

May 4, 2017

**Submitted by Email to Luis Aguilar, Regulatory Specialist at**  
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Office of Natural Resources Revenue  
Building 53, Entrance E-20  
Denver Federal Center  
West 6<sup>th</sup> Avenue and Kipling St.  
Denver, CO 80225

**Re: Comments on Regulation Identifier (RIN) 1012-AA21, Advance Notice of  
Proposed Rulemaking, Federal Oil and Gas and Federal and Indian Coal Valuation**

To whom it may concern:

Please accept these comments on the above referenced action, RIN 1012-AA21. I submit these comments as a former state tax official with over thirty years of experience in public rules development and in non-arm's length valuation issues arising in the property, corporate income, and mineral taxation context. That experience included initiating and providing oversight for Montana's participation in the joint state-federal mineral royalty auditing program. I served as Deputy Director of the Montana Department of Revenue (1981-1988), Executive Director of the Multistate Tax Commission (1988-2004), and Montana Director of Revenue (2005-2013). Since 2013, I have continued writing and consulting in these fields.

I previously commented during original rules development process on the Consolidated Federal Oil & Gas and Federal & Indian Coal Valuation Reform; Proposed Rule, RIN 1012-AA13, in a letter of May 8, 2015 co-signed with seven Montana legislators. That letter is identified on ONRR's website at [https://onrr.gov/Laws\\_R\\_D/FRNotices/AA13.htm](https://onrr.gov/Laws_R_D/FRNotices/AA13.htm) as "Montana State Legislature," (letter attached). Further, I testified on these rules and related issues before the Subcommittee on Energy and Mineral Resources of the Committee on Natural Resources of the U.S. House of Representatives on December 8, 2015 (testimony attached).

I specifically request that you incorporate (1) the Montana State Legislature letter of May 8, 2015 and (2) the attached testimony presented to the Subcommittee on Energy and Mineral Resources as part of these comments for consideration in the rulemaking process. The remaining documents attached are for reference by ONRR on the specific matters for which they are cited in these comments.

**A. If the 2017 Valuation Rule is repealed, is new rulemaking beneficial or necessary?**

Yes, if the 2017 Valuation Rule is repealed—an event that should not occur—then new rulemaking will be essential and highly beneficial. It will be especially needed to ensure the American people and Indian tribes receive a fair return from the public minerals they own and to provide state and local communities where federal minerals production occurs fair and proper revenues to manage the needs and impacts of resource development. Those are the principal goals that the Mineral Leasing Act establishes for royalty administration. Repealing the 2017 Valuation Rule will revert to the prior valuation rules, which are an uneven and obsolete set of rules that fail miserably to meet the standards of the Mineral Leasing Act.

Before commenting further, I would note that I am strongly opposed to repeal of the 2017 Valuation Rule—a rule that was carefully developed over several years. This rule significantly improved royalty administration especially in terms of ensuring a fair return to the public from their mineral resources. Nothing stated here should be remotely construed as sanctioning the repeal of the 2017 Valuation Rule. For reference, please see the comments I submitted to Interior on the proposed repeal, RIN 1012-AA20.

The question in this notice about whether, in the assumed scenario, new rulemaking would be beneficial or necessary is somewhat surprising because a decade ago, during the Bush Administration, Interior’s Subcommittee on Royalty Management in a December 2007 report answered that question in the affirmative.<sup>1</sup> The subcommittee made four recommendations (numbered 4-24 through 4-27) for updates in oil, gas and coal valuation regulations. Those recommendations including ones pertaining to cost-bundling and valuation of non-arm’s length transactions for natural gas and valuation of non-arm’s length transactions for coal. The Royalty Management Subcommittee considered these rules urgent because they asked Interior to propose rules on those topics by the end of FY 2008, a mere nine months after their report. That schedule was not met. Instead, these subjects were folded into the extensive and careful rulemaking process from 2011 through 2016 that produced the 2017 Valuation Rule. If that rule is repealed, the rules revert to those that the Royalty Management Subcommittee in 2007 found urgently in need of improvement.

More generally, in my congressional testimony of December 8, 2015, I characterized the “current system” at the time—the rules preceding the 2017 Valuation Rule—as follows:

The current system of producer self-reporting of mineral royalties has shortchanged the American people and Indian tribes by an enormous number of billions of dollars over several decades, the exact amounts of which are lost to history. The current system allows some producers to undervalue coal and underpay royalties by ignoring the full value of export sales, manipulating prices through non-arm’s length transactions, and

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<sup>1</sup> [https://www.onrr.gov/Laws\\_R\\_D/RoyPC/PDFDocs/RPCRMS1207.pdf](https://www.onrr.gov/Laws_R_D/RoyPC/PDFDocs/RPCRMS1207.pdf). See pages 71 to 73 of that report where four recommendations on the need to update royalty valuation rules are made.

inflating deductions and exclusions from value.

Worse yet, these practices are hidden from the American people who own the coal in secret returns and records. The public owns this coal and has a right to know the details of what they are being paid or not paid. Instead, taxpayers, the press and independent experts are all excluded from knowing whether coal producers are paying the right amount of royalties on the correct value for coal. The history of recurring crises over federal mineral royalties teaches that secrecy only perpetuates royalty abuses and that greater transparency is a fundamental remedy necessary to achieve equity and integrity in public royalties.<sup>2</sup>

The evidence on how and to what extent the American people and Indian tribes have been shortchanged by the rules that preceded the 2017 Valuation Rule is abundant. In addition to the Royalty Management Subcommittee report, here is a brief sample of that evidence:

- Isaiah T. Peterson’s 2015 law review article, “Devaluing Coal: Reasons for Restructuring How Federal Coal Is Valued,” that comprehensively inventories the loopholes in current federal royalty rules that facilitate lessee underreporting of royalties.<sup>3</sup>
- The July 2011 letter from Michael Geesey, Director, and Steve Dilsaver, Administrator of the Mineral Audit Division, Wyoming Department of Audit, recommending replacement of the benchmark rules which Wyoming (the nation’s largest coal-producing state) judged to be “unworkable,” “not effectively consistent,” and “suspect for their accuracy,”<sup>4</sup>
- An analysis by Tom Sanzillo, Institute for Energy Economics and Financial Analysis, that coal producers underpaid federal royalties by \$20.5 to \$21.8 over 27 years from 1983 through 2009 for the Powder River Basin alone.<sup>5</sup>
- Estimates by Mark Haggerty and Julia Haggerty, Headwaters Economics, that the effective coal royalty rate was 4.9% instead of 12.5%.<sup>6</sup>

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<sup>2</sup> Dan R. Bucks, “Ensuring Certainty for Royalty Payments on Federal Resource Production,” Testimony before the Subcommittee on Energy and Mineral Resources, Committee on Natural Resources, U.S. House of Representatives, December 8, 2015: 4.

<sup>3</sup> Isaiah T. Peterson, “Devaluing Coal: Reasons for Restructuring How Federal Coal Is Valued,” *Georgetown Journal of Law and Public Policy*, Winter 2015, 13(1): 165-180.

<sup>4</sup> Michael Geesey and Steve Dilsaver, Letter to Hyla Hurst, Office of Natural Resources Revenue, U.S. Dept. of Interior, responding to the “Advanced Notice of Federal Rulemaking, Federal and Indian Coal Valuation) 76 Fed. Reg. 30881, July 26, 2011.

<sup>5</sup> Tom Sanzillo, “The Great Giveaway: An Analysis of the Costly Failure of Federal Coal Leasing in the Powder River Basin,” Cleveland, OH: Institute for Energy Economics and Financial Analysis, June 25, 2012.

<sup>6</sup> Haggerty, Mark and Julia Haggerty. 2015. “An Assessment of U.S. Federal Coal Royalties: Current Royalty Structure, Effective Royalty Rates, and Reform Options.” Bozeman, MT: Headwaters Economics.

- The admission by Cloud Peak Energy to the Montana Supreme Court that it sold coal from the same mine in arm's length sales at prices approximately 30% above the price it charged its own affiliates in 2005.<sup>7</sup>

In addition, the rules that preceded the 2017 Valuation Rule were out-of-date because of changing business, operational and technological practices. If the 2017 Valuation Rule is repealed, there will be an obvious need to re-adopt the changes that corrected the obsolescence of the prior rules.

There should be no doubt that if the 2017 Valuation Rules are repealed, Interior should on both policy and technical grounds undertake new rulemaking by re-noticing the same rule with some recommended changes discussed below. The 2017 Valuation Rule is an excellent rule developed carefully and with substantial public participation over nearly a six-year period. A clear majority of its provisions represent the right solutions to the problems addressed. There is no other magic answer out there that will provide a better foundation for future rules. The prior rules are woefully inadequate in meeting standards of the Mineral Leasing Act and do a serious disservice to the American people and Indian tribes. That is why it would unacceptable for Interior to repeal of the 2017 Valuation Rule.

However, if Interior does repeal the rule reverts to the prior rules, the specific changes that are needed are to simply adopt again the 2017 Valuation Rule with three categories of adjustment:

1. Eliminate underreporting and create equity among producers by transitioning to direct valuation of coal and an index of coal transportation costs developed and maintained by the Office of Natural Resources—a system that can be first applied to the default provision and then expanded to general use,
2. Increase transparency of mineral royalties by publishing royalty payments and values by lease and by company in ways consistent with emerging international transparency standards, and
3. Eliminate the deduction for washing coal because it is a cost of placing coal into a marketable condition.

These recommendations and their rationale are discussed further in response to the second scenario and questions posed in the ANPRM.

## **B. If the 2017 Valuation Rule is not repealed, what potential changes in the 2017 Valuation Rule are needed?**

The ANPRM poses specific topics it wishes commentators to address. I will do so, and in the context of those answers, also discuss in greater detail the three recommendations for change in the 2017 Valuation Rule identified above. First, however, I will discuss further the two sources of problems that undermine fair and effective valuation of coal for public

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<sup>7</sup> Cloud Peak Energy Resources, Opening Brief, *Cloud Peak Energy Resources, LLC v. State of Montana Department of Revenue*, Montana Supreme Court, DA-14-0057, June 13, 2014, 20.

royalty purposes. The sources of those problems are, as noted above, (a) producer self-reporting and (b) excessive secrecy that allows abuses in royalty reporting to grow and persist over time and prevents the public from knowing what they are receiving from the sale of the coal they own.

The law review article by Isaiah T. Peterson (attached) referenced above provides an excellent inventory of the myriad ways producers can use the royalty rules that preceded the 2017 Valuation Rule to manipulate and underreport royalties in the self-reporting process. The 2017 Valuation Rule reduced, but did not eliminate, all the problems with self-reporting. Here is how I described the problems of self-reporting in the congressional testimony of December 2015:

As noted, relying on producer self-reporting of coal proceeds to determine royalties does not fit well with the Mineral Leasing Act. The law specifies that “a lease shall require payment of a royalty in such amount as the Secretary shall determine of not less than 12 1/2 per centum of the value of coal as defined by regulation . . .” The law places the Secretary in charge of determining the value of coal. Instead, Interior allows producers, who have an interest in minimizing payments, to determine in the first instance the base for royalty purposes. In doing so, Interior has reduced its authority over the royalty process and delegated too much power to producers to determine what they pay.

Producer self-reporting also switches the royalty base from the value of coal to the proceeds or receipts received by the lessee from producing coal. The value of coal and producers’ reported proceeds are different from each other in concept and frequently in practice. Indeed, some lessees work hard and often successfully to ensure that reported proceeds are often significantly less than the value of coal.

Producers can reduce reported proceeds below market value by several means. They can structure contracts to artificially divide receipts from coal into two parts: (1) unit prices for coal at below market value on which royalties are paid and (2) payments received ostensibly for things other than the production and disposition of coal that are left out of royalties. The latter include take or pay contract penalties, various management fees, contract settlement payments and a host of other payments that are excluded from the base for calculating royalties even though they are actually a part of the value of the coal.

Producers can also sell at higher prices in export markets without paying royalties reflecting those prices—and in the process can also manipulate mine mouth prices below market levels. They can avoid royalties on export values by selling coal to their own captive affiliates at the mine with the affiliate subsequently reselling the coal at a higher price at the export terminal free of royalty on the incremental market value. Producers can add an extra boost to their royalty savings by selling coal at the mine to their affiliates at depressed, non-arm’s length prices. Through the use of affiliates, producers can also inflate payments for transportation deductions and implicitly subtract costs—packaged inside other transactions—for marketing activities and other

services that, in fact, are not allowable deductions at all. The problem exists beyond export sales. Producers can also use the strategies of marketing through affiliates and manipulating prices to avoid royalties on sales into specialized, domestic markets. Relying on producer reporting of proceeds opens the door to a host of complex accounting strategies that are difficult and costly for Interior to police and that deny the public a fair return calculated on the true value of federal coal.<sup>8</sup>

There is a fundamental problem in relying on companies to self-report because they have a self-interest in cutting royalty costs by undervaluing minerals for royalty purposes. Secrecy to protect proprietary information results in hiding abuses from public scrutiny that would discourage such activities. Direct valuation by Interior of the coal, modeled after property taxation, is the solution to this problem. In doing so, it also creates the potential for significant public disclosure of royalty payments and values that can keep abuses in check because proprietary financial information would not be released.

*Should ONRR have one rule addressing federal oil and gas and federal and Indian coal valuation, or separate rulemakings?*

ONRR should have one rule addressing competing non-renewable fossil fuels. With increasing competition among these fuels in the market place, especially between coal and natural gas, it is important to ensure that these fuels are treated consistently with each other whenever consistency is needed. Further, royalty valuation rules for these different fuels should be updated on the same schedule to prevent the rules for one fuel being out-of-date as compared to other fuels. Certainly, there will be differences among the treatment of each fuel type. However, one rule helps ensure comparable treatment among these fuels.

*What is the best way to value non-arm's length coal sales and/or sales between affiliates?*

The best way is for Interior to directly value it as a property tax, which is, in fact, the basic method authorized in the Mineral Leasing Act. This idea was endorsed in a 2016 report by the U.S. Council of Economic Advisors, "The Economics of Coal Leasing on Federal Lands: Ensuring a Fair Return to Taxpayers."<sup>9</sup> Direct valuation, in general terms, would operate as follows:

Interior should reclaim its rightful authority under the mineral leasing law to determine the true market value of coal. It should replace producer self-reporting with a professional appraisal system to establish the market value of coal on a full, equitable and uniform basis. Interior should also directly establish the amount of allowable transportation deductions based on the most efficient, lowest cost means of transporting coal to its markets.

A direct coal valuation system should use a uniform starting point: arm's length market

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<sup>8</sup> Bucks Testimony, 4-5.

<sup>9</sup> U.S. Council of Economic Advisers, *The Economics of Coal Leasing on Federal Lands: Ensuring a Fair Return to Taxpayers.* June 2016. See especially pp. 18-19.

prices at the point of final sale in the United States. To set these values, Interior can rely on existing coal sales information and on enhanced reporting by producers of sales made both directly and through affiliates—reporting that Interior can require under their contracts with mineral lessees. Through well-established statistical procedures and methodologies, Interior can use a “market basket” of valid, arm’s length sales prices to determine values that are more representative of the true market value of coal than the transactions reported by producers.

Values would be set and published periodically, perhaps quarterly, for categories of coal by quality and type. Because Interior establishes these standardized market values, they can be made public. Indeed, they must be publicly released so that producers know the values they need to use in calculating their royalty payments.

Working with the Surface Transportation Board, Interior would similarly establish allowable deductions for coal transportation deductions on a least cost basis.

As an integral part of this valuation system, Interior would regularly provide a public report to the citizens and taxpayers of this nation on the amount of royalties paid on each lease and the values used in the calculation of those royalties. A direct valuation system allows these public reports to be issued because typically that data will not be proprietary information taken from producer financial statements. In the rare cases of limited sales where proprietary information may be involved, Interior can protect that data. However, those cases should be the exception instead of the rule.

A direct valuation system for coal royalties will best ensure that the public and Indian tribes receive a fair return on the coal they own. It will also improve equity among producers. Those producers paying the right amount of royalties under current practices will no longer be placed at a disadvantage as compared to those producers that game the system. All producers will be encouraged to use the most efficient transportation methods. Most importantly, the system will become open and transparent. By allowing the public to know what they are receiving in royalties on each lease and the values on which those royalties are calculated, abuses of the royalty system will be discouraged and public trust will be enhanced.<sup>10</sup>

Direct valuation is also referred to in mineral royalty administration as “agency creation of a coal price index.” In response to recommendations on this approach last year in the adoption notice for the 2017 Valuation Rules, ONNR responded as follows:

As to the comments that we should generate an index price for lessees to use, we decline to do so at this time. First, as mentioned above, there are no reliable indexes for coal like there are for oil and gas, making it difficult for us to create index-based prices similar to those used in our Indian oil and gas regulations. Second, if we use arm’s-length sales from the royalty reports that we receive, we risk divulging proprietary

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<sup>10</sup> Bucks Testimony, 6-7

data. We will monitor the coal market and may be open to considering an index-based valuation option if the indexes become viable in the future.<sup>11</sup>

I was encouraged that ONRR was open to considering such a system in the future. I was discouraged that there had not been an opportunity to have a dialogue on the practical aspects of developing the information and protecting the proprietary data, both of which I consider entirely feasible. Such a system can be built on the reporting that would be required by producers under the 2017 Valuation Rules, plus additional reporting to the Energy Information Administration, state utility regulators, and public data sources. The “commodity nature” of coal with its limited uses and limited range of characteristics makes it inherently easier to value than, for example, residential and commercial property. Yet systems of information and valuation have been developed to value those properties accurately. Further, statistical modeling methods exist in the property valuation field that overcome data limitations. What is needed is an opportunity to gather experts together in a workshop setting to explore the challenges that may exist and how they can be overcome. My own judgment from diverse experience in valuation and taxation is that the systems can be developed that would satisfy ONRR’s concerns.

The system does not need to be developed all at once. In fact, the best approach might be to begin to develop the data sources and valuation models as the methodology to administer the default provision. The publicly developed data could be called upon for use in cases where the default provision is invoked. The advance availability of this data should resolve the concern that is raised by some coal companies that the default provision is unpredictable in its consequences. Contemporaneous and continuous development and publication by Interior-determined fair market values in a matter of weeks or a few months after a reporting period can make the prospective results of a default valuation entirely predictable for companies and ONRR alike.

As the data is published and evaluated publicly and used from time to time for default valuation purposes, the process will improve and the comfort level and acceptability of its use can increase. At that stage, ONRR can begin to move toward full implementation of a direct valuation system. Such a system will be much simpler, less costly, and more equitable than the current self-reporting system. Further, it offers the best prospect for ensuring a fair return for the American people and Indian tribes.

As to proprietary information, I supervised a statewide property system in Montana for all property in that state. Residential sales information was, by law, confidential. However, our assessments and taxes levied were public, because they did not reveal any sales information, which was treated as private. It is not difficult to accomplish this result. Further, in any situation where the public valuation data, because the underlying data sources were limited and would reveal proprietary information, the otherwise public data can be held confidential. This is standard procedure in many tax circumstances. Concerns in this area can be readily resolved through dialogue among experts in this area.

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<sup>11</sup> 81 Fed. Reg. 43354

*Should ONRR update the valuation regulations governing non-arm's length dispositions of federal gas, and if so how?*

I do not have comments on this question.

*Should ONRR address marketable condition and/or unbundling, and if so, how?*

I do not have comments on this question.

