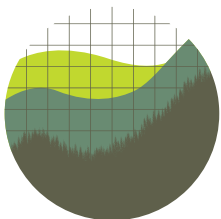




Priorities for Federal Coal Reform

Twelve Policy and Procedural Goals for the Programmatic Review



Institute for
Policy Integrity

NEW YORK UNIVERSITY SCHOOL OF LAW

June 2016
Jayni Foley Hein

Copyright © 2016 by the Institute for Policy Integrity.
All rights reserved.

Institute for Policy Integrity
New York University School of Law
Wilf Hall, 139 MacDougal Street
New York, New York 10012

Jayni Foley Hein is the policy director at the Institute for Policy Integrity at NYU School of Law. This report does not necessarily reflect the views of NYU School of Law, if any. The author wishes to thank Richard Revesz and Peter Howard for their useful comments, and Sara Savarani and Marissa Prieto for skillful research assistance.

Executive Summary

“Rather than subsidize the past, we should invest in the future—especially in communities that rely on fossil fuels. That’s why I’m going to push to change the way we manage our oil and coal resources, so that they better reflect the costs they impose on taxpayers and our planet.”

– President Barack Obama, State of the Union Address (January 12, 2016)

On January 15, 2016, the Department of the Interior (Interior) announced that it would begin a comprehensive review to identify and evaluate potential reforms to the federal coal program. This review will be conducted as a Programmatic Environmental Impact Statement (Programmatic EIS) that will analyze issues including “how, when, and where to lease; how to account for the environmental and public health impacts of federal coal production; and how to ensure American taxpayers are earning a fair return for the use of their public resources.”¹ Two primary purposes of the review are to evaluate the coal program’s overall return to taxpayers, and to assess the climate change impacts of coal production on federal lands.

The programmatic review presents a critical opportunity to set policy priorities for the future of federal coal. This review has the potential to deliver significant economic and environmental benefits for decades to come, as market conditions, energy infrastructure, scientific understanding, and national priorities have changed considerably since the coal program was last comprehensively reviewed in 1986. Interior is statutorily required to receive “fair market value” for taxpayers when it allows leaseholders to extract valuable natural resources from public lands. Interior must also harmonize energy production with environmental preservation, and protect at least some public lands in their natural condition for future generations.

This report highlights twelve policy and procedural recommendations for the review of the federal coal program. The Programmatic EIS, conducted pursuant to the National Environmental Policy Act (NEPA), must be prepared carefully, transparently, and by using the best economic and modeling tools available. The analysis should provide accurate

Photo © Brian Samson



Coal-burning power plant in Springerville, Arizona.

information on how different royalty rates and coal production scenarios would affect greenhouse gas emissions, revenue, jobs, and energy markets—particularly substitution among energy resources. Interior should pay particular attention to policy changes that it can implement now, without the need for new legislation, in order to secure a more fair return and manage federal energy production to meet 21st Century needs.

In order to modernize the federal coal program, Interior should:

1. Define “fair market value” to mean “net social value,” in order to account for the environmental and social costs of coal production and increase the net return to taxpayers;
2. Prepare a strategic plan for managing the coal program and commit to regular programmatic environmental reviews;
3. Prioritize renewable energy production on federal lands, including on abandoned and reclaimed coal mine lands;
4. Propose a broad range of alternatives for consideration in the Programmatic EIS;
5. Calculate the upstream and downstream greenhouse gas emissions of selected alternatives in this Programmatic EIS and in future project-level reviews;
6. Use the Social Cost of Carbon and Social Cost of Methane to quantify the climate impacts of proposed and alternate leasing scenarios;
7. Evaluate whether the current coal program earns “fair market value” for taxpayers, by conducting a cost-benefit analysis of the current program;
8. Identify optimal fiscal terms for new and modified coal leases by analyzing Social Cost of Carbon and Social Cost of Methane royalty “adders,” among other potential reforms;
9. Analyze viable alternatives that would reconcile the United States’ climate goals with management of coal production on public lands;
10. For each alternative scenario, model its climate impact and effect on coal prices, royalty payments, and energy markets, using sophisticated models that account for substitution effects;
11. Take steps to curb royalty rate reductions, which impair a fair return to taxpayers; and
12. Evaluate bidding and eligibility reforms that can help secure fair market value and reduce risks to taxpayers.

Ideally, this process should lead to a more transparent and rational federal coal program that maximizes social welfare. While the process of preparing the Programmatic EIS is complex, this review has the potential to pay significant dividends to the American public for decades to come, by identifying opportunities to increase revenue, reduce greenhouse gas emissions, and align federal land management with U.S. climate change goals.

Policy and Procedural Goals for the Federal Coal Programmatic Review

These twelve recommendations for the federal coal Programmatic EIS identify opportunities for Interior to better manage the federal coal program, in line with its statutory mandates. The goal of these recommendations is to help Interior run a more strategic and transparent program and to secure maximum net benefits for American taxpayers.

1. Interior Should Define “Fair Market Value” to Mean “Net Social Value,” to Account for the Environmental and Social Costs of Coal Production.

As stated in Secretarial Order 3338, two of the primary goals of the Programmatic EIS are to examine whether the federal coal program “successfully secur[es] a fair return for the American public,” and whether the program “adequately accounts for externalities related to Federal coal production, including environmental and social impacts.”² As a threshold issue, Interior should clarify how it defines “fair market value,” by examining its statutory mandates, legislative history, and modern knowledge of the social and environmental costs of coal production. Consistent with its role as steward of public lands for multiple generations, as well as best practices for agency decision making, Interior should define “fair market value” as “net social value,” as opposed to solely the market value of coal. This definition also accords with President Obama’s call to “change the way we manage our oil and coal resources, so that they better reflect the costs they impose on taxpayers and our planet.”

The Federal Land Policy and Management Act requires that the United States “receive fair market value of the use of the public lands and their resources unless otherwise provided for by statute.”³ The Federal Coal Leasing Amendments Act of 1976 likewise specifies that no bid may be accepted which is less than “the fair market value, as determined by the Secretary, of the coal subject to the lease.”⁴ The term “fair market value” is not defined in either statute. In 1982—the last time that Interior convened a working group to comprehensively review its fair market value procedures—the task force determined that “fair market value” was not merely the value of the resource discovered or produced, but the value of “the right” to explore and, if there is a discovery, to develop and produce the energy resource.⁵ Indeed, the Federal Land Policy and Management Act refers to the value of using the lands, and not solely to the value of the resources.

The Mineral Leasing Act of 1920 does not contain an explicit “fair market value” requirement. However, it states that the Secretary of the Interior can include coal, oil, or natural gas lease terms that she or he deems necessary “to insure the sale of the production of such leased lands to the United States and to the public at reasonable prices, *for the protection of the interests of the United States*, for the prevention of monopoly, and for the *safeguarding of the public welfare*.”⁶

This fair market value requirement should also be interpreted in light of the Federal Land Policy and Management Act’s statutory mandate for Interior to harmonize energy production with conservation,⁷ and to protect public lands for the benefit of future generations.⁸ A robust definition of “fair market value” that maximizes social welfare should account for the market price of the coal resource as well as the social and environmental cost of mining—the cost to American taxpayers of mining on public lands due to non-internalized externalities (costs borne by the public at large, not by the responsible party or polluter).⁹

Failure to account for the externality cost of coal production amounts to a subsidy for coal producers, as the public bears the burden of mitigation and adapting to such costs, including greenhouse gas emissions—the effects of which will continue to be felt decades from now. In other words, failure to account for the environmental costs of coal production prioritizes short-term coal company profits over long-term taxpayer welfare.¹⁰ Fortunately, this oversight can be corrected by using modern economic tools like the Interagency Working Group’s Social Cost of Carbon and Social Cost of Methane, which quantify the economic damages associated with a small increase in emissions, conventionally one metric ton, in a given year.¹¹

Interior should clarify that “fair market value” for coal and other natural resources should be defined with respect to net social value (or net benefits). Fair market value, then, can be measured by weighing the benefits and costs of coal leasing and production, and analyzing the net return to taxpayers. In order to provide fair market value, at minimum, federal coal leasing should provide net benefits to taxpayers. And ideally, leasing decisions should be calibrated to maximize net benefits.

This definition of “fair market value” accords with the concept of “net social value,” which is used by Interior’s Bureau of Ocean Energy Management (BOEM) to balance economic, environmental, and social values when managing offshore oil and gas leasing, as required pursuant to Section 18(a)(1) of the Outer Continental Shelf Leasing Act (OCSLA).¹² The D.C. Circuit Court of Appeal has upheld BOEM’s methodology for calculating net social value, which uses a cost-benefit analysis that begins by calculating of each planning area’s “net economic value” (the market value of expected resources less the cost of production and transportation) minus environmental and social costs.¹³ BOEM then compares the net benefits of producing oil and gas from the program areas to the net benefits of the “no leasing” alternative to calculate the incremental net benefits of including each area in the program.¹⁴

Interior should review its “fair market value” procedures and issue guidance in line with a “net social value” definition. “Fair market value” requires analysis of all of the quantifiable costs and benefits of coal production; not solely the market price of the coal resource. In addition, through the PEIS, Interior should explore how to account for the social and environmental costs of coal production through adjustments to federal lease fiscal terms, such as royalty rates. Several of these potential reforms are discussed below. Implementing such reforms would likely have the effect of reducing production on more marginal tracts, where the cost of production outweighs the benefits.

This social welfare-maximizing framework is also consistent with executive orders for agency decision-making. For important regulatory actions, Executive Order 12,866 requires agencies to conduct a benefit-cost analysis that includes the benefits and costs anticipated from the action, including “the protection of the natural environment,” on the benefit side of the ledger and any adverse effects on “health, safety, and the natural environment,” on the cost side.¹⁵ The White House Office of Management and Budget (OMB) Circular A-4 also provides best practices for agencies conducting cost-benefit analysis, including comprehensive analysis and monetization to the fullest extent possible.¹⁶ Executive Orders 13,563 and 12,866, OMB Circular A-4, and EPA’s guidelines for economic analysis each indicate that, where all benefits and costs can be quantified and expressed in monetary units, cost-benefit analysis provides decision makers with a clear indication of the most efficient alternative, that is, the alternative that generates the largest net benefits to society.¹⁷ While most commonly applied to regulatory impact analysis, the principles that inform executive level review provide a set of best-practices that should inform natural resources leasing and extraction decisions.¹⁸

Moreover, there is a strong argument based on the legislative history of the Federal Land Policy and Management Act and Federal Coal Leasing Amendments Act that defining “fair market value” from a social welfare maximizing perspective—

and accounting for the cost of environmental and social externalities to justify a royalty rate increase—falls squarely within Interior’s discretion. In 1970, the congressionally-established, bipartisan Public Land Law Review Commission recommended that all federal lands be retained in federal ownership unless disposal to private parties would achieve a greater benefit and provide equitable compensation if the use is interrupted. In establishing guidelines for public land management, the Commission stated, “[t]he end result, of course, is to achieve the maximum benefit for the general public”¹⁹ Congressional testimony leading up to the passage of the Federal Land Policy and Management Act reveals support for revenue sharing provisions that would direct a portion of the revenue from fossil fuel production to the states where the production occurs in order to “help county government[s] cope with energy development impact problems.”²⁰

In addition, the legislative history of the Federal Coal Leasing Amendments Act of 1976 reflects a concern that states be paid a greater share of federal coal royalties to account for social and environmental externalities.²¹ The Act increased the state share of revenue from federal coal royalties, provided that the state share of revenue be used by “giving priority to those subdivisions of the State socially or economically impacted by development of minerals leased under this Act, for (i) planning, (ii) construction and maintenance of public facilities, and (iii) provision of public service”²² Thus, the Act directly links receipt of production revenues to compensation for the social and environmental costs of mineral production.

