budget based on energy market data and the carbon intensity of various fuels.

This comment relies on the carbon budget analysis in the Carbon Tracker report *Enough Already: Meeting 2°C Powder River Basin Coal Demand Without Lifting the Federal Moratorium*.<sup>4</sup> Carbon Tracker modifies the “450 Scenario” emissions pathway used by the International Energy Agency, which provides an energy trajectory “consistent with the goal of limiting the global temperature increase to 2°C by limiting concentration of greenhouse gases in the atmosphere to around 450 parts per million of CO<sub>2</sub>.”<sup>5</sup> In particular, Carbon Tracker identifies what level of coal production from existing Powder River Basin federal leases is consistent with stabilizing CO<sub>2</sub> emissions at 450 parts per million based on dynamic market impacts.<sup>6</sup>

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<sup>2</sup> Additional factors that impact the carbon budget include the time period covered, assumptions regarding mitigation of other greenhouse gas emissions, and the scale and success of CCS deployment. *See* Carbon Tracker Initiative, Things to look out for when using carbon budgets! *Available at* <http://www.carbontracker.org/wp-content/uploads/2014/08/Carbon-budget-checklist-FINAL-1.pdf>

<sup>3</sup> Carbon Tracker Initiative, “Enough Already: Meeting 2°C Powder River Basin Demand Without Lifting the Federal Moratorium.” July 2016. *Available at* <http://www.carbontracker.org/report/enough-already-2c-powder-river-basin-coal-demand-federal-moratorium/> (hereinafter, “Carbon Tracker report”). This comment incorporates the Carbon Tracker report in its entirety, by reference.

<sup>4</sup> *Id.*

<sup>5</sup> International Energy Agency, World Energy Outlook Overview. *Available at* <http://www.iea.org/publications/scenariosandprojections/>

<sup>6</sup> Carbon Tracker compares its results with the following three studies modeling Powder River Basin leasing changes: Wood Mackenzie, ICF International in cooperation with Vulcan Philanthropy, and Erickson and Lazarus

The energy demand pathway under a 2°C carbon budget provides a useful tool for Interior to assess the climate consistency of the federal coal program. Excessive reliance on high-carbon fuels risks exhausting the budget before global energy demand is met, with the result that either the budget may be exceeded or that incremental energy services are more expensive than they would be in an optimized supply scenario. Researchers have evaluated a range of energy demand and supply pathways in order to determine compatibility with various 2°C carbon budget scenarios. *The implication of the 2°C model is that only a limited amount of coal can be combusted between 2010 and 2050.* In light of these analyses, the reformed federal coal lease program must recognize the centrality of federal coal to national CO<sub>2</sub> emissions and climate change.

Any eventual decisions to grant new leases should be made with reference to what coal is unburnable under the 2°C energy pathway. Doing so requires reference to production at currently producing mines, planned production from privately owned reserves, and the application of CCS technology, in addition to broader energy market conditions. If a given policy is consistent with the 2°C climate budget it is considered “climate consistent.”<sup>7</sup>

The production models analyzed by Carbon Tracker, which inform our recommendations for modernizing the federal coal program, are inherently conservative on the basis of two factors.<sup>8</sup> First, the 2°C target used by the IEA is an uppermost-limit for temperature warming but

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for the Stockholm Environment Institute. In their comparison of other assessments, Carbon Tracker notes “none of the papers reviewed showed results that would alter our core conclusion that reserves on current federal Powder River Basin leases are adequate to meet domestic supply needs with minimal dislocations under most scenarios.” Carbon Tracker, *supra* note 4 at 18.

<sup>7</sup> The Intergovernmental Panel on Climate Change Fifth Assessment Report assigns a remaining carbon budget of 1,000 metric GtCO<sub>2</sub> when using a greater than 66% probability of keeping the temperature increase below 2°C. This budget is relaxed to 1,300 GtCO<sub>2</sub> when using a 50% probability of success. The Fifth Assessment Report of the Intergovernmental Panel on Climate Change summarizes the characteristics of this 1,000 GtCO<sub>2</sub> budget. “Multi-model results show that limiting total human-induced warming (account for both CO<sub>2</sub> and other human influences on climate) to less than 2°C relative to the period 1861-1880 with a probability of >66% would require total CO<sub>2</sub> emissions from all anthropogenic sources since 1870 to be limited to about 2900 GtCO<sub>2</sub> when accounting for non-CO<sub>2</sub> forcing... About 1900 [1650 to 2150] GtCO<sub>2</sub> were emitted by 2011, *leaving about 1000 GtCO<sub>2</sub> to be consistent with this temperature goal. Estimated total fossil carbon reserves exceed this remaining amount by a factor of 4 to 7, with resources much larger still*” (emphasis added). Intergovernmental Panel on Climate Change, Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 at 63.

<sup>8</sup> The calculated balance of the global carbon budget and the implication for fossil fuel use varies across studies. A recent article in the scientific journal *Nature* applies a global carbon budget to identify the fraction of U.S. coal reserves that are unburnable before 2050 under a 2°C scenario, concluding that 95% of U.S. reserves cannot be

does not represent a “safe” threshold. For this reason, technical experts to the United Nations Framework Convention on Climate Change (“UNFCCC”) have cautioned keeping temperature warming well below 2°C in order to significantly reduce the risks of climate change, and Parties to the UNFCCC adopted this goal under the Paris Agreement.<sup>9</sup> Second, the IEA 450 Scenario only assigns a 50% probability of successfully staying below the 2°C threshold and assumes a relatively rapid deployment of CCS technology by 2020.<sup>10</sup>

Our comments to Interior are therefore based on very conservative assessments of the global carbon budget, from the perspective of envisioning the highest-possible levels of coal production with climate-consistent scenarios. These assessments likely over-estimate the level of federal coal production that is consistent with actually limiting global warming to no more than 2°C or to any level that may be deemed “safe.”

### **B. Coal reserves on existing PRB leases are sufficient to meet demand in 2°C scenario**

*The Carbon Tracker Initiative analysis shows that production from existing mines is sufficient to meet demand through 2040 in a climate-consistent electricity generation scenario.* The potential supply from existing leases from 2016 to 2040 is 5763 million metric tons (Mt), which is 1,252 Mt greater than the supply required under the 450 Scenario (See Figure 1).

