Responses of Rich Haddock,
General Counsel of Barrick Gold Corporation

Questions for the Record
Of the October 5, 2021 Hearing of
The Senate Energy and Natural Resources Committee
To Examine and Consider Updates
To the Mining Law of 1872

October 29, 2021

The following are responses of Rich Haddock, General Counsel of Barrick Gold Corporation, to questions posed for the record by Members of the Senate Energy and Natural Resources Committee, following the full Committee's October 5, 2021 hearing on updates to the Mining Law of 1872.

Questions from Chairman Manchin

Your testimony noted that the mining industry recently worked together with stakeholders to institute a new excise tax earmarked for education.

Response/Background on Nevada Mining Excise Tax: The new Nevada excise tax on mining revenue is a direct result of the COVID-19 pandemic. Nevada was in dire economic straits in 2020 as a result of the pandemic, which decimated tourism—the state's largest industry, employer, and economic driver. Mining was one of the only large industries in the state able to operate at a (relatively normal) capacity. Nevada Gold Mines took a proactive and cautious approach to the pandemic, but was able to continue employing its workforce without layoffs or slowdowns, and to continue producing gold.

In a series of emergency special sessions called during the summer of 2020, the Nevada legislature considered various measures to increase the Nevada Net Proceeds of Minerals Tax (NNPT), in an effort to address the state's severe budget shortfall. However, since the NNPT is in the Nevada Constitution, it cannot be altered solely by legislation.[1] Additionally, the state Constitution was amended in 1987 to cap the NNPT at five percent. Any amendment to the Constitution requires a multistep process that includes legislative action in two successive legislative sessions, and subsequent approval by Nevada voters in a general election. The process would have taken at least three years to complete, which would have done nothing to address the State's acute budget crisis. As a partner to the State, we recognized this was not in anyone's best interest.

Nevada's legislative leadership and the Nevada mining industry worked together to find a solution that could pass constitutional muster, provide immediate revenue to the State and be directed towards education. The product of this collaboration is the Nevada Mining Education Tax. This excise tax – applicable only to gold and silver mines – is in most respects a gross tax, and as a result is regressive, creates significant problems for the industry at the lower end of the metals price cycle and has all of the problematic elements of a gross royalty explained in my testimony at the hearing and further discussed in the following responses. Certain of this new tax's features – including an earnings threshold below which the tax does not apply, and a lower tax rate for certain operations – were included to blunt the harshest impacts of the tax on smaller gold and silver producers and marginal ore deposits. This tax is applied on top of the 5% net proceeds tax, and as a result effectively increases Nevada's mining-specific taxes from 5% of net proceeds to 8%. That figure does not include other state taxes paid by the mining industry in Nevada.

The Nevada Mining Education Tax is a response to a fiscal emergency in the State of Nevada, and to unique constraints on the legislature's taxing authority imposed in the Nevada Constitution. The deleterious effects of the tax on industry are currently blunted because of strong precious metals prices. When the price of gold drops, as it inevitably will, the negative impacts of the tax will become more apparent. Moreover, the existence of the excise tax would make a federal gross royalty even more

[1] When Nevada achieved statehood in 1864, its Constitution included authority to tax the "net proceeds" of mines. THE CONSTITUTION OF THE STATE OF NEVADA. ORDINANCE. The Nevada Constitution was approved by President Lincoln on October 31, 1864. *Id.*

damaging to the Nevada industry. As you can see from the graphs contained in my response to Senator Cortez-Masto's second question below, gross royalties and taxes have a significant distorting effect on the government "take" at low gold prices. The excise tax is not a model for a federal royalty.

Manchin Question 1: What does this excise tax apply to and on what basis is this excise tax calculated?

Response: The tax applies to gold and silver mines that gross more than $20 million annually. The tax rate on revenues from $20 million to $150 million is 0.75%. Revenues greater than $150 million are taxed at 1.10%. The threshold and the lower rate were included to mitigate the regressive impacts of the excise tax.

Manchin Question 2: Does this excise tax apply to all mines or only new mines?

Response: The tax applies only to gold and silver producers and is on existing and new operations earning more than $20 million annually in gross revenue.

Manchin Question 3: How long was the delay between enactment and implementation of the tax?

Response: The tax is effective immediately upon enactment – June 1, 2021 – and is payable in 2022. Implementing regulations are under development.

Questions from Ranking Member Barrasso

Barrasso Question 1: As Congress considers imposing a royalty on minerals under the mining law of 1872, why is a (prospective) net royalty more appropriate than a (prospective) gross royalty for these minerals? Why should Congress treat these minerals differently than minerals subject to a gross royalty under the Mineral Leasing Act?

Response:

As I explain in more detail below, a net royalty would recognize that most hardrock minerals are different in fundamental ways from leasable minerals such as oil, gas, and coal, including that they are much more difficult to find, and that they require significantly more processing to make a saleable product. A net royalty also can better address the significant differences in geology, processing, and economics among the locatable minerals, which range from precious metals and rare earths to bentonite and uncommon varieties of building stone.

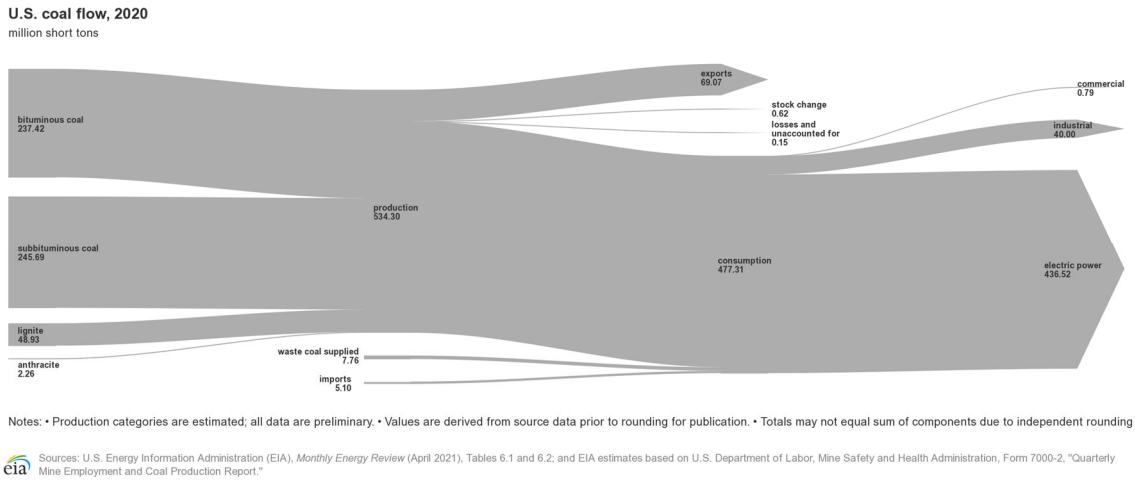
Mining Law Versus the Mineral Leasing Act. Locatable minerals such as gold should not be treated the same as oil and gas or coal under the Mineral Leasing Act because they are fundamentally different kinds of minerals. Oil, gas, and coal are easier to find than gold, copper, lithium, and other hardrock minerals because they occur over much larger geographic areas, and they require no (or relatively little) processing before they can be valued and marketed. With an exception in the case of gas (processing), these minerals are sold as they are removed from wells or mines. Hardrock minerals, on the other hand, are in most cases difficult and expensive to find, and they often cannot be marketed at or near the mine

mouth because they require significant processing.[2] Imposing a gross royalty on hardrock minerals would in effect be a tax on that processing.

Coal, Oil, and Gas Royalties are Not True Gross Royalties. Even the federal "gross" royalties for oil, gas and coal allow deductions for processing and transportation costs. In that respect, it is inaccurate to refer to them as true gross royalties, because they are "net" of these costs. The Department of Interior's (DOI) rules have always allowed deductions for "processing" when calculating the royalty on gas, and transportation costs for both oil and gas. *See* 30 C.F.R. §§ 1206.109, 110, .111 (transportation deductions for oil); §1206.156 (transportation deductions for gas); §§ 1206.158., 159 (processing deductions for gas). DOI rules have also recognized different royalty values based on different types and qualities of crude oil. 30 C.F.R. §1206.104 (index prices for like-quality oil); -.113 (adjustments/allowances to oil valuation). Similarly, DOI allows deductions for transportation and washing of coal. 30 C.F.R. §§ 1206.262, -.263, -.264 (transportation deductions for coal); §§ 1206.267, -.268, -269 (washing deductions for coal).

Coal Markets are Primarily Local or Regional, and Royalty Costs are Passed On. Coal deposits at different locations in the U.S. command widely varying prices. *See* https://www.eia.gov/coal/markets/ (accessed October 28, 2021). In 2019, transportation costs accounted for about 40% of the total delivered cost of coal. In some cases, transportation costs exceeded the mining costs and the value of the coal at the mine. *See* U.S. Energy Information Administration, "Coal Transportation Rates to the Electric Power Sector," May 12 2020, available at https://www.eia.gov/todayinenergy/detail.php?id=43695 (accessed October 28, 2021). High transportation costs mean that coal markets in the U.S. are very localized.

Finally, despite policy discussions about exporting U.S. coal, as illustrated in the chart below from the U.S. Energy Information Administration, the vast majority of coal in the U.S. is still sold locally for electricity generation. *See https://www.eia.gov/totalenergy/data/flow-graphs/coal.php* (accessed October 28, 2021).



[2] Some locatable minerals, such as building stone, *are* primarily marketed near the mine site because of high transportation costs. On the other end of the spectrum from precious metals, the fact that both are "locatable" under the Mining Law illustrates the enormous diversity of minerals that would be subject to any federal royalty.

The royalty for coal sold is passed on through power generated and becomes a part of the variable fuel cost paid by rate payers. *See, e.g.*, *Penn. Power & Light Co.*, 69 FERC P 62135, Docket No. FA92-8-000, 1994 WL 722952, at **5 - **8 (Nov. 8, 1994); *Delmarva Power & Light Co.*, 68 FERC P 62128, Docket No. FA92-39-000, 1994 WL 517519, **6 - **7 (July 28, 1994); Alamito Co., 37 FERC P 63036, Docket No. ER79-97-002, 1986 WL 79259, **1 - **10 (Dec. 31, 1986); *In the matter of PacifiCorp, dba Pacific Power*, OR Pub. Utilities Comm'n, Docket No. UE 374, Order No. 20-473, 2020 WL 7658074, at *6, (Dec. 18, 2020); *In re Southwestern Electric Power Co.*, Docket No. 3716, 7 Tex. PUC Bull. 78, at 8-9 (1981), 1981 WL 723266. In effect, the royalty on coal sold for power generation becomes a user tax on the rate payer.

Oil and Gas Royalties Can Be Passed On. Oil and gas markets also typically allow producers to pass along all or a substantial portion of the royalty to consumers. In the case of oil, global prices are heavily influenced by OPEC, which often limits production to support prices. *See* https://www.eia.gov/energyexplained/oil-and-petroleum-products/prices-and-outlook.php (accessed October 27, 2021). Accordingly, global oil prices usually are higher than marginal costs, and royalties can be passed on to customers. *See* https://www.nber.org/system/files/working_papers/w23801/w23801.pdf, Figure 4(a) (accessed October 27, 2021). Because gas is costly to process and transport, gas prices are set in regional markets, and in deregulated markets like the U.S., producers are able to pass on their costs (including royalties) to end users. *See* https://www.geoexpro.com/articles/2020/12/why-is-natural-gas-priced-differently-around-the-world (accessed October 27, 2021). Also, margins for oil and gas generally are much higher than for metals. Accordingly, when the producer cannot fully pass through the royalty, it is still much better positioned to absorb the royalty cost.

Hardrock Mineral Royalties Cannot Be Passed On. In contrast, hardrock miners are "price takers." In other words, metals prices are fixed daily in global markets, without regard to transportation, processing, royalties, or other costs. The costs of royalties for gold, copper, lithium, and other hardrock minerals cannot be passed on to buyers. Thus, royalties on these minerals become an additional cost of production, 100% of which must be absorbed by the producer.

