

WRITTEN TESTIMONY OF RANDALL LUTHI

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BEFORE

THE HOUSE NATURAL RESOURCE COMMITTEE

SUBCOMMITTEE ON ENERGY AND MINERAL RESOURCES

HEARING ON:

“Notice of Intent to Conduct a Review of the Federal Coal Leasing Program ”

October 27, 2021

Good Morning Mr. Chairman and members of the committee. My name is Randall Luthi, I am the Chief Energy Advisor to the Governor of Wyoming, Mark Gordon. Thank you for providing the State of Wyoming the opportunity to testify today. Wyoming’s coal surface mines are unique in size and scale and provide a necessary thermal coal resource for baseload stability of the national power grid.

The federal coal leasing program has been, and continues to be, a striking success for both federal taxpayers and the citizens of Wyoming. As such, no changes to the leasing program administered by the Bureau of Land Management (BLM) are necessary. The bulk of federal coal is sourced from Wyoming, where the coal has numerous environmental benefits and is mined efficiently. Although expected to be in reduced volume, coal will continue to be used for decades to come, according to estimates from the U.S. Government. Any policy changes that result in rapid reduced production of federal coal will result in economic harm to U.S. taxpayers and loss of the environmental benefits that Wyoming coal provides the Nation.

Wyoming leads the Nation in policy, infrastructure and projects related to carbon management, carbon capture, non-BTU uses of coal, and the use of coal for the potential production of much-needed critical minerals (CM), such as rare earth elements (REEs). These endeavors will be imperiled if reduction in federal coal production from Wyoming negatively impacts the State’s economy, as it certainly will.

Background

I. Wyoming Leads the Nation in Coal Production

Wyoming has been the top coal-producing state since 1986, accounting for about 39% of all coal mines in the United States in 2019, and the state holds more than one-third of U.S. coal reserves at producing mines, according to the U.S. Energy Information Administration (EIA). Wyoming has 10 coal fields, and six (6) of the largest coal mines in the Nation. Recent estimates from the Wyoming State Geological Survey give Wyoming more than 165 billion tons of recoverable coal. On average, coal in the Powder River Basin (PRB) is mined at the staggering rate of 12 tons per second.

In 2019, Wyoming produced a Nation-leading 276,912 short tons of coal, with West Virginia (93,279 thousand short tons) and Pennsylvania (50,053) coming in a distant second and third, respectively (*see Figure 1*).







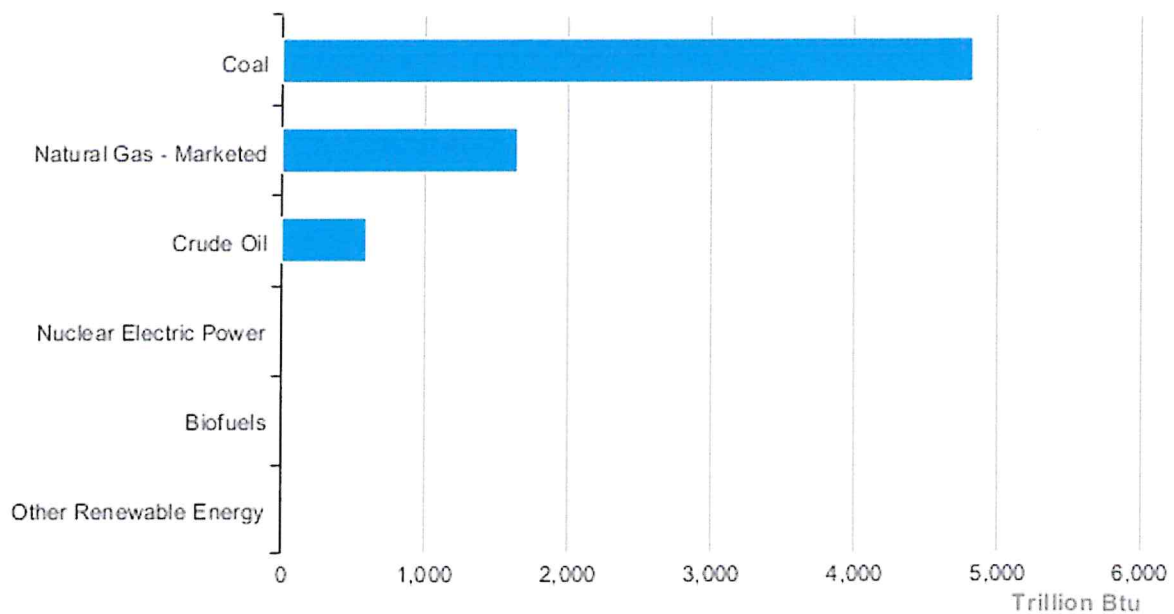
Rank	State	Coal Production (thousand short tons)	
1	Wyoming	276,912	
2	West Virginia	93,279	
3	Pennsylvania	50,053	
4	Illinois	45,853	
5	Kentucky	36,006	
6	Montana	34,468	