The 450 scenario assumes an aggressive build-out of CCS technology, at a pace that outstrips current market trends. In order to better reflect likely real-world conditions, Carbon Tracker also assessed scenarios in which large-scale deployment of CCS does not occur until

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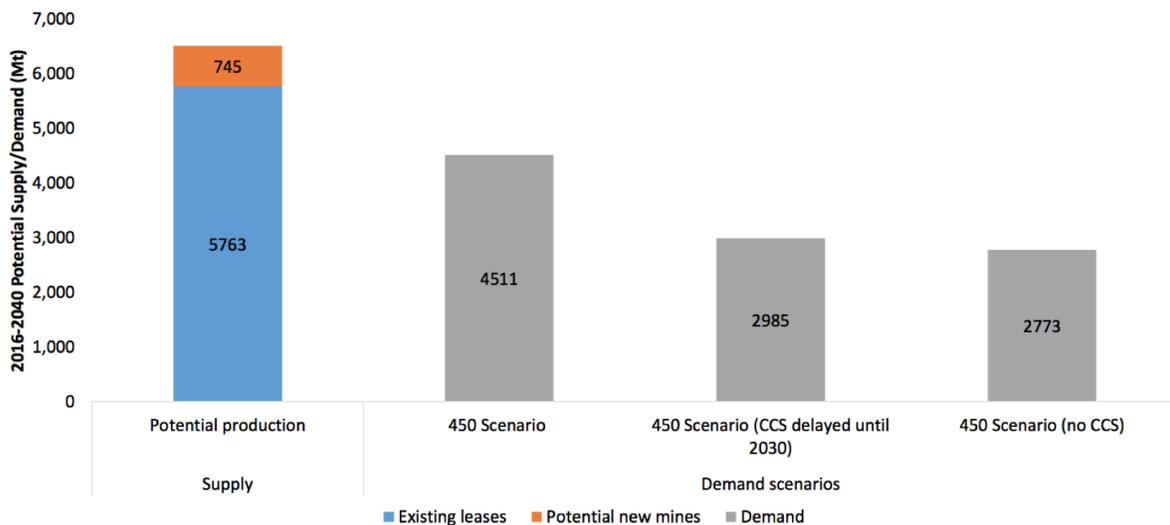
combusted. The *Nature* analysis models the optimal global use of oil, natural gas and coal with the constraint of a 2°C emissions trajectory. Coal is heavily disfavored in relation to oil and gas, especially in the United States, due both to coal’s carbon intensity and the wide availability of lower-cost, lower-carbon electricity sources. Even with CCS technology widely deployed from 2025 forward, the study concludes that 92% of U.S. coal reserves remain unburnable. See Christopher McGlade & Paul Eakins, *The geographic distribution of fossil fuels unused when limiting global warming to 2 °C*, 215 *Nature* 187 (January 8, 2015) at 189.

<sup>9</sup> For a discussion on the relative risks of temperature targets, see: United Nations Framework Convention on Climate Change Secretariat, Report on the structured expert dialogue on the 2013-2015 review (2015). Available at <http://unfccc.int/resource/docs/2015/sb/eng/inf01.pdf>. The Paris Agreement on climate change identifies the need for greater temperature ambition. The Agreement aims to hold “the increase in the global average temperature to *well below* 2°C above pre-industrial levels” with “*efforts to limit the temperature increase to 1.5°C* above pre-industrial levels” (emphasis added). Paris Agreement, Article 2 (Dec. 13, 2015), in UNFCCC, Report of the Conference of the Parties on its Twenty- First Session, Addendum, at 21, UN Doc. FCCC/CP/2015/10/Add.1 (Jan. 29, 2016) (hereinafter, “Paris Agreement”).

<sup>10</sup> Forecasting the rapid deployment of carbon capture and storage projects is characterized by uncertainty. CCS projects are not utilized at scale and only 15 large-scale projects currently operate. See Global CCS Institute, “Large Scale CCS Projects,” <https://www.globalccsinstitute.com/projects/large-scale-ccs-projects>.

2030, and in which this technology never becomes a significant factor in energy supply markets. Because lower levels of CCS deployment reduce the ability to mitigate coal’s intrinsic high carbon intensity, production from existing mines is necessarily also sufficient under scenarios where CCS is delayed until 2030 (cumulative supply production of 2985 Mt) and where no CCS is deployed (cumulative supply production of 2773 Mt).<sup>11</sup> In the energy scenario where no CCS is deployed, the projected production from existing leases alone is 2,990 Mt greater than the 2°C scenario carbon budget threshold.<sup>12</sup> As noted above, the 450 Scenario is also a higher risk pathway due to the 50% probability it assigns for achieving 2°C, and thus coal production consistent with a climate safe scenario would be even less when assigning a higher probability of success.

**Figure 1: Cumulative potential production of PRB coal versus projected demand under different scenarios, 2016-2040 (Mt)<sup>13</sup>**



If the United States is to maintain climate consistency in its energy resource mix, Carbon Tracker projects that American demand for thermal coal will decline by an average of at least 3.4% per year until 2040. For each of the three 450 Scenarios, production from existing mines is sufficient to meet demand. *The policy significance of this analysis is that energy trends affirm that current*

<sup>11</sup> Carbon Tracker Report, *supra* note 3 at 5.

<sup>12</sup> 5763 (potential production from existing leases, in Mt) - 2773 (production with CCS delayed until 2030, Mt) = 2,990 Mt

<sup>13</sup> Carbon Tracker Initiative analysis of data from Wood Mackenzie Global Economic Model, IEA, and EIA. *Supra* note 3 at 14.

leases are sufficient to meet demand, and thus a carbon constraint should be applied to the reformed coal leasing program. If Interior approves any alternative that exceeds the carbon budget, it risks incentivizing dangerous levels of production, creating stranded assets, and locking up federal lands that could be put to other productive uses.