Furthermore, coastal states and their congressional representatives have repeatedly advocated for a greater share of offshore oil and natural gas revenue, due to significant impacts on coastal infrastructure and the environment.²³ According to coastal producing states, these revenues are needed to mitigate environmental impacts and to maintain the necessary support structure for the offshore oil and gas industry.²⁴ Moreover, the Gulf of Mexico Energy Security Act of 2006 directs coastal states to use their share of royalty payments from offshore drilling for “the purposes of coastal protection, including conservation, coastal restoration, hurricane protection, and infrastructure directly affected by coastal wetland losses,” and “[m]itigation of damage to fish, wildlife, or natural resources,” among other delineated uses.²⁵

In sum, Interior should clarify that “fair market value” for the lease and production of federal coal should be defined with respect to net social value. Fair market value can be measured in this PEIS and in future leasing decisions by weighing the benefits and costs of coal leasing and production, and analyzing the net return to taxpayers. These recommendations are explored in more detail below.

2. Interior Should Prepare a Strategic Plan for the Coal Program and Commit to Regular Programmatic Reviews.

The federal coal PEIS seeks to examine “whether the currently regulatory framework should be changed to provide a better mechanism or mechanisms to decide which coal resources should be made available and how the leasing process should work.”²⁶ Due to persistent problems with uncompetitive leasing, Interior should prepare a strategic plan for the federal coal program that allows it to exert more control over how, when, and where federal coal leasing occurs. In addition, it should set a schedule for conducting regular programmatic review of the coal program.

The Mineral Leasing Act of 1920 and Federal Coal Leasing Amendments Act of 1976 require that federal coal leases be offered competitively.²⁷ The Federal Coal Leasing Amendments Act also modified the Mineral Leasing Act to clarify that Interior is authorized to “divide any lands subject to this Act which have been classified for coal leasing into leasing tracts of such size as he finds appropriate and *in the public interest*.”²⁸ But for decades, the Bureau of Land Management

(BLM) has run a noncompetitive program that effectively cedes control to coal companies over where and when to lease. Moreover, Interior does not conduct a regular programmatic review of the coal program. The result is a non-competitive program that does not adequately serve the public interest.

In 2013, the U.S. Government Accountability Office found that approximately 90 percent of all federal coal lease sales since 1990 attracted only one bidder.²⁹ From 1990 to 2012, 96 coal tracts were leased with only a single bidder; 10 tracts were leased in sales with two bidders.³⁰ This lack of competition can be traced back to Interior’s decertification of the Powder River Basin as a “coal production region” in 1990. In certified coal production regions, BLM is required to identify potential lease tracts and determine how much total coal should be leased in a region.³¹ By decertifying the Powder River Basin, Interior ushered in the modern practice of “leasing by application.”³² In this manner, Interior abdicated much of the lease planning process, allowing coal companies to select tracts for development, rather than having to follow a regional leasing plan—as called for in the Federal Coal Leasing Amendments Act of 1976.³³

Leasing by application allows private coal companies to design lease boundaries (subject to BLM land use screening and environmental review prior to lease sales³⁴); this perpetuates problems of noncompetitive leasing and opportunistic expansion via lease modifications.³⁵ Further, leasing by application allows companies to decide where it is privately optimal to locate a mine, rather than where it is socially optimal, which is likely to be different, given environmental externalities and other factors. Compounding this issue, the Energy Policy Act of 2005 increased the amount of land that can be added to an existing lease through noncompetitive lease modification from 160 acres to 960 acres.³⁶ BLM approved 45 lease modifications from 2000 to 2013.³⁷

Interior should retake control over how, when, and where federal coal leasing occurs. As part of this reform, Interior should eliminate leasing by application. It should, instead, prepare a strategic plan for any future coal leasing, with projections extending multiple years into the future. This strategic plan should be harmonized with existing Regional Management Plans and account for factors such as: the optimal timing of lease sales; tract size; tract location; expected recoverable coal reserves; the expected market value of the coal produced; other potential uses of federal land; and the environmental and social impacts of leasing. This strategic plan should also evaluate whether leasing in any identified region is expected to provide net public benefits, as compared to not offering the tracts for lease. Through this planning process, Interior should also seek to minimize conflicts with other land values, such as conservation, recreation, and other market uses, including grazing and renewable energy development (discussed immediately below).

Interior should also set a regular schedule for programmatic environmental reviews of the coal program, such as every five or eight years. Conducting this analysis every 30 years is woefully inadequate to keep pace with evolving scientific knowledge of environmental impacts and their costs. A regular schedule for programmatic environmental reviews would increase transparency and accountability with respect to issues like greenhouse gas emissions. This environmental review would complement Interior’s strategic plan, as it would analyze proposed leasing scenarios and their environmental and social impacts.

One model for how such a program could operate is the Bureau of Ocean Energy Management’s five-year planning process for offshore oil and gas leasing. As required by the Outer Continental Shelf Lands Act, BOEM prepares a five-year Program that establishes a schedule of oil and gas lease sales proposed for planning areas of the U.S. Outer Continental Shelf (OCS). The Program specifies the size, timing, and location of potential leasing activity that the Secretary of the Interior determines will best meet national energy needs.³⁸ And as highlighted above, BOEM calculates the projected net benefits of leasing in each identified region, as compared to not offering any tracts for lease. Because the implementation

of the five-year Program may have economic, social, or environmental impacts, BOEM also prepares an environmental analysis pursuant to NEPA for each Program. The Programmatic EIS analyzes the potential environmental impacts of the activities that may result from the lease sale schedule as identified in BOEM's Draft Program; considers a reasonable range of alternatives to the proposed lease sale schedule (including a "no sale" option); and identifies potential opportunities for mitigation.³⁹

Interior need not adopt an identical five-year program for the federal coal program. However, the goal is to exert more control over where, when, and on what terms any leasing occurs, in order to run a more competitive program that appropriately balances federal land uses and provides maximum net benefits to the American public. Preparing a strategic plan will enable Interior to better weigh the trade-offs between competing uses of federal lands; monitor changing market conditions; regularly evaluate lease timing and fiscal terms; and provide clarity to coal companies and other stakeholders. In addition, the agency should commit to regular programmatic environmental reviews in order to analyze viable alternatives and their environmental and social impacts.

3. Interior Should Prioritize Renewable Energy Production on Federal Lands, Including on Abandoned Coal Mine Lands, and Identify Opportunities for Job Retraining for Potentially Displaced Coal Workers.

As part of a strategic planning process, Interior should identify opportunities to preserve renewable energy production potential and accelerate the transition to renewable energy production on federal lands. Interior should direct any future coal leasing away from areas with strong renewable energy potential; identify new opportunities to use abandoned or reclaimed mine lands as renewable energy production sites; and work with partner agencies to assist in retraining coal workers for the renewable energy industry. In this manner, Interior's planning process can harmonize with federal renewable energy development and climate change goals.

In the Energy Policy Act of 2005, Congress directed the Secretary of the Interior to "seek to have approved non-hydro-power renewable energy projects located on public lands with a generation capacity of at least 10,000 MWs of electricity by 2015."⁴⁰ In 2009, the Secretary issued an order establishing renewable energy as a priority for the Department and establishing a task force to develop a strategy to increase the development and transmission of renewable energy on public lands.⁴¹ In 2011, President Obama asked federal agencies to double renewable energy generating capacity by the end of the year.⁴² And in 2016, Democratic Presidential Candidate Hillary Clinton announced a plan to "make public lands an engine of our clean energy economy through a ten-fold increase in renewable energy production on public lands and waters within ten years."⁴³

There is significant renewable energy potential on BLM-managed federal lands, including in historical "coal states" and on abandoned and reclaimed mine lands.⁴⁴ BLM manages over 19 million acres of federal lands in six states with solar energy production potential, including lands in Arizona, California, Colorado, Nevada, New Mexico, and Utah.⁴⁵ BLM manages more than 20 million acres of public lands with wind potential.⁴⁶ For example, an estimated 43 percent of public lands in Wyoming have wind energy development potential.⁴⁷ On federal lands, the potential for energy from wind sources is as high as 350,000 megawatts (MW).⁴⁸



A wind farm in California.

Since 2009, BLM has approved projects amounting to 9,763 MWs of solar energy capacity, 4,767 MWs of wind energy capacity, and 605 MWs of geothermal, for a total of 15,134 MWs of additional approved capacity.⁴⁹ These efforts will continue into 2016 and 2017, when BLM will evaluate seven additional renewable energy projects, five of which are solar.⁵⁰ These projects have the potential to produce an additional 1,337 MWs — enough energy to power more than 400,000 homes.⁵¹

However, federal agencies face hurdles in establishing such projects due to NEPA obligations,⁵² legal challenges,⁵³ transmission limitations, and more.⁵⁴ Interior has taken several steps to overcome these obstacles, such as preparing programmatic EISs for both solar and wind energy development on public lands⁵⁵ and designating seventeen “solar energy zones” for future solar development.⁵⁶ Working with the Departments of Agriculture, Commerce, Defense, Energy, Interior has also expedited the permitting of electricity transmission in designated “energy corridors,” which helps facilitate the delivery electricity generated by renewable power systems to load centers.⁵⁷

Interior should build on these efforts by identifying opportunities to accelerate the transition from coal and other fossil fuel production to renewable energy production on federal lands. Interior should direct future coal leasing away from such areas whenever possible, which it can do through the strategic planning process recommended above, as well as through preparation of Regional Management Plans and identification of additional solar and wind energy zones. In addition, Interior should identify more opportunities to use abandoned or reclaimed mine lands as renewable energy production sites, as EPA does through its RE-Powering America’s Land Initiative.⁵⁸ If such sites can be identified early, reclamation could potentially be managed with future renewable energy production in mind.

In addition, Interior should collaborate with partner agencies to identify opportunities to retrain displaced or potentially displaced coal workers for the renewable energy industry. While coal mining jobs have steadily declined over the last decade,⁵⁹ both solar and wind are projected to experience continued job growth. For example, the solar industry is projected to increase by 14.7 percent to 240,000 workers in the next year.⁶⁰

President Obama’s POWER+ Plan, launched in 2016, provides dedicated new resources for economic diversification, job creation, job training and other employment services for workers and communities impacted by layoffs at coal mines and coal-fired power plants.⁶¹ Twenty million dollars is designated for dislocated coal mine workers. Retraining dislocated coal miners to work in solar and wind energy development can be a focus area of these programs. In fact, the Department of Energy recently announced a goal “to train 75,000 people to enter the solar workforce by 2020.”⁶² Interior should collaborate with partner agencies like the Departments of Energy and Labor to identify promising locations for job training programs, based on its knowledge of coal production trends, potential job impacts, and appropriate locations for renewable energy production.

4. In the Programmatic EIS, Interior Should Propose a Broad Range of Alternatives, Including the Alternative of No New Coal Leasing.

In order to thoroughly evaluate the array of issues called for in Interior’s Secretarial Order—such as climate impacts, externalities, and a fair return—Interior should evaluate a broad range of alternatives in its Programmatic EIS. This will enable Interior to model and analyze several different coal leasing scenarios and their resulting environmental, economic, and social effects.

Analysis of reasonable alternatives is the heart of environmental impact statements.⁶³ For project-level reviews, NEPA requires federal agencies to “rigorously explore and objectively evaluate all reasonable alternatives,” including the “no action” alternative.⁶⁴ Agencies must “[d]evote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits,” and provide a clear basis for the agency’s choice.⁶⁵ Programmatic NEPA reviews are “governed by the same regulations and guidance that apply to non-programmatic NEPA reviews,” and should strive to meet the same standards.⁶⁶ This includes the NEPA requirements for alternatives analysis.⁶⁷

A broad range of alternatives for the coal PEIS could include, for example: (i) conducting no new federal coal leasing (the “no action” alternative); (ii) conducting leasing at a level that maximizes social welfare, by accounting for all quantifiable costs and benefits of the program; (iii) conducting leasing in order to meet U.S. greenhouse gas emission goals; (iv) conducting leasing to maximize federal revenue; and (v) conducting coal leasing to meet current demand.