Fig. 1: Coal Production Rankings, 2019 (source: <https://www.eia.gov/state/rankings/?sid=WY#series/48>)

In 2019, coal production from Wyoming amounted to nearly 5,000 trillion BTU's (*Figure 2*).

Wyoming Energy Production Estimates, 2019



Source: Energy Information Administration, State Energy Data System

Fig. 2: Wyoming Energy Production Estimates (source: <https://www.eia.gov/state/?sid=WY#tabs-3>)

The vast majority of coal production in Wyoming occurs from lands or leases with a federal nexus. According to BLM, federal coal produced from the PRB in Wyoming and Montana accounts for over 85 percent of all federal coal production. And because “[i]n recent years and on average, approximately 42 percent of the Nation’s annual coal production came from federal lands” Wyoming effectively dominates BLM’s federal coal leasing program, and all U.S. coal production generally. Indeed, Wyoming accounts for two-fifths of all coal mined in the United States, according to EIA. Nearly all of the coal mined in Wyoming is subbituminous, and the state accounts for almost nine-tenths of all U.S. subbituminous coal production.

Wyoming’s coal is also low-sulfur, and thus also delivers environmental benefits consistent with emission control requirements under the U.S. Clean Air Act. In addition to its low-sulfur attributes, Wyoming is the Nation’s largest and most productive coal region due to: (1) lower production costs due to the coal’s proximity to the surface; (2) world-class recoverable coal seams (varying in thickness from 5 feet to more than 200 feet); and (2) hyper-efficient rail infrastructure.

II. Coal Produced in Wyoming Powers the Nation’s Electricity System

Wyoming’s low-sulfur coal is shipped to power plants in 29 states, with power plants in Texas, Missouri and Illinois the largest users of the fuel, according to EIA (*Figure 3*). Up to 60 trains leave the PRB daily.

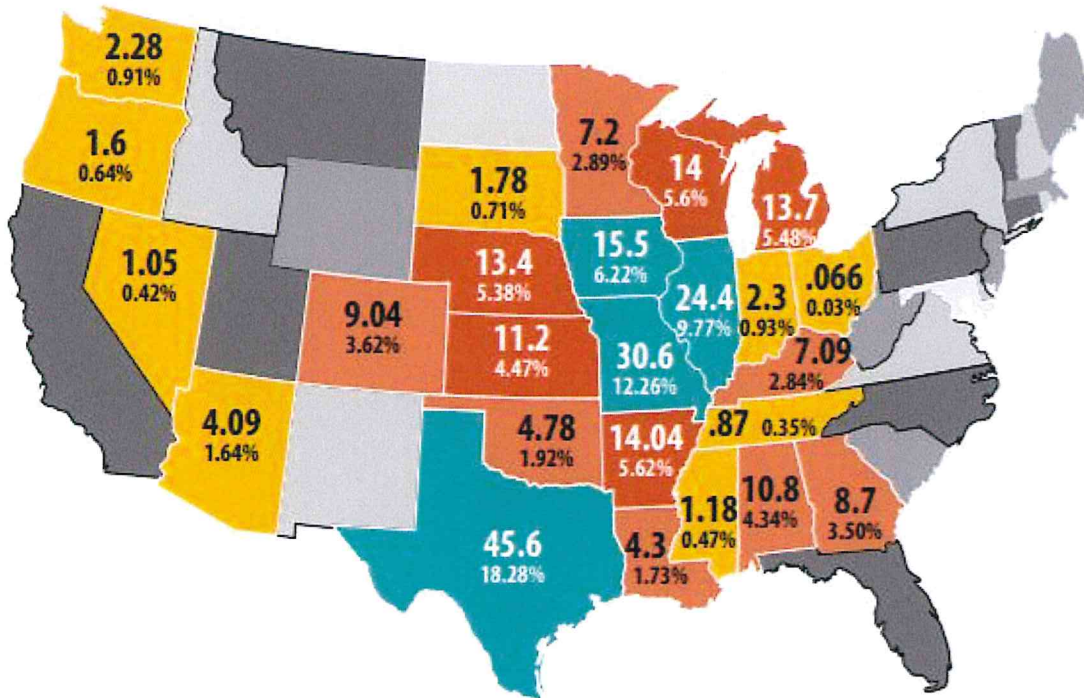


Fig. 3: Coal Shipments from Wyoming, 2019 (source: Wyoming Mining Association, 2020-2021 Coal Concise Guide)