### **C. Carbon stocks in existing leases generate stranded assets**

Interior should use the programmatic review as an opportunity to recognize the risk of stranded assets. Unless Interior reforms the program to reflect the necessary structural decline in the coal industry as the United States and other countries move to limit the effects of global warming, Interior's practices risk radically overvaluing coal reserves due to the volume of reserves that are non-combustible. Failing to address the carbon budget has the effect of promoting investment in assets that must necessarily become stranded if we are to avoid catastrophic costs associated with unlimited global warming. These mines will represent the very definition of stranded assets: "assets that have suffered from unanticipated or premature write-downs, devaluations, or conversion to liabilities."<sup>14</sup>

The effectiveness of the programmatic review relies on the credibility of Interior's assessment of the alternatives it considers. The Ninth Circuit Court of Appeals addressed the matter in *Natural Resources Defense Council v. U.S. Forest Service*, which held that the U.S. Forest Service violated NEPA by failing to present complete and accurate information to decisionmakers through its decision alternatives. In particular, the opinion addressed the risk of overstating economic benefits. "Presenting accurate market demand information [is] necessary to ensure a well-informed and reasoned decision, both of which are procedural requirements under NEPA."<sup>15</sup>

The current leasing program neglects the carbon budget constraint that will reduce the value of coal assets, which compromises the NEPA requirement for well-informed decisionmaking. Interior should use the opportunity afforded by the programmatic review to

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<sup>14</sup> See, Smith School of Enterprise and the Environment, Sustainable Finance Programme. Available at <http://www.smithschool.ox.ac.uk/research-programmes/stranded-assets/background.php>; Carbon Tracker, Resources. Available at <http://www.carbontracker.org/resources/>

<sup>15</sup> Nat. Res. Def. Council v. U.S. Forest Serv., 421 F.3d 797, 812 (9th Cir. 2005)

remedy this deficiency in the current program by undertaking reforms that will right-size the level of assets on offer to better reflect true market conditions in a carbon-constrained economy.

## **II. INTERIOR SHOULD APPLY A CARBON BUDGET TO ITS PROGRAMMATIC REVIEW IN ORDER TO BE CONSISTENT WITH UNITED STATES LAW AND POLICY**

Five legal authorities and policy directives by the Executive Office of the President provide a clear basis for Interior to reform the federal coal program in a manner that brings the program into alignment with the global carbon budget.

First, the Mineral Leasing Act establishes a public interest requirement for the federal coal program, which should include consistency with national climate goals. Second, the Federal Land Policy and Management Act of 1976 establishes a “multiple use” management principle that requires BLM to balance competing interests. Third, the Energy Policy Act enables Interior to account for coal reserves in alignment with U.S. climate objectives. Fourth, executive and agency actions provide a basis for Interior to address climate change in its coal lease program. Fifth, the United States *INDC* to the United Nations articulates an emissions reduction target to which the agency should align.

### **A. Existing legislation authorizes Interior to apply a carbon budget**

- i. The Mineral Leasing Act requires BLM to modify its coal leasing program to serve the public interest, which includes climate consistency*

The Mineral Leasing Act of 1920 (“MLA”) states that the Secretary of the Interior is authorized to divide any lands for coal leasing if found in the public interest.<sup>16</sup> Interior has capacious legal authority to interpret this term. “The Secretary of the Interior is authorized to prescribe necessary and proper rules and regulations and to do any and all things necessary to carry out and accomplish the purposes of this chapter.”<sup>17</sup> This authority extends to Interior’s discretion to reject individual leases or to end the practice of offering new leases and lease extensions altogether if the department determines that these practices are not in the public interest, on the basis of a broad array of factors.

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<sup>16</sup> 30 U.S.C § 201

<sup>17</sup> 30 U.S.C § 189

Interior regulations establish the public interest basis for coal leasing: “[an] application for a lease shall be rejected in total or in part if the authorized officer determines that . . . leasing of the lands covered by the application, *for environmental or other sufficient reasons*, would be contrary to the public interest” (emphasis added).<sup>18</sup> Up until now, BLM’s decisions to approve lease applications have been justified as serving the public interest because they offer competitive sales for meeting national coal demand,<sup>19</sup> provide a reliable and continuous “supply of stable and affordable energy for consumers,”<sup>20</sup> and reduce U.S. “dependence on foreign energy supplies and [provide] significant socioeconomic benefits.”<sup>21</sup> These interpretations of the public interest ignore two key aspects of the coal program: near-term health burdens imposed on American communities and long-term climate burdens on BLM land as well as all areas of the United States. Moreover, the BLM Records of Decision do not consider the Carbon Tracker finding that reserves from existing mines are sufficient to supply the transitional period for coal plants – thus, even the overly narrow public interpretation is deficient on its own terms. BLM should expressly consider health and climate change in the public interest as it undertakes the programmatic review, and it should reform the coal program to bring leasing decisions into alignment with these considerations.

Emissions associated with the coal leasing program impair the public interest through the health and welfare costs of air pollution and climate change. Of total nationwide emissions in 2013, 36% came from electric power generation, of which 76% was from coal combustion, of which 41% was from coal produced from federal lands.<sup>22</sup> A recent study by PSE Healthy Energy concludes that communities living near coal power plants are at higher risk of developing adverse health impacts. Emissions from coal combustion in Pennsylvania and Ohio caused more than 4,333 premature deaths nationwide in 2015 alone.<sup>23</sup> These premature deaths and illnesses

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<sup>18</sup> 43 C.F.R § 3425.1-8

<sup>19</sup> Record of Decision, Environmental Impact Statement, Belle Ayr North – WYW161248 – July 2010; Record of Decision, Environmental Impact Statement, South Hilight Field – WYW174596 – March 2011.

<sup>20</sup> Record of Decision, Environmental Impact Statement, North Porcupine LBA – WYW173408 – October 2011; Record of Decision, Environmental Impact Statement, South Porcupine LBA – WYW176095 – August 2011.

<sup>21</sup> *Id.*

<sup>22</sup> U.S. Environmental Protection Agency, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2013 (April 15, 2015).