5. Interior Should Calculate the Upstream and Downstream Greenhouse Gas Emissions of Selected Alternatives.

With the launch of the coal Programmatic EIS, Interior indicated that it would evaluate greenhouse gas emissions from coal production and consumption, and develop a “public database to account for the annual carbon emissions from fossil fuels developed on federal lands.”⁶⁸ This is consistent with NEPA requirements and the White House Council on Environmental Quality’s latest guidance, and will provide critical information about how federal coal production and consumption contributes to climate change. In order to provide the best information available to policymakers and the public, Interior should quantify and disclose the full upstream and downstream emissions for its proposed action and reasonable alternatives. Upstream greenhouse gas emissions include methane and carbon dioxide released at the mine site, as well as transportation emissions that occur upstream of the power plant or other end use; downstream emissions include those associated with burning coal for electricity and other end uses.

Pursuant to NEPA, environmental impact statements for any action significantly affecting the environment must describe the affected environment and any direct, indirect, and cumulative impacts accruing from the action and reasonable alternatives.⁶⁹ The dual purpose of these requirements is to ensure that agencies take a “hard look” at the potential consequences of their activities and disclose this information to the public.⁷⁰ White House Council on Environmental Quality (CEQ) regulations implementing NEPA require agencies to consider direct, indirect and cumulative impacts accruing from the proposed action, as well as connected and cumulative actions.⁷¹

CEQ’s 2014 guidance on assessing the climate impacts in federal actions subject to NEPA also makes clear that upstream and downstream greenhouse gas emissions should be included in environmental impact statements, stating that “emissions from activities that have a reasonably close causal relationship to the Federal action, such as those that may occur as a predicate for the agency action (often referred to as upstream emissions) and as a consequence of the agency action (often referred to as downstream emissions) should be accounted for in the NEPA analysis.”⁷² Consistent with this view, NEPA also expressly requires agencies to assess “the relationship between local short-term uses of man’s environment and the maintenance and enhancement of long-term productivity.”⁷³

In the Programmatic EIS, Interior should analyze and disclose the upstream and downstream climate and environmental impacts of its proposed action and reasonable alternatives, including the “no action” alternative. Transparent disclosure of greenhouse gas emissions helps decision makers and the public make better decisions. In order to do this analysis, Interior should model each alternatives’ energy market and greenhouse gas emission effects. This requires accounting for the substitution effects induced by each alternative—such as the substitution of additional natural gas and renewable energy production and consumption (as well as increased energy conservation) in place of new coal production and consumption that would result from the “no action” alternative. More detail on how Interior should do this analysis, including how to analyze energy substitution effects, is described in item number 10 in this report.

In addition, Interior should clarify in this proceeding or in separate agency guidance that its sub-agencies, BLM and BOEM, should analyze and quantify the upstream and downstream greenhouse gas emissions for project level decisions, such as coal, oil, and natural gas lease sales. Historically, Interior has been inconsistent in analyzing the upstream and downstream climate impacts of its proposed actions and alternatives.⁷⁴ For example, in its latest Proposed Program

Photo © Bureau of Land Management



Public land in Colorado.

for Offshore Leasing, BOEM did not fully quantify the downstream greenhouse gas emissions associated with offshore oil and gas production.⁷⁵ And a recent survey of nineteen EISs prepared between 2012 and 2014 for proposals related to fossil fuel development—including the approval of coal, oil and gas leases and the construction of natural gas pipelines and export terminals—found that only three of these EISs quantified lifecycle greenhouse gas emissions.⁷⁶

The coal PEIS presents an important opportunity to analyze the upstream and downstream greenhouse gas emissions of selected alternatives, and to set multiple federal agencies on the proper course for conducting this analysis in future project-level reviews.

6. Interior Should Use the Social Cost of Carbon and Social Cost of Methane to Quantify the Climate Impacts of its Proposed and Alternative Leasing Scenarios.

Executive Orders, the White House Office of Management and Budget’s Circular A-4, and CEQ’s 2014 NEPA guidance strongly counsel towards the use the Social Cost of Carbon and Social Cost of Methane in this process. These metrics are critical to illuminating the hidden costs of coal production and evaluating the overall return of the federal coal program to taxpayers, as called for by Secretarial Order 3338. Using these metrics in the Programmatic EIS will also lay the groundwork for their use in future rules, regulatory impact analyses, and EISs prepared by BLM and other agencies.

Executive Orders 12,866 and 13,563 direct federal agencies to make a reasoned determination that an action’s benefits justify its costs.⁷⁷ White House Office of Management and Budget (“OMB”) guidance similarly states that where benefits and costs can be quantified and expressed in monetary units, a cost-benefit analysis can provide decision makers with the most efficient alternative.⁷⁸ Quantitative estimates of benefits and costs are preferable to qualitative descriptions, as they help decision makers understand the magnitude of the effects of alternative actions.⁷⁹ This is true for environmental impact analyses prepared pursuant to NEPA, as well as for regulatory impact analyses.

CEQ’s 2014 Revised Draft Guidance on analyzing greenhouse gas emissions in NEPA Reviews recommends using the Social Cost of Carbon when an agency monetizes some costs or benefits, stating:

When an agency determines it appropriate to monetize costs and benefits, then, although developed specifically for regulatory impact analyses, *the Federal social cost of carbon, which multiple Federal agencies have developed and used to assess the costs and benefits of alternatives in rulemakings, offers a harmonized, interagency metric that can provide decisionmakers and the public with some context for meaningful NEPA review.* When using the Federal social cost of carbon, the agency should disclose the fact that these estimates vary over time, are associated with different discount rates and risks, and are intended to be updated as scientific and economic understanding improves.⁸⁰

Several federal agencies, including BLM, have used the Social Cost of Carbon and Social Cost of Methane in recent regulatory impact analyses. In BLM’s 2016 proposed venting and flaring rule for oil and gas wells on federal lands, the agency used the Social Cost of Methane in its regulatory impact analysis to calculate the net benefits of the proposed rule.⁸¹ In addition, EPA used it in the regulatory impact analysis for its New Source Performance Standards for methane and volatile organic compound emissions from the oil and natural gas sector, as well as in its proposed rule on landfill methane emission standards.⁸²

However, Interior’s sub-agencies have been inconsistent in using these metrics. For example, in BOEM’s Draft Proposed Program for 2017-2022 Outer Continental Shelf oil and gas leasing, BOEM states that, “USDOJ does not yet have a policy in place concerning the monetization of the social cost of carbon, therefore, BOEM is not monetizing the impacts from greenhouse gas emissions in the DPP analysis, but is analyzing greenhouse gas emissions in a quantitatively and qualitatively manner.”⁸³ BLM also failed to use the Social Cost of Carbon and Social Cost of Methane in past NEPA analyses for coal, oil, and natural gas lease sales.⁸⁴

The Social Cost of Carbon and Social Cost of Methane are the best tools available to evaluate the costs and benefits of greenhouse gas emissions. The Social Cost of Carbon was derived through a rigorous, consensus-based, transparent process, using the best available scientific and economic models and data.⁸⁵ The federal Interagency Working Group recently released an updated set of Social Cost of Carbon estimates, centered at approximately \$40 per metric ton of CO₂ for emissions in the year 2015, in 2015 dollars at a 3 percent discount rate.⁸⁶

EPA has developed a method for directly estimating the Social Cost of Methane using an analysis conducted by Marten *et al.*, which is based on the same techniques the Interagency Working Group developed to estimate the Social Cost of Carbon.⁸⁷ The Social Cost of Methane’s key assumptions and choices have therefore been shaped by the same rigorous, consensus-based, transparent process used for the Social Cost of Carbon.⁸⁸ Marten *et al.* was published in a peer reviewed economics journal, and EPA conducted additional internal and peer review of this methodology.⁸⁹ Like the Social Cost of Carbon, if anything the Social Cost of Methane is underestimated due to overly conservative assumptions.⁹⁰ Both metrics constitute “the best available science” to inform agency regulation.⁹¹

In this Programmatic EIS, Interior is evaluating whether the coal program provides “fair market value” to taxpayers, and should analyze different coal production and royalty rate scenarios in order to make this determination. Using the Social Cost of Carbon and the Social Cost of Methane is the best (if not only) way account for the cost of greenhouse gas pollution that results from each alternative scenario, and will provide decision makers and the public with context for a meaningful NEPA review.

7. Interior Should Evaluate Whether the Current Coal Program Earns “Fair Market Value” for Taxpayers, by Conducting a Cost-Benefit Analysis of the Coal Program.

As called for in Secretarial Order 3338 and building on prior recommendations in this report, Interior should evaluate whether it currently earns “fair market value” for taxpayers as required by the Federal Land Policy and Management Act.⁹² As reported by the Government Accountability Office, the Office of the Inspector General, and several non-governmental organizations, the federal coal program suffers from stagnant minimum bids and rental rates; inconsistent and opaque “fair market value” appraisals; royalty payment loopholes and deductions; and prevalent environmental externalities that impose uncompensated costs on the public, among other issues.⁹³ Therefore, Interior should conduct a cost-benefit analysis of the current coal program, in order to measure the net benefits that the program provides.

Interior can do this by analyzing the revenue and other benefits of coal leasing, as compared to the costs, including the social and environmental costs of leasing. As discussed above, it should use the Social Cost of Carbon and Social Cost of Methane in order to do this analysis. The result of this cost-benefit analysis can provide a baseline against which to

measure potential royalty rate increases; increases to minimum bids or rental rates; and other policy changes, such as tailoring coal production to meet climate goals, or ceasing the issuance of new leases altogether.

If the full benefits of coal production are accounted for in such an inquiry (such as bonus bids, royalty revenue, jobs, and state tax revenue), the full suite of social and environmental costs must be accounted for, as well.⁹⁴ Executive Orders 13,563 and 12,866, OMB Circular A-4, and EPA's guidelines for economic analysis all indicate that benefits and costs should be treated in parity, because where all benefits and costs can be quantified and expressed in monetary units, cost-benefit analysis provides decision makers with an indication of the most efficient alternative, that is, the alternative that generates the largest net benefits to society.⁹⁵

Relevant environmental and social costs include upstream and downstream greenhouse gas emissions (methane and carbon dioxide), and other quantifiable costs, such as transportation-related externalities (including particulate matter emissions, public fatalities, noise, and congestion), habitat effects, and the costs of unfunded reclamation. Independent think tanks and scholars have examined some of these costs of coal production, with a particular emphasis on the cost of greenhouse gas emissions.⁹⁶ To the extent that some of these costs and benefits are not quantifiable, they should be qualitatively analyzed.⁹⁷

8. Interior Should Analyze the Optimal Fiscal Terms for New and Modified Coal Leases by Analyzing Social Cost of Carbon and Social Cost of Methane Royalty “Adders,” Among Other Potential Changes Geared to Maximizing Net Benefits.

In the Programmatic EIS, Interior should analyze the optimal fiscal terms for any new and modified coal leases, in order to earn fair market value for American taxpayers.⁹⁸ In particular, Interior should model royalty rate scenarios as part of its alternatives analysis that account for the social and environmental costs of coal production, consistent with a social welfare maximizing perspective. The goal is to identify an alternative that maximizes net social benefits, or “fair market value.” In her 2016 Plan for Conservation and Collaborative Stewardship of America's Great Outdoors, Secretary Clinton called for reforms such as “raising royalty rates, which currently lag below the rates on state and private lands.” Adjusting royalty rates to recoup social and environmental costs is one persuasive rationale for raising rates, among others.

Environmental and social externalities from coal production vary with the amount of coal produced; therefore, these costs are best recouped through royalties. NYU Law School's Institute for Policy Integrity and Vulcan Philanthropies, working with ICF International, each conducted separate analysis on increasing royalty rates to account for the Social Cost of Methane and Social Cost of Carbon, respectively. This work may provide a useful starting point for this analysis.