Hardrock Minerals are Extremely Diverse. In comparison to Mineral Leasing Act minerals such as oil, gas, and coal, hardrock minerals are a very large and diverse group, ranging from precious metals to limestone, building stones, and gemstones. The most valuable locatable minerals – including platinum, palladium, gold, and silver – are difficult and expensive to find. For example, Nevada Gold Mines has invested over $450 million in exploration costs alone to establish our Goldrush project in Nevada.

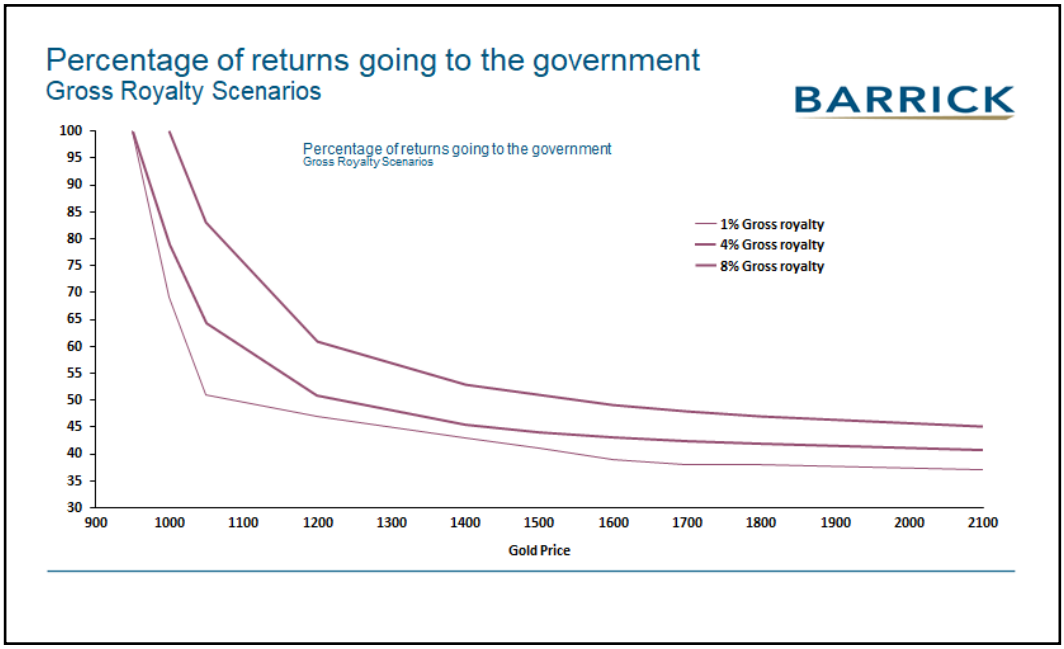
Additionally, hardrock minerals are usually sold in highly processed or fabricated forms (gold dore bars, copper cathodes, sheets, wire, rods, etc.), often far from the mine where they were extracted, and are subject to global market prices which do not allow for royalty costs to be passed through. Some hardrock minerals are sold and priced locally or regionally, and do not require the extensive processing necessary for gold, copper, and other metals, but mining claims on federal lands for these minerals are a small fraction of those claims that would be subject to a federal royalty. Most hardrock minerals – especially the metals – require significant and expensive processing. As I explain below in response to

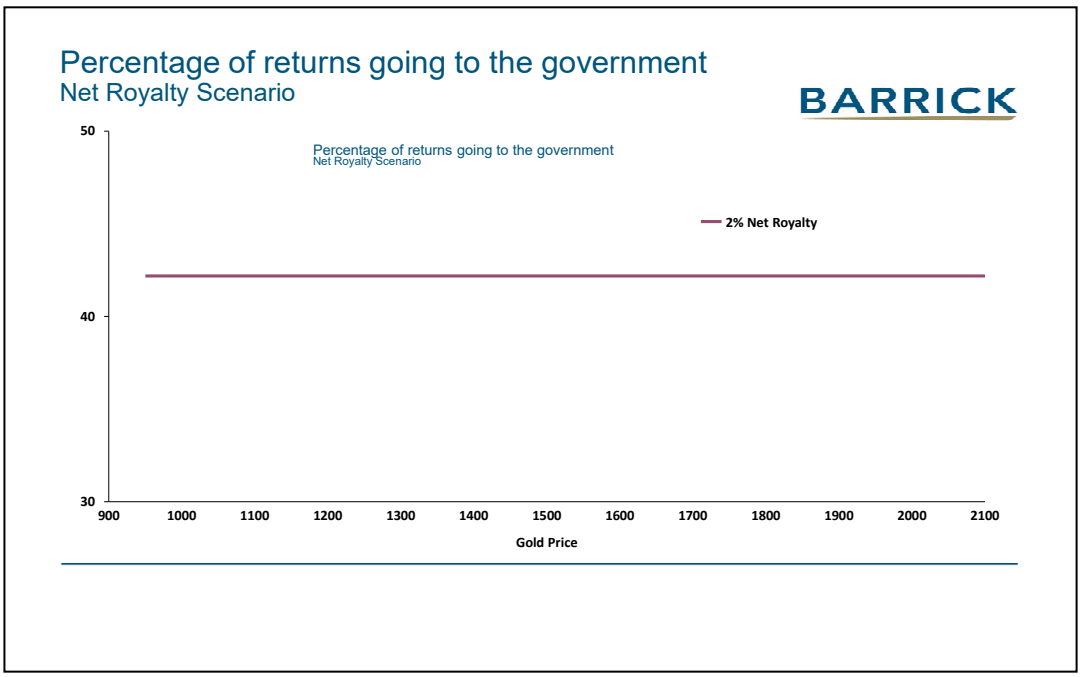
Senator Cortez-Masto's third question, Nevada Gold Mines has invested billions of dollars in processing technology and facilities at just one of its properties in Nevada—the Carlin complex – in order to process the rock that comes out of the mine into a saleable product. To be consistent with existing federal royalties for oil, gas, and coal, a federal hardrock royalty must allow deductions for processing costs. Also, it must be flexible enough to address the vast differences in nature, location, markets, prices, and other factors that exist among hardrock minerals. As I describe below, a net royalty would better recognize and adjust for this diversity. Please see also my response below to Senator Daines' fourth question for more on the diversity of hardrock minerals.

Gross Versus Net. As a cost, any royalty on a mineral deposit will reduce the amount of ore by making marginal ore uneconomic. A gross royalty, however, is particularly problematic for hardrock minerals because at lower prices it will lead to premature closures and disincentivize investment. If prices fall to low enough levels, a gross royalty could result in a government "take" of more than 100%.

1. A gross royalty is not just a tax on the gold or other hardrock mineral removed from federal lands. Gold, copper, lithium, and other hardrock ores cannot be sold into international markets as they come out of the mine, in the way oil, gas, and coal can. Because these minerals require billions of dollars of investment before they can be sold in global markets, a gross royalty becomes a tax on all that investment, rather than just on the mineral. The gold dore bar, as an example, can be analogized to refined gasoline. Charging the royalty on the gross sales price of a gold dore bar would be like charging the oil royalty on gasoline instead of on crude oil. It ignores the realities of and investments in concentrating and processing hardrock minerals.

2. A gross royalty is regressive. This is illustrated by the following graphs.





Under a gross royalty (first graph), the government take (state and federal taxes plus royalty) becomes dramatically higher as the commodity price goes down, which it inevitably will. For every percent of a gross royalty added, there is a dramatic non-linear effect of the gross royalty on the operator's share of the take. Moreover, with a gross royalty, the operator must continue to pay the royalty even when the government's take exceeds 100% of the revenue from the mine. In sharp contrast, under a net royalty (second graph), the government's take remains the same proportionally throughout the commodity cycle, hence the flat line.

3. A gross royalty "shrinks" the mineral resource faster by making more marginal mineralization uneconomic to mine. Rock that was "ore" stays in the ground, or is stockpiled as subgrade because the company would lose money processing it. The higher the gross royalty percentage, the more ore stays unmined and unprocessed. A gross royalty accelerates the rate at which the resource shrinks with a reduction in the gold price, making it very difficult for companies to plan the investment and manage investment risks.

4. A gross royalty eliminates a return on this marginal mineralization for the federal and state governments, and eliminates jobs unnecessarily early. The mine's breakeven point, or more accurately, its shutdown point, occurs at higher commodity prices. More mines will close early, less product will be available for commerce, fewer miners will be employed, and less personal and corporate tax revenues will be generated. See the discussion and graph below regarding the concept of "optimal government take," in response to Senator Daines' second question.

5. A gross royalty increases the risk of (and disincentivizes) capital investment because as the available return is reduced, the risk of investing significant capital into a project becomes higher, especially given expected fluctuations in the prices of gold and other minerals. Gold, copper,

lithium, and other types of hardrock mines require very large upfront investments, and continuing large capital investments to operate and maintain them. Thus, an unreasonable gross royalty will cause some companies to close operations and shift capital to other places. U.S. domestic minerals are left in the ground, generate no return for the company or governments, and provide no employment and generate no tax revenues. The U.S. remains or becomes more dependent on foreign production.

6. A gross royalty picks winners and losers because the deposits that have high enough grade can better absorb a gross royalty, while a lower grade or marginal deposit, which would otherwise still generate taxes, jobs and minerals, becomes uneconomic. To avoid this outcome, other nations – which like the U.S. produce many different types of minerals – have multiple royalty rates depending on mineral type/category: Brazil (5 rates), China (over 15 rates), India (over 30 rates), and Russia (5 rates).[3]

A gross royalty is inappropriate for the broad range of minerals that are locatable under the Mining Law. The economics of gold, uranium, copper, lithium, and bentonite, just to name a few locatable minerals, are completely different from one another. A gross royalty most severely disadvantages commodities that are low margin.

Given the negative impacts of gross royalties described above, Barrick has always advocated for a reasonable net royalty. A net royalty is more appropriate for hardrock and other locatable minerals because:

1. A net royalty allows the miner to keep operating and recoup capital investments in inevitable periods of low metals prices.

2. A net royalty "normalizes" for ore grade, differences in processing costs, and other variables. Stated differently, mines with lower margins can continue to operate when metals prices are low, and can operate longer. The mine life is extended because the miner can afford to mine and process marginal ore during periods of low prices.

3. A net royalty allows the industry to survive the inevitable dips in the commodities cycles while giving the U.S. the benefit of the peaks in the cycles. In other words, when revenues are low due to the price (which is out of the miner's control), operations would pay less, allowing them to reduce costs and maintain production and employment and generate tax revenue during tough times. Conversely, when net revenues are high, the royalty revenue returned to the government is higher. When looked at this way, the industry and the government win in both cases: (1) preserved employment, tax revenues, product output, and some returns in cycle troughs; and (2) higher returns, tax revenues, and employment in cycle peaks.

[3] Ishita Kapoor, *Mineral royalty rates in India: Comparison with other countries,* Centre for Social and Economic Progress (September 23, 2020), https://csep.org/discussion-note/minerals-royalty-rates-in-india-comparison-with-other-countries/; *see also* Tozzini Freire, Advogados, *Changes to the CFEM, the Brazilian Mining Royalty* (December 22, 2017), https://tozzinifreire.com.br/en/boletins/changes-to-the-cfem-the-brazilian-mining-royalty?utm_source=Mondaq&utm_medium=syndication&utm_campaign=LinkedIn-integration.

4. A net royalty also recognizes and automatically adjusts for the differing nature of minerals and mineral economics across a broad range of commodities. Investments and margins differ widely for gold, silver, copper, lithium, chemical-grade lime, and the dozens of other locatable minerals. The net royalty automatically adjusts to an equitable revenue-sharing level for mineral deposits with low capital outlay/low margin, low capital/high margin, or extraordinary capital/medium margin. A single gross royalty cannot appropriately adjust for these differences, and processing requests for relief from a gross royalty on a case-by-case basis would be unworkable for administrative agencies. With a net royalty, there is no need for commodity-by-commodity or mine-by-mine consideration of economics.