*Should ONRR have a default provision clarifying how ONRR will exercise Secretarial authority to determine value for reporting purposes?*

Default provisions are essential whenever there are elements of self-reporting in the valuation of any mineral. The incentives for abuse exist in self-reporting, and the ability to require the use of a value determined by Interior is crucial to protecting (a) the public from being shortchanged on revenues and (b) diligent taxpayers from unfair competition by others that aggressively underreport royalties.

Criticisms of the default provision for coal purposes is, in my view, greatly exaggerated. I commented on this matter in congressional testimony as follows:

Some in the coal industry argue, however, that the improved enforcement measures in the rules, particularly the default mechanism, create uncertainty for producers. This provision is structured to enable Interior to correct some of the most egregious forms of non-compliance with royalty rules. The industry criticism of these essential provisions is based on a false premise that under the rules Interior could set values at any level, even at arbitrarily punitive and confiscatory amounts. This argument is wrong because it ignores the plain language of the law that requires Interior to base royalties on the value of coal. The word "value" is a term of art that ties any valuation action by Interior to the market value of coal as determined by sales in arm's length transactions. The proposed rules themselves clearly indicate that the default provisions will be administered through use of relevant market price data.

The only way a company can argue that the default mechanism creates uncertainty is if they do not know the value of arm's length sales of coal at the time they produce coal, which would call into question their competency as a coal company. In truth, companies know when and to what degree they are reporting values at below market levels and claiming excessive deductions or exclusions. They also know or can determine the actual, contemporaneous arm's length prices of coal and the proper amount of subtractions from value. All the companies need to do to anticipate a default mechanism assessment is to record the difference between the values they report and the true arm's length values and deductions at the same time. Better yet, producers can remove any lingering uncertainty from the default provisions by refraining from the actions that trigger the use of this mechanism and paying royalties in the first place based on the true market value of coal and deductions determined on an arm's length basis. The

proposed rules provide sufficient guidance for them to do so; producers merely need to decide to follow the rules faithfully.<sup>12</sup>

I have, in discussing of direct valuation as the best method of valuing coal, identified how Interior can increase the comfort level with default valuation by beginning to develop and publish coal price data on a periodic basis for use if a default provision case arises. By having the data available relatively soon after a reporting period, Interior would eliminate the criticism that companies would not know for up to seven years how much they might have to pay if the default provision were applied to them. With known data, the companies could analyze for themselves what the results would be if the data were applied to their royalty reports.

*Should ONRR adopt other changes to valuation regulations?*

Yes, ONRR should eliminate the deduction from value for coal washing. Washing is a part of placing coal into marketable condition. Other such costs of getting a fuel commodity into marketable condition are disallowed. Equitable treatment requires that the coal washing deduction be eliminated on the same basis.

In addition, international standards for reporting governmental payments for resource extraction. Interior should monitor those changes over time and be prepared to expand the information available to the public about payments for resources owned by the public.

Thank you for your consideration of these comments.

Sincerely,

Dan R. Bucks  
Former Montana Director of Revenue (2005-2013).

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<sup>12</sup> Bucks Testimony, 3.

**BEFORE THE SUBCOMMITTEE ON  
ENERGY AND MINERAL RESOURCES  
COMMITTEE ON NATURAL RESOURCES  
UNITED STATES HOUSE OF REPRESENTATIVES**

**Oversight Hearing  
*"Ensuring Certainty for Royalty Payments on Federal Resource Production"***

**December 8, 2015**

**Dan R. Bucks  
Former Director, Montana Department of Revenue**

Chairman Lamborn, Ranking Member Lowenthal, and members of the subcommittee, I am Dan Bucks, former Director of the Montana Department of Revenue. Thank you for the invitation to testify today on federal royalty administration.

By way of background, I served as Montana Revenue Director from 2005-2013, longer than any other person in the history of the state. I also served as Deputy Director of the department from 1981-1988. During these periods, among other responsibilities, I oversaw the administration of natural resource production taxes and mineral royalty auditing and provided leadership to strengthen those activities and the rules for administering them. In the early 1980s, I led the effort for Montana to become one of the first states to join the cooperative federal-state mineral royalty auditing program initiated by then Interior Secretary James Watt. Between 1988 and 2005, I served as the Executive Director of the Multistate Tax Commission where I assisted states in addressing corporate income tax avoidance through income shifting among related affiliates—a topic that is directly relevant to improper producer avoidance of federal royalties using the same mechanisms. I continue to provide professional assistance to improving state level efforts to curtail tax avoidance through affiliate transactions.

**Policy Goals for Royalty Administration**

Whatever else occurs in federal royalty administration, the goals of equity and integrity should guide federal decision-making. Producers of federal minerals should comply fully with the law. The citizens of the United States who own these minerals should be guaranteed that the right amount of royalties are paid, that the law applies equally to all producers, and that no special influences, arrangements or loopholes allow producers to pay less than what the law requires.

The title of this hearing suggests that certainty is another valuable goal of royalty administration. The question is certainty for whom and to what end? If the certainty being sought is one where producers can be content in the knowledge that if they underpay royalties, they will not be called later to pay the full amount they owe, that is an

unacceptable form of certainty that should be firmly rejected. However, there are several positive ways to define and pursue this goal:

- Certainty is good if it means that a producer paying the correct amount of royalties from the outset is certain that they will not be asked to pay more.
- Certainty is also good if it means that a producer initially paying less than the right amount is certain that they will indeed be asked to pay the right amount at a future time.
- Certainty is even better if a competing producer is certain that all other producers are paying the proper amount of royalties and that none are receiving hidden subsidies or favorable treatment or are allowed to skirt the law.
- Finally, certainty is best of all if the citizens of the United States and Indian tribes know for certain that each producer of federal minerals is paying the full and fair amount of royalties they owe and that if producers are not, the federal government will certainly ask them to do so.

It is in the latter two areas—certainty for citizens and for competitors—that the current royalty system falls short the most. The shroud of secrecy that hides the facts about royalty payments prevents competitors and citizens from knowing whether each producer is paying a full and fair amount of royalties. Interior should reform royalty administration to provide for sufficient transparency and disclosure of royalty and mineral valuation information such that all interested parties, especially the public, can know that the right amount of royalties are being paid.

The stage has been set well at the Department of Interior for advancing the goals of equity, integrity and certainty in mineral leasing and royalty administration. Nearly a century of recurring scandals and crises have plagued federal minerals management—all well documented through press investigations, independent commissions, Inspector General reports, congressional inquiries and General Accountability Office reviews. However, thanks to the reorganization of that management by former Secretary Salazar and continuing improvements led by Secretary Jewell, the department is now poised for achieving historic, landmark changes in the stewardship of the American people's resources.

The proposed royalty rules by the Office of Natural Resource Revenues (ONRR) would make continuing progress in royalty administration. To help assure the American people that there will be greater certainty that producers will pay the right amount of royalties in the future, the proposed ONRR rules tighten loopholes and strengthen enforcement provisions. The proposed rules also contribute to producer certainty through simple and clear language that provides improved guidance on standards and procedures for royalty compliance. Overall, the rules do not make major, systemic changes in royalty administration. Nor do they solve all the problems that exist in this area. However, they do represent positive steps in the right direction, but more can and should be done as outlined later in this testimony.

Some in the coal industry argue, however, that the improved enforcement measures in the rules, particularly the default mechanism, create uncertainty for producers. This provision is structured to enable Interior to correct some of the most egregious forms of non-compliance with royalty rules. The industry criticism of these essential provisions is based on a false premise that under the rules Interior could set values at any level, even at arbitrarily punitive and confiscatory amounts. This argument is wrong because it ignores the plain language of the law that requires Interior to base royalties on the value of coal. The word “value” is a term of art that ties any valuation action by Interior to the market value of coal as determined by sales in arm’s length transactions. The proposed rules themselves clearly indicate that the default provisions will be administered through use of relevant market price data.

The only way a company can argue that the default mechanism creates uncertainty is if they do not know the value of arm’s length sales of coal at the time they produce coal, which would call into question their competency as a coal company. In truth, companies know when and to what degree they are reporting values at below market levels and claiming excessive deductions or exclusions. They also know or can determine the actual, contemporaneous arm’s length prices of coal and the proper amount of subtractions from value. All the companies need to do to anticipate a default mechanism assessment is to record the difference between the values they report and the true arm’s length values and deductions at the same time. Better yet, producers can remove any lingering uncertainty from the default provisions by refraining from the actions that trigger the use of this mechanism and paying royalties in the first place based on the true market value of coal and deductions determined on an arm’s length basis. The proposed rules provide sufficient guidance for them to do so; producers merely need to decide to follow the rules faithfully.

Let there be no doubt that proposed ONRR rules make important, incremental improvements to enhance the equity and integrity of the federal royalty system. However, they do not go far enough in eliminating the root causes of chronic underreporting of mineral royalties: corporate self-reporting and excessive secrecy in the royalty system. Interior can address these root causes if it returns to the plain language of the federal Mineral Leasing Act that calls upon Interior to directly value coal—just as a property tax assessor directly values homes and businesses. Instead of following the property tax model called for in the law, Interior has instead delegated initial valuation to companies through an income tax approach that opens the door to abuse and underreporting. If people don’t value their own homes, why should coal companies be allowed to value their own coal? Why should coal companies be allowed to value their own coal when the Mineral Leasing Act asks Interior to do that job itself?

Interior can effectively eliminate the root causes of royalty underreporting if it directly values coal. By this means, Interior can also achieve full certainty simultaneously for individual producers, competitors, Indian tribes and American citizens. Direct valuation will be simpler and less costly to administer than the current approach even as modified under

the proposed rules. It would greatly increase equity and integrity in the payment of royalties because all payments would be made in the first instance on the basis of statistically sound, arm's length values for coal. Because values would be established by Interior, those values, the royalty payments made and how these amounts were calculated could and should be disclosed publicly. The result will be unprecedented transparency that ensures certainty for all stakeholders—especially taxpayers of this nation and the Indian tribes—who have a right to know they are being paid properly for the resources they own.

It should be noted that H.R. 3303 sponsored by Rep. Cartwright would require Interior to implement direct valuation and would provide additional tools to help Interior do that job. While Interior has, in my view, sufficient authority to undertake direct valuation, Congress can also act to ensure and support its implementation.

We will return to describing a system of direct valuation after exploring more fully the problems created by the current system of self-reporting and secrecy.

### **Root Causes of Royalty Problems: Corporate Self-Reporting and Secrecy**

The current system of producer self-reporting of mineral royalties has shortchanged the American people and Indian tribes by an enormous number of billions of dollars over several decades, the exact amounts of which are lost to history. The current system allows some producers to undervalue coal and underpay royalties by ignoring the full value of export sales, manipulating prices through non-arm's length transactions, and inflating deductions and exclusions from value.

Worse yet, these practices are hidden from the American people who own the coal in secret returns and records. The public owns this coal and has a right to know the details of what they are being paid or not paid. Instead, taxpayers, the press and independent experts are all excluded from knowing whether coal producers are paying the right amount of royalties on the correct value for coal. The history of recurring crises over federal mineral royalties teaches that secrecy only perpetuates royalty abuses and that greater transparency is a fundamental remedy necessary to achieve equity and integrity in public royalties.

As noted, relying on producer self-reporting of coal proceeds to determine royalties does not fit well with the Mineral Leasing Act. The law specifies that "a lease shall require payment of a royalty in such amount as the Secretary shall determine of not less than 12 ½ per centum of the value of coal as defined by regulation . . ." The law places the Secretary in charge of determining the value of coal. Instead, Interior allows producers, who have an interest in minimizing payments, to determine in the first instance the base for royalty purposes. In doing so, Interior has reduced its authority over the royalty process and delegated too much power to producers to determine what they pay.

Producer self-reporting also switches the royalty base from the value of coal to the proceeds or receipts received by the lessee from producing coal. The value of coal and producers'

reported proceeds are different from each other in concept and frequently in practice. Indeed, some lessees work hard and often successfully to ensure that reported proceeds are often significantly less than the value of coal.

Producers can reduce reported proceeds below market value by several means. They can structure contracts to artificially divide receipts from coal into two parts: (1) unit prices for coal at below market value on which royalties are paid and (2) payments received ostensibly for things other than the production and disposition of coal that are left out of royalties. The latter include take or pay contract penalties, various management fees, contract settlement payments and a host of other payments that are excluded from the base for calculating royalties even though they are actually a part of the value of the coal.

Producers can also sell at higher prices in export markets without paying royalties reflecting those prices—and in the process can also manipulate mine mouth prices below market levels. They can avoid royalties on export values by selling coal to their own captive affiliates at the mine with the affiliate subsequently reselling the coal at a higher price at the export terminal free of royalty on the incremental market value. Producers can add an extra boost to their royalty savings by selling coal at the mine to their affiliates at depressed, non-arm's length prices. Through the use of affiliates, producers can also inflate payments for transportation deductions and implicitly subtract costs—packaged inside other transactions—for marketing activities and other services that, in fact, are not allowable deductions at all. The problem exists beyond export sales. Producers can also use the strategies of marketing through affiliates and manipulating prices to avoid royalties on sales into specialized, domestic markets. Relying on producer reporting of proceeds opens the door to a host of complex accounting strategies that are difficult and costly for Interior to police and that deny the public a fair return calculated on the true value of federal coal.

Coal companies sometimes deny that they make below market sales to their affiliates. One instance of that occurred at the federal coal public listening session conducted in Billings, Montana, on August 11 of this year. At this session, a representative of Cloud Peak Energy Resources stated that the company did not sell coal at below market value to its affiliates.

However, information presented by Cloud Peak Energy itself to the Montana Supreme Court directly refutes the statement made at the Billing listening session. In the case of *Cloud Peak Energy Resources, LLC v. State of Montana Department of Revenue*, Cloud Peak disclosed that in early 2005 it had sold coal to independent third parties at prices approximately 30% above the price it charged to its own affiliates. On page 17 of its brief to the Montana Supreme Court filed on June 13, 2014, Cloud Peak Energy reports that it sold coal from its Spring Creek mine in Montana to its affiliate, Venture Fuels, for \$6.50 to \$6.85 a ton on January 25, 2005. On page 20 of that same brief, Cloud Peak reports that in January 2005 it sold coal from the same mine to outside, independent parties for \$8.87 per ton.

These facts led Judge Jeffrey Sherlock, the district court judge in this case, to conclude that “it seems abundantly clear that the NAL (non-arm’s length) contracts were not set at market value under whatever valuation scheme one might adopt.” Cloud Peak did not dispute this characterization of the facts in its appeal to the Montana Supreme Court, but instead reported information to the Supreme Court that supported Judge Sherlock’s conclusion. The company’s own briefs to Montana courts establish that Cloud Peak Energy has sold coal to its affiliates at below market value.

In that same brief to the Montana Supreme Court, Cloud Peak Energy also reported that the predecessor owner of the Spring Creek mine had entered into a settlement agreement with the Department of Interior for federal royalty purposes that required non-arm’s length prices to affiliates to be adjusted to market value. The existence of this royalty settlement agreement is further evidence that coal companies have sold coal to captive affiliates at prices below market value.

Captive affiliate sales represent a significant part of the coal market. Energy Information Administration data indicates that in 2013 captive sales were 34% of total coal sales in Wyoming and 30% in Montana.

During my tenure as Deputy Director of the Montana Department of Revenue in the 1980s and again as Director of Revenue from 2005 to 2013, I encountered numerous and extensive problems in the valuation of coal, oil and gas, and other minerals—even though only a portion of producers engaged in questionable practices. Non-arm’s length sales are a chronic issue, but so too are claims for excessive deductions for both allowable and non-allowable costs—often bundled together in ways that are hard to untangle. From grappling with actual cases, I can assure the subcommittee that the problems caused by self-reporting of mineral values by producers seriously shortchange the public and are costly and difficult for public agencies to discover and correct. In the real world of limited resources, even diligent efforts by authorities cannot fully correct the problems arising from producer self-reporting of values.

#### **Further Description of a Direct Valuation System**

Interior should reclaim its rightful authority under the mineral leasing law to determine the true market value of coal. It should replace producer self-reporting with a professional appraisal system to establish the market value of coal on a full, equitable and uniform basis. Interior should also directly establish the amount of allowable transportation deductions based on the most efficient, lowest cost means of transporting coal to its markets.

A direct coal valuation system should use a uniform starting point: arm’s length market prices at the point of final sale in the United States. To set these values Interior can rely on existing coal sales information and on enhanced reporting by producers of sales made both directly and through affiliates—reporting that Interior can require under their contracts with mineral lessees. Through well-established statistical procedures and methodologies,

Interior can use a “market basket” of valid, arm’s length sales prices to determine values that are more representative of the true market value of coal than the transactions reported by producers.

Values would be set and published periodically, perhaps quarterly, for categories of coal by quality and type. Because Interior establishes these standardized market values, they can be made public. Indeed, they must be publicly released so that producers know the values they need to use in calculating their royalty payments.

Working with the Surface Transportation Board, Interior would similarly establish allowable deductions for coal transportation deductions on a least cost basis.

As an integral part of this valuation system, Interior would regularly provide a public report to the citizens and taxpayers of this nation on the amount of royalties paid on each lease and the values used in the calculation of those royalties. A direct valuation system allows these public reports to be issued because typically that data will not be proprietary information taken from producer financial statements. In the rare cases of limited sales where proprietary information may be involved, Interior can protect that data. However, those cases should be the exception instead of the rule.

A direct valuation system for coal royalties will best ensure that the public and Indian tribes receive a fair return on the coal they own. It will also improve equity among producers. Those producers paying the right amount of royalties under current practices will no longer be placed at a disadvantage as compared to those producers that game the system. All producers will be encouraged to use the most efficient transportation methods. Most importantly, the system will become open and transparent. By allowing the public to know what they are receiving in royalties on each lease and the values on which those royalties are calculated, abuses of the royalty system will be discouraged and public trust will be enhanced.

### **Flaws in Federal Leasing Process Contribute to a Lack of Fair Return to Taxpayers**

The manner in which Interior leases federal coal exacerbates the problems of royalty administration and generally reduces the return to taxpayers from coal production. While problems of below value coal leases existed earlier (a massive below value lease sale of Powder River Basin coal in 1982 is a notorious example), Interior complicated matters in 1990 when it scrapped an open process it had developed for regional planning for coal production and leasing. (Technically speaking, the action taken by Interior was decertification of coal production regions.) In its place, Interior substituted a closed process that virtually guarantees monopoly control of vast coal tracts by producers.

Monopoly control has created a non-competitive leasing process resulting in lease bonus bids that are often below fair market value—a fact documented in Inspector General and the General Accountability Office reports. In addition to below market value bonus bids,

monopoly producers, with the economic and political benefits that flow from that status, are able to exercise greater influence over the royalty valuation process and devote greater resources to accounting and legal strategies to minimize royalty payments. As much as possible, Interior should reverse its 1990 decision and reinstate an open and competitive leasing process for federal coal tracts. Doing so will also contribute to transparency and public participation in the leasing process, restore competitive conditions to the leasing process, and ensure a fair return from leasing and royalty revenues.

### **Changes in Royalty Payments Have Little Impact on Coal Production or Jobs**

The coal industry argues that if the royalty system is reformed to ensure that the right royalties are paid, coal production and jobs will suffer. However, both research and lessons of history effectively refute this argument.