And while Wyoming’s coal production has declined in recent years as U.S. coal-fired power plants are retired, coal is anticipated to stay in the energy mix for the foreseeable future. According to EIA, in 2020 about 4,009 billion KWH of electricity were generated at utility-scale electricity generation facilities in the United States, with about 60% of that from fossil fuels (coal, natural gas, and petroleum), 20% from nuclear energy, and 20% from renewable energy sources. Coal’s share of total electricity production was 19.3% in 2020.

According to EIA’s 2021 Annual Energy Outlook’s reference case, coal remains in the electricity mix for decades to come, plateauing to about 13% of U.S. electricity generation by 2030 then hovering around 11% (*Figure 4*), in part because EIA forecasts that most coal-plant retirements will take place by 2025. Remaining facilities are more efficient and/or younger, and thus are anticipated to continue to operate through the projection period.

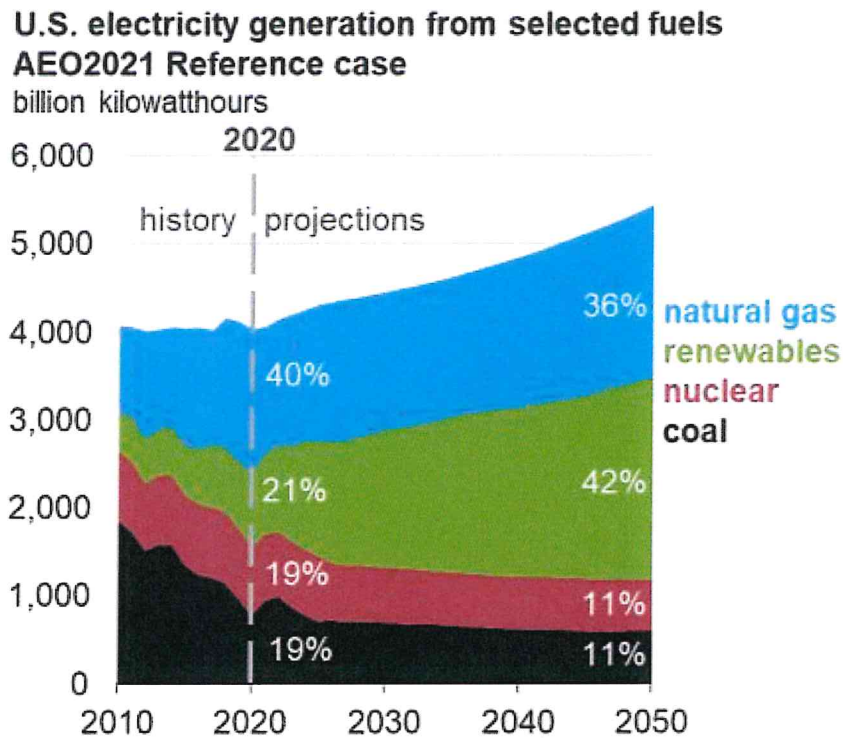


Fig. 4: U.S. Electricity Generation from Selected Fuels, AEO2021 Reference Case (source: https://www.eia.gov/outlooks/aeo/pdf/AEO_Narrative_2021.pdf)

These domestic figures are in line with international data. According to the International Energy Agency (IEA), “[c]oal remains a major fuel in global energy systems, accounting for almost 40% of electricity generation ...” in 2019. IEA anticipates that, through 2024, coal demand is forecast to remain stable, in part due to demand from China, which accounts for half of global consumption.

Indeed, despite passage of the Kyoto Protocol and Paris Agreement, international coal demand has effectively steadily increased since 2000, according to IEA (*Figure 5*).