5. Perhaps most importantly from a fundamental fairness perspective, a properly designed net royalty allows for deductions and adjustments that recognize the miner's investment to get the mineral out of the ground. This is an especially important point for gold, copper, lithium and other hardrock mining that is ignored in the House's proposed gross royalty, which is based on the incorrect assumption that hardrock mineral production is comparable to coal, oil, and gas production. In truth, they are fundamentally different. A net royalty recognizes and compensates for the value (the gold ore in place the U.S. is contributing to the equation). In other words, the net royalty is approximated to the value of the rock.

In contrast to gross royalties, net royalties take into account a mine's ability to pay. The type of mineral produced, whether it uses underground or surface mining, the unique economics of the operation, and the price cycles do not have to be analyzed by lawmakers or policymakers. A net royalty is in some ways similar to an income tax – it is based on a specialized calculation of profitability. If the mine is profitable, it pays; if not, it does not. This means that when prices cycle lower, marginal mines are more likely to stay open because their costs will be lower, thus reducing the likelihood of boom-and-bust economics in local communities. Major mining countries like Chile and Peru that tax at the federal level apply net proceeds type of royalties, as do many provincial and state governments in Australia, Canada and the U.S.

Barrasso Question 2: During the hearing, Senator Heinrich stated: "there is no way for the Forest Service, under the 1872 mining act, to determine that a mine in [a] particular location is not in the best interest of the public." He went on to say that: "under [the] 1872 [mining act], there is simply no step in the process where the public's interest in the location of a particular mine is considered." Later in the hearing, you stated that: "I would point out is that we have land use planning and it's part of the Federal Land Policy and Management Act and it is an amendment to the [1872] mining law that came into being in the 1970s. And so there are big swaths of the United States and Nevada – in Nevada's case 85% of [Nevada is] federal land, 25% of that [federal] land – is not available for mine exploration." Would you expand upon your comments?

Response:

The 1976 Federal Land Policy and Management Act (FLPMA), 43 U.S.C. §§ 1701 *et seq*., is one of many federal statutes that have amended or changed the Mining Law of 1872. In FLPMA, Congress directed the Secretary of Interior to develop and regularly update land use plans (called "resource management plans"). 43 U.S.C. § 1712. FLPMA directs both BLM and the Forest Service in their land-use planning processes to identify lands with resource conflicts and, where appropriate, recommend to

the Secretary that those areas be withdrawn, subject to valid existing rights. 43 U.S.C. § 1712(e)(3). The land use planning processes include substantial opportunities for the public to identify sites that may be withdrawn. Areas may also be legislatively withdrawn by Congress subject to valid existing rights. Where land is withdrawn, new mining claims may not be located and the mining industry will not spend time and money on exploration.

According to the Nevada Division of Minerals, as of 2018, 15.6 million acres of Nevada federal lands have been withdrawn from location under the mining law—more than 22% of all lands in Nevada. Nevada Division of Minerals, *Nevada Land Withdrawals from Mineral Entry A Historical Perspective*, (May 2018 update). In contrast, according to the Government Accountability Office (GAO) in 2018, hardrock mining disturbance for 143 operations in Nevada was less than 200,000 acres. General Accounting Office, *Mining on Federal Lands: More Than 800 Operations Authorized to Mine and Total Mineral Production is Unknown*, GAO 20-461R (June 25, 2020) (2020 GAO Report).

The identification of additional lands for withdrawal is a continuing process addressed during development and amendment of land use plans. For example, as a result of the land use plan amendments for Greater Sage Grouse in 2015 (subsequently amended and presently in litigation), the Secretary of the Interior is considering withdrawing about 10 million additional acres across the West, including 2.8 million acres in Nevada and 250,000 acres in Wyoming. *See* 86 Fed. Reg. 44742 (August 13, 2021).

Federal agencies may also impose limitations on actions on federal lands that are not withdrawn, again through the land use planning process. Using the 2015 Greater Sage Grouse plan amendments as an example, BLM imposed a long list of limitations on activities on public lands, including a requirement that mine operators provide compensatory mitigation for impacts to certain habitat categories. The land use plan amendments require that miners avoid and minimize impacts to Greater Sage Grouse to the extent practical and then compensate for any unavoidable impacts. *See* *https://www.blm.gov/programs/fish-and-wildlife/sagegrouse/blm-sagegrouse-plans* (accessed October 19, 2021). Both Barrick and Newmont, the joint venture partners in Nevada Gold Mines, have negotiated compensation frameworks for impacts to sage grouse habitat from operations in Nevada.

BLM and the Forest Service may use legal authority under their surface management regulations and other applicable laws, including the National Environmental Policy Act, National Historic Preservation Act and Endangered Species Act, to limit or mitigate impacts to sites and resources. This may include relocating mine facilities to avoid specific sites or resources or modifying reclamation plans to include certain post mining land uses. In Nevada, we work constantly with federal land managers, Tribes, local governments, and the Nevada Department of Wildlife to develop and implement mining plans that avoid or limit impacts to environmental resources, cultural sites, and wildlife.

An agency may not use its regulations, the land use planning process, or withdrawal authority to negate "valid existing rights." In the context of mining plans, that means that where an operator has proposed a plan of operations that complies with all applicable legal requirements, including federal and state environmental and reclamation laws and regulations, an agency may not, as a matter of discretion, deny approval of the plan because of a perceived resource conflict. Resource conflict decisions can and should be made during the land use and withdrawal processes, not on a case-by-case basis. This is an important legal and policy limitation because agencies should not be able to withhold approval of a mine on lands that are open to entry under the mining laws after the miner has invested years and millions –

often hundreds of millions – of dollars in exploration, design and engineering, and permitting to bring the mine to the stage where a final plan of operations has been submitted for agency approval.

Barrasso Question 3:

a. Please discuss how Canada and Australia have been able to maintain comparable environmental standards to the U.S. and complete the permitting process for new mines on dramatically shorter timelines than the U.S.

b. How can the U.S. repeat the success of Canada and Australia in reducing delays in the permitting process while maintaining high environmental standards for new mines?

Response:

Environmental Review. Based on our permitting experience in Canada and Australia, the permitting process is shorter because regulatory agencies typically review, rather than write, environmental documents. In the U.S., pursuant to the National Environmental Policy Act (NEPA), an agency must prepare an environmental impact statement (EIS) to accompany any major federal decision that may have a significant impact on the environment. In practice this means that an EIS must be prepared for every mining operation on federal lands. The NEPA process is the most time-consuming aspect of every mine permitting decision—the critical path that drives the permitting schedule.

Federal agencies typically engage third party contractors (paid for by the applicant) to consider baseline data, engineering and technical analysis and other information and prepare the document for agency review. The Draft EIS is then released for public review and comment and the agency, assisted by the third-party contractor, must respond to every substantive comment, revise the EIS where appropriate, and publish a Final EIS. The agency's decision is then subject to administrative and/or judicial appeal and may be reversed if the EIS is found to be inadequate. The agency must supervise preparation of this document while it fulfills all of its other statutory obligations. For BLM and the Forest Service, review and approval of mining plans and the associated NEPA obligations is only one part of their much broader land management obligations. Mining EIS's must compete with all of the other priorities of the land management agencies. For example, in Nevada during wildfire season, all available agency personnel may be devoted to firefighting and managing fire responses. Action on mining EIS's (and all other lower priorities) must be deferred until agency resources are available.

In other jurisdictions, including in Canada and Australia, environmental impact documents are usually prepared by the applicant and submitted to the agency for review and approval as part of the mining permit application. The environmental impact document must satisfy the agency and applicable legal requirements, but these documents are typically shorter and more focused than NEPA documents in the U.S.

In Canada, the federal and some provincial environmental impact assessment laws provide that significant portions of the impact assessment review process must be completed within fixed timelines.[4]

[4] Impact Assessment Act (Canada), S.C. 2019, c. 28, s. 1, ss,37 and 37.1; Prescribed Time Limits Regulation, adopted pursuant to the Environmental Assessment Act (British Columbia), B.C. Reg. 372/2002; Regulation respecting the environmental impact assessment and review of certain projects, adopted under the Environment Quality Act (Quebec) chapter Q-2, r. 23.1.

In addition, where there is the possibility of overlap of federal and provincial impact assessment processes, legislation allows for the substitution of a process as well for cooperation and coordination agreements between various levels of government or decision-making bodies so as to avoid duplication. The federal government also in Canada also provides administrative support through The Major Projects Management Office (MPMO) who is tasked with overarching project management and accountability for major resource projects in the federal regulatory review process.[5]

Division of Regulatory Authorities. In Australia, the states are primarily responsible for regulation of mining operations. The Commonwealth government's authorities focus on environmental issues of national significance, which are often matters covered in international treaties. The authorities of states and Commonwealth governments are clearly defined, and they cooperate using bilateral agreements that generally work well.

Litigation. The U.S. is more litigious than other countries, and EIS's and plans of operation for mining projects are frequently challenged. Our own review shows that a mining project in the United States is about three times more likely to face a litigation challenge than in Canada, and about 15 times more likely to face litigation than in Western Australia. Australia places some limits on judicial review. Decisions of state environmental regulators cannot be appealed; the pathway and grounds to challenge a project are narrower than in the U.S. Faced with the likelihood of litigation (and the possibility of paying attorneys' fees to a successful challenger), U.S. agencies naturally become more cautious and take more time in an effort to "bulletproof" the EIS.

Recommendations.

Project Proponents Prepare EIS's. The Council on Environmental Quality's NEPA regulations were updated in 2020 to allow project applicants to prepare NEPA documents, subject to agency review and adoption. This change would make the NEPA process more like the environmental reviews in Australia and Canada. It is one of the ways the U.S. has tried to tackle the problem of permitting delays for major infrastructure projects. As you noted in your question, Canada and Australia are advanced countries that have environmental protection standards generally comparable to those in the U.S. In those countries, these kinds of applicant-prepared environmental documents have been successful, and contribute to faster permitting timelines. There is insufficient experience with this new provision in the U.S. to determine whether it can be implemented successfully, and whether it might speed up mine permitting. However, whether through this or other measures, the U.S. has to wrestle with the difficult problem of permitting delays, if it wants to encourage domestic mining of critical minerals.

Modify Review Procedures at the Department of the Interior. The Department of Interior (DOI) could reduce the time for permitting mines, wind farms, solar arrays, and other major projects requring an EIS by months or years with one simple and sensible administrative change. DOI should delegate the authority to publish *Federal Register* notices associated with EIS's back to BLM State Directors. Prior to 2001, such notices were routinely approved by BLM state offices and submitted to the *Federal Register* for publication. The notices are essentially boilerplate—informing the public that the agency is preparing an EIS, summarizing the process and issues and identifying agency contacts and opportunities for public input.

[5] https://mpmo.gc.ca/home.

In 2001, in an effort to monitor administrative actions initiated in the prior administration, DOI required that such notices be reviewed in Washington before publication. That review step, linked to the *Federal Register* notices, has been kept in place by every administration, regardless of party, for twenty years. In Barrick's experience with numerous mine EIS's during that period, the review has added ***delay of between 9 and 16 months for every mine plan approval in the past 20 years***. These delays also apply to every other project that needs a BLM EIS, including solar and wind renewable energy projects.

While it is understandable that Washington officials want to monitor projects and decisions in the field, especially major ones like mines and wind farms, there is no reason to tie that review to EIS *Federal Register* notices. Each EIS requires three NEPA notices: a notice of intent to prepare the EIS, which must be published before the agency can begin public scoping; a notice of availability of the Draft EIS, which must be published before the agency can release the draft document for public review and comment; and a notice of availability for the Final EIS, which must be published before the agency can issue a record of decision. In each case, the NEPA process stops until the *Federal Register* notice is published, allowing the agency to move to the next step.

Administrations have followed different strategies for review, but no administration has uncoupled the project review process from the *Federal Register* notices. DOI can monitor projects, requiring the same level and types of review but separately from the *Federal Register* notice process. That would be a simple change, does not require an Act of Congress, and should be done immediately.