Various experts and researchers have found over several decades that taxes or royalties have little impact on resource production or jobs—even if royalties or taxes change by significant amounts. These experts generally cite two key facts:

- (1) Taxes and royalties are a small percentage of the final delivered price of coal. Transportation and extraction costs are the primary components of the final price. Thus, even major changes in taxes and royalties have little impact on the final delivered price.
- (2) The demand for coal is inelastic. Changes in the final delivered price of coal produce less than proportionate changes in the volume of coal purchases. Small changes in the final price have an even smaller impact on the amount of coal sold.

Similarly, researchers in the Montana Department of Revenue regularly refuted the notion of any significant connection between taxes and production for oil and gas. Instead, the Department documented the fact that Montana produced less oil and gas than Wyoming or North Dakota even though Wyoming and North Dakota both levied substantially higher taxes on oil and gas production. Geology, not taxes, determined levels of production.

Beyond the comparative and predictive studies by experts, strong evidence that major changes in taxes or royalties will not impact production or jobs comes from a major historical event involving coal in Montana.

In 1987, the Montana Legislature enacted a law reducing Montana's coal severance tax from 30% to 15% in steps from FY 1989 through 1991, contingent on the coal industry selling in FY 1988 coal equal to its average production from 1983 through 1986. This change was made on the basis of industry arguments that a reduction in the coal tax rate would increase the competitiveness of Montana coal in the marketplace and stimulate future coal production in the state.

During the prior 13-year time period when the 30% coal tax rate was in effect, the Montana coal industry increased production rapidly from 22.1 million tons in 1975 to 38.9 million tons in 1988, a 76% increase in total over this period.

As the reductions in the coal severance tax began in FY 1989, the immediate response was a decline in production from the 1988 peak of 38.9 million tons to 37.7 and 37.6 million tons in 1989 and 1990. Production rose to 38.2 and 38.9 million tons in 1991 and 1992, but fell back again to 35.9 million tons in 1993. Over this initial 5-year period when the coal severance tax rate was cut, average annual production was 37.7 million tons, a net decline from the 1988 peak.

After 1993, production first increased and then fell back again, starting an up and down pattern that would continue into the early 21<sup>st</sup> century. Over the 15 years from 1989 through 2003, annual coal production averaged 38.9 million tons—the same level of coal production in 1988, the last year of the 30% tax rate.

So, while coal production increased dramatically in Montana when the 30% tax rate was in effect, coal production fell on average over the first 5 years after the rate was reduced. Measured over 15 years after FY 1988, there was essentially no growth on average in Montana coal production, even though the tax rate had been cut in half. The absence of growth over these 15 years contrasts sharply with the 76% increase in production while the 30% rate was in effect from 1975 through 1988.

More importantly, this history effectively refutes the idea that a reduction in coal tax or royalty rates can stimulate production to the point of generating more revenue than when rates were higher. From FY 1980 through FY 1988, Montana coal severance tax collections varied between approximately \$70 million to \$91 million annually. From FY 1994 through FY 2007, under the 15% tax rate, Montana coal severance tax collections varied between from approximately \$29 million to about \$41 million annually—plummeting to less than half of prior collections. In fact, coal severance tax collections have never regained the level that they achieved in the FY 82-88 period under the 30% rate.

Montana tested the claim that coal rate reductions will pay for themselves with higher revenues—and the test proved the claim to be false. The policy of cutting tax rates in half to stimulate coal production was a failure. Even though the coal tax rate reductions were major, the impact on production levels was minor because the taxes as a percentage of final delivered prices were too small to impact the final demand for coal. The Montana coal tax history fully corroborates and supports expert predictions that changing taxes or royalties have only a minimal, if any, impact on production and jobs.

**Conclusion**

Interior has taken important steps in recent years to improve the equity and integrity of federal royalty administration, and the proposed ONRR rules contribute to those improvements. However, more needs to be done to make certain that the American people and Indian tribes who are the owners of federal mineral resources are being paid a full and fair amount for those resources. It is entirely possible to achieve that goal—and at the same create certainty for producers that they and their competitors are paying the proper amounts.

Thank you again for this opportunity to address key issues in federal royalty administration.

May 8, 2015

Armand Southall  
Regulatory Specialist  
Office of Natural Resources Revenue  
P.O. Box 25165  
MS61030A  
Denver, Colorado 80225

Re: Proposed Rules Regarding Coal Royalty Administration

Dear Mr. Southall:

The signatories to this letter include seven members of the Montana State Legislature and a former Montana Director of Revenue, who together have broad and diverse experience in natural resource policy, economics and revenue policy and administration. We welcome the opportunity to comment on proposed rules by the Office of Natural Resources Revenue (ONRR) designed to improve federal royalty administration, especially with regard to coal production on federal lands.

The proposed rules represent a significant step toward basing federal royalties on the true market value of coal. We support the overall direction of the proposal, but recommend improving the rules to ensure they apply uniformly to all coal production and to strengthen their market valuation methods. By linking the base for coal royalties to market values, ONRR can rely on and apply time-tested property valuation principles and methods to the task of valuing coal.

Using property valuation practices to value coal creates an opportunity to achieve another overdue reform: making coal valuation open and transparent to the public. The public has a right to know the value of publicly owned resources, how those values are established and the amounts being paid on their behalf. Within property tax systems, assessed values, methodologies and payments are a matter of public record. Accordingly, these same key facts about coal royalties can be open to the public without interfering with legitimate proprietary interests. Transparency will restore public trust in federal royalty administration and will help prevent royalty problems from recurring in the future as they have in the past.

ONRR is proposing two significant, positive steps away from the existing system of basing royalties on company reported proceeds from coal production and distribution. One step is the proposed use of the first "arm's length sale" of coal as the starting point for royalty valuation. The second step is providing circumstances under which ONRR will directly value

coal based on market valuation principles. These steps are important because the proceeds approach does not properly represent the “value of coal” and allows coal producers too much latitude, through exclusions, deductions and other loopholes, in determining what, how and when they will pay royalties.<sup>1</sup> The discretion allowed coal producers in reporting their proceeds undermines the intent of the Mineral Leasing Act for the Secretary of the Interior to establish the value of coal for royalty purposes. It is a wasteful system that subsidizes inefficient producers and those that engage in strategies to minimize royalty payments to the public. The shortcomings of the proceeds approach results in coal royalties being chronically underpaid, with effective coal royalty rates running at approximately 40% of the 12.5% rate established by Congress.<sup>2</sup>

## **Recommendations**

### **1. Restore the Secretary’s Authority to Value Coal.**

The Mineral Leasing Act provides that a “lease shall require payment of a royalty in such amount as the Secretary shall determine of not less than 12 ½ per centum of the value of coal as defined by regulation . . .” The Mineral Leasing Act does not link royalties to the proceeds or earnings of the coal producers, but to the value of coal. Thus, ONRR’s rules should convert the proposed “default mechanism” under §1206.254 for direct valuation in certain cases into the standard means of valuing coal generally. Under the direct valuation approach, Interior would establish the value of coal through valid market data on sales involving willing buyers and willing sellers. If valid market data is not available, Interior may rely on other established valuation methods to determine the value of coal.

Coal producers should pay royalties not on what they report as payments received, but instead on the market value for the coal they deliver to customers. The market value approach is inherently more consistent with the Mineral Leasing Act than the current method of calculating royalties. Market valuation by Interior would end the ability of producers to improperly minimize royalty payments through contract terms, pricing practices, and various accounting methods. Through this improved valuation method, Interior would reclaim its rightful authority over the determination of royalties as intended by the Mineral Leasing Act.

Using direct market valuation as the primary means for assessing royalties will also achieve greater equity, uniformity, efficiency and simplicity in the royalty system. The rules as proposed include two broad, but distinctly different systems of valuation: (1) self-reporting

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<sup>1</sup> See Isaiah T. Peterson, “Devaluing Coal: Reasons for Restructuring How Federal Coal Is Valued,” *Georgetown Review of Law and Public Policy*, Winter 2015, for a review of some of the problems of the current coal royalty valuation process. ONRR acknowledges the existence of these problems in the proposed rule §1206.253, which provides criteria for ONRR to establish the value of coal for the lessee.

<sup>2</sup> Headwaters Economics, “An Assessment of U.S. Federal Coal Royalties,” January 2015.

on a proceeds basis by producers and (2) the “default mechanism,” which is direct valuation based on market principles. Maintaining two systems of valuation appears inherently more complex and costly than using a single system. It will trigger new sources of controversy and litigation over whether ONRR has properly switched a producer from one system to another. Worse yet, having two distinct systems of valuation risks inequitable and non-uniform results among competing producers. Under direct valuation, all like coal marketed at like times will be valued equally.

Most importantly, however, direct valuation establishes the foundation for a royalty system that is transparent and understandable to the public.

If ONRR is not prepared to employ direct valuation immediately on a general basis, an acceptable alternative would be for ONRR to use the proposed rules with two systems of valuation temporarily. ONRR could establish a transition plan and publish within the final rules a date certain on which it would cease using the company proceeds approach to valuation in favor of direct market valuation.

Sophisticated property valuation standards, methodologies and statistical techniques are well developed and available from state and local governments and professional associations. Those sources can aid ONRR in establishing the direct market valuation process.

## **2. Apply the Market Value Principle Uniformly.**

Interior should establish market values through use of comparable arm’s length sales for similar coal sold during similar periods at similar points in the distribution process. We recommend that the valuation process begin with valid market sales data for coal at its destination, with the domestic power plant or export terminal deemed to be the destination. However, if ONRR determines that transactions at another stage are a better source of independent market data for coal valuation, the rules should allow for a general, uniform change to that stage.

Using market data at a common destination point effectively responds to criticism of the proposed rules that the “first arm’s length sale” approach would value coal at different points in the distribution process depending on where that first sale occurred. Critics charge that the proposed rules disadvantage coal sold through captive purchasers as compared to coal sold to independent parties at a point short of the destination. Relying on market data at export terminals and power plants effectively eliminates that criticism and establishes a uniform and equitable method of valuing coal at comparable stages.

As discussed below, direct market valuation can retain a transportation deduction. In conceptual terms, allowing a transportation deduction also moves the “point of valuation” back to the origin of the coal from the destination market.

### **3. Provide a Limited Deduction Only for Transportation Costs Set by ONRR.**

*Please note: This recommendation responds to both the proposed rules and the question from ONRR as to whether the coal transportation deduction should be limited to 50% of the value of coal, as is the case with oil and gas.*

Conceptually, a case can be made for eliminating all intermediate deductions prior the final market value at the destination. The Mineral Leasing Act does not require any such deductions. The market value of coal supports and incorporates all the costs that precede its delivery to customers. These costs are simply part of the value of coal.

However, one can also argue for a transportation deduction as a means of “equalizing” the value of coal for royalty purposes between coal shipments that travel varying distances to their market destination. Further, federal rules also provide competing fossil fuels, oil and gas, with a transportation deduction, up to 50% of the value of the oil and gas. For these two reasons, the rules should provide for a transportation deduction.

ONRR should establish the amounts of the allowable deduction based on the lowest reasonable cost of transportation for coal to its destination. The current deduction wastes royalty revenue on subsidizing costs that exceed the most efficient means available and encourages contractual and accounting strategies that inflate the deduction. These problems are eliminated by ONRR establishing the allowable deduction. ONRR should use publicly available data from the Surface Transportation Board and other sources to establish the allowable deductions for transportation from each lease location to its destination.

If ONRR directly establishes the allowable deduction for coal transportation, it is unnecessary to adopt a percent of value limit—50% or otherwise. However, if ONRR does not accept our recommendation and continues to allow transportation deductions on the basis of costs reported by producers, then limiting the transportation deduction as a percent of value is necessary to discourage inefficiencies and inflated deductions. In that event, Interior should consider setting the percent of value limit for each fossil fuel proportionately based on the relative average costs per mile of transporting quantities of coal, oil and gas of comparable energy value. It remains our strong recommendation, however, that ONRR directly set the allowable deduction at the lowest reasonable cost to each destination and thereby eliminate the need for a percent of value limit.

Finally, deductions for washing should be eliminated. Washing is an extension of the extraction process for which deductions are not otherwise allowed. Eliminating this deduction further simplifies the valuation process.

#### **4. Establish Administrative Systems to Enable Market Valuation.**

Property valuation procedures typically begin with samples of market data verified as arm's length sales. ONRR will necessarily use all currently available information concerning market transactions to undertake the valuation process. However, if judged necessary, ONRR could supplement existing information through a sales reporting process. If, in certain cases, valid market prices are unavailable, ONRR can rely other professionally accepted valuation methods to establish equitable values for coal.

If needed, ONRR could implement a sales reporting process to secure supplemental market data. Through that process, ONRR would require coal lessees to provide sales prices at destinations and other relevant information. For lessee sales to independent brokers, ONRR would require lessees to incorporate in their sales contracts with purchasers the reporting of information on subsequent sales through the destination market point. Those contract provisions should allow intermediate brokers with the choice of reporting the data through the coal lessee or directly to ONRR. Further, ONRR could provide that this sales information be treated as confidential, proprietary data.

Because ONRR's posting of market values for coal will lag at least one period behind dates when royalty payments are due, the rules should allow coal lessees to pay royalties without penalty at 90% of the last posted market values for the actual volume of coal sold during the period for which the payment is made. The rules would provide for adjusting payments in future periods to 100% of what is required for the current period.

#### **5. Report to the Public Key Royalty Information.**

The new market valuation process will enable the Department of Interior to achieve transparency for the public with regard to federal mineral royalty valuation. ONRR will set the values of coal, the allowable transportation deduction and the amount of required payments. All of this information will be established pursuant to official actions by the agency.<sup>3</sup> None of this information can reasonably be considered proprietary, especially since this proposal does not involve any new disclosures of sales prices or corporate financial information. Once the valuation process is operational, the Department should publish at the close of each payment period a "Public Royalty Report" that details for each coal lease the market value of the coal, the method by which the value was determined, the amount of transportation deduction allowed, and the amount of royalty payments.

Citizens certainly have the right to know the key information that determines the royalty receipts collected on their behalf. As noted, providing this information will restore public trust in federal royalty administration.

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<sup>3</sup> In fact, the key items of royalty information—ONRR's values for coal by type at each destination for each period and the allowable transportation deductions—would best be publicly posted for ready access by coal producers to calculate their royalty payments.

It is an unfortunate fact of history that federal royalty administration has been periodically beset by controversy over the past century. Problems develop under the cover of secrecy and worsen to a point that an untoward event or report triggers the emergence of a new crisis or a scandal. Problems that emerged over the last decade led former Secretary Salazar to restart royalty administration anew with the creation of the Office of Natural Resources Revenue and to the proposal of the new valuation rules under Secretary Jewell's leadership. Those are extraordinarily important initiatives to restore public trust.

One further step is needed to remedy the past difficulties and prevent them from recurring again. That step is simply to end the secrecy and let the sun shine on the royalty process. Our recommendations for valuation and transparency are all of one piece. They offer the Department of Interior an opportunity to start and welcome a new day in federal royalty administration based on the highest values of equity, integrity and public transparency.

Thank you for the opportunity to comment.

Sincerely,

Dan R. Bucks  
Former Montana Director of Revenue (2005-2013)

Senator Christine Kaufmann  
SD 40 Helena, MT

Senator Dick Barrett  
SD 45 Missoula, MT

Senator Mike Phillips  
SD 31, Bozeman, MT

Senator Sue Malek  
SD 46, Missoula, MT

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Note

## DEVALUING COAL: REASONS FOR RESTRUCTURING HOW FEDERAL COAL IS VALUED

Isaiah T. Peterson<sup>al</sup>

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*With international markets opening their doors to U.S. coal, politicians, journalists, and financial consultants have begun to re-scrutinize federal coal leasing policies. Most of this scrutiny has been directed at the bonus bids mining companies pay for access to federal reserves, but lost royalty payments represent a much greater source of lost revenue for the federal government. This note analyzes and critiques the federal government's current method of determining royalty amounts. It concludes that federal regulations generate unpredictable royalty payments and provide coal companies with incentives to structure transactions that price coal below its market value. These transactions are not market efficient, and they permit lessees to skirt federal royalty payments. Finally, this note suggests a way that BLM could revise coal royalty policies in a way that would eliminate the current opaque valuation system while putting difficult policy choices back into the hands of Congress.*

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**\*166 I. INTRODUCTION**

The federal coal leasing program has been criticized as being too generous to the coal industry for two reasons. First, analysts claim that the bonus bids that mining companies pay for access to federal reserves are uncompetitive and too small. Second, critics assert that the government does not receive enough in royalty payments.

Recently, pundits have focused primarily on the first issue.<sup>1</sup> These critics argue that the government is practically giving away the rights to mine on federal land.<sup>2</sup> Despite the recent emphasis on bonus bids, this note focuses on the second issue. Royalty payments account for two-thirds of federal revenues from coal leases,<sup>3</sup> and there is evidence that the federal government has lost far more from inadequate royalty regulations than from uncompetitive bonus bids.<sup>4</sup> This note explores the claim that the government is losing substantial amounts of revenue because of weak coal royalty regulations. It concludes that the current system of federal coal valuation does not adequately or reliably reflect the value of coal mined from federal reserves. It argues that the rules in the Code of Federal Regulations (CFR) do not properly value federal coal and that it is impossible to calculate the actual royalty rate that mining companies pay as a result.

Under the Federal Coal Leasing Amendment Act (FCLAA), federal coal lessees must pay royalties of at least 12.5% of the value of coal mined on federal lands.<sup>5</sup> These royalties are calculated as a percentage of the gross proceeds the lessee makes on the sale of coal. Federal regulations permit numerous deductions and contract structures that result in greatly diminished royalty payments. This note explains the most significant mechanisms that mining companies use to reduce royalty payments, and it demonstrates how the \*167 Bureau of Land Management (BLM)<sup>6</sup> has been largely unsuccessful in restricting them.

The goal of this note is to show that the current system of valuing coal for royalty purposes makes it impossible to accurately and reliably determine the value of coal and to recover fair royalty payments from coal mining lessees. If taxpayers are to receive more predictable royalty payments, then a change in the CFR is necessary. In particular, the CFR should be amended to base coal valuation for royalty purposes on the consumer market value instead of the gross proceeds received by coal lessees.

Part II provides an explanation of the coal valuation process under the CFR, and it describes some of the valuation issues that have arisen under the current regulations. Part III critiques the CFR's method of valuing coal. It argues that valuing coal according to sales price is incapable of producing predictable royalty payments. Finally, Part IV proposes a mechanism which aims to guarantee that the Office of Natural Resources Revenue (ONRR) is able to collect predictable royalties and which incentivizes Congress to remain involved in the policy decisions that determine the amount the government collects on its coal leases.

### *The Purpose of This Note*

The purpose of this note is to critique the process for valuing coal under federal regulations and to suggest a mechanism of arriving at a more satisfactory result. Although this note is primarily concerned with how mining companies have succeeded in reducing coal royalty payments, it also argues that the current system is not market efficient. In presenting both of these arguments, this note may seem to sit in the middle of a zero-sum game between taxpayers and the coal industry. On the one hand, the taxpayer is interested in receiving the greatest possible return from federal coal. On the other hand, the industry is interested in paying the government the smallest possible share of its coal revenues.<sup>7</sup> This note does not land decisively on either side of this conflict, but it does do two things:

First, it presents reasons that both sides should be interested in revising the valuation system. Market inefficiencies on the one hand and the existence of devaluation mechanisms on the other hand provide convincing reasons to change the current valuation process--even if the particular mechanism proposed in this note ends up causing an unfavorable result for one side.