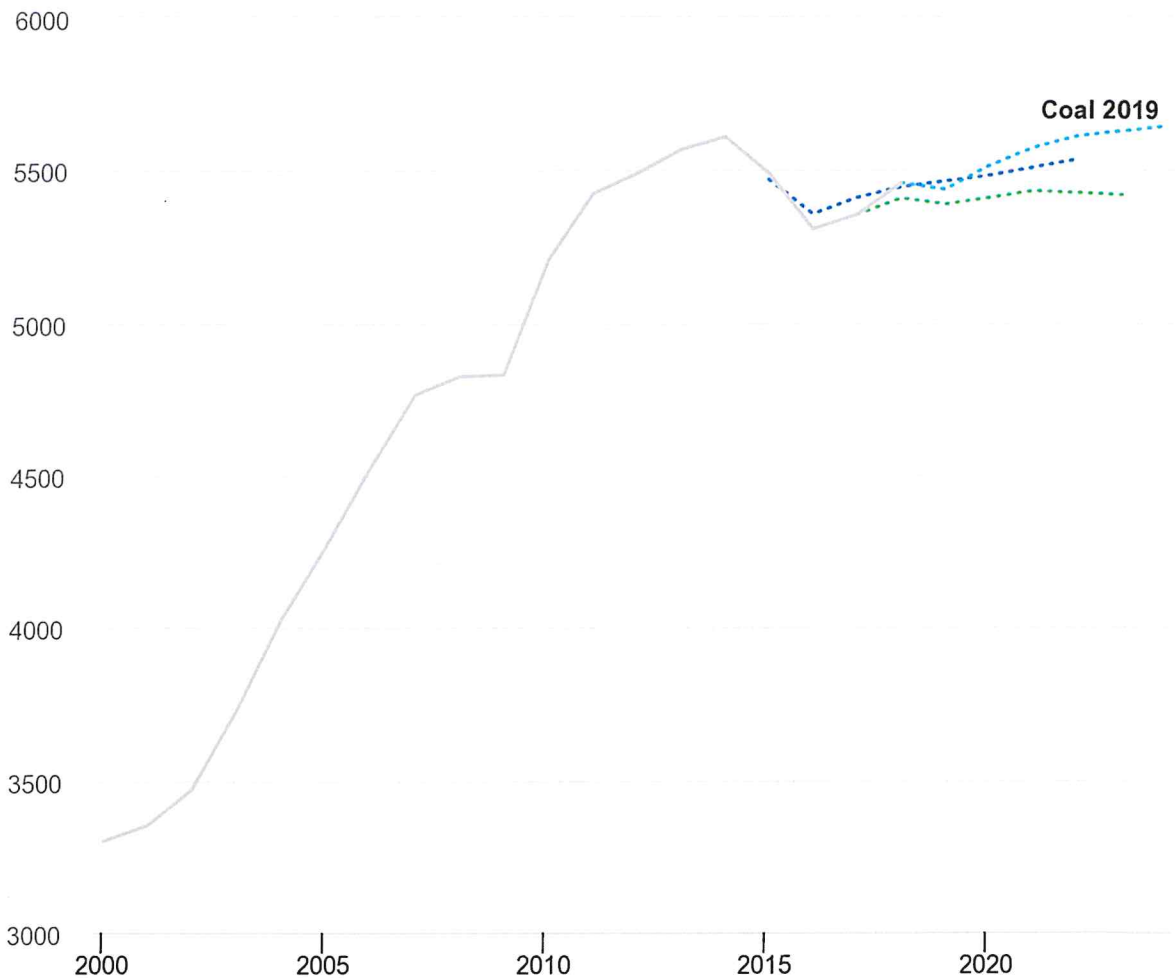


Fig. 5: Coal Demand by Forecast, 2000-2024 (source: <https://www.iea.org/reports/coal-2019>).
Blue = 2019 Forecast; Green = 2018 Forecast; Aqua = 2017 Forecast

Coal is not going to depart the energy mix any time soon, if at all, over all reasonably foreseeable time horizons. According to IEA (emphasis added):

Expectations of an imminent coal collapse have come and gone before. The adoption of the Kyoto Protocol in 1997 coincided with a three-year decline in global coal consumption (1997-99), and the imminent end of coal was heralded. But the decline turned out to be the result of some specific circumstances such as the Asian financial crisis and did not last. Between 2000 and 2013, global coal use rebounded spectacularly. It soared 75%, more than it had done over the entirety of the previous nine decades. **A similar upsurge is not expected in today’s context, but neither is a sudden plunge.**

Coal’s importance as a reliable supplier of energy systems continues to grow in importance as events such as water shortages in the western United States threaten alternative sources such as hydropower. In a society that is eager for improved resilience and reliability for energy systems,

coal remains at the watch. Coal can and should provide baseload backup to intermittent sources of electricity such as wind and solar.