<sup>23</sup> This figure compiles the health burdens from Ohio and Pennsylvania power plants' fine particle pollution, with 2,133 adult deaths in Ohio and 2,300 adult deaths in Pennsylvania (4,333 total) from coal and gas plants combined. Of these totals, 2,088 and 2,263, respectively, were attributable to coal power plants in each state. Krieger, E, et al.,

also generated nearly \$38 billion in health impacts.<sup>24</sup> The per-capita impacts were most concentrated in areas near to and downwind of coal power plants – areas with higher than average concentrations of minority and/or low-income residents. By failing to consider these health effects, BLM misses the opportunity to interpret the public interest in a way that serves Americans.

In addition to health effects, the federal coal program exacerbates the climate problem, which impairs the public interest. Emissions associated with the program comprise a large share of U.S. greenhouse gas emissions. The collective emissions from *existing production* under the federal coal program are responsible for 11% of American greenhouse gas emissions,<sup>25</sup> and the United States has already leased more coal than it can afford to burn in a manner that is consistent with meeting climate goals. The climate change impacts of the federal coal program disrupt ecosystems on federal lands, including national parks, monuments, and reserves, through the effects of climate change. A technical climate change report prepared for BLM identified potential climate impacts on BLM lands, which include increased risk of extreme temperatures, water scarcity and drought, and frequency of wildfires.<sup>26</sup> These risks extend beyond publicly-owned lands to encompass all areas of the United States.

The National Environmental Policy Act provides a framework for how Interior can interpret its relative contribution to climate change and the corresponding risk to the public interest through cumulative impacts.<sup>27</sup> The Council on Environmental Quality (“CEQ”) draft guidance for greenhouse gas emissions states that agencies should consider the “potential effects of a proposed action on climate change as indicated by its GHG emissions.”<sup>28</sup> The draft guidance also accounts for indirect effects of agency actions, defined as effects that are caused by the

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“The Clean Power Plan in Pennsylvania Analyzing power generation for health and equity,” June 2016. *Available at* <https://nextgenamerica.org/news-reports/our-air-pa-technical/> at viii; Krieger, E, et al., “Our Air: Healthy and Equity Impacts of Ohio’s Power Plants,” June 2016. *Available at* <https://nextgenamerica.org/news-reports/our-air-ohio/> at 6. Supplemental data specific to coal plants courtesy of the report’s author.

<sup>24</sup> *Id.*

<sup>25</sup> U.S. Environmental Protection Agency, *supra* note 7.  $(0.36) * (0.76) * (0.41) = (0.11)$

<sup>26</sup> Erica Simmons et al., Potential Climate Change Impacts and the BLM Rio Puerco Field Office's Transportation System: A Technical Report. *Available at* [ntl.bts.gov/lib/54000/54700/54763/RioPuercoClimateChange.pdf](http://ntl.bts.gov/lib/54000/54700/54763/RioPuercoClimateChange.pdf) at x-xi.

<sup>27</sup> 40 C.F.R § 1508.8 defining direct, indirect, and cumulative effects.

<sup>28</sup> Council on Envtl. Quality, Exec. Office of the President, Revised Draft Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA reviews, 79 Fed. Reg. 77,802 (Dec. 24, 2014).

action and are “later in time or farther removed in distance, but are still reasonably foreseeable.”<sup>29</sup> Up until now, BLM has inadequately evaluated the climate change impacts of its coal leasing program by failing to address indirect and cumulative impacts. The programmatic review provides an opportunity to correct this shortcoming.

Other agencies have relied on climate impact assessments when evaluating whether or not a decision is in the public interest. For example, the Department of State decision rejecting the TransCanada Keystone Pipeline (“Keystone XL”) provides additional context for construing the public interest. The determination turned on whether the project served the national interest, and the environmental impact statement for reaching this determination was conducted in a manner consistent with NEPA requirements.<sup>30</sup> The decision to reject the pipeline relied on many factors, critically including the fact that approval would undermine U.S. climate change policy:

[A] decision to approve this proposed Project would undermine U.S. objectives on climate change; it could call into question internationally the broader efforts of the United States to transition to less-polluting forms of energy and would raise doubts about the U.S. resolve to do so. In turn, this could raise questions for some countries about how aggressively they should combat climate change domestically, and potentially reduce the United States’ ability to advance climate and broader objectives with allies and other partners in various bilateral and multilateral contexts... [A] decision to deny the permit would support U.S. relationships with countries where climate issues are important and encourage actions that combat climate change and benefit the United States.<sup>31</sup>

The Record of Decision rejecting Keystone XL articulates the national and public interest in determining leases in alignment with American climate policy objectives. Interior should apply a similar approach to evaluate potential changes to the federal coal program. The national interest in a carbon budget framework is especially pronounced for the programmatic review. On the programmatic level, it is relatively straightforward to determine cumulative effects on climate change and the corresponding disruption to the global carbon budget, when compared to assessing the impacts of a single project.

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<sup>29</sup> *Id.*

<sup>30</sup> Department of State, Record of Decision and National Interest Determination: TransCanada Keystone Pipeline, L.P. Application for Presidential Permit. *Available at* <https://keystonepipeline-xl.state.gov/nid/249254.htm>

<sup>31</sup> *Id.*

When the President established a climate test for determining whether to approve the Keystone XL pipeline, he examined whether the infrastructure would significantly exacerbate the climate problem.<sup>32</sup> The same test applies to the federal coal program: if any reforms are inconsistent with the global climate budget, then the federal coal leasing program does not pass the climate test.

*ii. The application of a carbon budget is consistent with the Federal Land and Policy Management Act's Multiple Use management principle*

In order to truly manage the full portfolio of lands under federal supervision for multiple uses in the public interest, BLM should reform the federal coal program to align with federal climate commitments and the global carbon budget. BLM manages federal lands under the Federal Land Policy and Management Act (“FLPMA”) of 1976. This Act requires federal lands to be managed on the basis of multiple use in a combination “that will best meet the present and future needs of the American people.”<sup>33</sup> The multiple use definition also articulates that BLM should manage federal lands to account for “the long-term needs of future generations for renewable and non-renewable resources, including, but not limited to, recreation . . . natural scenic, scientific, and historical values.”<sup>34</sup> BLM’s interpretation of the multiple-use mandate through the federal coal program has historically been narrowly tailored around maximizing coal recovery through lease by application, which nominally aligns with the multiple use mandate because other federal lands are set aside for other uses such as recreation or conservation.