\*168 Second, this note proposes a mechanism for balancing the competing interests of taxpayers and the industry. It seeks to do this by creating a situation that would force Congress to wade back into the valuation debate. Through the FCLA, Congress seemingly expressed the policy decision that the government ought to recover 12.5% of the value of coal taken from federal lands. This note argues that the government does not receive anything close to 12.5% of that value. Insofar as it permits the government to recover a greater amount, the recommendation in Part IV is weighted against the interests of the industry. More significantly, however, the recommendation is intended to serve as a procedural tool to get Congress involved in the valuation debate. If society believes that the government should receive 12.5% of the value of federal coal, then the government ought to put a system in place that allows it to recover 12.5%. If society does not believe that the government is entitled to this amount, then Congress should revise the FCLAA to require a different percentage.

## **II. COAL VALUATION UNDER CURRENT REGULATIONS**

Under current regulations, coal royalties are assessed as a percentage of the gross proceeds that a mining company receives for selling coal in an “arms-length transaction.”<sup>8</sup> The requirement that a transaction be at “arms-length” prevents a lessee from selling coal to an affiliated entity at a price that is lower than the coal's value as a means of lowering royalty payments.<sup>9</sup>

Because royalties are calculated as a percentage of gross proceeds, the CFR definition of gross proceeds is extremely important in determining royalty payments. Gross proceeds consist of “the total monies and other consideration accruing to a coal lessee for the production and disposition of the coal produced.”<sup>10</sup> Gross proceeds include any payments the lessee receives in return for performing services to make coal marketable, including, “crushing, sizing, storing ... and other preparation of the coal.”<sup>11</sup>

\*169 Thus, royalties are assessed as a percentage of the contract price of coal between the lessee and the purchaser. However, there are two important qualifications to this standard. First, the lessee is permitted to deduct any costs it expends in transporting and “washing” coal.<sup>12</sup> Second, lessees can effectively reduce federal royalty payments by setting up transactions that result in payments for things not involving “the production and disposition of coal.”<sup>13</sup>

#### *A. Deductions: Transportation and Washing Costs*

Royalties are assessed as a percentage of gross proceeds, minus costs expended to process--or “wash”--coal and transport it to the purchaser.<sup>14</sup> These deductions result in small, but not inconsequential reductions in royalty payments.

The CFR defines transportation costs as “the reasonable, actual costs incurred by the lessee for moving coal to a point of sale or point of delivery remote from both the lease and mine or wash plant.”<sup>15</sup> The CFR does not specify a distance limitation, so the lessee could theoretically transport coal a great distance. The implicit acknowledgment behind the transportation deduction is that some mining companies may have to transport coal farther than others. If the purchaser compensates them for doing this via a higher contract price, it would not be fair for the government to take a cut out of that price since the government played no role in transporting that coal. Additionally, only lessees in more remote locations would have to pay the higher royalty.

Coal washing costs are defined as the reasonable, actual costs incurred by the lessee in removing impurities from coal.<sup>16</sup> The extent of coal washing services can vary significantly, so the CFR permits the lessee to deduct all the reasonable actual costs for processing services required by the lessee-purchaser contract.<sup>17</sup>

Overall, coal companies use the transportation and washing deductions to reduce the royalty base by about 11% of the sales price.<sup>18</sup> This is approximately equivalent to a 1.35% reduction in the overall royalty rate.<sup>19</sup>

#### *B. Payments Not for the Production and Disposition of Coal*

Because the lessee only pays royalties on the proceeds it receives for producing and disposing of coal, any payments received for something other than production or disposition will not go into the gross proceeds calculation and \*170 thus will not result in a royalty payment. Coal mining companies most commonly take advantage of this by structuring take-or-pay contracts, but there are numerous other contract structures that also allow coal lessees to take advantage of this regulation.

##### **1. Take-or-Pay Contracts Keep the Price of Coal and the Corresponding Royalty Payments Artificially Low**

Take-or-pay contracts allow coal lessees to keep the contract price of coal low because they ensure a guaranteed return for the lessee.<sup>20</sup> In a take-or-pay contract, purchasers agree to purchase large quantities of coal at a low price. If they fail to “take” the

required amount, then they must “pay” a penalty. This payment is called a penalty payment. Take-or-pay contracts can result in very low coal prices because the lessee has a guarantee that it will be paid whether or not the purchaser needs all of its coal.

At the time BLM was crafting valuation regulations, it was in the middle of a fight with the oil and gas industry over take-or-pay payments on oil and gas leases.<sup>21</sup> In 1988, the Fifth Circuit decided *Diamond Shamrock Exploration Co. v. Hodel* in the industry's favor, finding that oil lease regulations precluded assessing royalties on penalty payments.<sup>22</sup> MMS realized that the same issue would arise with coal royalties and effectively conceded the issue. In other words, MMS decided it would not try to assess royalties on take-or-pay payments. It cited the *Diamond Shamrock* decision:

The Department has not further appealed the Fifth Circuit's decision in *Diamond Shamrock*, and will apply the rationale of that decision for purposes of coal royalty valuation. Therefore, MMS's final coal regulations have been revised from previous proposed rules by revising the definition of “gross proceeds” to exclude ... payments or credits for advanced prepaid reserve payments subject to recoupment through reduced prices in later sales; payments or credits for advanced exploration or development costs that are subject to recoupment through reduced prices in later sales; take-or-pay payments; and reimbursements.<sup>23</sup>

\*171 Despite this concession, MMS did leave itself a way out; it reserved the right to assess a royalty if it decided that payment was a payment for coal in disguise: “Of course, if any of such payments at some point is used as a payment for produced coal, then [the lessee] would still be subject to royalty as gross proceeds for produced coal.”<sup>24</sup> Seven years later, MMS tested the effectiveness of this provision in *Black Butte Coal Co. v. United States* when it challenged a federal lessee that had been receiving substantial penalty payments under a take-or-pay clause.<sup>25</sup> There, the District Court held against MMS, finding that the penalty payments under the take-or-pay clause were not sufficiently linked to the “production and disposition” of coal, so royalty payments could not be charged.<sup>26</sup> In doing so, the court explicitly incorporated the federal oil and gas jurisprudence,<sup>27</sup> which effectively precludes the assessment of royalties on take-or-pay payments.<sup>28</sup>

As a matter of regulatory interpretation, the *Black Butte* and *Diamond Shamrock* decisions are almost certainly correct. In both of these cases, MMS had asked the court to assess a royalty payment for a resource that had not even been withdrawn from the ground. As the court noted in *Black Butte*, “the payments in question were not based on production, but instead were compensation for *failing* to purchase [coal].”<sup>29</sup> Based on this principle, the court went on to articulate a broad rule for determining whether a payment is subject to a royalty assessment: “There can be no mistaking the effect of these decisions: Payments are not royalty bearing unless they are connected to the severance of minerals from the ground.”<sup>30</sup> Since the Department of the Interior (the Department) has full authority to revise how it values coal, it certainly seems strange that it has made no effort to change the CFR even when the Department is willing to litigate the court's interpretation of its own regulation. Regardless, no such change has been made, and the regulations and their accompanying case law remain in effect.

## 2. Other Payment Structures Similarly Depress Coal Contract Prices

While take-or-pay contracts represent a common contract structure for energy resource transactions and are the most-litigated alternate payment structure, there are numerous other ways for contracting parties to set up payments which reduce the royalty valuation base. Even before the CFR took effect, MMS recognized that creative payment structures might impact its ability to collect royalties on coal contracts. The discussion in the Federal Register includes a list \*172 of the many possible ways lessees might structure alternate payments.<sup>31</sup> These include: capacity charges; payments for advanced development costs; prepaid reserve amounts; contract buy-downs and buyouts; altered take commitments; producer damages; excess royalty reimbursements; deficient price adjustments; damages for purchaser's breach of contract; payments under force majeure; payments for assignment of interest; and other payments not designated as part of the purchase price but nonetheless made on a regular or one-time basis under a prescribed formula.<sup>32</sup>

When MMS presented this list, it was predicting many of the issues that would arise in the complex task of defining the Department's wide-open valuation system. MMS did not intend to imply that all of these would be deductible from the royalty base, but, over time, companies have found that they are often able to reduce the valuation base by showing that a payment was not for the production or disposition of coal. To close this section, I will discuss two additional mechanisms which have been successfully litigated to reduce coal royalty payments.

First, following the principle in *Black Butte* and *Diamond Shamrock*, contract provisions that provide for contract settlement payments have been broadly upheld.<sup>33</sup> A contract settlement provision is any provision that allows one party to reduce or eliminate its obligation under a contract by paying off the other party. Of the mechanisms listed above, contract settlement mechanisms include: contract buyouts and buy-downs, altered take commitments, and payments for assignment of interest. Following precedent from the oil and gas industry, contract settlement provisions have been broadly upheld as excludable from coal royalty calculations.<sup>34</sup> In *Johns Hopkins v. Peabody Coal Co.*, the court cited *Diamond Shamrock* in holding that a buyout payment to a coal lessee was not subject to royalty assessment.<sup>35</sup>

The second example expands *Black Butte* and *Diamond Shamrock* to apply royalty exemptions to management fees.<sup>36</sup> In *Dry Fork Coal Co.*, the Administrative Board found that a fee charged on a per-ton basis did not qualify for royalty calculations because it was not paid in return for the physical severance of coal from the ground, but rather “for capital and administrative purposes.”<sup>37</sup> Accordingly, \*173 MMS was not permitted to assess a royalty.<sup>38</sup> By broadly exempting management fees, the Administrative Board created a vast and undefined category of exemptions.<sup>39</sup> Coal lessees can be expected to use their imaginations to develop fees for management services that are allegedly distinct from coal production. The impact of this category of exemptions on royalty payments is discussed in Section III.B.2, below.

To summarize, the current regulations leave a great deal to be sorted out, and coal companies have pushed the limits of the exclusion permitted by *Diamond Shamrock*. While it is unclear whether BLM is motivated to change the CFR, it is evident that there remains a great deal of room for creativity for companies to structure contracts that minimize royalty fees. The next section critiques the valuation system in the CFR and how it was developed in the cases discussed above.

### III. A CRITIQUE OF THE CURRENT REGULATIONS

The royalty valuation discussed in Part II is ineffective from the perspective of both the taxpayer and the industry. The system incentivizes contract structures and risk allocations that are not driven by market efficiencies. Additionally, it provides the coal industry with positive incentives for structuring transactions that conflict with the taxpayer's interest in receiving a fair return on federal coal.

#### *A. The Valuation Process Encourages Agreements that Are Not Driven by Market Efficiencies*

Although this note is primarily concerned with the undervaluation permitted by the CFR, it is also important that the CFR does not provide a market efficient solution. The CFR's valuation process could be considered an “industry-friendly” interpretation of the FCLAA, but it is not “industry efficient.”<sup>40</sup> Instead, BLM's policies create artificial incentives and reduce efficiency.

First, assessing a royalty based on a certain type of payment artificially influences coal purchase contracts in a way that could harm the coal market. In normal business transactions, contracting parties often use creative mechanisms to allocate risks and to help assure themselves that the other party will conform with its side of the bargain. Assessing a royalty that is tied to the unit price of coal introduces a completely artificial factor into this process. Instead of merely allocating risks, the bargaining parties will have a new goal: to lower the unit price of coal as much as possible, especially by shifting payments to other \*174 contract mechanisms. The resulting agreements may include payment provisions that otherwise would not exist. These are

artificial and potentially harmful to the coal market. Take-or-pay contracts provide an example. Under the CFR, parties may be incentivized to negotiate high volume, low price take-or-pay contracts not because they make business-sense but because a take-or-pay penalty payment is worth 12.5% more to the lessee than a direct coal payment (since the government will take a royalty off the former, but not the latter). This could flood the market and artificially depress the price of coal.

Second, the deductions permitted by the CFR hamper market mechanisms that guarantee efficiency. Transporting and processing coal are a substantial part of the coal production process, so when the government effectively excludes these from royalty considerations, more efficient companies lose 12.5% of their competitive advantage. Consider an example:

Company A is efficient and can transport coal for \$100. Company B is inefficient and must spend \$200. Assume that both companies are able to negotiate for the purchaser to pay the full transportation costs in addition to the unit price of coal. If the 12.5% royalty includes transportation fees, Company B will lose \$25, while Company A will only lose \$12.50. But since the CFR excludes transportation costs from royalty calculations, Company A loses this competitive advantage under the CFR. Of course, if you ask either company, each would probably elect not to pay the royalty at all. Nonetheless, this example shows that the current system is egalitarian in a way that harms efficiency. Rather than “softening the blow” for companies that cannot find efficient means of transporting and washing coal, the CFR should sweep more broadly, implementing a standardized royalty requirement and allowing the market to penalize less efficient parties. The current system does not necessarily encourage inefficiencies, but it is certainly more tolerable of them.

### *B. Payment Shifts Disadvantage the Taxpayer because They Undervalue Coal*

#### **1. Take-or-Pay Contracts Disguise the Actual Value of Coal and Enable Coal Lessees to Receive Large Royalty-Free Payments**

Valuing coal based on the unit price in the contract disadvantages taxpayers because the unit price of coal can be substantially lower than its true value. The court's finding in *Black Butte* may have been correct under the CFR, but this artificially lowers royalty payments by lowering the contract price for the coal. Lessees can afford to sell coal at extremely cheap prices under a take-or-pay contract because the contract guarantees that they will be able to sell a high volume of coal. If the purchaser decides it does not need the full amount of coal, then the lessee recovers penalty payments. Additionally, payment shifts inject a great deal of uncertainty into payment calculations. Thus, the CFR favors whoever is able to craft the most creative payment structures. In *Black Butte*, \*175 the lessee received over \$13 million in royalty-free penalty payments.<sup>41</sup> Not every contract results in penalties this large, but the mere unpredictability of the payments militates against the CFR valuation system.

The precedent set in *Black Butte* is significant because take-or-pay contracts are a common type of contract mechanism in federal mineral leasing. With the boom of natural gas and the corresponding fall in energy prices, take-or-pay contracts provide coal-mining companies and their investors a hedge against falling coal prices.

#### **2. *Black Butte* Provides No Clear Means of Limiting Lessees' Ability to Design Contracts that Artificially Devalue the Unit Price of Coal**

The reasoning in *Black Butte* is not easily restricted to take-or-pay contracts. Rather, by creating a standard that ties royalty assessments to the “physical severance” of coal from the ground,<sup>42</sup> federal courts have effectively reversed the default that payments to a lessee are presumed to be for the production and disposition of coal.<sup>43</sup> The “physical severance” rule invites lessees to invent reasons for payments not involving the production and disposition of coal. This is evident from the ability of the lessees in *Johns Hopkins* and *Dry Fork* to evade royalty assessments.

In *Johns Hopkins*, the court widely applied the *Black-Butte* rule to any contract settlement provision.<sup>44</sup> This detracts from the effectiveness of the valuation process because it invites the use of risk allocation tools that camouflage the true value of coal.

The *Dry Fork* decision does this even more blatantly.<sup>45</sup> In *Dry Fork*, the Administrative Board denied MMS the ability to assess royalty on a “management fee” even though an affiliate of the lessee admitted that the fee was paid “as compensation for the procurement and delivery of the coal” it sold to a purchaser.<sup>46</sup> The court, finding that the fee payments “[could] not be distinguished functionally” from those in *Diamond Shamrock* and *Black Butte*, ruled that in order to be included in the royalty base, “amounts received by a lessee ... must be related to payments for the ultimate production and disposition of the mineral, and not for some other purpose.”<sup>47</sup>

The unavoidable consequence of these cases is that any time a lessee can articulate an expense for anything other than physically severing coal from the \*176 ground, it can charge a royalty-free fee for that expense. In *Dry Fork*, even though one of the contracting parties admitted that the payment was “for the procurement of coal,” the board overlooked this because the coal lessee asserted that the payments were for “capital and administrative purposes” and for lobbying efforts in Washington D.C.<sup>48</sup>

### 3. The Federal Appraisal Process Values Coal at a Fraction of the Price It Is Sold to Utilities

The diversity of coal contracts is limited only by imagination, but it is impossible to determine the exact extent to which contract structures impact the ultimate valuation. Nonetheless, payment shifts have a definite and measurable impact on royalty payments. In *Black Butte*, for example, MMS was unable to recover over \$13 million in royalties.<sup>49</sup> And although the companies were much smaller in *Dry Fork*, MMS still estimated that it missed out on \$60,000 a year in royalties.<sup>50</sup>

Additionally, even though the exact impact of creative payment structures on the price of coal is unclear, it is indisputable that contracts between mining companies and purchasers value coal far below its fair market value.<sup>51</sup> One way to analyze the extent to which the federal valuation process undervalues coal is to compare the consumer market price with the contract price reported by mining companies. The difference between these numbers provides an indication of how much the federal process undervalues coal.

As an example, in 2010, the average price of a ton of coal paid by utilities in the U.S. was \$45.09.<sup>52</sup> In Virginia, the price peaked at \$96.15.<sup>53</sup> That year, the total sales value reported by federal lessees was \$7.2 billion on 467 million tons of coal for a per-ton price of \$15.17.<sup>54</sup> Thus, on average, the federal valuation process valued coal at only 1/3 of what the consumer market valued it at. In Virginia, utilities paid 533% more than the average value as determined by the federal valuation process. If the value of coal is assessed based on market value, then taxpayers are missing out on billions in revenue. One financial analyst estimates that the U.S. has lost between \$27.6 and \$28.9 billion dollars in royalty payments since the valuation process was last audited in 1983.<sup>55</sup> Now, with the demand for U.S. coal in China skyrocketing, some analysts fear that value disparities will be even greater in China than they are anywhere in the \*177 U.S. because the price for coal in China is usually more than \$100 per ton.<sup>56</sup>

In summary, when the consumer market price of coal is compared to contract prices, it is evident that royalties are being assessed at a price that is far lower than true market value. While it is difficult to decipher exactly how much of this is caused by payment shifts, this only makes it more evident that the federal valuation system is too unpredictable to ensure that taxpayers are getting a fair return on federal coal.

## IV. POLICY RECOMMENDATION

So far, this note has only critiqued the CFR method of valuing coal. This section proposes a policy recommendation that seeks to resolve the issues laid out in the last section. It does not, however, provide an answer to the question of how much the

government should charge for federal coal. This is a difficult policy question, and the answer should be based on the values our society attributes to the costs and benefits of using coal as an energy source. Accordingly, the recommendation discussed in this section outlines a way for the Department of Interior to eliminate the loopholes that permit lessees to undervalue federal coal. In doing so, the Department will put the fundamental policy decisions back into the hands of Congress and (hopefully) the constituents who elect them.

### *A. Proposed Solution*

**BLM should amend the CFR so that the value of coal for royalty purposes is defined as the spot market value at the coal's end destination.** The specific agreements between the lessee and purchaser would not influence the royalty amount, but the purchaser would have to disclose the intended destination of the coal it purchases so that the lessee could determine the appropriate royalty payment.

Significantly, this mechanism avoids the legal quagmire that the Department of Interior stumbled into in *Black Butte* and *Diamond Shamrock*. Under a consumer market standard, royalties will continue to be assessed when and only when the lessee sells the resource. The parties will remain free to negotiate whatever risk allocation measures they like without any corresponding impact on the royalty amount. The market as a whole--and not the individual contracts-- will determine the royalty for any given transaction. As a result, ONRR would not need to wade through complex contracts, and courts would have no reason to concern themselves with “physical severance” standards.