III. The Production of Federal Coal Plays an Outsized Role in Wyoming's Economy

Successful bidders for a coal lease pay a bonus bid for each ton of reserves in addition to the 12% base royalty as coal is recovered; this is an additive and additional payment to the 12% royalty paid to the federal government. Coal lease payments are split between the state and federal government and paid out in equal installments over a five-year period. One must also consider that the bonus bid payments are made prior to any revenue being received from mined coal because of the required state and federal permits required prior to mining. The bonus bid payment is an upfront capital cost that is borne solely by the coal operators. When the 12% base royalty is added to the bonus bid fee the federal revenue received by the U.S. taxpayers totals \$6.5 billion (based on BLM and EIA data) since 1990. This is in addition to state taxes, severance payments and Abandon Mine Fund (AML) payments. Wyoming has received more than \$2.3 billion in coal bonus bid dollars since 2003, dollars which have funded school buildings, highways and community colleges in the state. The last payment on coal leased to date was \$5.3 million in 2018, according to the Wyoming Mining Association (WMA).

Coal is an important source of income for Wyoming and is the second largest source of tax revenue for state and local governments, after natural gas. According to WMA:

Coal mining companies remit taxes and royalty payments to all branches of government, federal, state and local. Coal's estimated contribution to Wyoming in 2019 was about \$650 million in taxes, royalties and fees, reflecting a \$123 million, or 15.8 percent, decrease from 2018. The decrease highlights the magnitude of the continued slowdown in Wyoming's coal industry in recent years.

Employment in Wyoming's 15 operating coal mines declined 7.8 percent in 2019. Wyoming coal mines now employ just over 5,100 workers directly in the industry. Coal industry jobs are among the best paying in the state with Wyoming coal miners collecting an average wage of \$93,905, excluding benefits. A coal miner's take-home pay is almost twice the statewide average wage of \$49,756 per worker. Estimates indicate that each coal industry position supports an additional two jobs in the service and supply sectors, bringing direct and indirect employment to more than 15,000 workers.

IV. Wyoming is a Leader in Low-Carbon Energy, Including Electricity Generated from Coal, and Non-Combustion Uses of Coal

Wyoming has emerged as a national leader in coal technology development and research. The State of Wyoming has invested \$15 million in public-private partnerships with several utility cooperatives to study the capture, sequestration and management of carbon emissions. Real

world testing at the Wyoming Integrated Test Center (ITC) uses 20 megawatts (MW) of coal-based flue gas. Research conducted at the ITC will lead to new opportunities for petro-chemicals from coal, as well as commercial uses of carbon dioxide. The facility welcomed its first research teams from five different nations in the spring of 2018, and the first test modules and research equipment on the ground in October of 2019. Other projects are being pursued throughout the state and at the University of Wyoming to unlock the untapped potential of Wyoming's coal resource for innovative carbon and composite materials to create products ranging from car and airplane parts to medical devices and building products.

Specific Comments

I. Current Regulatory Framework

BLM's current regulatory framework functions efficiently and fairly, takes into account the needs of all interested stakeholders, including U.S. taxpayers, and thus does not need to be revised. An increase in federal royalties or leasing bonus bid requirements would result in an impairment to any potential future coal leasing action and potentially sterilize any future leasing action. Sterilization of needed future coal reserves is not in the U.S. taxpayer's interest.

Leasing federal coal reserves is a detailed, time consuming and highly regulated process. Each proposed lease must be requested through BLM in a Lease by Application (LBA) request. A mining company nominates proposed tracts for lease and the BLM completes detailed environmental assessments or environmental impact statements. The BLM assesses proposals to determine the coal's market value, scope of the application and establishes sale parameters. Interested companies with the ability to economically and viably mine the coal submit competitive bids. The lease is either awarded to the highest bidder or rejected if the BLM deems the offer too low.

All this said, to truly be on par with the direction that technology and the global economy are headed, if BLM's regulatory framework is revised it should take into account future uses of coal to include, for example: (1) the production of critical minerals (CM), including rare earth elements (REEs), for coal, overburden and/or coal byproducts; and (2) carbon capture & storage (CCS) and carbon capture, utilization and storage (CCUS) under federal lands or in/through federal mineral estate(s).