Policy Integrity found that using an upstream Social Cost of Methane adder would have added approximately \$2 billion in royalty revenue between 2009 and 2012 for production in four western states: Wyoming, Colorado, Montana and Utah.⁹⁹ To do this analysis, we used data on fugitive methane emissions from coal mines and the Social Cost of Methane to calculate a surface mine methane adder of approximately \$1 per metric ton of coal in 2015 (or \$0.90 per short ton), and an underground coal adder of \$8.79 per metric ton (\$7.97 per short ton), as underground coal mining emits more fugitive methane. We then calculated revised royalty rates that would incorporate this methane adder. For example, using average Wyoming mine mouth prices for Power River Basin subbituminous coal, the adder would increase royalty rates from 12.5 percent to 18.7 percent for surface-mined coal. The adjustment for underground mining royalty rates was

greater; for example, the royalty rate for underground coal mined in Utah would increase from 8 percent to 30 percent. In addition, because the Social Cost of Methane increases over time, the adder should increase over time.

We also calculated a transportation adder for Powder River Basin coal, using data on freight train routes and quantifiable transportation externalities, including greenhouse gas emissions, other air emissions, public fatalities, noise, congestion, and pavement. These costs totaled about \$10 per metric ton of coal in 2015 (about \$9 per short ton). Applied together, the fugitive methane and transportation adders would result in a larger royalty rate increase—from the current federal royalty rate of 12.5 percent to 82.6 percent for Powder River Basin coal.¹⁰⁰

The Vulcan and ICF International study examined the effect of different policy scenarios that increase the federal coal royalty rate and/or ramp down production through a tonnage production cap. The study used ICF International's Integrated Planning Model, which is commonly used by U.S. EPA and other agencies to model the effects of policy scenarios on energy markets. For example, Vulcan found that phasing-in an adder set at 20 percent of the Social Cost of Carbon—approximately \$15.30 per short ton in 2016—would add nearly \$3 billion in royalty receipts by 2025.¹⁰¹ Introducing higher royalty rates, phased-in over 10 years, would also reduce overall carbon dioxide emissions, even with the Clean Power Plan in place.¹⁰²

All of Vulcan's modeled reforms would induce substitution of renewable energy and natural gas for coal, resulting in a net decline in greenhouse gas emissions. In the 20 percent and 50 percent Social Cost of Carbon cases, gross royalties and the state share of royalties *increase* over the non-adjusted royalty base cases, even as production declines.¹⁰³ Ramping coal production down (as opposed to raising royalty rates) would achieve similar greenhouse gas emission benefits, but with diminished revenue for states and the federal treasury.

Thus, by increasing royalty rates to recoup some of the social and environmental costs of coal production, Interior can significantly increase revenue for states and the federal government, while simultaneously reducing greenhouse gas emissions from coal production and combustion. This results in significant net social benefits. Interior should analyze and model these alternative royalty rate scenarios in the PEIS, as well as in a parallel rulemaking on coal leasing fiscal terms.

Photo © ixtla



A coal train in Blue Island, Illinois.

Done correctly, this analysis can provide decision makers and the public with a social welfare maximizing alternative, and one that is consistent with Interior’s statutory mandate to harmonize production with preservation.

9. Interior Should Analyze How to Tailor Any Future Leasing to National Climate Change Goals and Commitments.

Secretarial Order 3338 calls for the Programmatic EIS to address how to manage the federal coal program “to both meet the Nation’s energy needs and its climate goals, as well as how to best protect the public lands from climate change impacts.”¹⁰⁴ In addition to analyzing social welfare maximizing alternatives, Interior should also analyze coal production scenarios that would tailor federal coal production to U.S. climate change goals. For example, the government could set a national “carbon budget” for federal lands, based on what is needed to meet its climate change commitments, and adjust the fiscal terms or leasing policies for federal fossil fuels in order to meet that budget. For example, this could be done through an escalating royalty rate; a phased-in production cap; or by halting all new coal leasing and all new coal lease modifications and extensions.

With the highest carbon content of all fossil fuels, coal mined on federally managed lands accounts for approximately 40 percent of U.S. coal consumption and 13 percent of total U.S. energy-related carbon dioxide emissions.¹⁰⁵ Several studies indicate that reducing greenhouse gas emissions from coal use globally is critical to addressing climate change.¹⁰⁶

As part of the PEIS, Interior should explore how to make the federal coal program consistent with U.S. climate change goals and commitments, including the United States’ Intended Nationally Determined Contribution (INDC) submitted to the United Nations Framework Convention on Climate Change for the 2015 Paris Climate Change 21st Conference of Parties. The U.S. target is to reduce greenhouse gas emissions by 26 to 28 percent below 2005 levels by 2025, and to make best efforts to reduce emissions by 28 percent.¹⁰⁷

Given its capacious statutory mandates, Interior has the authority to manage federal coal production to help meet national greenhouse gas emission goals and commitments, including the commitments made as part of the Paris Agreement. As the steward of public lands for present and future generations, Interior has the duty to “take[] into account the long-term needs of future generations for renewable and nonrenewable resources,” and to manage federal lands “without permanent impairment of the productivity of the land and the quality of the environment.”¹⁰⁸

The Federal Land Policy and Management Act, provides that federal lands are to be used only for the advancement of the national interest.¹⁰⁹ The Act declares that:

[P]ublic lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use.¹¹⁰

The Act requires agencies to manage public lands in accordance with the “principles of multiple use and sustained yield.”¹¹¹ The Act defines “multiple use” as:

[T]he management of the public lands and their various resource values so that they are utilized in the combination that will *best meet the present and future needs of the American people*; . . . the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the *long-term needs of future generations for renewable and nonrenewable resources*, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values.¹¹²

“Multiple use” also requires consideration to be given to “the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output.”¹¹³

Managing federal coal leasing in a manner that helps meet national climate goals is also consistent with Executive Order 13,693, “Planning for Federal Sustainability in the Next Decade,” which directs federal agencies to inventory and adopt targets for reducing their greenhouse gas emissions.¹¹⁴

In light of this authority, Interior should analyze at least one coal production scenario in the PEIS that would tailor federal coal production to U.S. climate change goals. For example, the Stockholm Environment Institute developed estimates of the greenhouse gas emission reductions that could be achieved if Interior were to stop issuing new coal leases and stop renewing non-producing leases as they come due.¹¹⁵ The study found that such restrictions would cause a net reduction in CO₂ emissions by 2030 of 71 Mt CO₂, even after accounting for substitution effects such as some increased coal production in the Illinois Basin and Appalachia (on non-federal lands) and some substitution of natural gas for coal.¹¹⁶

As an alternative to a production limit, Interior could analyze using an escalating royalty rate that is designed to decrease federal coal production over time. The PEIS is the ideal venue in which to explore these viable leasing alternatives, and to assess how to proactively manage federal coal to meet long-term national needs and priorities.

10. For Each Alternative Scenario, Interior Should Model the Climate Impact and Effect on Coal Prices, Royalty Payments, and Energy Markets, Including Energy Substitution Effects.

Interior should carefully model its selected alternatives’ energy production scenarios and resulting climate, revenue, and other effects. As part of this analysis, it should analyze the substitution effects among coal (on public and private lands), natural gas, oil, and renewable energy sources that result from changes in coal production or royalty rates. Interior may wish to consult with CEQ, the Council of Economic Advisors, and the National Center for Environmental Economics at the Environmental Protection Agency (EPA) in conducting this analysis.

Conducting proper substitution analysis in the PEIS is critical to analyzing environmental impacts, and ultimately, to selecting the most efficient alternative. Decreasing coal production or increasing the federal royalty rate for coal is expected to lead to greater substitution of natural gas and renewables for coal (as well as substitution from coal produced on public lands to private lands) in the overall energy mix, as well as greater energy conservation. This, in turn, will reduce total greenhouse gas emissions. In order to do proper substitution analysis, Interior should model each alternative scenario’s

energy market and greenhouse gas emission effects. This requires accounting for the substitution effects induced by each alternative—such as the substitution of natural gas and renewable energy (as well as increased energy conservation) in place of coal production and consumption that would result from the “no action” alternative.

BLM has been inconsistent in conducting appropriate substitution analysis in some of its prior environmental impact statements for proposed coal projects. For example, in its 2010 EIS for the Wright Area coal leases, located in the Powder River Basin, BLM incorrectly reasoned that if it were to select the No-Action Alternative (not leasing the coal), other coal mines would increase production to entirely replace all 2 billion tons of coal anticipated from the Wright Area leases, such that the amount of coal burned in the United States—and the resulting carbon dioxide and methane emissions—would be identical whether or not the leases were approved.¹¹⁷ BLM’s assumption runs counter to economic principles of supply and demand, as well as the empirical state of knowledge concerning the U.S. coal market. The leases at issue would produce up to 230 million tons of coal per year—more than 20 percent of the total U.S. coal used for electricity in 2010. In the No-Action alternative, removing over 20 percent of total U.S. production would be a non-marginal change that would affect overall coal prices, demand, and greenhouse gas emissions. The Final EIS is currently being challenged in the U.S. Court of Appeals for the 10th Circuit on this basis.¹¹⁸ BOEM’s proposed five-year offshore leasing program contains some similar discrepancies with respect to downstream greenhouse gas emissions.

Other federal agencies, including the Surface Transportation Board, the Forest Service, the State Department, the Office of Surface Mining Reclamation and Enforcement (another Interior sub-agency), the Federal Energy Regulatory Commission, and the Nuclear Regulatory Commission, have properly analyzed the effects of their energy management decisions in NEPA reviews, consistent with the advice of the U.S. Court of Appeals for the Eighth Circuit and the U.S. District Courts of Colorado and Minnesota.¹¹⁹

Interior can choose from several sophisticated models in order to evaluate the effect of different coal leasing policies and royalty rates on the market, such as ICF International’s Integrated Planning Model (IPM); the U.S. Energy Information Administration’s National Energy Modeling System (NEMS); and BOEM’s MarketSim model (which it uses to analyze lease sale scenarios in its five-year planning process). Each of these models has benefits and drawbacks.¹²⁰ IPM, which is used by EPA and several other federal agencies, is the most detailed of the models (with respect to the coal and natural gas markets, including transportation and distribution) and the most readily tailored to Interior’s coal PEIS.¹²¹ However, IPM is not publicly available and is less transparent than other models. NEMS is publicly available and more transparent than IPM, and has more detail about some coal substitutes (particularly oil and renewables), consumer behavior, and the macro-economy. However, NEMS—which is used by U.S. EIA and the Surface Transportation Board, among others—would require more modification than IPM to tailor it to the coal PEIS and future coal analyses, such as project-level environmental reviews. NEMS—and all models—should also be tailored to adjust baseline scenarios to align with existing U.S. climate change commitments, such as the target to reduce greenhouse gas emissions by 26 to 28 percent below 2005 levels by 2025. Ideally, the model’s baseline should accord with U.S. climate change pledges, and sensitivity analysis should be done for different baselines.

Finally, BOEM’s MarketSim model is publicly available and is the most transparent of the three models; but given its focus on offshore oil and natural gas production, it would require the greatest amount of modification to make it suitable for the coal PEIS and other coal analyses. And even then, the model may not capture important nuances of the energy resource market, such as detailed information on different fuels’ elasticities of supply, which is relevant to substitution analysis. Ultimately, BLM must weigh model transparency against model complexity. It may be preferable to use multiple



A coal mine in Gillette, Wyoming.

models to balance these tradeoffs; barring this possibility, the limitations of BLM’s chosen model should be disclosed and sensitivity analysis (including a Monte Carlo simulation) conducted.¹²²

In short, Interior should carefully model alternative coal leasing scenarios and their resulting climate, revenue, and other impacts. Interior should take care to conduct substitution analysis properly in the PEIS, as well as in future project-level reviews. Multiple sophisticated models are available to conduct this analysis in the coal PEIS, as well as for future supply-side energy projects. Interior should ensure that the proper baseline is used, that the limitations of the model are disclosed, and that sensitivity analysis is conducted for key parameters.