### **\*178 B. Congress and the Proposed Solution**

#### **1. Valuing Coal According to Spot Market Value Is Consistent with the FCLAA**

BLM is given wide leeway in how coal is valued. The FCLAA provides that royalty payments cannot be less than “12.5 per centum of the value of coal as defined by regulation.”<sup>57</sup> Revising the CFR to value coal according to the consumer spot market price would fulfill the mandate in the FCLAA.

#### **2. Valuing Coal According to Spot Market Value Would Place a Substantial Burden on the Coal Industry**

While BLM is given wide discretion to define how coal is valued, it is not permitted to reduce the royalty payment below 12.5%.<sup>58</sup> Thus, if BLM were to value coal at the spot market value, it would instantly create a substantial burden on lessees who would be forced to pay 12.5% of much higher consumer market prices. While advocates of reducing coal consumption would welcome this result, lessees and purchasers would be predictably outraged. Furthermore, the economic and political consequences of such a policy could be significant. For example, a large part of the increased cost would be passed directly onto utility rate-payers. The full impacts of this cannot be covered in this note, but the immediate impact on the law-making process is worth exploring.

In practice, if BLM altered its valuation method so fundamentally, it would probably induce Congress to act by either adjusting the royalty rate or by permitting BLM to adjust the rate based on regional factors. In either case, this would force Congress to reconsider its 1976 position that the federal government should seek 12.5% of the value of the resource. While it is certainly appropriate for Congress to delegate certain policy decisions to the executive branch, when delegation results in the creation of a system that is as easy to manipulate as the current program, it is proper for Congress to insert itself into the rulemaking process. The devaluation and artificial payment structures evident in the contracts between lessees and purchasers show that the 12.5% mandate in the FCLAA has become meaningless, and that the Department of the Interior has lost its ability to control royalty returns. Revising the CFR would thus have the benefit of forcing Congress to confront the issues surrounding coal valuation and (hopefully) implement royalty rates that reflect public opinion better than the current bureaucratic muddle of deductions and payment shifts that currently determine federal royalties.

## V. CONCLUSION

The current CFR incentivizes coal lessees to use deductions and payment shifts to undervalue the contract price of the coal they sell. This furthers market inefficiencies and makes it nearly impossible to determine whether the public is \*179 receiving a fair return from federal coal leases. BLM could eliminate the valuation maze it has created by re-defining the “value of coal” as the spot market value of coal at the destination market. This would also have the advantage of forcing Congress to make important policy decisions regarding the amount that the federal government should charge companies for mining coal on federal lands instead of leaving these important decisions up to the discretion of bureaucrats and judges.

### Footnotes

- <sup>a1</sup> J.D. Candidate, Georgetown University Law Center, 2015. © 2015, Isaiah T. Peterson.
- <sup>1</sup> See, e.g., Mark Squillace, *The Tragic Story of the Federal Coal Leasing Program*, 27 WTR NAT. RES. & ENV'T 29 (2013); OFFICE OF INSPECTOR GEN., U.S. DEPT OF THE INTERIOR, CR-EV-BLM-0001-2012, COAL MGMT. PROGRAM (Jun. 11, 2013) (discussing royalty payments but failing to make any significant findings or recommendations for royalty payment reform); John M. Broder, *Undervalued Coal Leases Seen as Costing Taxpayers*, N.Y. TIMES, Jun. 12, 2013, at A19; see also Bruce R. Huber, *The Durability of Private Claims to Public Property*, 102 GEO. L.J. 991, 1012-15 (2014) (discussing how Department of Interior regulations and procedures permit long-term, uncompetitive leases).
- <sup>2</sup> E.g., 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 (Jun. 25, 2012), available at <http://www.ieefa.org/study-almost-30-billion-in-revenues-lost-to-taxpayers-by-giveaway-of-federally-owned-coal-in-powder-river-basin/>.
- <sup>3</sup> U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-14-140, COAL LEASING: BLM COULD ENHANCE APPRAISAL PROCESS, MORE EXPLICITLY CONSIDER COAL EXPORTS, AND PROVIDE MORE PUBLIC INFORMATION 23 (Dec. 2013).
- <sup>4</sup> See Sanzillo, *supra* note 2, at 31. Sanzillo claims that BLM regulations have cost US tax payers between \$27.6 billion and \$28.9 billion since 1983. *Id.* Sanzillo attributes approximately 75% of this to undervalued royalty payments, but surprisingly less than one page of his sixty-one page report is about royalty payments. See *id.*
- <sup>5</sup> Federal Coal Leasing Amendment Act, 30 U.S.C. § 207 (1976).
- <sup>6</sup> This note repeatedly refers to three divisions of the Department of Interior: the Bureau of Land Management (BLM), the Mineral Management Service (MMS), and the Office of Natural Resources Revenue (ONRR). The BLM is the Bureau that is responsible for creating the regulation that governs royalty assessments. The ONRR is responsible for collecting revenues under these policies. The MMS is a now-defunct organization that was formerly responsible for, *intra alia*, the current functions of the ONRR. See *Reorganization of Title 30, Code of Federal Regulations*, 75 Fed. Reg. 61051-01 (Oct. 4, 2010).
- <sup>7</sup> The reader should note that this is a purely theoretical description of the conflict.
- <sup>8</sup> 30 C.F.R. § 1206.257(b)(1) (2013).
- <sup>9</sup> See 30 C.F.R. § 1206.251 (defining an arm's length contract as a contract between independent, nonaffiliated persons with opposing economic interests with regard to that contract). Beyond this footnote, this note does not deal with non-arms-length transactions. While it is true that transactions between affiliated companies ought to raise eyebrows at ONNR, I have chosen not to write about this issue for two reasons. First, ONNR already has mechanisms in place for identifying and dealing with transactions between affiliated entities. See 30 C.F.R. § 1206.257(b). Further discussion of these mechanisms would require a close case-by-case analysis of their success in particular transactions. While this may be a valid inquiry, my aim is to critique the CFR valuation system more broadly. Second, even though affiliated transactions may be more susceptible to criticism in general, the same issues are equally possible in transactions between non-affiliated parties. This is true for two reasons. First, as discussed in section II.B, there are countless ways for lessees and purchasers to achieve by contract the same results that seem objectionable when affiliated parties engage in sham

transactions. Second, even if none of the contract mechanisms discussed in this paper are used, the taxpayer still has a strong interest in implementing a valuation system that reliably tracks the fair value of coal. Part III argues that the current system is not such a system.

10 30 C.F.R. § 1206.251 (defining gross proceeds).

11 *Id.* (explaining the services that are included in the gross proceeds calculation).

12 *Id.* These deductions are explained more fully in Section II.A, *infra*.

13 *Id.* These payments are discussed in depth throughout the note, beginning in Section II.B, *infra*.

14 See 30 C.F.R. § 1206.261 (transportation deduction); 30 C.F.R. § 1206.259 (washing deduction).

15 *Id.* (defining the transportation allowance).

16 See *id.* (defining coal washing and the coal washing allowance).

17 30 C.F.R. § 1206.259(a)(1).

18 Author's calculation based on OFFICE OF NATURAL RES. REVENUE, STATISTICAL INFO., <http://statistics.onrr.gov/ReportTool.aspx> (last visited May 9, 2014) (Fiscal Years 2010-2013, Reported Revenues-Sales Volumes). In 2010, the valuation basis was 89.6% of the sales price. In 2011 and 2012, it was 89.4% and 86.0% respectively. I assumed a 12.5% royalty rate. See also GOV'T ACCOUNTABILITY OFFICE, *supra* note 3, at 24 (noting that the effective royalty rate is usually about 11%).

19 Author's calculation based on OFFICE OF NATURAL RES. REVENUE, *supra* note 18.

20 See, e.g., *Black Butte Coal Co. v. United States*, 38 F. Supp. 2d 963, 971 (D.Wyo. 1999).

21 See generally Carol A. Crocca, *Oil and Gas: Rights of Royalty Owners to Take-or-Pay Settlements*, 57 A.L.R. 5th 753 (1998). In general, the issue of recovering royalties payments was litigated extensively in the 1980s and 1990s, but it has not been litigated extensively since then. Nonetheless, the issue remains relevant today particularly because it was resolved in favor of the coal and oil and gas industries, and—as this note will argue—this has contributed to a systematic undervaluation of federal coal.

22 See 853 F.2d 1159, 1168 (5th Cir. 1988). *Diamond Shamrock* did not completely foreclose the issue of royalties on take-or-pay penalty payments, but it is the most influential case in a long-line of case law precedent that has tilted in favor of the industry. See, e.g., *Harvey E. Yates Co. v. Powell*, 98 F.3d 1222 (10th Cir. 1996); see generally Crocca, *supra* note 21.

23 Revision of Coal Product Valuation Regulations and Related Topics, 54 Fed. Reg. 1492, 1497-98 (Jan. 13, 1989).

24 *Id.* at 1498.

25 38 F. Supp. 2d at 971-72.

26 *Id.*

27 See *id.* at 972.

28 See *Diamond Shamrock Exploration Co. v. Hodel*, 853 F.2d 1159, 1168 (5th Cir. 1988).

29 38 F. Supp. 2d at 970 (citing *Diamond Shamrock*, 853 F.2d at 1168) (emphasis added).

30 *Black Butte*, 38 F. Supp. 2d at 971. This rule is referred to as the “physical severance rule” hereafter.

31 Revision of Coal Product Valuation Regulations and Related Topics, 54 Fed. Reg. 1492, 1497-98 (Jan. 13, 1989).

32 *Id.*

33 See *Johns Hopkins Hosp. v. Peabody Coal Co.*, 920 F. Supp. 738, 748 (W.D. Ky. 1996) (applying *Diamond Shamrock* to a contract buy-out provision); *Indep. Petroleum Ass'n of Am. v. Babbitt*, 92 F.3d 1248, 1260 (D.C. Cir. 1996) (applying *Diamond Shamrock* to an oil settlement provision).

- 34 See, e.g., *Johns Hopkins*, 920 F. Supp. at 748. Note that *Johns Hopkins* did not deal with a federal lease, so ONRR is not bound by this decision. Nonetheless, this case effectively shows the broad implications of the principle articulated in *Diamond Shamrock*.
- 35 *Id.*
- 36 See *Dry Fork Coal Co.*, 154 Interior Dec. 207 (IBLA 2001).
- 37 *Id.* at 220.
- 38 *Id.* at 220-21.
- 39 *Id.*
- 40 For a critique of the valuation system from an industry perspective, see generally Brian E. McGee, *Coal Royalty Valuation: The Federal Perspective*, 97 W. VA. L. REV. 887 (1995) (arguing that the federal valuation system is an artificial mechanism with “absolutely no common law or mandated statutory basis” which “reverse[s] six centuries of royalty principles and precedent.”).
- 41 See 38 F. Supp. 2d 963, 966 (D.Wyo. 1999).
- 42 See, e.g., *Black Butte*, 38 F. Supp. 2d at 971.
- 43 See 30 C.F.R. § 1206.251. The structure of the CFR creates a presumption that payments are royalty-bearing. See *id.* It does this by requiring that the “total monies and other consideration” be included in the calculation of gross proceeds before separately laying out designated exemptions. *Id.* As discussed in this section, courts have readily reversed this presumption, suggesting that BLM should have worded the presumption more strongly if it wanted to reduce royalty exemptions.
- 44 920 F. Supp. 738, 748 (W.D. Ky. 1996).
- 45 See 154 Interior Dec. 207, 210 (IBLA 2001).
- 46 *Id.*
- 47 *Id.* at 214.
- 48 *Id.* at 212.
- 49 See 38 F. Supp. 2d at 966.
- 50 154 Interior Dec. at 212 n.4.
- 51 See Sanzillo, *supra* note 2, at 31.
- 52 WILLIAM WATSON, ET. AL, *U.S. Coal Supply and Demand: 2010 Year in Review*, U.S. ENERGY INFO. ADMIN. 2 (Jun. 1, 2011).
- 53 Squillac, *supra* note 1, at 36.
- 54 OFFICE OF NATURAL RES. REVENUE, *supra* note 18.
- 55 Sanzillo, *supra* note 2, at 29. Note that Sanzillo calculated lost revenues by subtracting the market value from the sales value as discussed in this section, but he calculated market value by projecting the GAO’s findings of under-valuation through to 2012. *Id.*
- 56 See Patrick Rucker, *Asia coal export boom brings no bonus for U.S. taxpayers*, REUTERS, Dec. 4, 2012, <http://www.reuters.com/article/2012/12/04/us-usa-coal-royalty-idUSBRE8B30IL20121204>.
- 57 30 U.S.C. § 207.
- 58 *Id.*

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**THE ECONOMICS OF COAL LEASING  
ON FEDERAL LANDS:  
ENSURING A FAIR RETURN TO TAXPAYERS**

June 2016



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## Executive Summary

The Federal coal leasing program accounted for nearly 40 percent of coal production in the United States in 2015, including some of the lowest-cost coal available. While the program brings in hundreds of millions of dollars of government revenue per year, it has been widely criticized in recent years by economic and environmental experts for providing a poor return to the taxpayer and for not adequately addressing the environmental costs of coal extraction, processing, and combustion. In January 2016, U.S. Department of the Interior began the first programmatic review of the Federal coal leasing program in 30 years in order to address a range of issues, including the return to the taxpayer and coal leasing impacts on the environment.

This report focuses on the issue of whether the Federal coal leasing program *provides a fair return to the taxpayer* and draws upon relevant academic research to provide an economic perspective. A review of the coal leasing program indicates that the program has been structured in a way that misaligns incentives going back decades, resulting in a distorted coal market with an artificially low price for most Federal coal and unnecessarily low government revenue from the leasing program.

Typically when the government owns a resource, whether it is timber, electromagnetic spectrum, or coal, a common objective is to ensure that the government maximizes revenue to the extent feasible, while also taking into consideration positive or negative externalities associated with the use of that resource. When it is impractical or inefficient for the government to use the resource itself, then the key task is designing an arrangement that aligns the incentives of the agent who harvests or produces the resource with the public interest.

The coal leasing program offers companies 20-year leases on Federal lands, and brings in revenue to Federal and State governments through three channels: (1) bonus bids from an auction for the right to lease land with coal resources, (2) land rental fee payments, and (3) production royalty payments as a percentage of the sale price of the coal produced. A review of these features finds that they have not fostered an efficient, competitive system that provides a fair return to taxpayers. For example, although intended to be competitive, the bonus bid auctions appear to be less and less competitive, typically with only one to two bids submitted at prices very near the lowest selling price possible, or reserve price, set by the government. Similarly, by assessing royalty payments through a royalty rate, there is an incentive for companies to reduce reported coal sales prices in order to minimize the royalty payments owed and companies have employed several tactics to lower the selling price of coal without losing revenue.

All of these factors lead to lower returns to the taxpayer from the coal leasing program. They have been exacerbated over the past few decades as Federal coal has considerably expanded its share of the overall coal market by offering coal at a much lower price on average than non-Federal coal, bringing down the equilibrium price of coal on the market. Because of these documented inefficiencies and other concerns related to the Federal coal leasing program, the

U.S. Department of the Interior (DOI) announced in early 2016 the first comprehensive programmatic review of the Federal coal leasing program since the 1980s.

This report examines the market implications of changing royalty rates based on three potential approaches motivated by the current structure of the coal market. Specifically, we consider basing royalty payments on nearby regional coal prices, nationwide coal prices, and the price of natural gas, which is a close substitute for coal in the electricity market. All three prices are in terms of dollars per one million British Thermal Units (MMBtu) to account for differences in heat rates of different types of coal (and natural gas). Further, we consider a fourth approach that establishes royalty payments based on the objective of maximizing government revenues, consistent with how the government manages many other resources.

A critical question that arises in any discussion of changing royalty rates is whether an increase will actually increase government revenue or if it will lower auction revenues sufficiently, thus decreasing government revenues. Using results from the well-known Integrated Planning Model (IPM), we find that the answer to this is unambiguous: increasing coal royalty payments for Federal leases could bring in substantially greater revenue for States and the Federal government. Modestly increasing coal royalty payments, such as basing the payments on the price of nearby regional coal, would lead to a slight decline in Federal coal production and a very slight increase in non-Federal coal production. On net, it would lead to a slight reduction in aggregate coal production across the United States that leads to subsequent emissions reductions from coal combustion. The results for the other scenarios mirror these, with larger decreases in Federal coal production, but considerable increases in government revenue. These findings highlight the potential of royalty reform to provide a fair return to taxpayers while simultaneously reducing the environmental effects of coal extraction and combustion. Finally, it is important to note that this report does not analyze the full range of considerations relevant to potential changes to the Federal coal leasing program, ranging from development benefits and employment effects to impacts on natural resources such as water and wildlife habitat.

### **An economic perspective on the Federal coal program highlights the need for reform.**

- From an economic perspective, important objectives for the Federal coal leasing program would include maximizing return to taxpayers from the use of the public resources and addressing unpriced environmental externalities. There is growing evidence that the current structure of the Federal coal leasing program does not provide a fair return to the taxpayer due to misaligned incentives inherent in the structure and administration of the program.

### **The U.S. coal market has become increasingly dominated by Federal coal.**

- Over 40 percent of the U.S. coal market is supplied by Federal coal and this share has increased substantially over the past several decades. On average, Federal coal is substantially less expensive than non-Federal coal, and the ratio of non-Federal to Federal prices has diverged from 3.3 in 1990 to 5.0 in 2014.

**Increasing royalty payments is one approach to ensuring that the Federal coal program provides a fair return to the taxpayer.**

- There is strong economic support for setting coal lease royalty terms based on the final delivered price of coal, less adjustments for the heat content, quality, and location of the coal. These adjustments are crucial to make sure coal is being assessed on its true economic value.
- Similarly, establishing lease royalty terms based on relevant (adjusted) market prices for comparable coal or coal substitutes is important to ensure a fair return to the taxpayer. The relevant market price could be the average price of nearby regional coal, the price of nationwide coal, or the price of a substitute in the electricity dispatch order: natural gas. By basing royalties on such market price comparisons, only Federal coal that is underpriced (relative to comparable direct substitutes) would have a change in the royalties paid.
- Alternatively, another option would be increasing royalty payments to maximize royalty revenues. Many government resources are managed with the goal of maximizing the return to the taxpayer. This would imply a substantial increase in the royalty rate.

**Modeling results indicate that increasing royalty rates would increase government revenues while only modestly reducing Federal coal production.**

- All approaches examined for assessing higher royalties can lead to higher government revenues. If royalty payments are based on the price of nearby regional coal on a per-Btu basis, after it is fully phased-in, this would add up to \$290 million more to State and Federal coffers annually. Maximizing royalty payments would bring in as much as \$3 billion more to State and Federal coffers annually once fully phased-in.
- Since Federal coal is so much less expensive on average to extract than other coal on the market, increasing royalty payments based on market prices for comparable substitutes (and thus increasing the price of that coal), would only result in a modest reduction in Federal coal production. For example, assessing royalty payments based on the price of nearby regional coal would reduce Federal coal production by roughly 3 percent annually once fully phased-in.
- Increasing the royalty payments on Federal coal would modestly increase production of non-Federal coal in the Appalachians and Illinois Basin through the slightly higher nationwide market price for coal. For example, assessing royalty payments based on the price of nearby regional coal would increase non-Federal production just over 1 percent annually once fully phased-in.

**Environmental externalities are another important consideration.**

- On net, increasing royalty payments to ensure a fair return to the taxpayer would decrease total coal production in the United States and also decrease total nationwide emissions. For example, assessing royalties on the price of nearby regional coal would reduce emissions by an estimated 12 million metric tons of carbon dioxide annually while utilizing prices for either non-Federal coal nationwide or for natural gas yields emission reductions of approximately 32 million metric tons annually. (For comparison, total U.S. carbon dioxide emissions from coal combustion for electricity in 2015 was 1,364 million metric tons).