Demand for REEs is anticipated to continue to grow in the years and decades ahead, with the United States largely reliant on foreign sources and processing. In a 2017 report, the U.S. Department of Energy concluded that "6 million metric tons of REEs could be recovered from the known coal reserves in select western state coal basins in Montana, Wyoming, Colorado, Utah, New Mexico, and Arizona." A 2019 report from the Congressional Research Service documented the many legal, regulatory and policy challenges related to the recovery of CM from federal lands generally.

Similar policy impediments exist with respect to the utilization of federal lands for CCS/CCUS -- technologies that are expected to see significant deployments in the years ahead. A 2020 study

by the Center for Energy Regulation & Policy Analysis at the University of Wyoming concluded:

To meet the climate and energy goals set forth by the Biden Administration and the Paris Agreement, the United States must dramatically reduce carbon emissions. Use of public lands for carbon dioxide removal activities, including ... CCUS has the potential to advance carbon reduction goals and concurrently provide economic revitalization opportunities to communities dependent on fossil industries on public land. Current federal law presents numerous challenges and opportunities associated with utilization of federal pore space for CCUS. Although federal grant programs and tax incentives encourage deployment of CCUS technologies, legal and land-management issues related to public lands have received comparatively little legislative or agency attention.

Wyoming is a leader in CCS/CCUS law, policy, regulation and projects. More than a decade ago the Wyoming Legislature separately enacted a statutory framework for CCS and CCUS projects, including permitting. That framework:

- Specifies who owns the pore space (*Wyo. Stat. § 34-1-152 (2020)*);
- Establishes permitting procedures and requirements for CCS sites, including permits for time-limited research (*id. § 35-11-313*);
- Provides a mechanism for post-closure “measurement, monitoring and verification” (“MRV”) via a trust fund approach (*id. § 35-11-318*);
- Provides a mechanism for unitization of storage interests (*id. §§ 35-11-314, 315, 316, 317*);
- Specifies that the injector, not the owner of pore space, is generally liable (*id. § 34-1-153*);
- Clarifies that vis-à-vis storage rights, production rights are dominant but cannot interfere with storage (*id. § 30-5-501*); and
- Provides a certification procedure for CO₂ incidentally stored during enhanced oil recovery (*id. § 30-5-502*).

On March 24, 2020, House Bill 200, a new CCUS-related law entitled “Reliable and Dispatchable Low-Carbon Energy Standards,” became law in Wyoming. The new law is a groundbreaking statute that establishes a framework by which utilities must consider retrofitting CCS/CCUS technologies. It is emblematic of Wyoming’s ongoing efforts to encourage coal-fired power plants in the State to retrofit CCS/CCUS technology, and thus cements Wyoming’s role as being in the vanguard of CCS/CCUS standards for electricity generation in the United States.

Further with respect to CCS and CCUS, for example, Wyoming is home to: (1) one of the U.S. Department of Energy’s (DOE) Carbon Storage Assurance Facility Enterprise (CarbonSAFE) projects; (2) the Wyoming Integrated Test Center, a CCUS test facility; and (3) CO₂ pipeline infrastructure. In January 2021, BLM granted the record of decision for the Wyoming Pipeline Corridor Initiative, which envisions the eventual build-out of thousands of miles of CO₂ pipelines throughout Wyoming for carbon management purposes. Wyoming is also one of only two states that has primacy for Class VI of the Underground Injection Control Program, which is the regulatory core of CCS. Earlier this year Wyoming announced a goal of making the State net-

negative in CO₂ emissions. Because approximately 48% of Wyoming's surface is owned by the federal government, further advancing these and other Nation-leading efforts on CCS/CCUS will take additional collaborations between the State and the federal government.

II. Fair Return

Bonus bids, rents and royalties received under the federal coal program are successfully securing a fair return to the American public for federal coal. As BLM notes, “[o]ver the last decade (2011-2020), the BLM sold 17 coal leases and managed leases that produced approximately 3.7 billion tons of coal and resulted in \$9.2 billion in revenue collections by the United States.”

The federal coal program has been and remains a success story on both energy and economic grounds. Aside from the revenues referenced above:

States where federal coal is produced have historically exceeded the job and wage growth experienced in the remainder of the United States. Since 1970, the coal basins with significant federal coal production experienced sharply higher employment growth, often 2.5 to 3 times the growth in the U.S.. Personal income growth far outpaced— often by twice—the growth of total U.S. personal income growth. For example, the employment growth in Campbell County, Wyoming was 460 percent while the personal income growth was 740 percent. Coal wages are 60 to 115 percent higher than the average industrial wages in western states with federal coal production.