11. Interior Should Take Steps to Curb Royalty Rate Reductions and Loopholes, Which Impair a Fair Return to Taxpayers.

Relevant to the question of whether the coal program is structured to ensure a fair return is how royalties are calculated, including whether any deductions or loopholes affect the overall return to the public. As part of its “good government” reforms announced in January 2016, Interior stated that it plans to “clarify the process through which BLM may consider requests for royalty rate reductions,” and make such requests public.¹²³ However, it would be preferable for Interior to eliminate or amend its existing royalty relief regulation, as it provides improper incentives to coal companies and hinders the receipt of a fair return.

Under current law, the Secretary of the Interior has discretion to reduce or waive royalties “whenever in [her] judgment it is necessary to do so in order to promote development, or whenever in [her] judgment the leases cannot be successfully operated under the terms provided therein.”¹²⁴ Pursuant to its current regulations, BLM has discretion to grant royalty rate reductions if three requirements are met: (i) the royalty rate reduction encourages the greatest ultimate recovery of the coal resource; (ii) the rate reduction is in the interest of conservation of the coal and other resources; and (iii) the rate reduction is necessary to promote development of the coal resource.¹²⁵

Independent analysis by Headwaters Economics found that royalty rate reductions occurred on approximately 36 percent of leases offered for sale between 1990 and 2015.¹²⁶ The effective royalty rate was only 4.9 percent of the gross market value of coal extracted between 2008 and 2012. Similarly, the Government Accountability Office found that the reported rate that lessees pay on the mine price used for royalty valuation ranged between 5.6 percent for federal leases in Colorado and 12.2 percent in Wyoming.¹²⁷ The lower reported rates were largely a function of rate reductions. These effective royalty rates are well below the statutorily-set minimum rate of 12.5 percent for federal surface-mined coal. Further, because lease-specific royalty rates and allowable cost deductions are currently considered proprietary data, there is little oversight of these rate reductions.

Interior should eliminate, or at least amend, its royalty rate reduction regulation. Rate reductions that are “necessary to promote development of the coal resource” amount to a subsidy for coal, and the government should not be in the business of supporting uneconomical coal production from public lands, especially at a potential loss to taxpayers. And rate reductions that are necessary to “encourage[] the greatest ultimate recovery of the coal resource” similarly prioritize coal production over other competing values. Finally, this regulation is directly at odds with managing the federal coal program to maximize the net return to taxpayers, and threatens the utility of any future royalty rate adjustments made on this basis. As President Obama remarked in his State of the Union address, “[r]ather than subsidize the past, we should invest in the future—especially in communities that rely on fossil fuels.”¹²⁸ Eliminating this royalty relief loophole is a common sense measure that moves the federal coal program in the right direction.

12. Interior Should Evaluate Bidding and Lease Eligibility Reforms That Can Help Secure Fair Market Value and Reduce Risks to Taxpayers.

Secretarial Order 3338 calls for the Programmatic EIS to address “whether the bonus bids, rents, and royalties received under the Federal coal program are successfully securing a fair return to the American public for Federal coal, and if not, what adjustments could be made to provide such compensation.”¹²⁹ At the bidding stage, Interior should be compensated for the estimated market price of the coal to be leased, the fixed costs of leasing, as well as the option value of mining coal (or informational value of delay). Moreover, given serious problems with untimely coal mine reclamation¹³⁰ and a slew of high profile coal company bankruptcies that threaten to leave taxpayers with a large bill for coal mine clean-up,¹³¹ Interior should revise its coal leasing eligibility criteria to offer new coal leases exclusively to companies that are in compliance with bonding and reclamation requirements. If any of these reforms are outside the scope of the coal PEIS, Interior should consider them through a separate rulemaking. The goal is to move toward a program that reduces taxpayer risk and maximizes social welfare.

First, the minimum bid for coal leasing has been set at \$100 per acre since 1982.¹³² The minimum bid should be raised to account for inflation, fixed social costs, and the option value of leasing, in order to serve as a floor price for fair market value, as originally intended. Accounting for inflation, alone, would raise the minimum bid to \$247 per acre. BLM should also account for the value of lost amenities (i.e., lost public access to recreation) and estimated public funding of reclamation, in the minimum bid price or rental rate. For example, as soon as a tract is leased, the public loses access to it for other purposes, such as recreation or habitat protection. And as soon as companies undertake exploratory mining, the site incurs reclamation costs.

In addition, while coal companies are supposed to post bonds adequate to pay for the cost of land reclamation upon cessation of mining, these bonds often fall short of what is required for reclamation.¹³³ In prior work, using data on the

cost of publicly funded reclamation, we estimated this cost to be about \$0.44 per metric ton of coal.¹³⁴ This represents a conservative lower bound for fixed costs, as it omits other costs, such as lost public access to the tract and the opportunity cost of leasing. In some cases, these costs may be significant, especially in areas with more recreation, hunting, scenic value, or renewable energy production potential. These are fixed costs, as opposed to variable costs, because they are incurred by the public independent of how much coal is mined.

Second, BLM's minimum bid and fair market value appraisals also fail to account for the option value of coal leasing, which is the value of waiting for more information on energy prices and extraction risks before deciding whether and when to lease the public's non-renewable energy resources to private companies. As the D.C. Circuit recently indicated with respect to offshore leasing, there is "a tangible present economic benefit to delaying the decision to drill," and failing to account for this value undervalues public resources.¹³⁵ Interior can look to BOEM's proposed program for offshore leasing for 2017 to 2022 as a starting point. BOEM uses a hurdle price analysis to account for economic uncertainty, and qualitatively considers environmental and social option value when determining where and when to lease.¹³⁶ Ideally, both BOEM and BLM would quantify economic, environmental, and social uncertainty. Interior should consider instructing regional offices to incorporate option value into their internal fair market value calculations, or revising its current regulations in line with this recommendation.

Third, Interior should revise its coal leasing eligibility criteria to include proof of that a coal lease applicant is in compliance with bonding and reclamation requirements.¹³⁷ The Surface Mining Control and Reclamation Act (SMCRA) of 1977 requires coal companies to purchase bonds—effectively, insurance policies—that can be used to pay for reclamation if the companies are insolvent.¹³⁸ In enacting SMCRA, Congress also sought to assure that "adequate procedures are undertaken to reclaim surface areas as contemporaneously as possible with the surface coal mining operations."¹³⁹

However, regulators in states like Wyoming have allowed coal companies that satisfy certain financial conditions to "self-bond," or to operate without posting any surety or collateral—in effect, offering only their promise to pay once mining operations have concluded. Self-bonding is less secure than requiring coal companies to post surety bonds or collateral bonds, and poses risks to the public in the event that these companies enter into liquidation bankruptcy. In an era of coal bankruptcies and mounting unfunded reclamation, Interior should proactively limit this risk.

Interior should revise its coal lease eligibility criteria to include evidence that a coal lease applicant is in compliance with all bonding and reclamation requirements. This can be done through a rulemaking to revise its basic coal lease eligibility criteria.¹⁴⁰ In fact, if Interior made such a change, it may be less necessary to raise minimum bids on the basis on unfunded reclamation, as new coal leases or modifications could not be issued to an applicant who fails to meet these criteria. (It would still be rational to increase minimum bids on the basis of inflation and option value, alone.) In addition, Interior's Office of Surface Mining Reclamation and Enforcement (OSMRE) should take steps to reduce the risk to taxpayers from self-bonding. For example, OSMRE should use its existing authority to require bond substitution for any company that is in violation of current bonding rules.¹⁴¹

Together, these bidding and lease eligibility reforms can help secure fair market value and reduce risks to taxpayers.

Conclusion

The policy and procedural recommendations contained in this report are intended to help Interior modernize the federal coal program and provide maximum net benefits to American taxpayers. The transition to a 21st Century coal program must not end with the preparation of the Programmatic EIS; therefore, many of these recommendations call for ongoing strategic planning, regular environmental reviews, and more robust project-level analysis. The programmatic review should identify opportunities to increase revenue, reduce greenhouse gas emissions, and align federal land management with U.S. climate change goals, paying enormous dividends to the public.

Endnotes

- ¹ U.S. DEPARTMENT OF THE INTERIOR, OFFICE OF THE SECRETARY, Press Release: Secretary Jewell Launches Comprehensive Review of Federal Coal Program (Jan. 15, 2016), available at <https://www.doi.gov/pressreleases/secretary-jewell-launches-comprehensive-review-federal-coal-program>.
- ² 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 (hereinafter, “SECRETARIAL ORDER No. 3338”).
- ³ 43 U.S.C. § 1701(a)(9).
- ⁴ Federal Coal Leasing Amendments Act of 1975, Pub. L. No. 94-377, 90 Stat. 1083, 1087 (1976), codified as amended at 30 U.S.C. § 181 et seq.
- ⁵ U.S. GOV’T ACCOUNTABILITY OFFICE, No. GAO-14-140, COAL LEASING: BLM COULD ENHANCE APPRAISAL PROCESS, MORE EXPLICITLY CONSIDER COAL EXPORTS, AND PROVIDE MORE PUBLIC INFORMATION 3 (Dec. 2013), available at <http://www.gao.gov/assets/660/659801.pdf> (hereinafter “U.S. GOV’T ACCOUNTABILITY OFFICE, COAL LEASING REPORT”).
- ⁶ 30 U.S.C. § 187 (emphasis added).
- ⁷ 43 U.S.C. §§ 1701(a)(8), 1701(a)(12).
- ⁸ 43 U.S.C. § 1701(a)(8).
- ⁹ See Jayni Foley Hein and Peter Howard, *Illuminating the Hidden Costs of Coal*, INSTITUTE FOR POLICY INTEGRITY, NYU SCHOOL OF LAW (Dec. 2015), available at http://policy-integrity.org/files/publications/Hidden_Costs_of_Coal.pdf; Jayni Foley Hein and Peter Howard, *Reconsidering Coal’s Fair Market Value*, INSTITUTE FOR POLICY INTEGRITY, NYU SCHOOL OF LAW (Oct. 2015), available at http://policyintegrity.org/files/publications/Coal_fair_market_value.pdf.
- ¹⁰ A May 27, 2016 letter signed by 14 U.S. Senators made a similar point: “A huge disparity exists between the high, long-term costs of burning the public’s coal and the low, short-term return from selling it. The BLM needs to address the disparity.” Letter from Sen. Maria Cantwell et al., to Interior Sec’y Sally Jewell (May 27, 2016), available at http://www.energy.senate.gov/public/index.cfm/files/serve?File_id=4FE163E6-53AE-46D5-871E-1AE02ED-41AB4.
- ¹¹ U.S. ENVIRONMENTAL PROTECTION AGENCY, The Social Cost of Carbon, available at <https://www3.epa.gov/climatechange/EPAactivities/economics/scc.html> (last visited June 15, 2016).
- ¹² U.S. BUREAU OF OCEAN ENERGY MANAGEMENT, 2017–2022 OUTER CONTINENTAL SHELF OIL AND GAS LEASING PROPOSED PROGRAM 5-1 (March 2016), available at <http://www.boem.gov/2017-2022-Proposed-Program-Deduction/> (hereinafter “BOEM 2017-2022 PROPOSED PROGRAM”).
- ¹³ *Id.*; *California v. Watt*, 712 F.2d 584 (D.C. Cir. 1983) (“Watt II”). The Court also found that receipt of fair market value does not mean “maximization of revenues.” See also *Natural Resources Defense Council, et al. v. Hodel*, 865 F.2d 288 (D.C. Cir. 1988) (upholding the agency’s cost-benefit methodology).
- ¹⁴ BOEM 2017-2022 PROPOSED PROGRAM, *supra* note 12 at 5-10.
- ¹⁵ See Exec. Order No. 12,866 § 6(3)(C), 58 Fed. Reg. 51,741 (Sept. 30, 1993).
- ¹⁶ OFFICE OF MANAGEMENT AND BUDGET, EXEC. OFFICE OF THE PRESIDENT, CIRCULAR A-4: REGULATORY ANALYSIS, 1-2, 18 (Sept. 17, 2003) (hereinafter “CIRCULAR A-4”).
- ¹⁷ See *id.* at 2; Exec. Order No. 13563, 76 Fed. Reg. 3821 (Jan. 21, 2011); Exec. Order No. 12866, 58 Fed. Reg. 51735 (Oct. 4, 1993); U.S. ENVIRONMENTAL PROTECTION AGENCY, GUIDELINES FOR PREPARING ECONOMIC ANALYSES 11–2 (Dec. 17, 2010), available at [https://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0568-50.pdf/\\$file/EE-0568-50.pdf](https://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0568-50.pdf/$file/EE-0568-50.pdf).
- ¹⁸ Michael Livermore, Patience is an Economic Virtue: Real Options, Natural Resources, and Offshore Oil, 84 U. COLO. L. REV. 581, 627-28 (2013).
- ¹⁹ PUBLIC LAND LAW REVIEW COMMISSION, ONE THIRD OF THE NATION’S LAND: A REPORT TO THE PRESIDENT AND TO THE CONGRESS 1, 38 (1970).