Assure that Federal Land Managers Have Adequate Resources to Process Mining Permits.
Congress must provide the resources necessary to speed up the agency review of mining permits. Similarly, BLM and the Forest Service need to assure that their offices in the field have adequate resources – human, technical and technological – to process mine permit applications together with all of their other land management responsibilities. Under current regulations permit applicants reimburse the agencies for processing costs, including costs associated with preparation of environmental impact statements. But local field offices do not always have resource specialists with experience in reviewing mining plans of operations, or qualified specialists are burdened with competing obligations. In Nevada, for example, during wildfire season, most employees in BLM field offices are assigned to wildfire management as the top priority. Mine permitting and NEPA reviews may be put on the back burner for months. Land management agencies have also been affected by the retirements of agency staff with mining engineering backgrounds and experience, and are not able to review mining and reclamation plans. Meeting critical mineral production goals will require addressing these systemic issues.

Question from Senator Risch

Risch Question: In his opening statement, Chairman Manchin noted that one of the concerns he perceives with the Mining Law is that it mandates a claim system. Can you explain why the claim location system works for hardrock mining? And conversely, why a leasing system similar to coal, oil and gas would not work?

Response:

With the claim maintenance fees imposed over the last couple of decades, the Mining Law and its base tenure – the mining claim – has already taken on one primary attribute of a leasing system: the annual

fee for use. The maintenance fee – a major 1994 amendment to the Mining Law – replaced the Mining Law's annual work requirement.

Unlike oil and gas prospects, which are large targets in identifiable geologic settings (and in many cases treated as "known geologic structures"), or coal fields, which are well known and long since identified, hardrock mineral deposits are very small targets, widely scattered, often very deep in the earth compared to coal, and much more difficult to find and reach. While there is a database to support rational identification and leasing of large tracts for oil, gas, and coal, no similar database exists for the wide array of locatable minerals. Accordingly, the data do not exist to inform a federal leasing program for locatable minerals. The government would have no way with its current lack of data to identify or prioritize areas for mineral exploration, the amount of land for a particular mineral, or the geologic constraints for a given mineral.

The argument is often made that states have mineral leasing systems for hardrock minerals and the federal government could do the same. GAO recently published a report surveying systems for obtaining mineral rights on state trust lands. Government Accountability Office, *Hardrock Mining Management: Selected Countries, U.S. States, and Tribes Have Different Governance Structures but Primarily Use Leasing,* GAO-21-298 (June 30, 2021), available at https://www.gao.gov/products/gao-21-298. As expected, the Report documents that U.S. western states use leases to grant mineral rights on their lands. However, the GAO Report does not evaluate the success of these leasing programs. One measure of their success would be the number of hardrock mining operations on state trust lands, or the amount of royalty revenue from such operations. As it happends, there is very little hardrock mineral production from state lands. In comments submitted to GAO for consideration in preparing its report, Barrick noted that it could identify only one large mining operation primarily on state lands: The Kinross Fort Knox Mine in Alaska. Otherwise, our research revealed only minor hardrock mining activity on state trust lands, usually in concert with much larger blocks of mining claims on federal lands. The *de minimis* amount of hardrock mining on these lands undermines any argument that state leasing programs could be a model for federal mining law because there is no record of success by which to evaluate them.

Leasing system proponents also claim that in jurisdictions like Australia that are viewed as favorable for mining investment, the mineral tenement is sometimes called a "lease." That argument ignores the most significant aspects of that mineral right, i.e., that it is based on self-initiation and preserves tenure. The GAO Report I described above, in addition to its summary of state mining laws, also looked at the mining laws of Australia, as well as laws in Chile and Canada. That report documents, and Barrick's on-the-ground experience confirms, that in Australia the miner acquires exploration tenements, the boundaries of which they define themselves (subject to statutory size and shape requirements), and through the process of exploration ultimately narrows down the prospective area, defines the boundaries of the prospect they want to develop and then converts it to a "mining lease." Indeed, the Australian example supports the importance of self-initiation rather than undermining it. Furthermore, the Australian approach provides tenure – security of title – because no other miner can take over the fruits of the miner's exploration labors. The miner that discovers the mineral deposit has the sole right to convert the exploration tenement to a mining lease, provided that it has complied with the terms and conditions of its exploration tenement.

Australia and the U.S. are not unique in this respect. Most nations that have hardrock mines have a system that is based on self-initiation through a right to explore (referred to as a claim, license, lease, or concession depending on the jurisdiction) that can result in a right to mine. Also, like in the U.S., many nations have an auction system for oil and gas and coal rights. This reflects the fact that exploration is much more difficult for hardrock minerals and that an approach based on bidding does not work. Countries that have experimented with auctioning hardrock exploration blocks, for example Pakistan, have been disappointed, and have returned to systems based around self-initiation.

The difference between hardrock mineral exploration and exploration for oil and gas or coal is immense. Only about 1 in 10 mineral exploration projects are taken to the drill stage, and 1 in 1000 drill programs unearth viable mineral deposits. Ultimately, less than 1 in 10,000 projects become mines. "Mining 101," Ontario Mining Association, at https://oma.on.ca/en/ontario-mining/Mining101.aspx (accessed Oct. 27, 2021). In 2018, the success rate for exploration of oil and natural gas in the US was more than 60%. "Natural Gas, Oil Drilling and Completions Up More Than 35 Percent Over 2017," American Petroleum Institute (April 19, 2018) at https://www.api.org/news-policy-and-issues/news/2018/04/19/natural-gas-and-oil-drilling-and-completions-up-more-than-35-percent-over-2017 (accessed Oct. 27, 2021). The success rate for wildcat drilling, defined as exploration outside of existing known fields, is estimated to be about 30%. *Wildcat drilling: worth the risk?* Offshore Technology (Feb. 24, 2020) at https://www.offshore-technology.com/features/wildcat-drilling-worth-the-risk/ (accessed Oct. 27, 2021).

The very foundation of hardrock mineral exploration is being able to follow the geology – the notion of prospecting – and identify the limited areas where the explorer believes further expenditure such as geophysics and drilling are justified. Any miner's competitive advantage comes from making the best choice of available land based on superior geologic knowledge and application of the best and ever-evolving technology. Any mining land tenure system must preserve the rights of self-initiation and tenure.

Questions from Senator Daines

Daines Question 1: What specific actions should this committee take to increase domestic production of critical minerals?

Response:

This is a complicated subject with facets that extend far beyond concerns about domestic supplies of the minerals themselves. I am limiting my response here to recommendations to increase domestic mining of critical minerals, which in my opinion should include gold, but the Committee must be aware that even if domestic supplies were available now or in the foreseeable future, processing and manufacturing capacity for many metals – especially certain rare earth elements – have disappeared in the U.S. and have moved abroad, principally to China. At the present time, most rare earths are processed in China, which has invested in decades of research that now give it a competitive advantage. As in other industries, it is difficult for new entrants to compete with established firms that enjoy large economies of scale. China's firms have the technology and scale to provide low-cost processing that firms in the U.S. have not been able to match. Yet, these downstream processing steps are crucial parts of the supply chain to a variety of products, including wind turbines, solar cells, and electric vehicles. In addition to

finding critical minerals in the U.S., this more comprehensive supply chain problem also has to be addressed.

An example of the problem (and potentially an early success story in solving it) is the Mountain Pass mine in California, which has produced rare earth elements periodically since 1952, but which closed in the late 1990's as global prices collapsed and China dramatically increased production. After a series of failed efforts to reopen the mine, it was purchased in 2017 out of bankruptcy by hedge fund investors (including 8% minority ownership by a Chinese state-owned enterprise), and production resumed in 2018. At least for the time being, the mine is producing a rare earths metal concentrate that has to be shipped to Asia for processing and manufacture of permanent magnets (among other uses), because those capabilities do not currently exist in the U.S. However, the mine owners have announced that they will recommission processing facilities at Mountain Pass – possibly as soon as 2022 – and develop capacity eventually to manufacture rare earth elements and permanent magnets.

Preserve Self Initiation and Tenure. As I described in my October 5 testimony, self-initiation and tenure are the two essential pillars of hardrock mining law in the U.S. The most important thing this Committee can do to promote future domestic mineral exploration is to preserve true self-initiation and tenure. These features of The Mining Law incentivize private companies to take risks and invest in exploration activities in the U.S., with the expectation that if a valuable mineral deposit is found, the miner will have the exclusive right to develop it.

Consider the Policy Implications of a Royalty on Hardrock Minerals. As I explain in more detail below in response to your second question, a royalty revenue stream to the U.S. from hardrock mining is just one of several policy concerns Congress must consider. The Mining Law was enacted originally (and without a royalty) to encourage domestic production of minerals. *See* Salvatore Lazzari, *The Federal Royalty and Tax Treatment of the Hardrock Mineral Industry: An Economic Analysis,* Congressional Research Service Reports – Taxation (June 13, 2008). Now, as Congress considers the imposition of a royalty, the U.S. finds itself again in the position of needing to encourage domestic mineral supplies. This is not an argument against imposing a royalty, but rather an admonition that the royalty type and rate matter a great deal. They are policy choices as much as revenue choices for the U.S. If the royalty is punitive, or if it increases the total U.S. government take too much, it will raise the cost of investing in the U.S. and discourage future domestic mining, at a time when the U.S. has recognized that it needs to do the opposite.

Improve U.S. Data Regarding Domestic Mineral Resources. As directed in Executive Order 13817 (A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals), the Department of Commerce prepared a report in 2019 recommending six "Calls to Action" to assure reliable supplies of critical minerals for U.S. needs. United States Department of Commerce, *A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals* (2019). The Commerce Report noted that the U.S. has fallen behind other major mineral-producing countries – including China, Canada, and Australia – in supporting research and developing tools to identify potential mineral resources. Commerce Report at 31. For example, the United States Geological Survey (USGS) estimates that less than 18% of the U.S. has been geologically mapped at the necessary scale. In contrast, China, Australia, and Canada have invested heavily in geologic mapping, geophysical surveys, and other data collection, and have made data readily available to private exploration companies.[6] *Id.* The Commerce Department also found that

[6] For example, in Canada, the federal government announced and implemented the Geo-mapping for Energy and Minerals program

some U.S. mineral resource data, to the extent they are available, are in paper form or otherwise difficult or impossible to access electronically.

Most nations that have significant mining industries invest heavily in basic research and data about geological attributes over large areas that any one company would not be able to generate on its own. These data can then be used by private actors to explore in smaller, more targeted areas. The National Science Foundation is a useful analogy; the federal government invests in basic research that scientists and researchers rely on to develop new technologies.

To a large extent, new hardrock mineral resources in the U.S. today are being identified by private mining companies conducting exploration. Most of that exploration is for gold, copper, molybdenum, silver, tungsten, and uranium. Congressional Research Service, R45810, *Critical Minerals and U.S. Public Policy* at 26 (2019). Increasingly, lithium and other metals used in emerging battery technology will also join that list. The Committee should update and increase the federal investment in identifying mineral resources, especially critical minerals. This would fill gaps in current mineral resource identification, and lay the groundwork for domestic production of critical minerals in the future. One policy option is to reconstitute the Bureau of Mines within the Department of Interior. Congress closed the Bureau of Mines in 1996, and reassigned some of its functions to the USGS and the Department of Energy, but many functions were discontinued. For example, the US Bureau of Mines was the lead US agency for mineral processing research. It developed a technology used to extract gold from low grade ores, and today we use this technology in our mines worldwide. At the same time that China was investing heavily in research to process rare earths and to transform raw silica into silicon wafers for solar panels, the U.S. closed down the Bureau of Mines and its research efforts.

We believe the conclusion that the U.S. does not have supplies of certain critical minerals is a self-fulfilling prophecy. Our vast nation, straddling the entire continent thanks to the westward migration spurred in part by the Mining Law, has significant mineral wealth, including many deposits that have yet to be discovered. Geologically speaking, the U.S. spans multiple geological settings that make the discovery of multiple minerals, including critical minerals, possible.

In some other cases, the U.S. may not have identified critical mineral resources, or those minerals may not be present here in a currently economically extractable form. However, we have not done enough work to know that. The U.S. has not yet come anywhere near investing the resources and exhausting exploration opportunities necessary to find domestic sources of such minerals. As mineral policy takes on more importance, the U.S. must devote more resources to mapping, geophysical surveys, and other data gathering to spur discovery of critical minerals.