III. Climate Impacts

Decreasing coal supplies from federal lands will not decrease coal usage, and thus resulting emissions. They will merely result in alternate sources of coal stepping up to fill the void, including non-federal domestic sources and imports from international suppliers. Those alternative sources are also likely to result in the loss of ancillary environmental benefits associated with PRB's low-sulfur coal.

Metrics such as the Social Cost of Carbon (SCC) should not be applied to the production of federal coal. The SCC provides “an estimate of the economic value of the extra (or marginal) impact caused by the emission or reduction of an additional ton of carbon (in the form of carbon dioxide) at any point in time.” Utilizing modeling expertise in both atmospheric science and economics, the SCC is calculated through the use of sophisticated models that in turn rely upon a variety of technical and socioeconomic considerations and assumptions. Among the costs the SCC is intended to measure, for example, are changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services due to climate change. Even among experts, these estimates vary; since 1996 hundreds of SCC values have been published, some of which have been peer-reviewed and others not.

In recent years, the use of climate Integrated Assessment Models (IAMs) have been used to estimate the SCC. IAMs predict how a modeled system behaves given a set of defined

assumptions. IAMs are complex and endeavor to synthesize results from various disciplines. The use of IAMs in this context has come under criticism. As one economist noted:

These models have crucial flaws that make them close to useless as tools for policy analyses; certain inputs (e.g., the discount rate) are arbitrary, but have huge effects on the SCC estimates the models produce; the models' descriptions of the impact of climate change are completely ad hoc, with no theoretical or empirical foundation; and the models can tell us nothing about the most important driver of the SCC, the possibility of a catastrophic climate outcome. IAM-based analyses of climate policy create a perception of knowledge and precision, but that perception is illusory and misleading.

The SCC also assumes that all fossil fuels will be combusted with no carbon mitigation. It is reasonably foreseeable that at least some amount of fossil fuels will mitigate their greenhouse gas (GHG) emissions through the use of CCS/CCUS. Congress has provided funding for research and projects related to CCS/CCUS technologies for decades. DOE is currently funding research with the goal of siting one or more large-scale CCS/CCUS projects at coal-fired power plants and other large emitters of CO₂ under the CarbonSAFE initiative, discussed above. Researchers at the University of Wyoming are leading a CarbonSAFE project in Gillette, Wyoming.

IV. Other Impacts on Public Health and the Environment

Coal production is subject to stringent environmental and public health-related controls under federal, state and local law. These laws and regulations protect air, land, water and human health. As BLM is well aware, mining is also subject to rigorous reclamation standards.

V. Socio-Economic Considerations

As discussed above the economic and societal importance of the federal coal program to the State of Wyoming cannot be overstated. Nor can the importance of Wyoming coal to the Nation's energy system be overstated. Data indicate that coal will continue to be used for decades to come. Research findings support that coal has potential future uses from everything from coal-based products to a source of REEs.

VI. Exports

Although recent commercial and litigation events have imposed hurdles to U.S. coal exports, Asian coal markets are expanding and have a distinct need and economic desire for the low-sulfur Powder River Basin Coal in Montana and Wyoming. Japan, Taiwan, South Korea, and China especially are expanding coal-fired power stations. Japan is the third largest coal-importing country in the world and its use of coal, particularly considering recent failures related to nuclear energy, is increasing. South Korea has limited domestic energy resources and is expected to become a large importer of U.S. coal, which is beneficial for both economic and national security reasons. U.S. companies have already secured prospective export contracts with South Korea, but because of the limited ability to obtain U.S. coal, South Korea has looked elsewhere, including Russia, which has increased its coal exports to the country.

These Asian countries need to supply their expanding power stations; if they are unable to get clean-burning coal from Wyoming and Montana, they will get high sulfur coal from other countries. Japan is also dependent on imports for its energy, especially following the Fukushima nuclear power plant accident. Japan is installing clean coal plant technologies to meet environmental targets, and it plans to develop additional coal power plants, adding more than 20 GW of capacity in the next decade.