- ²⁰ *Bills to Provide for the Management, Protection, and Development of the National Resource Lands, and for Other Purposes: Hearing on S. 1507 and S. 1292 Before the Subcomm. on Env't. and Land Res. of the S. Comm. on Interior and Insular Affairs, 94th Cong. 1 (1975)* (statement of James Evans, Legislative Rep., National Association of Counties).
- ²¹ H.R. Rep. 94-681, 38, 1976 U.S.C.C.A.N. 1943, 1975 WL 12515 (Leg. Hist.) (stating, “When an area is newly opened to large scale mining, local governmental entities must assume the responsibility of providing public services needed for new communities, including schools, roads, hospitals, sewers, police protection, and other public facilities, as well as adequate local planning for the development of the community.”) The legislative history also reflects concern as to “the waste of valuable resources, and the creation of severe environmental impacts.” *Id.* at 20.
- ²² 30 U.S.C. § 191(a).
- ²³ See CONGRESSIONAL RESEARCH SERVICE, NO. R40645, U. S. OFFSHORE OIL AND GAS RESOURCES: PROSPECTS AND PROCESSES 19 (April 26, 2010), available at <http://fpc.state.gov/documents/organization/142736.pdf>; see also Senate Hearing 113-122, Revenue Sharing Hearing before the Committee on Energy and Natural Resources, United States Senate, 113th Congress, 1st Session to Consider S. 1273, The Fair Act of 2013 (July 2013), available at <http://www.gpo.gov/fdsys/pkg/CHRG-113shrg85874/html/CHRG-113shrg85874.htm> (stating, inter alia, “Revenue sharing is vital for these [coastal] areas to adequately respond to all sorts of impacts associated with enormous influxes of people and equipment;” “States and communities will have less incentive to support this development if they’re expected to shoulder risks and absorb impacts with no opportunity for revenue sharing” “[t]here are also cumulative impacts of offshore energy development such as habitat degradation and coastal erosion that are typically not mitigated at the project level, and it is important for states to address these impacts. Therefore, a significant portion of a state’s revenue share should be directed to addressing those unmitigated cumulative impacts, including through coastal protection and restoration and investments in natural infrastructure such as forested wetlands, marshes, oyster reefs, barrier islands, and dune systems.”).
- ²⁴ *Id.*
- ²⁵ See 30 C.F.R. § 219.410(d)(1)(A)-(C).
- ²⁶ SECRETARIAL ORDER No. 3338, *supra* note 2 at 7.
- ²⁷ 30 U.S.C. § 201(a)(1); Federal Coal Leasing Amendments Act of 1975, Pub. L. No. 94-377, 90 Stat. 1083, 1087 (1976), codified as amended at 30 U.S.C. § 181 et seq.
- ²⁸ 30 U.S.C. § 187 (emphasis added).
- ²⁹ U.S. GOV’T ACCOUNTABILITY OFFICE, COAL LEASING REPORT, *supra* note 5 at 16.
- ³⁰ *Id.*
- ³¹ See 43 C.F.R. § 3400.5.
- ³² See 43 C.F.R. 3425.0-2; U.S. BUREAU OF LAND MANAGEMENT, History of the Coal Program, available at http://www.blm.gov/wy/st/en/programs/energy/Coal_Resources/PRB_Coal/history.print.html.
- ³³ See Federal Coal Leasing Amendments Act of 1975, Pub. L. No. 94-377, 90 Stat. 1083, 1087 (1976), codified as amended at 30 U.S.C. § 181 et seq. The statute states: “No lease sale shall be held unless the lands containing the coal deposits have been included in a comprehensive land-use plan and such sale is compatible with such plan. The Secretary of the Interior shall prepare such land-use plans on lands under his responsibility where such plans have not been previously prepared.” 30 U.S.C. §201(a)(3)(A)(i).
- ³⁴ U.S. BUREAU OF LAND MANAGEMENT, Coal Operations; Competitive Leasing Process, available at http://www.blm.gov/wo/st/en/prog/energy/coal_and_non-energy.html (last updated Aug. 22, 2014).
- ³⁵ Tom Sanzillo, The Great Giveaway: An analysis of The United States’ Long-Term Trend of Selling Federally Owned Coal for Less Than Fair Market Value, INSTITUTE FOR ENERGY ECONOMICS AND FINANCIAL ANALYSIS 20 (June 2012), available at https://docs.google.com/file/d/0B_qWeYLAqoq1V2YyX3hnR25lcXM/edit. The author conducted independent analysis and found that as a result of policy choices and a subjective, flawed fair market value appraisal process, the U.S. Treasury lost almost \$30 billion in revenue from the coal program during the past 30 years.
- ³⁶ Energy Policy Act of 2005, Pub. L. No. 109-58, § 211, 119 Stat. 660 (Aug. 8, 2005).
- ³⁷ U.S. DEPARTMENT OF THE INTERIOR, OFFICE OF INSPECTOR GENERAL, NO. CR-EV-BLM-0001-2012, COAL MANAGEMENT PROGRAM, U.S. DEPARTMENT OF THE INTERIOR 13 (2013), available at http://www.eenews.net/assets/2013/06/11/document_pm_01.pdf (hereinafter “INSPECTOR GENERAL REPORT”).

- ³⁸ U.S. BUREAU OF OCEAN ENERGY MANAGEMENT, FIVE-YEAR OUTER CONTINENTAL SHELF (OCS) OIL AND GAS LEASING PROGRAM, available at <http://www.boem.gov/Five-Year-Program/> (last visited June 15, 2016).
- ³⁹ *Id.*
- ⁴⁰ Energy Policy Act of 2005, Pub. L. No. 109-58, § 211, 119 Stat. 660 (2005). The Act omitted hydropower as a part of the 10,000-megawatt goal. A megawatt is 1 million watts.
- ⁴¹ U.S. DEPARTMENT OF THE INTERIOR, Order No. 3285, *Renewable Energy Development by the Department of the Interior* (March 11, 2009), available at http://www.blm.gov/or/energy/opportunity/files/order_3285.pdf.
- ⁴² U.S. DEPARTMENT OF THE INTERIOR & U.S. DEPARTMENT OF AGRICULTURE, NEW ENERGY FRONTIER: BALANCING ENERGY DEVELOPMENT ON FEDERAL LANDS 6 (2011), available at <https://www.doi.gov/sites/doi.gov/files/migrated/whatwedo/energy/upload/NewEnergyFrontier050511.pdf> (hereinafter “NEW ENERGY FRONTIER”).
- ⁴³ Hillary Clinton, *Hillary Clinton’s Plan for Conservation and Collaborative Stewardship of America’s Great Outdoors*, THE BRIEFING, available at <https://www.hillaryclinton.com/briefing/factsheets/2016/06/01/hillary-clintons-plan-for-conservation-and-collaborative-stewardship-of-americas-great-outdoors/> (last visited June 16, 2016).
- ⁴⁴ NEW ENERGY FRONTIER, *supra* note 42 at 2.
- ⁴⁵ *Id.* at 18; U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT, BLM FACT SHEET: RENEWABLE ENERGY: SOLAR (Updated May 2015) (hereinafter “SOLAR FACT SHEET”), available at http://www.blm.gov/style/medialib/blm/wo/MINERALS__REALTY__AND_RESOURCE_PROTECTION_/energy/solar_and_wind.Par.99571.File.dat/fact_Solar.pdf.
- ⁴⁶ U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT, BLM FACT SHEET: RENEWABLE ENERGY: WIND (May 2015) (hereinafter “WIND FACT SHEET”), available at http://www.blm.gov/style/medialib/blm/wo/MINERALS__REALTY__AND_RESOURCE_PROTECTION_/energy/solar_and_wind.Par.38552.File.dat/fact_Wind.pdf.
- ⁴⁷ BUREAU OF LAND MANAGEMENT, *Renewable Energy*, available at <http://www.blm.gov/wy/st/en/programs/energy/renewable.html> (last updated Mar. 12, 2015).
- ⁴⁸ NEW ENERGY FRONTIER, *supra* note 42, at 13.
- ⁴⁹ U.S. BUREAU OF LAND MANAGEMENT, *Renewable Energy Projects Approved since the Beginning of Calendar Year 2009*, http://www.blm.gov/wo/st/en/prog/energy/renewable_energy/Renewable_Energy_Projects_Approved_to_Date.html (last updated Sept. 28, 2015).
- ⁵⁰ U.S. BUREAU OF LAND MANAGEMENT, *2016-17 Renewable Energy Projects*, http://www.blm.gov/wo/st/en/prog/energy/renewable_energy/2014-15_Renewable_Energy_Projects.html (last updated Jun. 8, 2016).
- ⁵¹ *Id.*
- ⁵² Amy L. Stein, *Renewable Energy through Agency Action*, 84 U. COLO. L. REV. 651, 655-56 (2013) (citing 42 U.S.C.A. § 4332(2)(C) (2004)).
- ⁵³ See, e.g., *Protect Our Communities Foundation v. Jewell*, No. 13CV575 JLS (JMA), 2014 U.S. Dist. LEXIS 50698 (S.D. Cal. Mar. 25, 2014) (regarding a challenge to BLM’s right-of-way for 62 wind turbines on 12,360 acres of federal land in California).
- ⁵⁴ See Stein, *supra* note 52, at 703-04 (describing how some groups staked mining claims on federal lands planned for solar and wind development).
- ⁵⁵ SOLAR FACT SHEET, *supra* note 45; WIND FACT SHEET, *supra* note 46. In October 2012, then-Secretary of the Interior Ken Salazar signed the Record of Decision finalizing a Programmatic EIS for solar energy development, also known as the Western Solar Plan. A Programmatic EIS relating to the development of wind energy on the public lands was completed in June 2005.
- ⁵⁶ See U.S. BUREAU OF LAND MANAGEMENT, *Withdrawal of Public Lands for the Protection and Preservation of Solar Energy Zones for Future Energy Development*; Arizona, California, Colorado, Nevada, New Mexico, and Utah, 78 Fed. Reg. 40,499, 40,500 (July 5, 2013).
- ⁵⁷ Romany Webb and Steven Weissman, *Addressing Climate Change Without Legislation: How The Department of the Interior Can Use Its Existing Legal Authority to Reduce Greenhouse Gas Emissions and Increase Clean Energy*, CENTER FOR LAW, ENERGY, AND THE ENVIRONMENT, UC BERKELEY, SCHOOL OF LAW 24-26 (June 2014), available at https://www.law.berkeley.edu/files/1_Corrected_DOI_Report.pdf.
- ⁵⁸ U.S. ENVIRONMENTAL PROTECTION AGENCY, *Learn More About RE-Powering*, available at https://www.epa.gov/re-powering/learn-more-about-re-powering#what_is (last updated May 25, 2016).