- Although the focus of this report is on ensuring a fair return to the taxpayer, there is strong economic evidence of large external costs from coal production, transportation, and consumption. For example, incorporating the social cost of carbon in coal royalties would imply a royalty rate greater than 100 percent, implying that an increase in royalty rates could improve economic efficiency both due to fair return to the taxpayer and environmental externality considerations.

## Introduction

Coal resources on Federal lands are a significant energy source for the production of electricity throughout the United States. In 2015, roughly 40 percent of coal produced in the United States was extracted from Federal lands, amounting to approximately 450 million tons per year and generating over \$700 million in Federal and State revenue per year (EIA 2015a).<sup>1</sup> The regulations and administrative processes governing leasing of Federal coal were largely put in place in the late 1970s and early 1980s and have seen little change since that time. On January 15, 2016, Secretary of the Interior Sally Jewell issued Secretarial Order Number 3338, directing “the BLM to prepare a discretionary Programmatic Environmental Impact Statement (PEIS) that analyzes the potential leasing and management reforms to the current Federal coal program.” During the pendency of the PEIS, the Secretary directed the BLM to place a pause on the issuance of coal leases subject to limited, enumerated exemptions and exclusions. This announcement was preceded by President Obama’s 2016 State of the Union Address, which clearly stated the priorities of the Administration:

“Rather than subsidize the past, we should invest in the future—especially in communities that rely on fossil fuels. We do them no favor when we don't show them where the trends are going. 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.”

This report covers the basic economics of coal leasing on Federal lands, with a focus on *ensuring a fair return to taxpayers* from extraction of the coal resource on public lands. To be sure, there are other economic justifications for reforming coal leasing. Most importantly, there is an economic justification based on un-internalized environmental externalities, such as carbon dioxide emissions from coal combustion, methane emissions from coal extraction, and water pollution from coal extraction and processing. The full programmatic review being launched by DOI is expected to address both the fair return to the taxpayer and coal leasing impacts on the environment, as stated by Secretary Sally Jewell on January 15, 2016:

“We haven’t undertaken a comprehensive review of the program in more than 30 years, and we have an obligation to current and future generations to ensure the Federal coal program delivers a fair return to American taxpayers and takes into account its impacts on climate change.”

In her announcement, Secretary Jewell also emphasized that DOI is committed to openness and improved transparency in the Federal coal leasing program while the programmatic review, which is expected to take approximately three years, is underway. While these additional considerations are unquestionably important for understanding the economics of coal leasing on Federal lands, and will be discussed briefly, this report will retain a focus on government revenues and the return to the taxpayer.

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<sup>1</sup> The federal government typically shares the coal leasing program revenue roughly equally with State governments.

There is an extensive legal history underpinning the current structure of the coal leasing program. The following discusses a few of the key highlights relevant to understanding the program. The Mineral Leasing Act (MLA) provides the Secretary of the Interior with substantial discretion in managing Federal coal leasing and setting the terms of leases. The Secretary “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 interests and which will permit the mining of all coal which can be economically extracted” and “shall, in his discretion, upon the request of any qualified applicant or on his own motion, from time to time, offer such lands for leasing and shall award leases thereon by competitive bidding.” 30 U.S.C. § 201(a)(1). The Act also directs the Secretary to set surface coal royalties at a minimum of 12.5 percent “of the value of coal as defined by regulation” and provides that the Secretary may establish a lesser royalty for coal recovered by underground mining operations 30 U.S.C. § 207(a). In 1990, the underground mining rate was set at 8 percent by regulation. The MLA also provides the Secretary discretion to suspend, waiver, or reduce royalty fees “whenever in his judgment it is necessary to do so in order to promote development, or whenever in his judgment the lease cannot be successfully operated under the terms provided therein.” 30 U.S.C. § 209. Finally, the Federal Coal Leasing Amendments Act of 1976 amended the MLA to generally require that all Federal coal leases be offered competitively.

These laws formed the foundation for today’s Federal coal leasing process. The current procedures were most significantly last revised in the 1980s, resulting from allegations that the Federal government did not receive fair market value from a large lease sale in the Powder River Basin due to leaked confidential information. In response, Congress directed the Secretary of the Interior to appoint members to the “Linowes Commission” to review the Federal coal leasing program’s fair market value processes. The Linowes Commission’s report, along with other reports from the Government Accountability Office and the Office of Technology Assessment, recommended major updates to the Federal coal leasing program procedures.

Under the current structure of the Federal coal leasing program, the Federal government receives revenue in three major ways:

1. Bonus Bids – for any new tract of land available for lease, there is a first-price sealed-bid auction (i.e., bidders submit sealed bids, the bidder with the highest bid wins the auction, and the winning bidder pays the amount they bid). DOI also establishes a confidential minimum bid based on a valuation of the coal tract. The winning bid must be above this minimum bid. The minimum bid is set as the greater of the agency’s estimate of the fair market value of the tract and \$100 per acre. The winner must pay the bonus bid upon issuance of the lease.
2. Rental Fees – there is a minimum \$3/acre per year rental fee for use of the land.
3. Production Royalties – these are paid at the first point of sale of the coal after it is removed from the ground as a percentage of the revenues at the sale price. The royalty rates are set by regulation at a fixed 8 percent for underground mines and not less than 12.5 percent for surface mines. Lessees may request royalty waivers, suspensions, or reductions by demonstrating that the change is necessary to promote development or

that operations would not be financially successful under the lease terms. In addition, lessees may claim deductions against royalty payments for certain costs, such as washing (i.e., cleaning the coal for impurities) and transportation of coal (e.g., if the first point of sale is not at the mine mouth).

Tracts are leased for an initial 20-year primary term, contingent on continued operations and production of the coal in commercial quantities within the first 10 years. Leases may be renewed for 10-year terms. All leasing revenues (bonus bids, rental fees, and production royalties) are split roughly evenly between the Federal government and the State in which the lease is located.

The Federal coal leasing program has recently been widely criticized for failing to provide a fair return to taxpayers.<sup>2</sup> This criticism highlights concerns with the incentive structure of the current program and points out characteristics consistent with an uncompetitive lease bidding process and effective royalty rates that are much below the statutory minimum levels. For example, GAO (2013) reports that between 1990 and 2013 DOI leased 107 coal tracts, and 96 of them (about 90 percent) involved only a single bidder in the bonus bid leasing auction. The primary reason for this is that more than 90 percent of the lease applications were for maintenance tracts used to expand an existing mine's annual production or extend the life of the mine. GAO notes that "there is limited competition for coal leases because of the significant capital investment and time required to establish new supporting infrastructure to start a new mine or to extend operations of an existing mine to a tract that is not directly adjacent to it." GAO also points out that over time royalties provide a larger fraction of the revenue from coal leasing than bonus bids, due to greater production on existing leases. GAO calculates that bonus bid revenues have averaged \$335 million per year from 2003 to 2012 (although varying significantly by year, with no clear trend), while royalty revenues have increased over time to amount to \$796 million in fiscal year 2012. Rental fee payments are largely insignificant, totaling only \$1.2 million in fiscal year 2012.

Haggerty and Haggerty (2015) calculate an average *effective* royalty rate, defined in that study as the final royalties paid per ton of coal divided by the average delivered market price that sellers ultimately receive for the coal sold from Federal leases. Using this approach, they divide the average royalty collections of \$1.70 per ton of coal from 2008 to 2012 by the gross market price during that time period of \$34.43 per ton. The result is an effective royalty rate of only 4.9 percent. Although allowable deductions are clearly a significant contributor to the difference between 4.9 percent and the statutory rate of 12.5 percent, recent reports have argued that several other factors may also help explain the difference between the effective royalty rate and the statutory minimum rate.

Lee-Ashley and Thakar (2015) point out that in 2012, 42 percent of all Federal coal produced in Wyoming was sold through a "captive transaction," which refers to a sale between a parent and affiliate company. The authors reason that these captive transactions, along with allowed

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<sup>2</sup> The coal leasing program has also been criticized for not internalizing externalities. For example, see Krupnick et al. (2015), Hein and Howard (2015), and Gerarden et al. (2016).

deductions for transportation and washing, are an important part of the reason why the price used to determine royalties is so much below the market price of coal. Haggerty and Haggerty (2015), Lee-Ashley and Thakar (2015), and Taxpayers for Common Sense (2013) argue that coal companies have an incentive to use captive transactions and inflate the transportation and washing deductions in order to reduce the market value of coal used for calculating royalty payments.

Peterson (2015) notes these issues, but also emphasizes another particular concern: the current structure of the Federal coal leasing program provides coal companies with incentives to structure contracts to price coal as low as possible. The author argues that companies employ “take-or-pay” contracts, in which final purchasers (e.g., electricity generating units) agree to purchase very large quantities of coal at a low price and if they fail to “take” the required amount, they are required to make a “penalty payment.” These penalty payments do not have royalties assessed on them, so there is an incentive for contracts to be designed with very low coal transaction prices and larger penalty payments in order to reduce royalty payments.

The following sections explore lessons from economic theory relevant to ensuring a fair return to taxpayers, examine characteristics of the current coal market, and provide possible options to improve the likelihood that taxpayers will receive a fair return from the Federal coal leasing program. The remainder of the report then uses results from the well-known Integrated Planning Model (IPM) to estimate the effect of adjustments to the Federal coal leasing program on the coal market, Federal coal production, and royalty revenues. It concludes with a few key take-away findings.

## I. An Economic Perspective on a Fair Return to the Taxpayer from Federal Coal Leasing

The recent criticisms of the Federal coal leasing program raise questions about the incentives provided to coal companies under different ways of structuring the program. This section takes a theoretical view of the economics of coal leasing and discusses the economic implications of different choices in program design.

The need to properly design payment for the development or use of public resources is a common one. From National Park Service auctions for concessionaire rights in Yosemite National Park, to timber auctions on National Forest Service land, electromagnetic spectrum auctions by the Federal Communications Commission, and government surplus property auctions by the General Services Administration, there are examples of mechanisms used to ensure a fair return to taxpayers throughout the Federal government. States with significant coal reserves also routinely use auctions for the right to extract coal on State land.

A common theme among all of these examples is the goal of maximizing return to the taxpayer from the use of the public resource to the extent feasible. In addition to ensuring a fair return to the taxpayer for the use of the public resource, this goal has an additional economic rationale: if revenues are raised in a non-distortionary or minimally distortionary way through the use of a government-owned resource, then revenues will not have to be raised through other, more distortionary, taxes, such as income taxes or sales taxes. In this sense, maximizing the return to the taxpayer can improve economic efficiency.

It is worth considering the infeasible, but ideal, “first-best” (in an economic efficiency sense) arrangement for ensuring maximum return to the taxpayer. In the first-best outcome, all of the economic profits (i.e., profits after excluding the standard return on capital) would go to the government, as the resource owner and steward.<sup>3</sup> This could in theory be accomplished by the government itself efficiently extracting the coal using the lowest-cost approaches and keeping the economic rents. Alternatively, it may be more practical for a trusted agent, with the necessary equipment, infrastructure, and expertise, to efficiently extract the coal and remit any economic profits to the government. The coal firm (or agent) would get a fair return for its investment and effort, while the public would receive any remaining or excess value from the development of the public resources. Thus, the task is designing an arrangement that aligns the incentives of the agent with those of the government.

Auctions are the most common way to align incentives. With many bidders (i.e., a thick bidding pool), auction mechanisms can be designed so that the revenues received come as close as possible to the first-best economic profits or rents. Such mechanisms have been studied extensively in economics, focusing primarily on a simple auction setting that does not include

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<sup>3</sup> Economic profits can include the option value of a long-term lease, which accounts for the fact that coal companies who win the lease have the option to extract in the future should prices be sufficiently high, but are not required to do so until the tenth year of the lease.

royalty or other ex-post verifiable payments. In such a setting, with a first price sealed-bid auction, as the number of bidders increases, the auction revenue increases, for each bidder realizes that they must outbid the other bidders and thus bids higher. As the number of bidders approaches infinity (i.e., a perfectly competitive market), the optimal bids approach the true market valuation. So in a highly competitive auction, the revenues to the taxpayer approach the first-best outcome, which is the full value of the economic profits. The less competitive the market, the further the deviation from a first-best outcome. For example, in a first price sealed-bid auction with only two bidders, the optimal bid is only one half of the true valuation. With a single bidder, the optimal bid is as low as possible (Milgrom 2004, Laffont and Tirole 1994).

Even closer to the Federal coal leasing context, there is also significant work analyzing “auctions with contingent payments” (Haile et al. 2010, Skrzypacz 2013). Bonus bid auctions for coal leases can be considered auctions with contingent payments, for the right to lease the tract is auctioned with contingent payments (i.e., royalties) that are paid based on revenues. Auctions to determine the royalty rate paid are also possible instead of auctions for the right to lease a tract. For example, firms bid a per unit price for each species of timber in U.S. Forest Service auctions, which is equivalent to a royalty rate auction if prices are stable (Athey and Levin 2001).

Raising revenue from Federal coal leasing using bonus bid auctions along with royalty payments may deviate from the first-best outcome. For example, when there are few bidders in an auction (i.e., a thin bidding pool), then the auction is expected to generate much less revenue than the first-best outcome. As is discussed above, for practical reasons 90 percent of Federal coal lease auctions between 1990 and 2013 had a single bidder. Requiring royalty payments also raises the post-royalty marginal cost of production, thereby reducing production. This would lead to a deviation from the first-best production levels if coal production and combustion did not have external costs, but given the important externalities of coal production and combustion, the use of royalties may actually move us closer to the first-best outcome by helping to internalize some of these externalities.

In a context with perfect information, it may be possible for the government to calculate the market value of the lease to the limited number of firms bidding and impose a minimum bid (or even a price) for the lease that would be auctioned. However, coal leasing is a setting with asymmetric information where the agents (coal companies) know more than the government about their cost structure and the true market value of the lease to the entire firm, including subsidiaries. In a context with asymmetric information, it is extremely challenging to determine the true market value of the lease. In addition, while firms may not know the exact minimum bid for any given auction, there is a repeated game being played, so that the firms can roughly infer what the minimum bid might be, and thus can make sure to bid just above it. Such a repeated game may also lead to lower calculated minimum bids than the true market value of the coal if the minimum bid is determined in part based on other recent successful bids. If other recent successful bids come in low, it would appear that the market value of the new coal lease is also low, potentially leading to an equilibrium with lower minimum bids than would be needed to fully capture the economic profits from the coal leasing.

Given these challenges with the bonus bid auction (and similar challenges that would occur with a royalty auction), royalty payments assessed on the production of coal have the potential to bring the return to the taxpayer closer to the first-best outcome. These payments could be based on traditional fixed royalty rates, a fixed royalty fee or charge, or other royalty payment structure including a combination of royalty rates and fees. In principle, in a context where competitive auctions are not possible, royalty payments can provide firms an incentive to minimize costs and produce efficiently, and may partly help overcome issues of asymmetric information and costly monitoring.

There are two important questions that determine whether or not using royalty payments along with a lease auction is an attractive second-best approach. First, to what extent are the lease auctions uncompetitive? Increasing the royalty payments would be expected to reduce the remaining economic rents to the successful bidder, so the bonus bids would be expected to decrease as royalty rates rise. If lease auctions are generally uncompetitive, the additional revenues from the increased royalty payments would exceed the lost bonus bid revenue. In contrast, if lease auctions are entirely competitive and the bonus bid revenues fully capture the remaining economic profits, then increasing the royalty rate may not bring in any additional revenue (as lower bids offset royalty rate revenue), and may even bring in slightly less revenue by discouraging production (although this may be optimal if relevant externalities are otherwise un-internalized).<sup>4</sup> This is fundamentally an empirical question and one that is addressed in the modeling exercise later in this report.

Second, royalty payments are a more attractive approach if the royalties are assessed on the true market value of the coal.<sup>5</sup> From an economics perspective, the coal market is a nationwide market, but coal is not homogenous. Coal differs in characteristics such as heat content, sulfur content, mercury content, moisture, and ash content. Moreover, coal that is extracted near the location of purchasing facilities is more valuable than coal mined far from demand, since the transportation costs would be lower. This is again where considering the first-best economic outcome is useful. In the first-best, coal with higher heat content would be worth more, with higher sulfur or mercury content would be worth less, and with higher transportation costs would be worth less. Thus, from an economics perspective, the true market value of the coal adjusts for the characteristics of the final coal produced, including its location.

Due to asymmetric information, the underlying value of coal would also be gross of any unobserved or imperfectly observed costs involved in extracting or preparing the coal for consumption. For example, marketing costs, overhead, and washing costs are all necessary costs of preparing the coal for final combustion. Moreover, they are highly specific to the particular

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<sup>4</sup> Technically this equivalence works in expectation; with risk-neutral bidders, the *expected* revenues from the bonus bids are exactly offset by the *expected* present value of the flow of royalty payments. If bidders are risk-averse, the expected revenues from the bonus bids may not be entirely offset by the flow of royalty payments, since with royalty payments, the government will be sharing in the risk of low revenue outcomes, allowing for slightly higher bonus bids.

<sup>5</sup> One would generally call this a “fair market value,” but in coal leasing this term has been co-opted and given a technical definition as the value used for choosing the minimum bid level in the bonus bid auctions.

mine and coal extracted. These costs are thus imperfectly observable to DOI, and yet are known by the firm. As mentioned above, coal washing costs currently can be deducted from the value of coal that royalties are assessed on. Not deducting these costs from the reported market value of coal would help to prevent two potential issues of perverse incentives. First, allowing these costs to be deducted reduces the incentive to minimize these costs and prepare coal for market as efficiently as possible. Second, deducting these costs provides an incentive for lessees to inflate these reported costs and thus reduce the royalties paid. In a context of imperfect information and high monitoring costs, profit-maximizing firms would have an incentive to include as many costs in the category of deducted costs as possible in order to earn the highest return for their shareholders. With larger deducted costs, fewer royalties are paid.

A useful analogy for understanding how market value may be manipulated is considering how property is taxed in the United States. If homeowners were allowed to state the value of their property instead of being required to use assessor data on the market price, then homeowners would have an incentive to systematically report lower property values and to neglect to mention home improvements that may increase the value of the property. It would also create an incentive for side payments during home sales, so that the recorded value of the home comes in below the true value of the home (similar to penalty payments in coal contracts). The primary check against these incentives is that assessors follow the property market closely and base home valuations on similar homes elsewhere in the overall housing market. This helps to ensure that the property tax base is the fair market value of the property. Property transaction records are also public records, which fosters transparency in the market, which is critical for assessing the fair market value of any property.

The logic here also extends to transportation costs. As described above, the location from which coal is extracted is an easily observed characteristic of the coal. Furthermore, rail shipping costs for different commodities are in most cases easily observed, and in principle, arms-length coal shipping costs could be observed and verified against costs of other similar commodities. If firms are permitted to self-report transportation costs, this not only reduces the incentive for efficiently transporting the coal, but it also provides an incentive for inflating the transportation costs and including other costs in with transportation costs. For instance, there could be an incentive to include logistics support costs, which are just standard overhead costs for marketing the coal.

Economics delivers significant guidance on the optimal design for the Federal coal leasing program by providing a first-best benchmark and highlighting issues of asymmetric information and perverse incentives in the royalty program when there is insufficient competition in the leasing auctions. Economic logic points to the importance of transparency, adjusting the market value of coal for its characteristics, excluding deductions from the market value that are not easily observable, and basing the market value (and any deductions) on observable market prices rather than self-reported prices.