However, truly modernizing the federal coal program requires an integrated understanding of how coal leasing activities materially impede agencies from pursuing other important uses. Even if lands are set aside for coal versus recreational uses, a coal program that allows for levels of leasing and development that risk stranding assets or exceeding the carbon budget impairs other uses because it (1) ties up land in stranded assets and unnecessary mines and (2) relies on a climate inconsistent objective, that undermines other lands’ ability to provide

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<sup>32</sup> Remarks by the President on Climate Change, Georgetown University, Washington, D.C., June 25, 2013. Available at [www.whitehouse.gov/the-pressoffice/2013/06/25/remarks-president-climate-change](http://www.whitehouse.gov/the-pressoffice/2013/06/25/remarks-president-climate-change)

<sup>33</sup> 43 U.S.C. § 1702

<sup>34</sup> *Id.*

recreational, aesthetic, conservation, and sustainable natural resource functions, as well as other vital ecosystem services.

iii. *The Energy Policy Act enables Interior to account for coal reserves in alignment with climate objectives*

The third statute enabling Interior to apply a carbon budget to its programmatic review is the Energy Policy Act of 2005, which establishes a basis for BLM to account for coal reserves in alignment with climate objectives.<sup>35</sup> The Act requires the Secretary of the Interior to “review coal assessments and other available data to identify... *the extent and nature of any restrictions on the development of coal resources on Federal lands*” (emphasis added).<sup>36</sup> Given the Carbon Tracker conclusion that BLM has leased more coal than it can afford to burn in a carbon consistent scenario, the large volume of non-combustible reserves should factor into Interior’s review of restrictions on coal resources. This mandate is also relevant for the U.S. Geological Survey, which is in the process of developing a national inventory of carbon in federal lands. As part of its inventory, the USGS “will establish a baseline and public database that accounts for carbon emitted from fossil fuels produced on public lands.”<sup>37</sup>

The USGS accounting methodology and BLM’s interpretation of the USGS data should be set against a clear carbon constraint of the maximum CO<sub>2</sub> emissions level that is consistent with a 2°C warming scenario. The agency should only grant new leases if the combustion of coal from all leases (in combination with the combustion of coal from existing leases) would not emit CO<sub>2</sub> above the sector’s carbon budget.

**B. Executive and agency actions provide a basis for agencies to address carbon constraints**

Executive and agency actions provide a basis for BLM to limit coal production from federal leases based on climate objectives. Executive Order 13653 directs agencies to “identify

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<sup>35</sup> U.S. Department of the Interior, Question and Answer, Department of the Interior Federal Coal Reforms, Available at [www.blm.gov/style/medialib/blm/wo/Communications\\_Directorate/public\\_affairs/news\\_release\\_attachments.Par.98291.File.dat/Questions%20and%20Answers%20Coal.pdf](http://www.blm.gov/style/medialib/blm/wo/Communications_Directorate/public_affairs/news_release_attachments.Par.98291.File.dat/Questions%20and%20Answers%20Coal.pdf)

<sup>36</sup> 42 U.S.C § 15991

<sup>37</sup> *Supra*, note 35.

opportunities to support and encourage smarter, more climate-resilient investments by States . . . including by providing incentives through agency guidance.”<sup>38</sup> Executive Order 13693 also directs agencies to improve their environmental performance and pursue renewable or alternative energy solutions. President Obama’s Climate Action Plan establishes a suite of obligations using executive power to address climate change, affirming the strong policy direction to act on climate.<sup>39</sup>

In addition to these executive actions, the Clean Power Plan establishes obligations to reduce greenhouse gas emissions from power plants. The Plan is the first federal policy to limit carbon pollution from the power sector, cutting emissions by 30% from 2005 levels by 2030. The EIA projects that fully implementing the CPP will reduce coal’s share of the generation mix to 21% in 2030 (down from 50% in 2005 and 33% in 2015).<sup>40</sup> The Clean Power Plan establishes a clear mandate for states to develop a comprehensive framework for climate action that will cut CO<sub>2</sub> emissions from the electricity sector. The federal coal program is currently inconsistent with the policy vision established by the Clean Power Plan, envisioning a perpetual continuation of coal production from federal lands, and a constant stream of revenues and royalties associated with this mining to fund reclamation and offset other costs associated with coal production and combustion.

Leasing programs should recognize the permanent downward trend in the coal market and the likelihood that coal’s share will continue to shrink as the U.S. and the rest of the world pursue climate goals. This decline may outpace the reductions envisioned in the Clean Power Plan as domestic and international climate action accelerates, and as the costs of renewable energy continue to decline. Ultimately, coal production must virtually come to an end altogether if we are to have any hope of maintaining a relatively stable climate.<sup>41</sup> The date for the eventual

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<sup>38</sup> Exec. Order No. 13653, Preparing the United States for the Impacts of Climate Change, 78 Fed. Reg. (Nov. 1 2013).

<sup>39</sup> See White House Executive Office of the President, ‘The President’s Climate Action Plan’ (2013). *Available at* <https://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf> accessed 13 June 2016.

<sup>40</sup> U.S. Energy Information Administration, Annual Energy Outlook 2016 Early Release: Annotated Summary of Two Cases, May 2016. *Available at* [http://www.eia.gov/forecasts/aeo/er/pdf/0383er\(2016\).pdf](http://www.eia.gov/forecasts/aeo/er/pdf/0383er(2016).pdf)

<sup>41</sup>In 2015, the United States added more wind (8.6GW) and solar (7.3GW) capacity than natural gas (6GW). Already competitive with fossil fuel generation, additional cost declines in renewable energy demonstrate why these technologies are a more effective tool for carbon pollution mitigation. Bloomberg New Energy Finance, "Sustainable Energy in America: Factbook." February 2016. *Available at* [www.bcse.org/wp-content/uploads/BCSE-2016-Sustainable-Energy-in-America-Factbook\\_Executive-Summary.pdf](http://www.bcse.org/wp-content/uploads/BCSE-2016-Sustainable-Energy-in-America-Factbook_Executive-Summary.pdf)

end of the coal program is within sight, potentially within 20 years, and almost certainly by no later than 2050. This necessary phase-down should be a prominent consideration as Interior undertakes this programmatic review, in order to ensure both climate consistency and an orderly transition to a post-coal economy nationally and in areas currently dependent on coal mining for vital revenue streams.