- ⁵⁹ U.S. DEPARTMENT OF LABOR, Mine Safety and Health at a Glance, *available at* <http://arlweb.msha.gov/MSHAINFO/FactSheets/MSHAFCT10.asp> (last updated Jul. 20, 2015). See chart entitled “Coal Mine Safety and Health” and row entitled “Number of Miners.” There were 116,010 coal miners in 2014, down from 133,828 in 2008.
- ⁶⁰ THE SOLAR FOUNDATION, NATIONAL SOLAR JOBS CENSUS 2015 12 (2015), *available at* <http://www.thesolarfoundation.org/wp-content/uploads/2016/01/TSF-2015-National-Solar-Jobs-Census.pdf>; *see also* *Solar Energy Jobs Double in 5 Years*, CNN MONEY (Jan. 12, 2016), <http://money.cnn.com/2016/01/12/news/economy/solar-energy-job-growth-us-economy/>; ENVIRONMENTAL AND ENERGY STUDY INSTITUTE, Fact Sheet: Jobs in Renewable Energy and Energy Efficiency (Nov. 16, 2015), *available at* <http://www.eesi.org/papers/view/fact-sheet-jobs-in-renewable-energy-and-energy-efficiency-2015#1>.
- ⁶¹ THE WHITE HOUSE, THE PRESIDENT’S BUDGET, FISCAL YEAR 2016: INVESTING IN COAL COMMUNITIES, WORKERS, AND TECHNOLOGY: THE POWER+ PLAN, *available at* https://www.whitehouse.gov/sites/default/files/omb/budget/fy2016/assets/fact_sheets/investing-in-coal-communities-workers-and-technology-the-power-plan.pdf.
- ⁶² THE WHITE HOUSE, Press Release, Fact Sheet: Administration Announces Actions to Drive Growth in Solar Energy and Train Workers for Clean-Energy Jobs (Apr. 3, 2015), *available at* <https://www.whitehouse.gov/the-press-office/2015/04/03/fact-sheet-administration-announces-actions-drive-growth-solar-energy-an>.
- ⁶³ 40 C.F.R. § 1502.14.
- ⁶⁴ *Id.*
- ⁶⁵ *Id.*
- ⁶⁶ COUNCIL ON ENVIRONMENTAL QUALITY, EFFECTIVE USE OF PROGRAMMATIC NEPA REVIEWS, 79 Fed. Reg. 50,578, 50,580 (Aug. 25, 2014).
- ⁶⁷ *Id.* at 50,583.
- ⁶⁸ U.S. BUREAU OF LAND MANAGEMENT, Fact Sheet: Modernizing the Federal Coal Program 3 (Jan. 16, 2016), *available at* http://www.blm.gov/style/medialib/blm/wo/Communications_Directorate/public_affairs/news_release_attachments.Par.47489.File.dat/Coal%20Reform%20Fact%20Sheet%20Final.pdf.
- ⁶⁹ 42 U.S.C. § 4332(2)(C); 40 C.F.R. §§ 1502.14-1502.16.
- ⁷⁰ *Balt. Gas & Elec. Co. v. Natural Resources Defense Council, Inc.*, 462 U.S. 87, 97-98 (1983).
- ⁷¹ 40 C.F.R. §§ 1508.7, 1508.8, 1508.2.
- ⁷² COUNCIL ON ENVIRONMENTAL 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, 77,825-26 (Dec. 24, 2014).
- ⁷³ 42 U.S.C. § 4332(2)(C)(4).
- ⁷⁴ *See, e.g.*, U.S. BUREAU OF LAND MANAGEMENT, Competitive Oil and Gas Lease Sale (Jan. 26, 2016), *available at* http://www.blm.gov/style/medialib/blm/mt/blm_programs/energy/oil_and_gas/leasing/lease_sales/2016/jan26_2015/oct__28_posting.Par.85050.File.dat/January2016leasesaleDNA_10615.pdf (“Incremental GHG emissions from downstream use of oil cannot be reasonably estimated. Oil may be used as fuel, as a lubricant, or as feedstock for chemical or plastic production. If used as a lubricant or feedstock, the oil would not be combusted and GHG emission estimates based on combustion would be incorrect. Attempts to estimate GHG emissions from downstream activities also lead to overestimation of global GHG emissions by counting combustion emissions at the production stage and again in GHG inventories of vehicular, residential, and industrial sources, which are already inventoried at end user sites”). In addition the Records of Decision for BLM’s Wright Area coal leases do not mention estimated greenhouse gas releases associated with the combustion of the leased coal to generate electricity. *See, e.g.*, U.S. BUREAU OF LAND MANAGEMENT, Record of Decision: North Hilight Field Lease by Application, Wyw164812, Campbell County, Wyoming 11-12 (February 2012), *available at* http://www.blm.gov/style/medialib/blm/wy/information/NEPA/hpdo/Wright-Coal/n-hilite.Par.6759.File.dat/N_H-ROD.pdf (“Issuing a Federal coal lease for the North Hilight Field tract would not result in the creation of new sources of human-caused GHG or mercury emissions.”).
- ⁷⁵ BOEM 2017-2022 PROPOSED PROGRAM, *supra* note 12.
- ⁷⁶ Jessica Wentz, Grant Glovin, and Adrian Ang, *Survey of Climate Change Considerations in Federal EISs, 2012-201*, Sabin Center for Climate Change Law, Columbia Law School (Feb. 2016), *available at* https://web.law.columbia.edu/sites/default/files/microsites/climate-change/survey_of_climate_change_considerations_in_federal_environmental_impact_statements_2012-2014.pdf.
- ⁷⁷ Exec. Order No. 13,563 §§ 1(b); Exec. Order No. 12,866 §1(b)(6).

- ⁷⁸ CIRCULAR A-4, *supra* note 16 at 2.
- ⁷⁹ *Id.* at 27 (“You should monetize quantitative estimates whenever possible.”).
- ⁸⁰ COUNCIL ON ENVIRONMENTAL 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, 77,827 (Dec. 24, 2014). CEQ does not address the Social Cost of Methane in this document.
- ⁸¹ DEPARTMENT OF THE INTERIOR, Proposed Rule: Waste Prevention, Production Subject to Royalties, and Resource Conservation, 81 Fed. Reg. 6616, 6624 (Feb. 8, 2016) (“BLM estimates that this rule would result in monetized benefits of \$255–329 million per year (using a 7 percent discount rate to calculate the present value of future annual cost savings, and using model averages of the Social Cost of Methane with a 3 percent discount rate) or \$255–357 million per year (using a 3 percent discount rate to calculate the present value of future annual cost savings, and using model averages of the Social Cost of Methane with a 3 percent discount rate).”).
- ⁸² U.S. ENVIRONMENTAL PROTECTION AGENCY, REGULATORY IMPACT ANALYSIS OF THE FINAL OIL AND NATURAL GAS SECTOR: EMISSION STANDARDS FOR NEW, RECONSTRUCTED, AND MODIFIED SOURCES, EPA-452/R-16-002 (MAY 2016); U.S. ENVIRONMENTAL PROTECTION AGENCY, REGULATORY IMPACT ANALYSIS FOR THE PROPOSED REVISIONS TO THE EMISSION GUIDELINES FOR EXISTING SOURCES AND SUPPLEMENTAL PROPOSED NEW SOURCE PERFORMANCE STANDARDS IN THE MUNICIPAL SOLID WASTE LANDFILLS SECTOR, EPA-452/R-15-008 (August 2015).
- ⁸³ U.S. BUREAU OF OCEAN ENERGY MANAGEMENT, 2017–2022 OCS OIL AND GAS LEASING DRAFT PROPOSED PROGRAM at B-9 (Jan. 2015), *available at* <http://www.boem.gov/2017-2022-DPP/>.
- ⁸⁴ *See* U.S. BUREAU OF LAND MANAGEMENT, Competitive Oil and Gas Lease Sale 13-14 (Jan. 26, 2016), *available at* http://www.blm.gov/style/medialib/blm/mt/blm_programs/energy/oil_and_gas/leasing/lease_sales/2016/jan26_2015/oct__28_posting.Par.85050.File.dat/January2016leasesaleDNA_10615.pdf (“The BLM finds that using SCC in its NEPA analysis for this proposed action, which is not a rulemaking, would not be useful....”).
- ⁸⁵ For more information on the development and methodology behind the Social Cost of Carbon and Social Cost of Methane, *see* Institute for Policy Integrity, Environmental Defense Fund, and Natural Resources Defense Council, *Joint Comments on RIN 1004-AE14, Waste Prevention, Production Subject to Royalties, and Resource Conservation* (Apr. 22, 2016), *available at* http://policyintegrity.org/documents/Joint_Comments_to_BLM_April2016.pdf.
- ⁸⁶ INTERAGENCY WORKING GROUP ON THE SOCIAL COST OF CARBON, TECHNICAL SUPPORT DOCUMENT: TECHNICAL UPDATE OF THE SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12,866 (2015); *see also* INTERAGENCY WORKING GROUP ON THE SOCIAL COST OF CARBON, TECHNICAL SUPPORT DOCUMENT: TECHNICAL UPDATE OF THE SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12,866 (2013), *available at* <http://www.whitehouse.gov/sites/default/files/omb/assets/inforeg/technical-update-social-cost-of-carbon-for-regulator-impact-analysis.pdf>.
- ⁸⁷ Alex L. Marten et al., Incremental CH₄ and N₂O Mitigation Benefits Consistent With the US Government’s SCCO₂ Estimates, CLIMATE POLICY (2014).
- ⁸⁸ Specifically, Marten et al. builds on the methodology used by the Interagency Working Group to develop the SCC. The study maintains the same three integrated assessment models, five socioeconomic-emissions scenarios, equilibrium climate sensitivity distribution, three constant discount rates, and aggregation approach that were agreed upon by the Interagency Working Group. Consequently, many of the key assumptions underlying the Social Cost of Methane estimates have already gone through a transparent, consensus-driven, publicly reviewed, regularly updated process, since they were borrowed from the Interagency Working Group’s vetted methodology. Marten et al.’s Social Cost of Methane estimates also directly account for the quicker time horizon of methane’s effects compared to carbon dioxide, include the indirect effects of methane on radiative forcing, and reflect the complex, nonlinear linkages along the pathway from methane emissions to monetized damages. Marten et al. was published in a peer reviewed economics journal, and EPA conducted additional internal and peer review of this methodology. However, the Social Cost of Methane methodology does not yet fully reflect the effects of methane oxidizing in the atmosphere over time and becoming carbon dioxide. *See* U.S. ENVIRONMENTAL PROTECTION AGENCY, REGULATORY IMPACT ANALYSIS FOR THE PROPOSED EMISSION STANDARDS FOR NEW AND MODIFIED SOURCES IN THE OIL AND NATURAL GAS SECTOR, EPA-452/R-15-002, 4-37 (August 2015), *available at* https://www3.epa.gov/airquality/oilandgas/pdfs/og_prop_ria_081815.pdf.