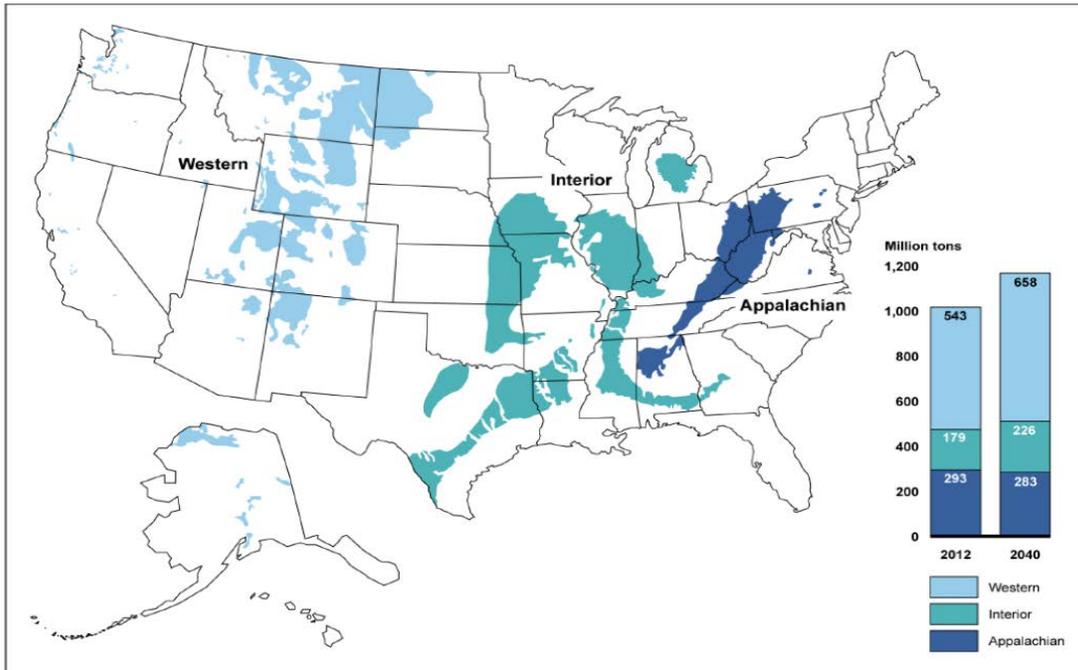
## II. The Coal Market in the United States Today

Coal is a major feedstock for electricity generation, and the United States has substantial coal resources. In 2014, just over one billion tons of coal were produced in the United States, down from just under 1.2 billion tons of coal in 2006, and comparable to production levels over the past two decades (all tons in this report are short tons). Roughly 74 million tons were exported in 2015, with net exports of about 73 million tons, most of which was metallurgical coal used for industrial purposes. Gross and net exports peaked in 2012 with net exports in 2012 of about 116 million tons (EIA 2015a). With retirements of aging coal plants and low natural gas prices, coal production declined 11 percent in 2015 (by 109 million tons) and a slight decline is forecasted to continue over the next two years (EIA 2016a). Yet, despite the declines, coal is still expected to remain one of the primary feedstocks for electricity generation over the next decade (EIA 2015b).

Figure 1 shows the location of coal resources in the United States, along with 2012 estimates and 2040 forecasts of coal production by region (GAO 2013). There are substantial coal resources in the Appalachian region and interior region, but the largest resources are in the western region. Almost all coal produced on Federal lands is produced in the western region and in fiscal year 2012 nearly 80 percent of coal production in the western region was from Federal lands (GAO 2013).<sup>6</sup> The reliance on Federal coal in the western region for coal production is even higher today; according to EIA, the largest percentage decrease in production between 2014 and 2015 was in the Appalachian region, followed by the interior region, with the smallest decline in the western region (EIA 2016b). This shift is unsurprising as some of the largest, most productive, and lowest-cost coal mines are found on Federal lands, and in particular in the Powder River Basin (PRB) of Wyoming and Montana.

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<sup>6</sup> Small amounts of coal are produced from federal leases in Alabama, Kentucky, New Mexico, North Dakota, and Oklahoma. In fiscal year 2012, 85 percent of federal coal was produced in Wyoming, and 97 percent produced in Wyoming, Montana, Colorado, or Utah (GAO 2013).

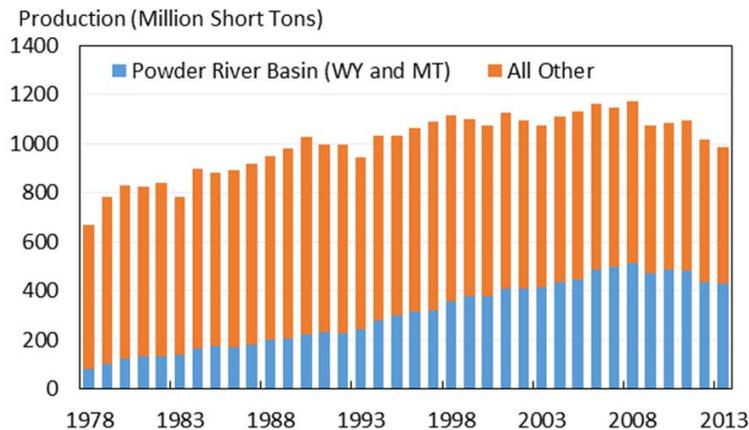


Sources: GAO analysis of Energy Information Administration data; copyright © Corel Corp., all rights reserved (map).

Figure 1. Coal producing regions around the United States. Source: GAO (2013)

The coal market in the United States has seen a significant shift since the current coal royalty system was established, from a market mostly reliant on production on private lands to one with a much larger share of production mined on Federal lands. In 1990, the percentage of total coal produced from Federal leases was 24 percent. This rose to roughly 40 percent in 2002 and has leveled off at just above 40 percent since then. Figure 2 illustrates this shift graphically by splitting production between the PRB and all other coal production. Over 85 percent of Federal coal has been produced in the PRB in recent years, and the vast majority of PRB coal production is on Federal lands.

### Powder River Basin Coal as a share of U.S. Coal Production, 1978-2013



Source: Energy Information Administration.

Figure 2. U.S. Coal Production from 1979 to 2013, showing the share of PRB coal. Source: EIA (2015a)

Another major shift over the past two decades is a divergence in dollars per ton coal prices at the mine mouth by State, as is shown in Figure 3.<sup>7</sup> In the 1990s, mine-mouth prices (i.e., prices at the time of first sale, just before transportation) were generally less than \$30 per ton (in 2014\$), with Appalachian and interior region coal bunching between \$15 per ton and \$30 per ton. In contrast, Federal PRB coal prices were around or less than \$10 per ton. In the past several years, that gap between Federal PRB coal and private coal prices has widened, with private coal from Appalachian and interior States ranging from \$30 per ton to as high as \$100 per ton (in Virginia), while Federal PRB coal still remains close to \$10 per ton. Another way to see this divergence is to consider that the ratio of the price of Southern West Virginia coal (a common benchmark for Appalachian coal) to the price of Wyoming PRB coal increased from 3.3 in 1990 to 5.0 in 2014.

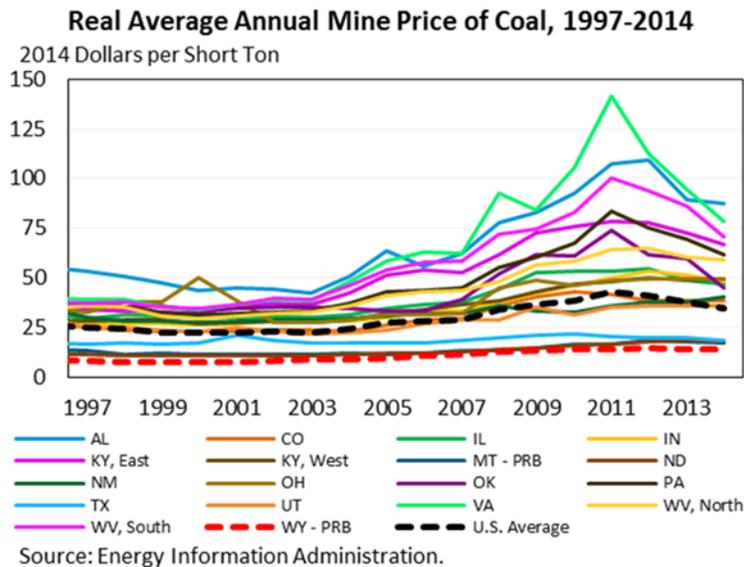


Figure 3. Average coal prices (\$/ton) by State and basin from 1997 to 2014. Source: EIA (2016b)

The prices of coal from different locations can vary for a number of reasons. Federal PRB mines are all surface mines, while some of the other Federal leases are for underground mines, such as in Utah and Colorado. Surface mines tend to have lower costs. But, there are surface mines in the Appalachian and interior regions as well. Gerking and Hamilton (2008) argue that technological innovation and economies of scale help explain the lower prices of PRB coal, but these factors alone are unlikely to fully explain the cost difference, since surface mines elsewhere in the United States use similar technology (although not usually at quite the same scale).

Another explanation for the differences in price is that the coal itself is different. PRB coal is sub-bituminous coal with a low heat rate (i.e., low Btu content per ton) and low sulfur content. The low heat rate means that more coal must be burned to generate the same amount of electricity, which is a major disadvantage. However, the low sulfur content is advantageous for it can reduce

<sup>7</sup> The estimates in Figure 3 are simple arithmetic averages including all grades of coal. Non-metallurgical coal has continued to make up only a small percentage of coal, so most of the coal produced is thermal (steam) coal used for electricity generation.

the need for scrubbers to remove sulfur dioxide from the emissions (Considine and Larson 2006). Many coal electricity generating units can switch between coal of different grades based on relative prices. For reference, the Appendix presents average coal prices by State and basin over time only in terms of dollars per millions of Btu (MMBtu) of coal, rather than in terms of dollars per short ton of coal.

A further major difference is that Federal PRB coal is generally farther from markets and thus tends to have higher transportation costs. Another significant difference is that Federal PRB coal tends to be sold at low prices to subsidiaries, as is described in several recent reports, including Lee-Ashley and Thakar (2015). The coal is then sold for higher prices in a final transaction. This vertically-integrated arrangement may lower transaction costs (Joskow 1985), but it provides a perverse incentive by allowing firms to self-report deductions, as discussed above. Some final transactions may also have lower reported prices, but utilize take-or-pay contracts with high penalty payments.

Since the lower-cost Federal PRB coal makes up roughly 40 percent of the market, it clearly exerts a strong downward pressure on the national average coal price, as was noted in Sanzillo (2012). This downward pressure is a likely contributor to the sharper decline in production in the Appalachian and interior coal-producing regions over the past few years, especially as mines in those regions have moved into higher-cost coal deposits. Moving forward, EIA forecasts suggest that this trend will continue, further increasing the influence of Federal coal in setting lower market prices for coal in the United States (EIA 2015b). This is important in providing a motivation for approaches to ensure a fair return to taxpayers.

### **III. Approaches to Ensure a Fair Return to the Taxpayer from Federal Coal Leasing**

Ensuring a fair return to the taxpayer and approaching the first-best outcome is challenging in light of the current legal framework of the Federal coal royalty program. Issues of asymmetric information and imperfect monitoring imply that DOI's Office of Natural Resources Revenue (ONRR) must expend significant resources in auditing coal contracts to prevent gaming and other abuses. DOI is undertaking efforts towards increasing transparency and further improving the Federal coal leasing process within the current framework.

The following are two possible approaches to help ensure a fair return to the taxpayer that are rooted in the economic perspective and observations about the current coal market described above. These approaches do not explicitly address changes that could improve transparency or improve the lease bidding process (GAO 2013), but rather they are premised on the fact that bonus bid auctions are structurally uncompetitive, and thus the royalty payments are the primary mechanism that can be used to move revenues from coal leasing closer to the first-best outcome.

#### **Approach 1. Assess Royalties Based on the Full Market Value of Coal**

The effective royalty rate is often much below the minimum level of 12.5 percent for surface coal mines or 8 percent for underground coal mines. This is only in part due to the granting of royalty waivers, suspensions, and reductions to encourage development. Due to these royalty reductions, GAO calculates that the effective royalty rate charged on revenues from all Federal leases in fiscal year 2012 was 11 percent.<sup>8</sup> This royalty rate varied significantly across States. In Wyoming, the effective rate was 12.2 percent and in Montana it was 11.6 percent. The rate was much lower in Utah and Colorado, coming in at 6.9 and 5.6 percent respectively. In more minor coal-producing States, such as North Dakota, it is even lower. As Wyoming and Montana are the largest coal-producing regions, the waivers do not appear to be the root of the issue.

There are additional important reasons why the true effective royalty rate is often much lower than the statutory minimum levels. By using the first sale for determining the market value of the coal that the royalties are assessed on, several issues may arise. For example, asymmetric information and costly monitoring may allow for reporting of artificially low prices at the first sale. Similarly, artificially high deductions for washing and transportation may also reduce the post-deduction reported price. In either case, the royalties would not be assessed on the full market value of the coal.

Under a framework analogous to property taxes, the market value for coal should be based on sale prices of coal with similar characteristics, from both Federal lands and non-Federal lands. Under such a framework, the most appropriate price to use would be the market price for coal with similar characteristics in the region of coal extraction. This market price would already be

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<sup>8</sup> In contrast to Haggerty and Haggerty (2015), GAO defines the "effective royalty rate" as the rate after accounting for waivers. So, the rate would be the royalty revenue divided by the reported revenue from the first sale.

adjusted in large part for transportation costs. However, it may also be constructive to instead look to nation-wide market average coal prices. This could be particularly useful in locations where Federal coal dominates the regional market, potentially depressing the prices in that regional market. Under this approach, nation-wide market prices would be used to determine the starting royalty payment, although deductions for transportation costs might still be applied to reflect the different value of coal in different locations. However, deductions for poorly observable costs, such as washing costs, could be removed. Deductions for transportation costs are more easily observed and can be based on easily observable indices of coal transportation costs per rail mile, rather than on self-reported cost numbers. These changes would reduce the incentive for penalty payments, improve incentives for efficient transportation and washing, and help increase the likelihood that the company-reported market value of the coal is close to the true market value.

There may be cases where no non-Federal mines produce coal of exactly the same characteristics. This may be even be partly true with PRB coal. In this case, the royalty rate can be adjusted for the particular characteristics of the coal. For example, the true price of coal can be thought of on an energy-equivalent basis to reflect the fact that the heat rate of the coal is a determinant of its value in the coal power plant. Pricing on an energy-equivalent basis would imply pricing in units of dollars per Btu, rather than dollars per ton. Pricing this way also facilitates comparisons to the royalties collected from Federal leases for natural gas and oil on public lands. For example, after adjusting for the heat content of coal, the royalty rate being paid by surface PRB coal is roughly one third of the royalty rate paid for natural gas on Federal lands (on an energy-equivalent basis), even though they are both subject to a 12.5 percent royalty rate on their respective reported sales prices (before deductions).

It could be appropriate to adjust the royalty rate directly to reflect an adjustment for heat content, or to include a Btu-adjusted royalty “addder” on top of the base royalty rate. In other words, the royalty owed would be 12.5 percent of the revenues plus an additional payment in dollars per Btu. Similar adjustments would be possible for sulfur content and other characteristics, but the heat content adjustment is likely to be among the most important.

## **Approach 2. Increase the Royalty Rate to Maximize Revenues to the Taxpayer**

If bonus bids are truly uncompetitive, then increasing the royalty rate to simply maximize the return to the taxpayer is another option for bringing revenues closer to the first-best outcome. For surface coal, the 12.5 percent royalty rate is a minimum royalty rate, and the Secretary of the Interior has discretion to increase this rate to ensure a fair return to the taxpayer. If externalities had been internalized and the leasing program was perfectly competitive, there would be a trade-off in that this approach would conceptually reduce coal production below the economically efficient level. Given that there are un-internalized externalities and the leasing program does not appear to be perfectly competitive, this trade-off is likely to be less of a concern.

The net results in terms of revenue to the public would depend on how production, and hence revenues, change with respect to changes in the royalty rate, and the degree to which the

additional royalty revenues exceed any lost bonus bid revenue (due to fewer new leases as well as due to smaller economic profits to be bid on). But it is quite possible that this approach could substantially increase revenues and the return to the taxpayer. Whether it does is an empirical question, and the next section presents the results of a modeling exercise to explore this question and flesh out the implications of possible approaches for improving the return to the taxpayer. Whether this approach is the preferred approach overall may depend on whether there are other considerations regarding the Federal coal leasing program, ranging from development benefits and employment effects to environmental concerns.

## IV. The Effects of Possible Reforms on Revenues and the Coal Market

### Background

This section explores the effects of possible reforms to the Federal coal leasing program that are intended to ensure a fair return to the taxpayer. These effects depend on the economic environment that coal producers face going forward. For example, coal will be more economic if natural gas prices rise, less economic if utilities decide not to recommission coal plants for any number of reasons, and more economic if demand for coal increases in China or elsewhere. Any modeling analysis of the effects of a policy into the future should be taken as illustrative. One of the key factors that could influence the effects of possible reforms to the Federal coal leasing program is the Clean Power Plan, which is set to reduce emissions from the electric power sector by 32 percent by 2030. Many compliance approaches are possible under the Clean Power Plan, including fuel switching from coal and other carbon intensive fuels to less carbon intensive ways to produce electricity.

The analysis presented here is based on publicly available detailed spreadsheets with model results from IPM model runs also used in Vulcan (2016) and Gerarden et al. (2016). IPM is a well-established energy and electricity system model of the United States that is developed and run by the consulting firm ICF International. IPM has been used extensively for many years by the U.S. government in support of rulemakings. For example, the U.S. Environmental Protection Agency (EPA) Clean Power Plan technical analysis uses IPM for estimating the effects of the policy. The model has multiple regions, and in each region there are endogenously determined unit dispatch, capacity expansion, fuel switching, and environmental compliance decisions based on power market fundamentals. IPM also models coal resources (location and grade of the supply) and demand sources (electric generating units and other industrial users). In addition, IPM models coal imports and exports based on EIA Annual Energy Outlook 2015 projections.

Vulcan Philanthropy contracted with ICF to perform a set of IPM runs examining the effect of several different increases in royalties on all new Federal coal leases. The royalty payment increases are modeled as phasing in over 10 years, to roughly model the phasing in of the change in royalty rates as old leases expire and new or renewed leases are signed at the higher royalty rate. In performing the runs, ICF made every effort to use the same assumptions as the EPA and EIA have recently used. This includes the assumptions in the v5.15 Base and Final Clean Power Plan runs, as well as the EIA Annual Energy Outlook 2015. States have several options to comply with the Clean Power Plan, including mass-based plans (i.e., an emissions limit) and rate-based plans (i.e., an emissions intensity target). Vulcan (2016) uses IPM to model an all-mass-based plan and all-rate-based plan, just as is in the EPA Regulatory Impact Analysis of the Clean Power Plan. See Vulcan (2016) for further details on the cases run.