(GEM) which was a $200-million geological mapping program that ran between 2008 and 2020 and was administered by Natural Resources Canada's Geological Survey of Canada. The program was designed to significantly advance and modernize geological knowledge in northern Canada to support increased exploration for new resources. The federal government has implemented a similar program known as the GEM GeoNorth program that is to run between 2020 to 2027: https://www.nrcan.gc.ca/earth-sciences/resources/federal-programs/geomapping-energy-minerals/18215. Several provinces have also established mapping and data collection programs that are available on-line. For example: British Columbia: https://www2.gov.bc.ca/gov/content/industry/mineral-exploration-mining/british-columbia-geological-survey/mineralinventory; https://www2.gov.bc.ca/gov/content/industry/mineral-exploration-mining/british-columbia-geological-survey; Alberta: https://ags.aer.ca/; Ontario: http://www.geologyontario.mndm.gov.on.ca/mines/ogs/indexes/maps_e.html; https://www.mndm.gov.on.ca/en/mines-and-minerals/geology; Quebec: https://sigeom.mines.gouv.qc.ca/signet/classes/I1102_indexAccueil?l=a.

Incentivize Technological Innovation. Technological innovation also is a key aspect of finding "new" mineral deposits and extracting them. The gold industry in the U.S. provides the perfect model of how previously unknown or unrecognized mineral resources are ultimately going to be produced. As recently as the 1990s, the vast majority of gold deposits being discovered and developed were at or near the earth's surface. However, advances in geologic understanding and in exploration technology are enabling us to find and develop deposits deep under cover. The discovery of many other critical minerals will come only as the industry and the U.S. find better ways to look under cover.

Similarly, as recently as the 1980's, gold production was limited to certain kinds of rock, while other rock, also known to contain microscopic particles of gold, stayed in the ground because there was no known economic extraction technology. Those dispersed microscopic gold deposits today form the basis of our current industry, specifically because Barrick and other companies invested in further applied research and development of new extraction technologies that in many instances are customized to the ore body to be mined. The industry then invested billions of dollars to bring these new technologies on-line. Without these innovations, the Nevada Gold Mines operations would have closed in the 1990's. Barrick and Newmont invested in these technological innovations and implemented them in Nevada because of the favorable mineral policy embedded in the Mining Law and its many amendments.

The U.S. will continue to enjoy the benefits of ever evolving exploration and extraction technology only if there is a healthy domestic hardrock mineral industry doing the exploration work and then investing in the development. The prime example of this today is the lithium mining industry, ready to begin developing new mines in Nevada to create more domestic supplies of that mineral that is so important to advancing carbon neutral policy goals.

Expedite Permitting. Permitting delays in the U.S. are a perennial problem, and they are not amenable to a straightforward solution, but we do believe the Committee can and should tackle this problem. The current permitting process has a significant negative impact on the ability of smaller companies to bring a mine to fruition. While large companies like Barrick with cashflow can endure permitting delays, those delays are still part of our calculus about future investments. Smaller firms that do not have cashflow from other operations may be long out business before a permit is issued. This barrier to new entrants is real and significant, and these companies are necessary to create the new investments in domestic minerals the U.S. says it wants.

As you know, the Fixing America's Surface Transportation Act (FAST Act) created the Federal Permitting Improvement Steering Council and a new governance structure intended to streamline and expedite approvals for large infrastructure projects. Pub. L. No. 114-94, 129 Stat. 1312 (2015), codified at 42 U.S.C. §§ 4370m *et seq.* The Steering Council added mines as "covered" projects on January 8, 2021. *See* 86 Fed. Reg. 1281. The Steering Council administers a "dashboard" where qualifying projects are listed and tracked. *See* https://www.permits.performance.gov/. It is too early to know whether the FAST Act provisions will improve permitting timeframes, but they reflect some level of consensus in Congress about the need to address permitting delays across the economy.

I addressed permitting delays above in response to Senator Barrasso's third question. I also recommended an improvement that can be implemented right now: DOI can restore procedures that were in place before 2001 allowing BLM State Directors to approve NEPA notices for publication in the

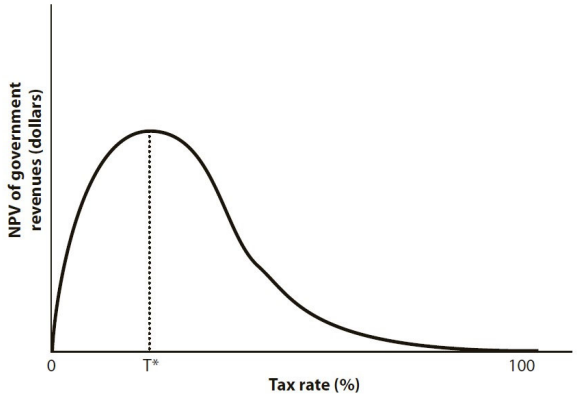
Federal Register, rather than requiring they be approved in Washington. These notices are procedural in nature only; they serve no substantive review purpose, and the current procedures result in significant, measurable, and unnecessary permitting delays. DOI can make this tangible improvement now, with no action by Congress.

Daines Question 2: There was a lot of discussion on the difference between a net royalty and a gross royalty. Can you explain in detail how a gross royalty would hurt your company and why it is not the right policy for hard-rock mining?

Response:

A gross royalty is an additional tax and will add to the overall tax burden borne by mines. The figure below illustrates how if the overall effective tax rate becomes too high, tax revenues will decrease because some mines will become uneconomic during downturns in commodity price cycles (many mines never reopen once closed) and new mines will not be built because companies may choose to invest their capital in lower-taxing nations.

Figure 2.1. Government Tax Revenues as a Function of the Tax Rate



Source: Author J. Tilton.

Note: T* is the optimal tax rate.

Source: The World Bank, *Mining Royalties: A Global Study of Their Impact on Investors,Government, and Civil Society* (2006).

A gross royalty approach is especially burdensome on existing and planned marginally economic mines because it is not based on ability to pay, and mines must pay regardless of whether they are profitable during price downturns. In contrast, a net royalty is based on annual profitability and better accommodates price cycles.

I addressed the importance of a net royalty for hardrock mining above in my response to Senator Barrasso's first question. A gross royalty does not work for hardrock minerals, most of which must be processed at great expense to produce a marketable product. A gross royalty therefore would not just apply to the minerals themselves; it would be a tax on the large investments necessary to extract and process the minerals. A net royalty compensates the government fairly for the mineral, it avoids a tax on the investments necessary to produce minerals, and it works well to account for the significant differences in investments and profit margins among locatable minerals.

Additionally, before imposing a royalty, Congress should be clear about the reason it is doing so. A royalty is a revenue or profit-sharing mechanism, but when imposed by government it is also a policy lever. For example, governments have set royalties at specific rates, or foregone them, in order to encourage resource exploration and production; to encourage westward expansion; to incentivize new technology; or to control or mitigate certain behaviors. Both the profit-sharing aspects and the policy aspects of a federal hardrock royalty would be better realized by a net royalty.

While one purpose of the Mining Law of 1872 was to promote westward expansion and settlement, and is no longer a driving force, its other main purpose – supplying valuable and necessary minerals for the nation – is more relevant than ever. We perceive growing bipartisan consensus that the U.S. must do better to promote discovery and production of minerals domestically that will be needed for electric vehicles, semiconductors, computers, other electronic devices, and other important uses. Thus, any federal royalty must strike a balance between the government's interest in an appropriate return on its mineral wealth and its interest in preserving and growing a domestic mining industry that has the technology, expertise, trained employees, and other resources to find and extract minerals. Any reform of the Mining Law must be consistent with the U.S.'s need for stable domestic supplies of critical minerals, and that includes gold, by the way. Gold mining is ***the*** single most important economic driver in Northern Nevada, and Nevada's gold mining by itself makes the U.S. the fourth largest gold producer in the world, behind only China, Russia, and Australia.

When viewed from the policy perspective, any federal royalty imposed is going to affect the competitiveness of the industry in the U.S. compared to the global industry. Therefore, it should be carefully formulated or it will fail from a policy standpoint because it will stifle domestic production, surrendering the mineral future to foreign governments. The best way to avoid that outcome is to impose a reasonable net royalty.

Daines Question 3: The current Democratic House proposal creates a new $0.07 a ton dirt tax. While the number seems small, its cumulative effects could have a major impact on mining businesses who move material back and forth during the mining, cleaning, processing and reclamation process. Can you explain how this tax could hurt your business and could hinder the work you all do to reclaim an area?

Response:

The "dirt tax" has many problems, including vague statutory language, broad reach, and a complete lack of any economic basis or rationale. The tax is called a "reclamation fee" in Section 70807 of the House Natural Resources Committee Print, but the proceeds would not be dedicated to reclamation, as is the case with the SMCRA AML fee. *See* 30 U.S.C. § 1231 (Abandoned Mine Land Reclamation Fund), §1232 (reclamation fee).[7] Apparently the proposed hardrock dirt tax would go to the Treasury's general fund. The amount of the fee – $0.07 per ton – is arbitrary. It is not tied to current reclamation costs, abandoned mine land inventory, or any other metric.

The legislative language creating the reclamation fee is scant, and leaves numerous details to the interpretation of implementing agencies. The tax would be on "displaced material," defined as any unprocessed ore and waste dislodged from its location at the time hardrock mineral activities begin at a

[7] The reclamation fee is not included in the Rules Committee Print of H.R. 5376, the Build Back Better Act, released on October 28, 2021.

surface, underground, or in-situ mine." Because the bill language offers so little guidance on how to administratively apply the tax, its scope, impacts, and even its applicability, are almost impossible to understand from the text.

Apart from the direct economic impact of the tax, such a taxing regime would also increase mining costs, already high in the U.S. compared to most other countries. Material movement of all types would have to be tracked because it would become necessary to distinguish between "displaced materials" and other moved earth. Modern hardrock mining operations require enormous amounts of earthmoving, and while miners obviously track the amounts of basic material moved, such as tons mined and processed, tracking "displaced material" – however that term is eventually defined – would add reporting and compliance burdens not tied to any regulatory or environmental purpose.

Most egregiously, this "reclamation fee" could be read to apply to reclamation activities themselves. In other words, depending on how it is implemented, the reclamation fee could become a tax on reclamation. As such, it could increase the costs of reclamation and disincentivize the miner from moving earth needed for sound reclamation. Taxing salutary company behavior is unusual policy. Indeed, the dirt tax would be a direct tax on *required conduct.* Taxing reclamation would be terrible policy.

Like a gross royalty, the dirt tax would be regressive, most severely burdening – and further imperiling the viability of – marginal operations. The reclamation fee is not tied to the economics of particular mining operations. Many hardrock mines, especially surface mines, are low-margin operations that rely on moving large amounts of material. Applying such a tax without regard to the economics of the mine will result in the closure of low-margin mines. The hardrock minerals stay in the ground, and jobs and tax revenues are lost.

Daines Question 4: One size fits all regulation and laws rarely result in good policy and often result in harms to small businesses and jobs. Can you explain the difference in how precious metals companies like yourself operate compared to industrial minerals companies or other mines and why Congress should examine these differences before making a one size fits all, punitive tax and fee law?

Response:

I have covered some of this subject matter in my response above to Senator Barrasso's first question. Gold is a highly volatile commodity and the price varies significantly over time. This reality makes financing and developing gold mines higher-risk investments. The following figure shows the gold price range of the last 10 years:

The nature of commodity cycles needs to be taken into account in establishing a royalty. Hardrock miners are "price takers;" in other words, metals prices are fixed daily in global markets. The costs of royalties for gold, copper, lithium, and other hardrock minerals cannot be passed on to buyers. This is a key distinction from coal, oil and gas, and some other leasable commodities. Many industrial minerals are priced locally, not globally, because it is not economic to transport them over long distances and thus they are used or processed only locally for the most part.