- ⁸⁹ U.S. ENVIRONMENTAL PROTECTION AGENCY, WHITE-PAPER ON VALUING METHANE EMISSIONS CHANGES IN REGULATORY BENEFIT-COST ANALYSIS, PEER REVIEW CHARGE QUESTIONS, AND RESPONSES, *available at* <https://www3.epa.gov/climatechange/pdfs/social%20cost%20methane%20white%20paper%20application%20and%20peer%20review.pdf>.
- ⁹⁰ See Institute for Policy Integrity, Environmental Defense Fund, and Natural Resources Defense Council, *Joint Comments on RIN 1004-AE14, Waste Prevention, Production Subject to Royalties, and Resource Conservation* (April 22, 2016), *available at* http://policyintegrity.org/documents/Joint_Comments_to_BLM_April2016.pdf.
- ⁹¹ See Exec. Order No. 13,563, 76 Fed. Reg. 3821 (Jan. 18, 2011).
- ⁹² 43 U.S.C. § 1701(a)(9).
- ⁹³ See SECRETARIAL ORDER NO. 3338, *supra* note 2 at 4; INSPECTOR GENERAL REPORT, *supra* note 37; U.S. U.S. GOV'T ACCOUNTABILITY OFFICE, COAL LEASING REPORT, *supra* note 5.
- ⁹⁴ OMB Circular A-4, *supra* note 16 at 2-3.
- ⁹⁵ See Exec. Order No. 13563, 76 Fed. Reg. 3821 (Jan. 21, 2011); Exec. Order No. 12866, 58 Fed. Reg. 51735 (Oct. 4, 1993); Circular A-4, *supra* note 16 at 2-3; U.S. ENVIRONMENTAL PROTECTION AGENCY, GUIDELINES FOR PREPARING ECONOMIC ANALYSES 11-2 (Dec. 17, 2010).
- ⁹⁶ See Spencer Reeder and James H. Stock, *Federal Coal Leasing Reform Options: Effects on CO₂ Emissions and Energy Markets: Executive Summary* (Feb. 2016); Vulcan Philanthropy, *Federal Coal Leasing Reform Options: Effects on CO₂ Emissions and Energy Markets: Summary of Modeling Results* (Jan. 26, 2016); Jayni Foley Hein and Peter Howard, *Illuminating the Hidden Costs of Coal*, INSTITUTE FOR POLICY INTEGRITY, NYU SCHOOL OF LAW (Dec. 2015); A.J. Krupnick et. al., *Putting a Carbon Charge on Federal Coal: Legal and Economic Issues*, Resources for the Future Discussion Paper 15-13 (Mar. 2015); *see also* David Hayes and James Stock, "The Real Cost of Coal," N.Y. TIMES (Mar. 24, 2015), http://www.nytimes.com/2015/03/24/opinion/the-real-cost-of-coal.html?_r=1.
- ⁹⁷ Circular A-4, *supra* note 16 at 10 ("Even when a benefit or cost cannot be expressed in monetary units, you should still try to measure it in terms of its physical units. If it is not possible to measure the physical units, you should still describe the benefit or cost qualitatively").
- ⁹⁸ See SECRETARIAL ORDER NO. 3338, *supra* note 2 at 7.
- ⁹⁹ Hein and Howard, *Illuminating the Hidden Costs of Coal*, *supra* note 9 at 1. One limitation of the NYU study is that it used an average elasticity of supply of between 1 and 3 to account for substitution effects from higher royalty rates between coal produced from different basins (federal, state, and private), and among coal, natural gas, oil, and renewables. The Vulcan study, by contrast, modeled the effect of different royalty rates scenarios using ICF International's Integrated Planning Model, which is commonly used by U.S. EPA and other agencies.
- ¹⁰⁰ Hein & Howard, *Illuminating the Hidden Costs of Coal*, *supra* note 9 at 7.
- ¹⁰¹ Reeder and Stock, *Federal Coal Leasing Reform Options: Effects on CO₂ Emissions and Energy Markets: Executive Summary*, *supra* note 96 at 4.
- ¹⁰² *Id.* at 1.
- ¹⁰³ *Id.* at 7.
- ¹⁰⁴ SECRETARIAL ORDER NO. 3338, *supra* note 2 at 8.
- ¹⁰⁵ U.S. BUREAU OF LAND MANAGEMENT, *Final Environmental Impact Statement for the Wright Area Coal Lease Applications*, Vol. 1, at 4-137 (July 2010), *available at* <http://www.blm.gov/style/medialib/blm/wy/information/NEPA/hpdo/Wright-Coal/feis.Par.33083.File.dat/01WrightCoalVol1.pdf> (hereinafter "Wright Area EIS").
- ¹⁰⁶ See, e.g., Christophe McGlade and Paul Ekins, "The Geographical Distribution of Fossil Fuels Unused When Limiting Global Warming to 2°C", 517 NATURE 187, 187-190 (Jan. 8, 2015) (finding that globally over 80% of current coal reserves should remain unused from 2010 to 2050 to meet the target of 2 degrees Celsius).
- ¹⁰⁷ THE WHITE HOUSE, OFFICE OF THE PRESS SECRETARY, FACT SHEET: U.S. REPORTS ITS 2025 EMISSIONS TARGET TO THE UNFCCC (Mar. 31, 2015), *available at* <https://www.whitehouse.gov/the-press-office/2015/03/31/fact-sheet-us-reports-its-2025-emissions-target-unfccc>.
- ¹⁰⁸ 43 U.S.C. § 1702(c).
- ¹⁰⁹ 43 U.S.C. § 1701(a)(1).
- ¹¹⁰ 43 U.S.C. § 1701(a)(8).
- ¹¹¹ 43 U.S.C. § 1712(a)-(c)(1).
- ¹¹² *Id.* § 1702(c) (emphasis added).
- ¹¹³ *Id.* (emphasis added).

- ¹¹⁴ Exec. Order No. 13,693, 80 Fed. Reg. 15,871 (March 25, 2015).
- ¹¹⁵ Peter Erickson and Michael Lazarus, *How Would Phasing Out U.S. Federal Leases for Fossil Fuel Extraction Affect CO₂ Emissions and 2°C Goals?* Working Paper No. 2016-12, STOCKHOLM ENVIRONMENT INSTITUTE (2016), available at <https://www.sei-international.org/mediamanager/documents/Publications/Climate/SEI-WP-2016-US-fossilfuel-leases-climate.pdf>.
- ¹¹⁶ *Id.* at 22.
- ¹¹⁷ *Wright Area EIS*, *supra* note 105 at 4-141 (“It is not likely that selection of the No Action alternatives would result in a decrease of U.S. CO₂ emissions attributable to coal mining and coal-burning power plants in the longer term, because there are multiple other sources of coal that, while not having the cost, environmental, or safety advantages, could supply the demand for coal beyond the time that the Black Thunder, Jacobs Ranch, and North Antelope Rochelle mines complete recovery of the coal in their existing leases.”).
- ¹¹⁸ *WildEarth Guardians, v. U.S. Bureau of Land Management*, Case No. 15-8109 (10th Cir. 2016). The Institute for Policy Integrity submitted an amicus brief in support of petitioners-appellants in this case, which focused on substitution analysis. See Brief of the Institute for Policy Integrity at New York University School of Law as Amicus Curiae in Support of Petitioners-Appellants, Case No. 15-8109 (10th Cir., Feb. 5, 2016), available at http://policyintegrity.org/documents/10th_Cir_BLM_Brief.pdf (hereinafter, “Policy Integrity 10th Circuit Amicus Brief”).
- ¹¹⁹ Policy Integrity 10th Circuit Amicus Brief, *supra* note 118 at 25-27. The U.S. Court of Appeals for the Eighth Circuit criticized the Surface Transportation Board for “illogical[ly]” concluding that approving new railroad lines to Powder River Basin coal mines would not affect the demand for and consumption of coal, and for ignoring “widely used” models capable of forecasting such effects. *Mid States Coalition for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 549–550 (8th Cir. 2003). “On remand, the Board undertook just such a study using the Energy Information Administration’s (EIA) National Energy Modeling System (NEMS) . . . [which] not only forecasts coal supply and demand but also quantifies environmental impacts.” *Mayo Foundation v. Surface Transp. Bd.*, 472 F.3d 545, 555 (8th Cir. 2006). The U.S. District Court of Colorado “[could] not make sense” of the Forest Service’s assumption that approving road construction through national forests to reach Colorado coal mines would not increase coal production and consumption. *High Country Conservation Advocates v. Forest Service*, 52 F. Supp. 3d 1174, 1197 (D. Colo. 2014).
- ¹²⁰ For more information on the benefits and drawbacks of these three models for Interior’s coal PEIS, and detailed selection criteria, see Peter H. Howard, *The Bureau of Land Management’s Modeling Choice for the Federal Coal Programmatic Review*, INSTITUTE FOR POLICY INTEGRITY, NYU SCHOOL OF LAW (June 2016), available at http://policyintegrity.org/files/publications/BLM_Model_Choice.pdf.
- ¹²¹ *Id.*
- ¹²² *Id.*
- ¹²³ U.S. BUREAU OF LAND MANAGEMENT, FACT SHEET: MODERNIZING THE FEDERAL COAL PROGRAM 3 (Jan. 16, 2016), available at http://www.blm.gov/style/medialib/blm/wo/Communications_Directorate/public_affairs/news_release_attachments.Par.47489.File.dat/Coal%20Reform%20Fact%20Sheet%20Final.pdf.
- ¹²⁴ 30 U.S.C. §209.
- ¹²⁵ 43 C.F.R. §§3473.3-2(e), 3485.2(c)(1).
- ¹²⁶ Mark Haggerty, An Assessment of U.S. Federal Coal Royalties Current Royalty Structure, Effective Royalty Rates, and Reform Options, HEADWATERS ECONOMICS 8 (Jan. 2015), available at <http://headwaterseconomics.org/wphw/wp-content/uploads/Report-Coal-Royalty-Valuation.pdf>.
- ¹²⁷ U.S. GOV’T ACCOUNTABILITY OFFICE, COAL LEASING REPORT, *supra* note 5 at 25.
- ¹²⁸ The White House, Office of the Press Secretary, Remarks of President Barack Obama – State of the Union Address As Delivered (Jan. 13, 2016), available at <https://www.whitehouse.gov/the-press-office/2016/01/12/remarks-president-barack-obama-%E2%80%93-prepared-delivery-state-union-address>.
- ¹²⁹ SECRETARIAL ORDER NO. 3338, *supra* note 2 at 7.
- ¹³⁰ Of almost 450 square miles of disturbed lands in Wyoming, Montana and North Dakota, only 46 square miles have been successfully reclaimed. NATIONAL WILDLIFE FEDERATION, NATURAL RESOURCES DEFENSE COUNCIL, AND WESTERN ORGANIZATION OF RESOURCE COUNCILS, *Undermined Promise II* at 4 (2015), available at <http://www.underminedpromise.org/UnderminedPromiseII.pdf>.
- ¹³¹ Michael Corkery, “Regulators Fear \$1 Billion Coal Cleanup Bill,” N.Y. TIMES (June 6, 2016), available at http://www.nytimes.com/2016/06/07/business/dealbook/regulators-fear-1-billion-coal-cleanup-bill.html?smprod=nytcore-iphone&smid=nytcore-iphone-share&_r=0.

¹³² See 43 C.F.R. § 3422.1(c)(2).

¹³³ See 30 U.S.C. § 1259.

¹³⁴ Hein & Howard, *Reconsidering Coal's Fair Market Value*, *supra* note 9 at 5-6.

¹³⁵ *Center for Sustainable Economy v. Jewell*, 779 F.3d 588, 610 (D.C. Cir. Mar. 6, 2015). Policy Integrity served as counsel to Petitioner, Center for Sustainable Economy.

¹³⁶ See BOEM 2017-2022 PROPOSED PROGRAM, *supra* note 12 at 5-20, 8-1 to 8-19.

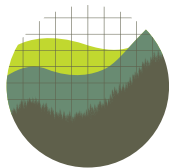
¹³⁷ See 30 U.S.C. § 184.

¹³⁸ 30 U.S.C. § 1259.

¹³⁹ 30 U.S.C. §1202(c)-(e).

¹⁴⁰ See 30 U.S.C. § 184.

¹⁴¹ These recommendations will be detailed in a separate report.



Institute *for*
Policy Integrity

NEW YORK UNIVERSITY SCHOOL OF LAW

Institute for Policy Integrity
New York University School of Law
Wilf Hall, 139 MacDougal Street, New York, New York 10012
policyintegrity.org