The statutes, policies, and executive actions discussed in this comment represent strong policy momentum on climate change. Interior acts as both the asset owner and regulator of coal reserves and therefore has both capacious authority and responsibility to administer these lands responsibly and in alignment with these policy actions. The agency should use this capacious authority to implement a forward-looking program that truly balances multiple uses and the public interest in reforming the program to better align with other executive branch climate policy directives.

**C. Federal and international climate policy encourages agency actions to align with carbon constraints**

*i. U.S. commitments to the Paris Agreement rely on agencies to operate under carbon constraints*

The U.S. has articulated a formal commitment to the international community to reduce its greenhouse gas emissions to fight climate change. Interior should not pursue a coal program that impairs the ability for the U.S. to honor its international promise.

On March 31, 2015, the U.S. submitted its Intended Nationally Determined Contribution (INDC) to the United Nations Framework Convention on Climate Change. The INDC articulates a national target of reducing greenhouse gas emissions by 26%-28% below the 2005 level in 2025 while making “best efforts” to reduce emissions by the upper-target of 28%.<sup>42</sup> As part of this target, the U.S. INDC explicitly accounts for the land sector, stating that the United States will “include all categories of emissions by sources and removals by sinks, and all pools and gases, as reported in the Inventory of the United States Greenhouse Gas Emissions and Sinks; to

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<sup>42</sup> United States Intended Nationally Determined Contribution, March 31, 2015. Available at [http://www4.unfccc.int/submissions/indc/Submission percent20Pages/submissions.aspx](http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx).

account for the land sector using a net-net approach.”<sup>43</sup> This means that the United States commits to accounting for carbon emissions beyond the smokestack and tailpipe. We are committed to accounting for and planning around a comprehensive picture of our carbon profile, including our fuel stocks and our policies that affect how those stocks are deployed – whether they are sold off to be burned at taxpayer expense, or maintained as a permanent reserve stock of sequestered potential carbon pollution.

Article 4.19 of the Paris agreement provides a policy basis for why BLM should account for coal resources in federal lands in alignment with climate objectives, stating that *all Parties* should “strive to formulate and communicate long-term low greenhouse gas emission development strategies, . . . taking into account their common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.”<sup>44</sup>

Article 4.2 of the Paris Agreement establishes the requirement for countries to contribute domestic mitigation measures. Article 4.2 states that “Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such [Nationally Determined Contributions].”<sup>45</sup> The U.S. INDC to the Paris Agreement reflects the national ambition to address climate change. When combined with the commitments from 187 other countries, the U.S. INDC aims to serve the Paris Agreement objective of limiting the global average temperature to well below 2°C above pre-industrial levels.<sup>46</sup> Interior should reform its coal program in a way that is consistent with our nation’s commitment to the international community. This conclusion is also affirmed by 67 climate scientists who wrote to Interior to express their support for ending coal leasing on public lands, stating, “The science is clear: to satisfy our commitment under the Paris Agreement to hold global temperature increase well below 2°C, the United States must keep the vast majority of its coal in the ground.”<sup>47</sup>

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<sup>43</sup> *Id.*

<sup>44</sup> Paris Agreement, *supra* note 9.

<sup>45</sup> *Id.*

<sup>46</sup> *Id.*

<sup>47</sup> Ken Caldeira et al., Re: Scientists Support Ending Coal Leasing on Public Lands to Protect the Climate, Public Health, and Biodiversity, July 27. Available at [http://www.biologicaldiversity.org/programs/public\\_lands/energy/dirty\\_energy\\_development/coal/pdfs/16\\_7\\_26\\_Scientist\\_sign-on\\_letter\\_Coal\\_PEIS.pdf](http://www.biologicaldiversity.org/programs/public_lands/energy/dirty_energy_development/coal/pdfs/16_7_26_Scientist_sign-on_letter_Coal_PEIS.pdf)

- ii. *The North American Climate, Clean Energy, and Environment Partnership Action Plan requires agencies to operate under a carbon constraint*

On June 29, President Obama jointly announced the North American Climate, Clean Energy, and Environment Partnership Action Plan (“North American Climate Plan”) with Mexican President Enrique Peña Nieto and Canadian Prime Minister Justin Trudeau. The North American Climate Plan establishes a goal of 50% clean electricity generation by 2025 in North America.<sup>48</sup> More broadly the plan also calls for the United States, Mexico, and Canada to advance clean energy development.<sup>49</sup> The credibility of the North American Climate Plan relies on actions from each country to do its share to accomplish the clean electricity generation goal.<sup>50</sup> Decisions made to reform the federal coal program will have lasting impacts on the ability of the three countries to achieve this objective.

The Clean Power Plan, the U.S. commitment to the UNFCCC, and the North American Climate Plan illustrate the policy significance of addressing climate change. Agencies should not advance policies or programs that impair the United States’ ability to meet its climate goals, and Interior should restructure the federal coal program in a way that aligns with these policy objectives.