Additionally, the cost to produce a mineral varies widely from mineral type to mineral type and is also influenced by the mining method used to extract the mineral and a host of other factors. If setting gross proceeds royalty rates, it is important to understand these differing economic factors because they influence the ability of mines to pay royalty. If the rate is set too high, it may impact the ability of mines that produce a certain type of mineral or that use a particular mining method to stay in business. The reality that a gross royalty needs to take into account fundamental factors such as mining method is reflected in U.S. federal coal leases where underground coal has a royalty rate of 8% while surface-mined coal is assessed at 12.5% of gross proceeds. Lawmakers recognized that a rate of 12.5% levied on underground coal mines was not realistic.[8] Royalty rates for minerals managed under the U.S. leasing (non-locatable minerals) system vary based on the mineral. *See, e.g.,* 43 C.F.R. § 3504.21. Phosphate miners pay a minimum of 5%, while sulfur miners pay at least 2%. One size does not fit all, and the various rates set for various leasable minerals reflect this.

In addition to mineral type and mining method, costs and profitability vary greatly from mine to mine based on factors such as distance from infrastructure, the physical attributes of the deposit including the amount of mineral per unit of ore, the cost of financing, wages in the area, electricity tariffs and so forth.

[8] *Federal Coal Leasing Amendments Act of 1975: Hearing on S. 391 Before the Subcomm. On Minerals, Materials and Fuels of the S. Comm. On Interior and Insular Affairs*, 94 Cong. 504 app. (1975).

Many marginally economic mines are unprofitable when commodity prices cycle lower and depend on higher price years in order to sustain operations. A gross proceeds tax does not take a mine's ability to pay into consideration, and during a low in the price cycle when a mine is not profitable, the mine may need to permanently or temporarily close when it cannot pay its royalties and other costs. Jobs, tax losses, and local community impacts can be appreciable.

Question from Senator Murkowski

Murkowski Question: The Biden administration has committed to the goal of transitioning to a 100% clean energy economy and net-zero emissions by no later than 2050. The administration, and many members of Congress, however, do not seem to have a clear view for how such a transition will actually occur. To reach net-zero emissions, we will need to significantly increase our consumption of battery technologies constructed with lithium, graphite, and other critical minerals.

a. Where will the United States have to source the materials needed to fulfill the President's 'zero emissions' agenda, if not able to be produced domestically?

Response:

Please see my response above to Senator Daines' first question for additional observations about critical minerals. The most recent data available on this subject are summarized in a 2021 USGS technical report, prepared to support Section 7002 of the Energy Act of 2020 (which you authored). United States Geological Survey, *Methodology and Technical Input for the 2021 Review and Revision of the U.S. Critical Minerals List,* Open File Report 2021-1045 (2021) *available at* https://pubs.er.usgs.gov/publication/ofr20211045. Section 7002 requires USGS to develop a revised methodology for identifying critical minerals and to update the earlier critical minerals list developed by USGS in 2018 pursuant to Executive Order 13817. *See* 83 Fed. Reg. 23295 (May 18, 2018). The USGS report contains a "heat map" identifying critical minerals with the most supply risk; over a dozen of these minerals have significant supply risks as of 2018. The minerals with the highest supply risks are currently sourced primarily in China, South Africa, Brazil, and the Democratic Republic of Congo. *See* USGS Report at 11. According to the Commerce Department Report cited above in response to Senator Daines' first question, the U.S. relies entirely on imports from these countries for 14 critical minerals, including some of the most important heavy rare earth elements. Commerce Report at 3. The recent resumption of rare earth production at the Mountain Pass mine in California may provide a domestic source for certain of the 14 minerals identified in the Commerce Report, but for the time being, the metal concentrates produced at Mountain Pass still must be shipped to Asia for processing and manufacturing, illustrating significant supply chain problems downstream of mineral production.

b. What legislative steps can the committee take to help meet the President's supply chain security and clean energy objectives?

Response:

As I noted in my response to Senator Daines' first question, Barrick believes the Committee must retain self-initiation and tenure in any Mining Law modifications. These are the Law's most

important inducements to companies to invest in the U.S. in exploring for minerals. Second, the Committee should carefully weigh all policy considerations in developing a hardrock mining royalty that will return revenue to the U.S. without disincentivizing new investments in domestic minerals. Third, the Committee should carefully evaluate the creation and funding of new government efforts to map and survey hardrock mineral resources, whether through a new Bureau of Mines, or via additional authorities for USGS. Finally, the Committee must tackle the difficult problem of permitting delays, which are a real and persistent impediment to promoting mineral development in the U.S.

As I noted above, creating incentives for domestic mining is just one part of the supply chain problem. Over the last 30 years or so, the U.S. has allowed its mineral processing technology and capacity for many metals to be shifted overseas, to China and other growing economies. Smelters, refineries, and other downstream processing and fabrication facilities became increasingly difficult and expensive to site in the U.S., and at the same time growing nations were willing to invest in new processing capacity. The shift made economic sense in a globalizing trade environment, with lowered trade barriers, and in a world mostly at peace. Today, given current trade and national security concerns, and because of the prominence of minerals in addressing energy and climate change problems, the shift out of the U.S. of mineral refining capacity looks much different from a policy perspective. That capacity and those facilities will not migrate back to the U.S. on their own. As Congress focuses on the critical mineral supply chain, it will have to consider ways to restore mineral processing capacity, including tax or other fiscal incentives to restore a domestic supply chain in the most critical minerals.

c. What are the potential human rights consequences associated with shifting mineral production away from the United States to countries such as China?

Response:

U.S. mining jobs pay high wages, and workers are protected by federal and state labor, environmental, mine safety, and other laws. Additionally, Barrick has zero-tolerance for human rights violations. We have adopted the United Nations' Guiding Principles on Business and Human Rights, the Voluntary Principles on Security and Human Rights, and the Organization for Economic Co-operation and Development's Guidelines for Multinational Enterprises. Our vendors must agree to operate in compliance with our human rights and worker standards. All agreements for goods and services must include commitments by vendors to act consistently with our standards. We also perform due diligence on our vendors and suppliers to look for issues, both at the time we first engage with them and then later in a recertification process.

We take these standards with us wherever we operate in the world, as do other western-based major mining companies. Many mining firms operate internationally, so their investment decisions (whether to invest in the U.S.) inevitably will be affected by U.S. mineral and tax policy. Unfavorable policies will result in more mining jobs outside the U.S. However, mining that occurs outside the U.S., especially in less-developed nations, is less likely to provide the same human rights or worker protections.

Questions from Senator Cortez-Masto

Cortez-Masto Question 1: Nevada has more federal land than any other state except Alaska; about 85% of the land in Nevada is owned by the federal government. Nevada also has the most hardrock mining of any state in the nation, and currently the vast majority of that is gold, although Nevada has rich lithium deposits too and that industry is likely to grow in the future. Generally, how would a federal royalty specifically impact Nevada?

Response:

Using data currently available, it is not possible to quantify the likely impacts on Nevada, but a rough estimate is possible. As I explain below in more detail, we estimate that Nevada companies would pay at least 60% of a federal hardrock royalty, and we believe the proportion almost certainly will be higher, at least for the foreseeable future.

In its analysis of H.R. 2579 – a Mining Law reform bill in the 116th Congress – the Congressional Budget Office estimated that the royalties in that bill would fall mostly on gold miners. Congressional Budget Office, H.R. 2579, Hardrock Leasing and Reclamation Act of 2019, Cost Estimate at 4 (July 27, 2020). As you know, the bulk of gold mining in the U.S. is conducted in Nevada. In its 2020 report (cited above), GAO noted that the U.S. does not track hardrock mineral production on federal lands, making it difficult to quantify what portion of a federal royalty would be paid by Nevada mines operating on unpatented mining claims. However, using data provided to GAO by federal land managers on acreage covered by approved plans of operation, we estimate that at least 60% of a new federal royalty would come from Nevada federal lands.

The GAO Report documents the number of approved plans of operation in each western state, and the acreage associated with each approved plan. *See* 2020 GAO Report at 12, 19. In total, 317,783 acres are subject to approved plans of operation in 12 western states, and of that total, 191,889 acres – or 60% – are in Nevada. That percentage is the basis of our estimate that Nevada operations will pay most of a federal royalty. It is important to emphasize that these acreage figures cannot really function as a proxy for likely royalty shares, most importantly because they do not correspond directly to unpatented lode and placer claims that would be subject to a new federal royalty. Although it is not apparent from the GAO report, the land management agencies typically count all acreage – not just mining claims – within the boundaries of a plan of operations, including private lands and federal lands that do not contain mineral deposits (such as millsites). Additionally, an approved plan of operations does not mean that a mine is actually operating. Most of the approved plans reported by federal land management agencies are for less than 100 acres, and many are for one acre or less. These are almost certainly exploration projects, not operating mines. However, overall, the data do establish that almost two-thirds of all hardrock mineral activities on federal lands are happening in a single state: Nevada. Nevada has over 50 approved plans of operation covering 200 acres or more. No other western state has anywhere close to this much mineral activity on federal lands.

For instance, next to Nevada, California has the largest number of approved plans of operation – 123 – covering 24,571 acres. However, most of these plans are very small – 10 acres or less. A significant active hardrock mining operation would require thousands of acres. We are aware of only three metal mines of any significance operating in California currently: the Mesquite Mine (gold), the Castle

Mountain Mine (gold), and the Mountain Pass Mine (rare earths).[9] At least portions of these mineral deposits are on private lands. California also has significant borate mines (borates are hardrock non-metal minerals), but only one approved plan of operation of any size: 200 acres. *See* Supplemental Material for GAO-20-461R: Data on Solid Mineral Operations on Federal Lands at 9-15 (May, 2020)(GAO Supplemental Material), available at https://www.gao.gov/assets/710/707570.pdf. This data point indicates that most borate production in California is likely on private lands, and would not be subject to a royalty.

Next to Nevada, Wyoming has the most total acreage subject to approved plans of operation: 47,655 acres, and 90 approved plans of operation. 12 plans of operation – accounting for 18,787 acres (37%) – are for uranium, but only one uranium mine is operating in Wyoming currently.[10] Most of the remaining Wyoming acreage – over 21,000 acres – is for bentonite clay. *Id.* at 37-41.

Just as Nevada is known for its gold mines, Arizona is known for its copper mines. The state has a dozen large operating copper mines. *See* Arizona Geological Survey, Active Mines in Arizona: FY2020 (December 2020), available at http://repository.azgs.az.gov/sites/default/files/dlio/files/nid1963/activemines2020_v1.1.pdf.[11] However, only 4,222 acres statewide in Arizona are subject to approved plans of operation for copper. *See* GAO Supplemental Material at 7-9. These data suggest that the vast majority of current copper mining in Arizona is on private lands, and would not be subject to a federal royalty.

The remaining GAO data lead us to similar conclusions for the other public land states. Colorado, an important mining state historically, has only 1,299 acres subject to approved plans of operation. 2020 GAO Report at 19. The largest plan of operations for a metal mine in Colorado covers 80 acres, not enough land to support a major mining operation. GAO Supplemental Material at 16. Idaho has one large plan of operations for gold, one for silver, and one for molybdenum. *Id.* at 17-19. The only molybdenum mine in Idaho is the Thompson Creek Mine, which has not operated since 2014.[12] The plan of operations for silver is likely for the Lucky Friday Mine, owned by Hecla Mining Company. The mine is operating, and approximately half of the mining claims at Lucky Friday are unpatented.[13] Montana has only four large plans of operation (larger than 1,000 acres) – for gold, clay, and zinc. *Id.* at 20-22. Montana also has the only platinum/palladium mines in the U.S. – the Stillwater and East Boulder underground mines, which are on a combination of patented and unpatented claims.[14] New Mexico has no large approved plans of operation. *Id* at 22-23. Oregon has only two plans of operation larger than 1,000 acres, one for gold and one for diatomite. *Id.* at 30-33. However, we are not aware that

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[9] Equinox Gold Website: https://www.equinoxgold.com/ (accessed October 28, 2021); MP Materials Website: https://mpmaterials.com/what-we-do/ (accessed October 28, 2021).