In 2016, Wyoming entered a five-year Memorandum of Understanding (MOU) with the Japan Coal Energy Center. The MOU contemplates the parties' cooperation in the facilitation of coal exports and sales, which may include the development of new U.S. coal export and Japanese coal import terminals, public support to existing export facilities together with establishing sale contracts for Wyoming coal. Japan, like other Asian countries, has identified Powder River Basin coal from Montana and Wyoming as being particularly desirable for the country's next generation of high efficiency, low emissions coal-fired power plants.

Wyoming and Montana have made significant efforts to expand coal exports to Asian markets. Both States' Governors have visited Asian countries to promote the States' coal. The States recognize that the ability to export to Asian markets is critical to their economic security, as well as production of high-paying jobs in the United States.

In sum, efforts to secure coal exports from the PRB continue, and BLM should not allow recent events to dictate future outcomes on this topic.

Finally, a 2016 study by the National Energy Technology Laboratory examined the GHG life cycle emissions of coal exports from the PRB. The purpose of the study was to:

compare environmental implications of exporting U.S. coal resources to Asian markets with respect to alternative global sources of steam coal. The combination of significant Asian demand for steam coal and declining U.S. domestic coal consumption in recent years has opened up new potential export markets for ... PRB ... coal. This is evidenced by the recent increase in West Coast terminal proposals to meet this demand. This study seeks to evaluate and understand potential environmental consequences of exporting PRB coal compared to global alternative sources of coal. Some of the questions which arise in regards to environmental impacts of PRB exports to Asia include: (1) Which stages of the life cycle (e.g., mining, transport, power plant combustion) contribute the most to environmental impacts? (2) How do environmental impacts at each stage differ between the PRB and competing countries? (3) Do environmental impacts differ substantially based on the importing country? (4) Is there a definitive difference between the life cycle greenhouse gas (GHG) profiles between sourcing coal from the U.S. (PRB), Australia, or Indonesia for Japan, South Korea, or Taiwan?

The study reached favorable conclusions to those four questions regarding the climate impacts of PRB coal to Asian markets, as follows:

(1) *Which stages of the life cycle (e.g., mining, transport, power plant combustion) contribute the most to environmental impacts?* The results ... find that the majority of cradle-to-busbar life cycle GHG emissions in all cases are from the combustion of coal at the destination power plant (92.5 to 96.1 percent of the total impacts, depending on the individual case). **Coal mining activities account for 0.8 to 3.3 percent**, while transport accounts for 2.0 to 6.7 percent ...

(2) *How do environmental impacts at each stage differ between the PRB and competing countries?* **Emissions associated with coal mining activities are more significant in Australia and Indonesia compared to the PRB.** Both countries have considerably higher strip ratios compared to the PRB, meaning that more overburden must be removed for each unit of coal produced. Additionally, the coal mine methane emissions from Australia and Indonesia are 3.5 to 5 times higher than those modeled as the expected value for the PRB ...

(3) *Do environmental impacts differ substantially based on the importing country?* **The destination for the coal does not contribute much variability to the life cycle results ...**

(4) *Is there a definitive difference between the life cycle GHG profiles between sourcing coal from the U.S. (PRB), Australia, or Indonesia for Japan, South Korea, or Taiwan?* Given the uncertainty in the model parameter values, **there is not a definitive difference between the life cycle GHG profiles between sourcing coal from the U.S. (PRB), Australia, or Indonesia for Japan, South Korea, or Taiwan.** In fact, when accounting for the uncertainty, it is difficult to attribute any significant difference between the various coal sources

VII. Energy Needs

It is imperative that the federal coal program explicitly take into account the vital role that federal coal, including coal mined in Wyoming, plays in fulfilling the energy needs of the United States – a role that will continue for decades to come. Coal will continue to be used for electricity production in the United States in the coming decades. It is a reliable, reasonably priced source of energy for the production of electricity and through carbon capture technology will continue to provide 24-hour dispatchable power. This power source is a major factor in preserving grid reliability. Hindering that federal production will deprive the federal government, and thus Wyoming, of critically needed revenue. It also will result in a degraded environment as coal from less desirable sources fill the void left by a reduction in production of federal coal.

The future is bright for coal on various fronts, from low-emission electricity production (with CCS/CCUS) to non-Btu uses in coal-based products. Federal coal also holds great promise from

the production of materials such as CM/REEs that will be needed in the decades ahead. As a policy matter, it thus would be counterproductive for BLM to take any actions that degrade what to-date has been a highly successful partnership between the federal government and the State of Wyoming on these matters.

Thank you for the opportunity to testify today and I look forward to answering any questions you might have.