### **III. INTERIOR SHOULD APPLY CARBON BUDGET CONSTRAINTS TO ITS PROGRAMMATIC REVIEW OF THE FEDERAL COAL PROGRAM**

#### **A. Failure to Adequately Assess Climate Impacts When Evaluating Decision Alternatives in the Programmatic Review May Violate NEPA Requirements**

Interior will conduct its Programmatic Environmental Impact Statement pursuant to the National Environmental Policy Act as amended (42 U.S.C § 4321, *et seq.*) and the Council on Environmental Quality (“CEQ”) Regulations for Implementing the Procedural Provisions of NEPA (40 C.F.R § 1500-1508). Crucial to the NEPA process is identifying and comparing credible decision alternatives for a proposed action, which the CEQ describes as the “heart of the

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<sup>48</sup> White House, North American Leaders Summit, May 2016. *Available at* <https://www.whitehouse.gov/blog/2016/06/29/president-obama-goes-canada-north-america-leaders-summit>

<sup>49</sup> White House, North American Climate Clean Energy and Partnership Action, May 2016. *Available at* <https://www.whitehouse.gov/the-press-office/2016/06/29/north-american-climate-clean-energy-and-environment-partnership-action>

<sup>50</sup> *Id.*

environmental impact statement.”<sup>51</sup> CEQ regulations for implementing NEPA require that agencies “rigorously explore and objectively evaluate all reasonable alternatives.”<sup>52</sup> The purpose of the Programmatic EIS as laid out by Secretary Jewell in her Secretarial Order, is to “determine whether and how the current system for developing federal coal should be modernized.”<sup>53</sup> The Review is broad in nature, ultimately deciding “where, when, and under what terms and conditions, mineral development should occur, including with regard to the issuance of federal coal leases.”<sup>54</sup>

Climate consistency must be a criterion for deciding whether to include – and then ultimately in evaluating whether to support – a decision alternative under the PEIS. Climate consistency is a key criterion because of the significant and cumulative nature of the program’s environmental effects. The CEQ draft guidance provides a framework how Interior should consider the effects of its decisions on climate change.<sup>55</sup> This draft guidance states, “Federal agencies, to remain consistent with NEPA, should consider the extent to which a proposed action and its reasonable alternatives contribute to climate change through GHG emissions.”<sup>56</sup> Agencies that fail to effectively compare decision alternatives are increasingly at risk of facing legal challenge. In a review of NEPA alternative analysis case law, Michael Smith identifies that the “most common challenge [to alternative analyses] was that federal agencies had not included a full reasonable range of alternatives.”<sup>57</sup>

Multiple cases have been brought against agencies for failing to address appropriate NEPA alternatives. In *Natural Resources Defense Council v. U.S. Forest Service*, the Forest Service Environmental Impact Statement was ruled inadequate for failing to consider the full range of decision alternatives, specifically an analysis of cumulative impacts.<sup>58</sup> The court stated

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<sup>51</sup> 40 C.F.R § 1502.14 – Alternatives including the proposed action.

<sup>52</sup> *Id.*

<sup>53</sup> Secretarial Order No. 3338, *supra* note 1 at 1.

<sup>54</sup> United States Department of the Interior, Planning for Fluid Mineral Resources. Available at [http://www.blm.gov/style/medialib/blm/wo/Information\\_Resources\\_Management/policy/blm\\_handbook.Par.59010.File.dat/H\\_1624\\_1.pdf](http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.59010.File.dat/H_1624_1.pdf)

<sup>55</sup> Revised Draft Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews, 79 Fed. Reg. 77,802 (Dec. 24, 2014).

<sup>56</sup> *Id.* at 8.

<sup>57</sup> Michael D. Smith, A review of recent NEPA alternatives analysis case law, Environmental Impact Assessment Review 27.2 (2007): 126-144, at 126 and 134.

<sup>58</sup> Nat. Res. Def. Council v. U.S. Forest Serv., 421 F.3d 797, 814 (9th Cir. 2005).

that an EIS “must include a ‘useful analysis of the cumulative impacts of past, present and future projects’ in sufficient detail to be ‘useful to the decisionmaker in deciding whether, or how, to alter the program to lessen cumulative impacts.’”<sup>59</sup> Interior needs to determine the cumulative effect of the coal leasing program, including both existing and expected future leases, on domestic carbon emissions. The best way to evaluate these impacts is in the context of an overall carbon budget for the program. The cumulative impacts assessment should also consider how the program impedes the development of low-carbon energy pathways for countries receiving exported PRB coal.

In *WildEarth Guardians v. United States Office of Surface Mining Reclamation and Enforcement*, plaintiffs successfully alleged that OSM violated NEPA by failing to consider indirect effects of mining planning modifications.<sup>60</sup> According to NEPA, indirect effects are those “caused by the action and are later in time or rather removed in distance . . . but are still reasonably foreseeable.”<sup>61</sup> These indirect effects must also be accounted for in the analysis of cumulative impacts. In *WildEarth Guardians*, the court found that “the interdependence between the mines and [power plants] effectively guarantees the foreseeability of combustion-related effects.” The court therefore approved a remedy requiring OSMRE to conduct a new NEPA analysis.<sup>62</sup>

#### **B. Interior should select decision alternatives and assessment criteria for climate consistency**

Interior should evaluate decision alternatives in a manner that reasonably examines a range of climate-consistent scenarios, and should reject alternatives that assume or result in projected carbon emissions above the level set in the carbon budget. Pursuant to the National Environmental Policy Act, environmental impact statements should “include the environmental impacts of the alternatives including the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented . . . and any irreversible or

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<sup>59</sup> *Id.* (quoting *Carmel-by-the-Sea*, 123 F.3d at 1160).

<sup>60</sup> *WildEarth Guardians v. United States Office of Surface Mining, Reclamation & Enft*, 104 F. Supp. 3d 1208, 1229 (D. Colo. 2015)

<sup>61</sup> 40 C.F.R § 1508.8(b).

<sup>62</sup> *WildEarth Guardians v. United States Office of Surface Mining, Reclamation & Enft*, 104 F. Supp. 3d 1208, 1230 (D. Colo. 2015).

irretrievable commitments of resources which would be involved in the proposal should it be implemented.”<sup>63</sup> Critically, this evaluation of environmental effects includes the question of whether a given action exceeds the limited available carbon budget for the Powder River Basin. Interior should evaluate climate consistency under the three 450 Scenarios discussed in Part I: climate consistency with CCS deployment in 2020, climate consistency with widespread CCS deployment in 2030, and climate consistency with no CCS deployment through 2040, in addition to any other climate-consistent scenarios.

When reviewing the scope of the modernized coal leasing program, Interior should prioritize decision alternatives that include policies that are likely to result in a coal program that is consistent with a carbon constrained world. Alternatives that maintain the status quo or that do not envision an eventual end to the production and sale of coal from federal lands implicitly assume that carbon pollution will continue unabated, that we will never take meaningful action in this country to attempt to combat global warming, and that the market trend already producing major declines in coal production will somehow vanish or even reverse. These assumptions would be irrational, arbitrary, and contrary to both the seriousness of our country’s commitments to international partners, and to the weight of evidence that the coal industry is in permanent structural decline.