[10] According to the U.S. Energy Information Administration, Lost Creek (Ur-Energy) and Smith Ranch-Highland (Cameco) – both *in situ* mines – were operating at the end of 2020. U.S. Energy Information Administration, *2020 Domestic Uranium Production Report* at 2, 7 (May 2021), available at https://www.eia.gov/uranium/production/annual/pdf/dupr2020.pdf. However, according to information at the Cameco website, Smith Ranch-Highland is ***not*** operating currently. *See https://www.cameco.com/businesses/uranium-operations/suspended/smith-ranch-highland* (accessed October 28, 2021).

[11] The report includes a link to a map showing the location of Arizona copper mines. *See* https://arcg.is/1844Hi0.

[12] *See* https://www.centerragold.com/operations/thompson-creek-metals/thompson-creek/history (accessed October 28, 2021).

[13] Hecla Mining Company, 2020 Annual Report at 23, available at https://s1.q4cdn.com/702437152/files/doc_financials/2020/ar/HMC_2020_AnnualReport.pdf.

[14] Sibanye-Stillwater, 2020 Mineral Resources and Mineral Reserves Report at 32, available at https://www.sibanyestillwater.com/sustainability/reports-policies/.

these or any other major hardrock mines are operating in Oregon. Utah has one large plan of operations, for copper. *Id.* at 33-36. Washington has none. *Id.* at 36-37.

In contrast, in Nevada there are ***26 approved plans of operation*** for gold projects larger than 1,000 acres, 1 large plan of operation each for molybdenum and copper, and another 26 approved plans that cover between 200 and 1000 acres for gold. *Id.* at 23-30. Nevada also has the only operating lithium mine in the U.S. (on private lands), and at least two large lithium projects on public lands (Thacker Pass (Lithium Nevada) and Rhyolite Ridge (ioneer)) under development but not yet approved by BLM.

As these data show, major mineral activity on federal lands in Nevada dwarfs that of every other public land state. While states like Arizona have major mines, they are for the most part on private lands and would not pay royalties. Next to Nevada, Wyoming has the most mineral activity on federal lands (measured by size of approved plans of operation). Most of these operations are bentonite; Wyoming's major uranium projects are not operating (with one exception). Other states have several large approved plans of operation, but only a handful have operating mines. These facts suggest strongly that Nevada share of a federal royalty would be more than 60%.

Cortez-Masto Question 2: In your testimony you talked about other developed countries like Australia and Canada, and how the U.S. compares in terms of what you referred to as "the total economic take" of a government.

a. Can you elaborate on that? I am interested in how you can compare different systems, with different tax and royalty structures, and how a federal royalty in the U.S. would change things.

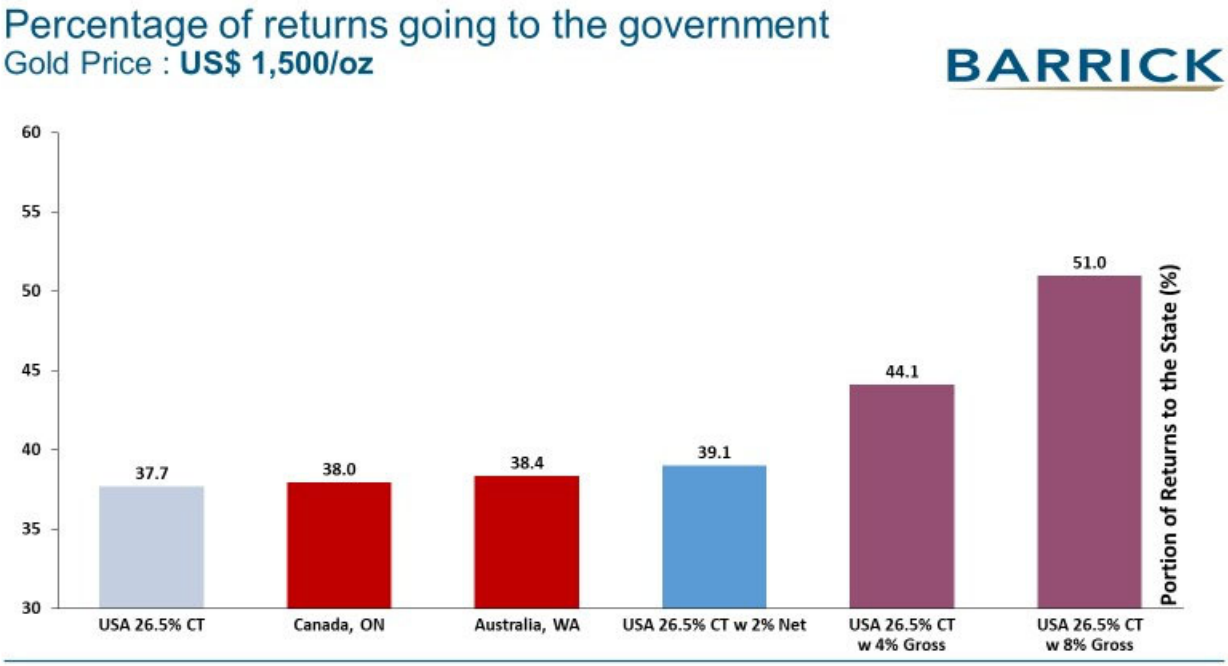
b. Would the House's mining reform proposal create a disadvantage to the U.S. when comparing these other systems and would it discourage domestic mining investment?

Response:

Mines pay many taxes and fees to various levels of government. Mineral economists have developed an approach that allows the total tax burden (all forms of taxes, fees, royalties, duties, etc.) in one jurisdiction to be compared to that in others. A computer model is developed of a typical mine's cash flow over the life of the project that reflects estimated revenues and costs. Then all the significant taxes, royalties and fees are added in. Using the model it is then possible to calculate the total effective tax rate – a measure of the after-cost "profit" that goes to government. This is done for each jurisdiction of interest and provides a standardized way in which to compare the tax burden in different countries. Knowing the total tax burden is important because if only one type of tax is compared (such as royalty rates), it does not give the whole picture. For example, a country that has very low royalties may have a high income tax.

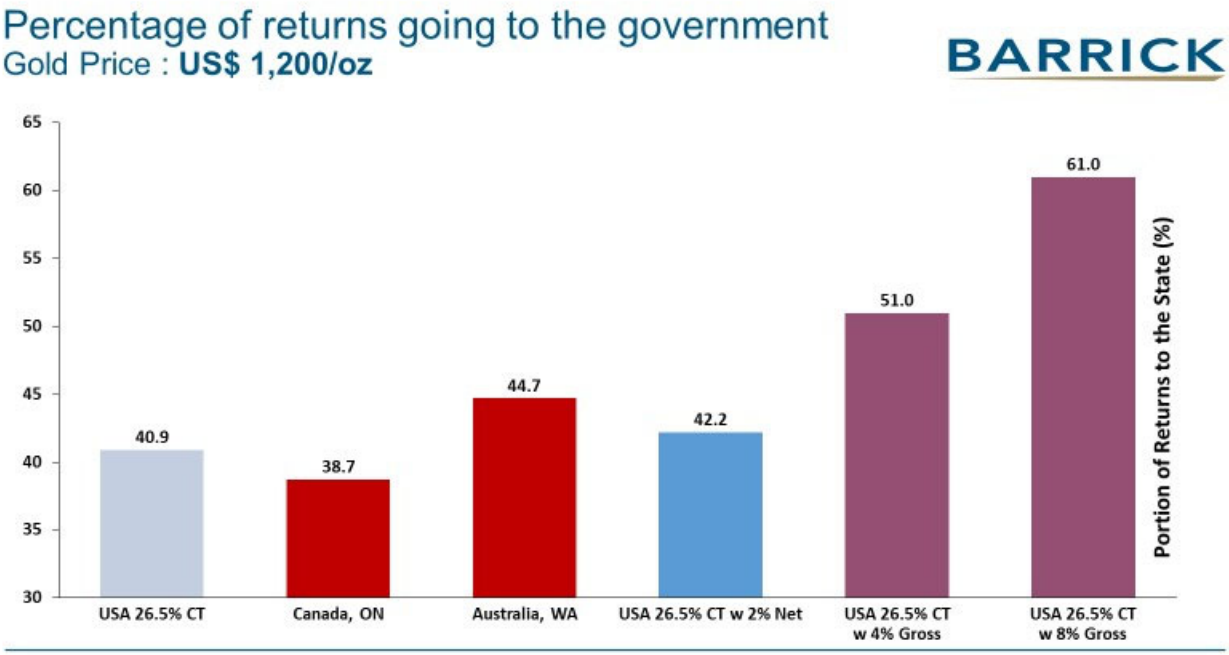
To evaluate the impacts of a federal royalty, we created a "synthetic" or "hypothetical" mine in order to generate an apples-to-apples comparison between jurisdictions. We looked at: (1) what would be the total economic take (total tax and royalty burden or total effective tax rate) if that mine were in Australia, Canada, or the U.S. under current conditions (i.e., no royalty in the U.S.); and (2) how different federal royalty scenarios would change the comparative picture. This "synthetic mine" is a Tier 1 mine, which is a gold mine that has more than 10 years of mine life, at least 500,000 ounces of annual

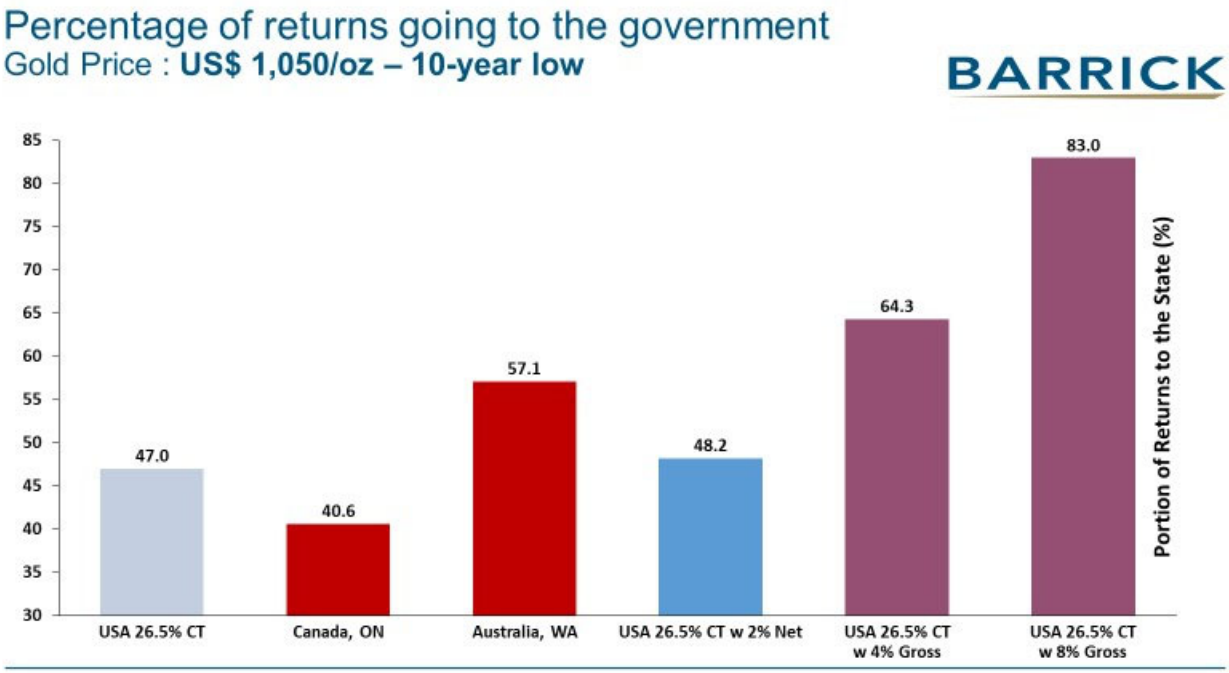
gold production, and low cash costs. Our Carlin mine, which you visited recently, is a Tier 1 mine. A Tier 1 mine is a very economically robust operation, hence it should be recognized that the impacts of U.S. royalties would be even greater than the chart illustrates on less productive mine operations. The graphs below show the results of our analysis at three different gold prices: $1,500/oz, representing long term consensus, $1,200/oz., a common price during the last decade, and $1,050/oz., the low for the decade.