The effect of an increase in coal royalty payments may be different depending on whether States choose mass-based plans or rate-based plans.<sup>9</sup> It is also possible that some States choose mass-based plans and others choose rate-based plans. Such an intermediate case is likely bounded by the all-mass-based or all-rate-based cases. Under a rate-based regulation, an increase in royalty rates would change relative prices of fuels, which would impact both capacity investment and dispatch decisions, thus influencing costs and emissions. Under a mass-based plan, an increase in royalty rates may change the dispatch order in some States due to transportation costs and the location of Federal coal.<sup>10</sup> It is also possible that a sufficiently large increase in royalty rates could effectively accomplish the Clean Power Plan goals without further adjustments. Lower coal usage could make the emissions limit non-binding and lead to allowance prices that approach zero in some States.

The IPM is particularly well-suited for analyzing policy cases that capture all of these complicated dynamics of the electricity system. It also has a reasonably detailed characterization of the coal market with supply curves at a fairly disaggregated regional level, allowing for a careful modeling of the production of coal (and coal royalty revenues) after an increase in royalty rates. The Vulcan (2016) scenarios involved a dollars per ton royalty charge, which can be easily converted into actual increases in royalty rates given the price at the time. The royalty charges were applied to both surface and underground mines, but the results are driven by the surface mines, which account for over 80 percent of coal production on Federal leases. The royalty charges were also applied to the western States that produce nearly all coal from Federal lands: Colorado, Montana, Utah, and Wyoming.<sup>11</sup> However, it is important to note that the results are nearly identical if the focus is shifted to only PRB coal in Wyoming and Montana, given the dominance of these States in western Federal coal production.

## Methodology and Scenarios Examined

For this analysis, CEA used the model results from the Vulcan runs at different values of per ton royalty charges. There were four values of royalty charges used in the Vulcan analysis (the current royalties and three cases with higher royalty payments). The first step in the CEA analysis was to linearly interpolate the results from these four runs in order to have a complete set of results for all values of the royalty charges.<sup>12</sup> This provides a set of estimated results (e.g., coal production, coal prices, royalty payments) for any value of royalty charges within the range of the original Vulcan runs.

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<sup>9</sup> Mass-based plans put a limit on the amount of emissions in the State in that year and can allow trading between sources. Rate-based plans put a limit on the average emissions rate in the State. Again, trading can be allowed.

<sup>10</sup> In a classic textbook mass-based regulation, if the emissions limit is binding, then the increased royalty rate would be exactly offset by lower allowance prices for coal-fired generation. In this textbook case, there would be no impact on capacity investment and dispatch decisions.

<sup>11</sup> Since the coal supply curves in the IPM do not differentiate federal from non-federal coal within sub-basins (“logical mining units”) the increased royalties are applied to the supply curves on a weighted basis, based on the mix of federal and non-federal coal included in the supply curve. This is likely to be a very close approximation given how high a percentage of federal coal is mined in the Powder River Basin, which is almost entirely federal leases.

<sup>12</sup> There may be some interpolation error from this approach, so these results should be taken as illustrative. That said, the scaling appears to be quite linear, so it is very likely that the interpolation error is small.

The second step in the CEA analysis was to develop a set of four scenarios designed with the economic issues and approaches in mind. Each scenario is based on a different argument for improving the return to taxpayers from the coal leasing program. The CEA analysis is completed with a set of calculations based on the interpolated results.

One of the ways discussed above to improve the return to taxpayers is to assess the royalties on a value of produced coal that more closely approximates the true market value of coal. Three of the four scenarios are based on recalculating the market value of the coal based on a per-Btu market price, rather than the per-ton self-reported price that is currently used (Approach #1 from above).

- The first uses the market price for nearby regional coal;
- The second uses the market price for non-Federal coal nationwide;
- The third uses the price of natural gas because marginal dispatch decisions tradeoff between coal and gas.

Basing the market value of coal on the market price for nearby regional coal would by construction account for the fact that coal in different locations has a different value. One challenge with this approach is that in some regions there may be very little non-Federal coal produced. In this case, it may make sense to use the market price for non-Federal coal nationwide or the market price for a close substitute for coal in electricity dispatch decisions, such as natural gas. In using these other comparison market prices, the second and third scenarios do not account for the differing value of coal by location. Thus, in principle, the royalty payments for these scenarios should be adjusted downward for transportation costs, perhaps through a deduction for observable transportation costs.

For each of these three scenarios, the royalty charges can be calculated by determining what 12.5 percent of the scenario's price (in per-Btu terms) would be. The per-Btu values are then converted back to the dollars per ton royalty charge.<sup>13</sup> As an illustrative example for how these charges for each scenario are calculated, consider a scenario that bases the market value of coal on the market price of nearby regional coal. For concreteness, consider Federal PRB coal in 2016. Recent EIA coal market reports indicate the market spot price (pre-royalty) of nearby regional coal in Colorado and Utah is roughly \$37 per ton, while the market spot price (pre-royalty) for PRB coal is roughly \$9 per ton.<sup>14</sup> Converting these prices to per-Btu prices based on the different heat rates implies a market spot price of \$1.62 per MMBtu for nearby regional coal and \$0.53 per MMBtu for PRB coal. Taking 12.5 percent of the PRB coal price of \$9 per ton is equivalent to a royalty charge of \$1.13 per ton, which is roughly the current royalties being paid per ton on PRB coal. In contrast, taking 12.5 percent of the per-Btu price of nearby regional coal of \$1.62 per MMBtu implies a royalty charge of \$0.20 per MMBtu (i.e., \$1.78 per ton) for PRB coal, a 58 percent increase in the royalty charge that would raise the post-royalty price by less than 12.5 percent.

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<sup>13</sup> Further refinement could adjust the market value for sulfur content, ash content, moisture content, etc.

<sup>14</sup> For example, see <http://www.eia.gov/coal/markets/#tabs-prices-1>.

A royalty charge based on the three scenarios could be applied in several different ways. One direct approach would be to simply apply a fee per ton on coal. This could be in addition to the current royalty rate as a per MMBtu “adder” or it could be an alternative to the existing Federal coal leasing structure. Another approach would work within the existing structure by increasing the royalty rate and keeping all other facets of the Federal leasing program the same. A third approach would be to retain the existing royalty rate, but apply the royalty rate on the market price of coal (as designated by the scenario), rather than the reported transaction price as in the current system. This would imply that the total royalties would be calculated as a percentage of the market value of coal based on the market price of coal (or substitute natural gas), rather than the market value based on the typically lower transaction prices currently reported.

The fourth scenario would maximize return to the taxpayer from the Federal coal leasing program (Approach #2 from above). In other words, the royalty payments would be increased until royalty revenues peak, after which they begin to decrease (due to reduced production). Increasing the royalty payments to this level is illustrative for providing a sense of how high the royalty payments could go while still increasing revenues. This may maximize return to the taxpayer from royalties, but it is possible that tax revenue on income and business profits would correspondingly decrease. These countervailing effects on tax receipts are not modeled here, but could be considered in further refinements of this analysis.

The Vulcan IPM model runs provide results for several years, but for clarity, this report focuses only on 2025. Note that the royalty charges tend to be larger in 2025 than they would be today because the overall coal price is expected to be higher than it is today. This report also focuses on results that include the mass-based Clean Power Plan in the baseline for illustrative purposes. Of course, the quantitative results would change under different Clean Power Plan configurations.

The analysis proceeds as follows. For each of the four scenarios, CEA began with the interpolated suite of results from the IPM runs based on different values of dollars per ton royalty charges. These are converted to dollar per MMBtu royalty charges. For the first three scenarios, we then calculate the dollar per MMBtu 2025 coal prices for each scenario (e.g., the regional coal price, nationwide coal price or natural gas price). For the regional average scenario, this is \$40.71 per ton or \$3.48 per MMBtu, implying a royalty payment of \$0.32 per MMBtu in 2025 following the 9.3 percent average royalty collections on all Federal lands (all in 2012\$).<sup>15</sup> For the national coal price, the production-weighted average price is \$69.07 per ton or \$5.76 per MMBtu, implying a royalty payment of \$0.54 per MMBtu (all 2012\$). It turns out that the natural gas price scenario is almost identical to the nationwide coal price scenario. This makes sense because coal and natural gas are substitute feedstocks in the dispatch order in the nationwide electricity generation market. Matching up these calculated per-Btu royalty payments with the per-Btu payments in the suite of results from the IPM runs yields a full set of results for each of these

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<sup>15</sup> The 9.3 percent is calculated based on a production weighted average of the royalty rates by region in GAO (2013) based on production in the year 2025, which is the royalty rate after accounting for waivers, suspensions, or reductions.

scenarios. The maximizing revenue scenario simply finds the royalty charge that maximizes total government revenue.

### Royalties Resulting from Each Scenario

Table 1 provides an overview of the four scenarios in 2025 based on the interpolated Vulcan IPM results. For each scenario, Table 1 shows the total royalty charge per ton of coal in 2025. It also shows the 2025 royalty rate that corresponds to this charge (if the increased royalty payments are achieved by increasing the rate rather than using a per ton or per Btu charge). Note that the current royalty structure is equivalent to roughly a \$2 per ton royalty charge or a 9.3 percent weighted average royalty rate in 2025, so all of the estimates in the table can be compared to these values. The high royalty charge in the scenario that maximizes return to the taxpayer indicates that royalties can be increased dramatically before royalty revenue begins to decline. The extremely high royalty rate in that scenario is because the pre-royalty price is reduced to roughly \$10 per ton (from roughly \$19 per ton with the current royalty structure and rate).

Table 1. Four scenarios of different rationales for changing coal royalties to ensure a fair return to the taxpayer.		
Scenario	2025 Royalty Charge (2012\$/ton)	2025 Royalty Rate (percentage)
1. Prices based on nearby regional coal prices	3	17
2. Prices based on non-Federal nationwide coal prices	5	29
3. Prices based on natural gas prices	5	29
4. Maximize return to the taxpayer	30	304
Notes: The royalty charge in 2025 under the existing structure is just under \$2/ton, which corresponds to a 9.3 percent royalty rate. The charges shown here can be compared to this current charge. The royalty rate is calculated as the royalty payment per ton of coal divided by the pre-royalty equilibrium average price per ton for Federal coal.		

The findings in Table 1 indicate that under scenario 1 (regional prices), the current royalty rate could be replaced by a \$3 per ton (or \$0.32 per MMBtu) charge. If the current royalty rate is retained and an adder is included on top of the current rate, then the adder would be approximately \$1 per ton (or \$0.13 per MMBtu). Similarly, under scenarios 2 and 3 (national prices or natural gas prices), the adder on top of the current rate would be approximately \$3 per ton (or \$0.35 per MMBtu). Under scenario 4 (maximizing return), the adder on top of the current rate would be approximately \$28 per ton (or \$3.01 per MMBtu). The next section provides more detailed 2025 results for each of the four scenarios.

### Illustrative Impacts on Production, Emissions, and Revenue

Before moving to the impacts for each of the options, there are some key findings common to all of the scenarios worth noting. The increased royalty payments for all scenarios lead to the following:

- The increase in royalty revenues is vastly larger than the loss in bonus bid revenue.

- Non-Federal coal production becomes slightly more competitive relative to Federal coal.
- The phase in of the policy (it is applied only to new lease sales, new lease modifications, and lease renewals) leads to a very minor impact on existing operations.
- There is reduced demand for new Federal leases, and a modestly higher price for coal, thereby improving margins for existing operations.
- For all but the maximize revenues approach, there is a modest reduction in net U.S. coal production and associated greenhouse gases, and a modest increase in market share for renewables. In the maximize revenues approach, there is a more substantial reduction in production and emissions.

The extent of each of these forces scales with the royalty charge. For example, the reduction in net U.S. coal production is much greater in scenario 4 than scenario 1. The results for each of the four scenarios are given in Table 2.

Table 2. IPM results for the scenarios once the changes are fully phased in (post-2025).			
Scenario	Percent Change in Federal Coal Production	Emissions Reduction (MMtCO <sub>2</sub> /year)	Government Revenue Increase (millions 2012\$)
1. Prices based on nearby regional coal prices	-3	12	0-290
2. Prices based on non-Federal national coal prices	-7	32	330-730
3. Prices based on natural gas prices	-7	32	330-730
4. Maximize return to the taxpayer	-53	319	2,700-3,110
Notes: These results are based on IPM runs. The government revenue is split between the States and the Federal government, following current practice. The ranges in the change in government revenue account for the possibility that bonus bid revenue is lost entirely; the lower bound should be considered extremely conservative, and is zeroed out in scenario 1. Emissions reduction calculates the direct reduction from reduced coal use nationwide.			

A major finding from this modeling exercise is that the potential to bring in additional revenue to the public is quite substantial. While the past year may have been difficult for certain coal companies, in general, the analysis indicates there are large economic rents being earned on Federal coal, and only a small fraction of these rents are currently going to the States and the U.S. Treasury. Even the more modest increases in the royalty charge in scenarios 2 or 3 would bring in on the order of \$0.7 billion in revenue annually (once fully phased in), would lead to fairly small decreases in western Federal coal production, and would have the offsetting effect of making non-Federal coal slightly more competitive in the nationwide market by leveling the playing field between the two.

The small, but positive, impact on non-Federal coal production is due simply to the changes in relative prices of coal. The IPM baseline results show eastern (Appalachian and Illinois basin) coal production in 2025 at 168.8 million tons of coal. Under scenario 1 (nearby regional prices), eastern coal production increases by just over 1 percent to 171.0 million tons of coal. Under scenarios 2 and 3 (nationwide or natural gas prices), eastern coal production increases by just

over 3 percent to 174.5 million tons. Under the maximizing royalties scenario, eastern coal production increases by just over 25 percent to 211.6 million tons. At the same time, coal prices also slightly rise, suggesting that reform of the Federal coal leasing program could increase profits for eastern coal producers.

## V. Environmental Externality Considerations

Although the focus of this report is on ensuring a fair return to the taxpayer from the Federal coal leasing program, there are other relevant economic considerations. The most important of these are un-internalized externalities from coal production, transportation, and consumption. On the production side, coal mining involves emissions of methane, which is a potent greenhouse gas. Coal extraction and processing also may lead to external costs from water pollution and land degradation. Transportation of coal is often energy and emissions intensive. Coal combustion releases carbon dioxide, mercury, and other harmful air pollutants. Impoundments and coal combustion waste can also lead to severe water pollution (Epstein et al. 2011).

The resulting climate and health impacts are either not internalized in the price of coal at all, or are imperfectly internalized. For example, coal-bed methane emissions and the social cost of carbon dioxide emissions are not currently internalized in the price of coal at all. Gerarden et al. (2016) model the coal market with the IPM to find that including a Federal coal royalty charge equal to the U.S. government social cost of carbon (IWG 2015) in the presence of the Clean Power Plan would reduce the price of tradeable emissions allowances (reducing the cost of the Clean Power Plan) and lead to additional emissions reductions by reducing leakage. In addition, Gerarden et al. (2016) find that in the absence of the Clean Power Plan, the same Federal coal royalty charge could achieve roughly three quarters of the emissions reductions that the Clean Power Plan is expected to achieve. Hein and Howard (2015) point out that even if the external costs from the carbon dioxide emissions from the combustion of coal are completely internalized through downstream regulation, there would still be an economic case for ensuring that royalties are sufficiently high to internalize the externalities caused by coal-bed methane emissions that are released during mining.

Many estimates of the external costs from the coal supply chain are large. Incorporating the social cost of carbon in coal royalties would imply a royalty rate of well-over 100 percent. Thus, there is an economic rationale for increasing royalty rates both to ensure a fair return to the taxpayers and to internalize environmental externalities. Under either rationale, an increase in royalty rates would improve economic efficiency.<sup>16</sup>

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<sup>16</sup> Note that the National Environmental Policy Act (NEPA) environmental review process can also provide for the consideration of environmental externalities.

## VI. Conclusion

This report examines the economics of the current coal leasing program in the United States, with a focus on ensuring a fair return to the taxpayer from the Federal coal leasing program. From an economic perspective, the current structure of the program faces issues of uncompetitive bidding, asymmetric information, and costly monitoring. These issues all have the potential to reduce the likelihood that taxpayers are receiving a fair return on coal production on Federal lands, and present DOI with a difficult challenge in best managing the program for the taxpayer. There are strong arguments from an economic perspective for basing the market value of coal on observable market prices, rather than self-reported prices, and only allowing easily verified deductions, such as for transportation costs.

These economic issues interact with the structure of the coal market in the United States today. The artificially low price of PRB coal exerts downward pressure on nationwide coal prices as the gap between PRB coal prices and coal prices elsewhere in the nation has increased. This gap has even put downward pressure on production of Appalachian and other non-Federal coal. The production of PRB coal, nearly all of it on Federal leases, has also increased to roughly 40 percent of the nationwide market. Exports remain small, largely due to transportation constraints, but the prices earned on exported coal are often much higher (EIA 2016b).

Using an economic lens and considering the current structure of the coal market, this report lays out two possible approaches to help ensure a fair return to the taxpayer. The first would assess royalties on the true observable market value of coal. Using observable market prices (rather than self-reported prices), limiting and standardizing deductions, and adjusting for the heat content (and possibly other characteristics) of coal would significantly help ensure that the market value of coal used to assess royalties is as close as possible to the true market value. The second option would be to increase the royalty rate to maximize return to the taxpayer. Since the bonus bid auctions are widely considered uncompetitive (GAO 2013), increasing royalty rates has the potential to increase the return to the taxpayer.

An analysis based on IPM modeling indicates that several different approaches to adjusting royalty rates could help address the economic issues in the current structure of the program. This analysis indicates that increasing royalty payments—either to approximate the effect of using market prices to determine the market value of coal, or to simply attempt to maximize the return to the taxpayer—serves to greatly increase Federal lease revenue collections, which benefit both States and the U.S. Treasury. It also has the consequence of raising the nationwide equilibrium price of coal, which improves the competitiveness of Appalachian and interior region coal production. Furthermore, increasing the royalty rate could help address externalities, thus improving economic efficiency.

Ensuring a fair return to the taxpayer from the Federal coal leasing program is an important objective, and economics provides valuable guidance on the incentives provided by different program structures and the potential effects of changes to the program. This guidance is a useful

consideration—among others not analyzed—for potential changes to the Federal coal leasing program.

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## Appendix

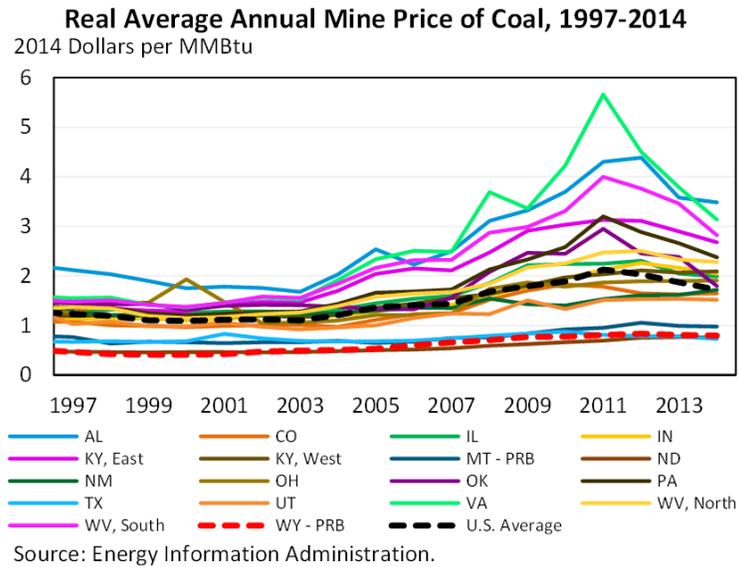


Figure A1. Average coal prices (\$/MMBtu) by State and basin from 1997 to 2014. Source: EIA (2016b)