This carbon budget criterion is not prescriptive of the decision alternatives or of potential reforms that may inform those alternatives, although it is likely that alternatives that continue to issue new leases without removing substantial portions of existing leases from eligibility for continued or eventual development would result in exceeding the carbon budget. Rather, the carbon budget framework provides a screening tool to test alternatives for climate compatibility, which has otherwise not been considered by the federal coal program.

Interior should investigate decision alternatives that address carbon constraints in a variety of ways: the addition of a carbon adder, changes to royalty and reclamation requirements, or ending leasing by nomination. In addition to the no action reference scenario, this Comment recommends that Interior reject decision alternatives that do not comport with the restrictions of a carbon budget. If a given decision exceeds the 2°C target threshold, then Interior should reject

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<sup>63</sup> 40 C.F.R § 1502.16 – environmental consequences.

the decision alternative, and ultimately select an alternative that most closely approximates consistency with the carbon budget and the eventual end of the federal coal program.

***Alternative A: No Action (Continue Lease-By-Application Process Currently Administered by BLM)***

Alternative A is the No Action Alternative under which the BLM continues its lease-by-application program. Secretary Jewell has already acknowledged public concerns with the current program, including concerns about global climate change and the impact of coal production and use. The reasonably foreseeable development can be calculated from this no action alternative, which represents developments that would occur over the life of the plan.<sup>64</sup> Emissions associated with business-as-usual have been compiled by Carbon Tracker, in their analysis of the 2016 Annual Energy Outlook. Under the 2016 Reference Case, annual demand in the Powder River Basin declines to 227 Mt in 2040, and the compounded annual growth rate is -1.7%. This case exceeds the PRB carbon budget.

	<i>Annual Demand (Mt)</i>				<i>CAGRs (%)</i>			
	<b>2015</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2015-20</b>	<b>2020-30</b>	<b>2030-40</b>	<b>2015-40</b>
<i>AEO 2016 Reference Supply</i>	350	339	285	227	-0.6%	-1.7%	-2.2%	-1.7%

Source: Modified Table from Carbon Tracker Report (Referencing IEA, EIA, CTI analysis 2016)

Although the no action alternative is customary in an Environmental Impact Statement, the option is climate-inconsistent and in tension with U.S. law and policy, and it should therefore be rejected.

***Alternative B: Proposed Action (Preferred Alternative) Permanently Extending Lease Moratorium***

<sup>64</sup> Bureau of Land Management, BLM Handbook, at III-7. Available at [http://www.blm.gov/style/medialib/blm/wo/Information\\_Resources\\_Management/policy/blm\\_handbook.Par.59010.File.dat/H\\_1624\\_1.pdf](http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.59010.File.dat/H_1624_1.pdf)

Under this alternative BLM would permanently implement the coal leasing moratorium, allowing all existing leases to naturally sunset without extension. Under this alternative, assuming deployment from CCS, as noted by Carbon Tracker, “the potential production from existing leases is sufficient to meet projected demand in every year through 2040.”<sup>65</sup> In this scenario, the number of leases are sufficient to meet demand for a range of plausible and high levels of CCS deployment: 450 with CCS deployment in 2020, 450 with widespread CCS deployment in 2030, and 450 with no CCS deployment through 2040.<sup>66</sup>

### ***Alternative C and D: Social Cost of Carbon and Royalty Rate Increases***

This alternative would internalize the cost of carbon based on federal social cost of carbon estimates reflecting the “worldwide incremental damage from climatic change brought about by an additional metric ton of CO<sub>2</sub> emissions.”<sup>67</sup> This price is sensitive to discount rates. A midrange price for the year 2020 is \$46 per ton of CO<sub>2</sub>.<sup>68</sup> Similarly, BLM may consider royalty rates as a means to reform the federal coal program. Increased royalty rates can also include royalty carbon adders, which “directly incorporates a carbon price into the royalty paid on federal coal sales, reflecting its climate costs.”<sup>69</sup> Interior should analyze these decision alternatives and compare them against the criterion of budget compatibility – whether the reformed alternatives are consistent with federal climate change targets, as illustrated by the 450 Scenario.

These decision alternatives can be approached as policy options that may act separately or together to produce a climate-consistent coal program. Whatever policy Interior selects for the modernized coal program, the policy decision must be rigorously modeled to ensure that the cumulative impact remains below the Powder River Basin carbon budget.

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<sup>65</sup> Carbon Tracker Report, *supra* note 3 at 12.

<sup>66</sup> Resources for the Future, “Putting a Carbon Charge on Federal Coal: Legal and Economic Issues.” Available at <http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-15-13.pdf>; Carbon Tracker Report, *supra* note 3 at 10.

<sup>67</sup> *Id.* at 29.

<sup>68</sup> Alan Krupnick et al., Putting a Carbon Charge on Federal Coal: Legal and Economic Issues, Resources for the Future Discussion Paper at 10574; See U.S. GAO, GAO-14-663, Regulatory Impact Analysis: Development of Social Cost of Carbon Estimates (July 2014).

<sup>69</sup> Spencer Reed and James H. Stock., Federal Coal Leasing Reform Options: Effects on CO<sub>2</sub> Emissions and Energy Markets – Executive Summary, February 2016 at 2-3.

## CONCLUSION

More recoverable coal is currently under lease than may safely be developed in light of the imminent threat of dangerous climate change. NextGen Climate America urges Interior to modernize the federal coal program in a manner that aligns with constraints imposed by climate change. Specifically, Interior should reject any decision alternatives under the programmatic review that imply a level of coal production that is inconsistent with a scientifically sound carbon budget to limit global warming to well below 2°C. Interior has capacious legal authority to align the federal coal program with U.S. commitments on climate change. Above all, the agency has a strong moral obligation to steward its resources in a manner that does not worsen the consequences of climate change, and undermine the collective effort to safeguard the climate for future generations.