The first three bars on this chart show total economic take of the U.S., Canada, and Australia under current conditions[15] and assuming a $1,500 oz. gold price, which is near the long-term consensus price. As reflected by the fourth bar, the 2% net royalty that Barrick has supported increases the US take to about 39%, which is slightly higher but still competitive with Canada and Australia. The fifth bar shows that with a 4% gross royalty, currently proposed by the House for existing mines on federal lands, the total U.S. take increases to about 44%, significantly higher than Australia and Canada. And finally, the last bar shows the U.S. total take at an 8% gross royalty, currently proposed by the House for new mines on federal lands. With an 8% gross royalty, the total take for the U.S. would exceed 50%.

[15] Note that we have assumed the corporate income tax rate of 26.5% given that the tax rate is in flux. We believe this reflects a reasonable historical average and represents at least one of the proposals we understand to be currently before the Congress.





As two charts above demonstrate, as the gold price drops, the percentage of government take in jurisdictions with a net royalty such as Canada (Ontario) stays fairly constant, demonstrating the wisdom of that approach. Jurisdictions with a gross royalty, such as the state of Western Australia, begin to take a much larger share. In comparison, the U.S. (Nevada), assuming a new 2 percent net royalty, falls somewhere in the middle, but is nevertheless no longer competitive with Canada.[16] As the $1,050 gold

[16] The Nevada "mine" does not move in sync with Canada because of the new Nevada mining excise tax, described above in my response to Chairman Manchin's questions.

chart above compellingly demonstrates, the U.S. under the House royalty proposal is punishing. Even our robust synthetic mine would be giving between 64% and 83% of revenue to the U.S. if gold prices were to drop to 2015 levels of $1050/oz.

Cortez-Masto Question 3: Can you help us understand the processing costs in hardrock mining and how that differs from production of other natural resources like oil, gas, coal, and even other commodities?

Response:

As I described above in my response to Senator Barrasso's first question above, coal, oil, and gas are marketed in the form they are removed from the mine or well (or with at most minimal processing). Hardrock minerals almost never can be marketed at the mine mouth. Gold ore removed from our mines is essentially dirt; the gold particles are invisible and microscopic. There are few places to sell that rock both because of transportation costs and processing capacity. To produce a gold dore bar that can be marketed, we have to invest billions of dollars to design and build facilities that crush and mill the rock, remove naturally-occurring substances that interfere with gold recovery, leach the gold from the ore, concentrate the gold and finally, refine it into a gold dore bar.

Designing these facilities begins during the exploration process. We perform various tests to determine how the ore we are finding can be extracted from the rock. From this information we perform laboratory or bench-scale tests to determine the optimal extraction process. Then, through detailed and expensive engineering studies we design industrial scale extraction facilities. The facilities are a combination of physical and chemical processes designed to extract the gold and they are usually customized to the type of ore we will be mining. Gold ore from different mines – and even from different portions of a single mine – is not homogeneous. Often companies build separate recovery plants using different technologies to process the ore from one mine.

Our processing facilities are also designed to the highest environmental standards. It is not unusual for 50% of the cost of these facilities to be for environmental controls. At our Carlin Complex, which you, your staff, and committee staff recently visited, we have several processing facilities. The cost of those facilities would be about $4 billion in 2021 dollars. Our total initial initial investment at the Carlin Complex, including the mines and processing facilities, was $7.5 billion.

After ore is brought from the mine and is ready for extraction ("Run-of-Mine Ore"), it goes through our processing facility at considerable expense per ounce of gold. What we do in our processing facilities is analogous to what happens to a barrel of crude oil shipped to a refinery through a pipeline or by truck. Yet, the oil producer does not pay royalty on the enhanced value it creates by paying to have the oil refined. The House proposal and indeed any true gross royalty proposal would require us to pay royalty not on the value of the product of the mine, but on the value created by our extraction and processing. It should make no difference that the oil refinery is remote from the wellhead, while our analogous facilities must be at the mine site.

To cite another example particularly relevant to Nevada, lithium ore also requires significant processing. According to Lithium Nevada, which is building the Thacker Pass lithium project, 85% of operational costs and more than 85% of capital investment are directed at processing the ore into a saleable lithium product. Less than 15% of capital investment and operating costs are devoted to mining, including

extraction, ore stockpile management, waste rock management, and separating waste rock from ore that can be processed.

To summarize, unlike oil, gas, and coal, most hardrock mines have substantial processing costs that the carbon minerals do not. It is for this reason that I believe a hardrock royalty must be a net royalty. Unlike a gross royalty, a net royalty is based on ability to pay because it takes into account revenues less the many costs, including processing and environmental costs, that are unique to each mine. While I believe that a net royalty is the better approach, if a gross proceeds royalty is assessed, rates can be set taking into account the general situation for mines that produce similar types of minerals.

Cortez-Masto Question 4: Would you please expand upon the royalties applied to oil and gas production from federal lands and whether those are "gross" royalties, or "net" royalties with certain costs deductible in determining the "value" for purpose of calculating the royalty payments?

Response:

Please see my response above to Senator Barrasso's first question for more detail on this question. Federal oil and gas royalties are in fact not true gross royalties. By regulation there are authorized deductions designed to produce a royalty on the value of the oil or gas at the wellhead, net of the costs incurred for processing or transportation to markets. Processing costs to extract natural gas liquids and other products are deductible in calculating a royalty on gas. 30 C.F.R. §§ 1206.158-.159. Transportation costs from the wells to the point of sale are deductible in calculating royalty on both oil and gas. 30 C.F.R. §§ 1206.110 (oil), 1206.156-.157 (gas). In the same way, the enormous costs of processing hardrock minerals should be deductible in calculating any royalty. In the hardrock mining context, the ore as it is removed from the mine (run-of-mine ore) would be analogous to oil, gas, and coal at the wellhead or mine mouth. Without the processing to follow, the hardrock ore would have essentially no market value; it could not be marketed in that form. It is our investments in processing that makes the difference.

Cortez-Masto Question 5: One criticism of net royalties is that they can be difficult for the government to administer and audit, and that the cost deductions create opportunities to cheat. If a net proceeds royalty were to be enacted, how can the federal government be certain that it is receiving its fair share?

Response:

It is not overly difficult for governments to calculate and monitor a net proceeds royalty. Most of the "deductions" in a net royalty scheme are the same as or similar to deductions used to calculate income tax. One need only look to the many hundreds of mines in Australia, Canada, Chile and Peru that pay net proceeds-types of royalties to see that net royalties can be practically and effectively administered. If developing countries like Peru can effectively apply net proceeds royalty, the U.S. with its well-developed tax administration can too.

Nevada has successfully managed the Net Proceeds of Mineral Tax, with its deductions, for decades. The deductions are transparent and auditable. The Federal government already administers and audits oil and gas royalties, which allow deductions for processing costs. Finally, on the issue of cheating, Barrick is proud to be a part of the IRS's Compliance Assurance Program real-time audit, in which the IRS

reviews our books and the roll-up to our taxes every year on a real time basis. Our financial records are and have been completely transparent to the U.S. Government for many years now.

Cortez-Masto Question 6: What tools are available to federal land managers to protect special sites or resources from potential adverse effects of mining?

Response:

First, it should be recognized that our most significant sites and resources – national parks, monuments, wilderness areas and other designated lands – are already closed to the location of new mining claims and mines. Exploration and mining can occur only on lands that are open to location under the mining laws and managed by the Bureau of Land Management ("BLM") and U.S. Forest Service. Those agencies have sufficient tools to protect special sites and resources on such lands.

BLM and the U.S. Forest Service have each adopted regulations that govern the surface impacts of hardrock mining on federal lands and resources. These regulations have been in place now for almost forty years and the agencies and the industry have considerable experience in exploration, mining, and reclamation under these rules. A 1999 report by the National Academy of Sciences found that the regulations were generally effective and recommended a few changes which have been implemented in the BLM regulations. National Research Council, *Hardrock Mining on Federal Lands*, (1999).

The agencies have also developed handbooks and guidance documents that supplement the regulations with detailed instructions on collecting and analyzing baseline data, predicting potential impacts, and designing, operating, and closing mine facilities to reduce surface impacts. These guidance documents are being constantly updated to incorporate changing regulations and to account for new technology.

Both Forest Service and BLM rules require that mineral activities comply with federal and state environmental laws and regulations. All mines must meet air and water quality standards, including state standards applicable to ground water. Mines that cannot meet these standards will not be approved.

Mines are also subject to federal laws that protect cultural resources, including the National Historic Preservation Act, and wildlife, such as the Endangered Species Act. Mining activities must comply with these statutes to the same degree as any other use of federal land. In practice, this means that mines may be required to avoid cultural sites or mitigate for adverse effects to cultural resources and avoid habitat for protected species and/or provide compensatory mitigation.

Federal decisions to approve mining plans are also subject to the requirements of NEPA. The permitting agency must identify, evaluate and disclose the potential impacts of a mining operation in an EIS or an environmental assessment (EA) and release that document for public review and comment. NEPA also requires that agencies identify potential measures to mitigate environmental impacts, and the surface management regulations give the agencies authority to require that those mitigation measures be implemented. Mitigation measures may include changes to mine design or schedule, relocation or reconfiguration of mine facilities, timing of mine operations, replacement or restoration of impacted resources, or compensation for impacts. In my response above to Senator Barrasso's second question, I described the example of BLM's 2015 amendments to numerous land-use plans to protect the Greater Sage Grouse, including mitigation and compensation requirements for activities on lands open to

mining, and proposed withdrawal from mining entry of millions of acres of federal lands in Nevada and across the West.

Finally, Congress has given federal agencies (through the Secretary of the Interior) the authority to withdraw lands from entry under the Mining Law where the Secretary determines that no exploration or mining should occur. The agencies can use their land use planning processes to identify lands that should be withdrawn from entry under the mining laws. FLPMA Section 302(b) specifies procedures for lands to be withdrawn from mining claim location for up to 20 years. Tens of millions of acres have been withdrawn from mining to protect scenic, recreational, scientific, cultural, historic and other resources. Together with the congressional designated withdrawals (parks and wilderness areas), almost a third of all public lands nationally are presently closed to mining. In Nevada, according to the Nevada Division of Minerals, as of 2018, 15.6 million acres of Nevada federal lands have been withdrawn from location under the Mining Law—more than 22% of all lands in Nevada. The Secretary is currently considering the withdrawal of an additional 2.8 million acres in Nevada for habitat for the Greater Sage Grouse.

Because agencies must acknowledge and protect "valid existing rights," a federal land manager may not, as a matter of discretion, deny approval of a mining plan on lands open to mining that otherwise complies with all applicable laws and regulations. This is an important legal and policy limitation because agencies should not be able to withhold approval of a mine on lands that are open under the Mining Law after the miner has invested years and millions – often hundreds of millions – of dollars in exploration, design and engineering and permitting to bring the mine to the stage where a final plan of operations has been submitted for agency approval. Any arguments against the appropriateness of an area for mining could (and should) have been made long before that point in time.

Questions from Senator Hyde-Smith

Hyde-Smith Question 1: How would a gross royalty on new or existing projects, as well as a new dirt tax, affect how your company approaches decisions related to current operations, as well as new or prospective projects?

Response:

A new royalty or any other financial burden on existing operations self-evidently changes the financial assumptions on which the investment was made, and negatively affects the return on investment. That is why, though Barrick has long supported a reasonable net royalty, we also believe that it should only be prospective and should not apply to existing investment. If the royalty is prospective, the miner can take it into account in its investment decision. If that new cost is imposed on existing projects, it automatically will reduce the size and longevity of an existing deposit by making the marginal ounces uneconomic. As I explained above in my response to Senator Barrasso's first question, the ore boundary is fluid, and moves based on costs, including royalties. Existing mines were rationalized based on a set of known or projected costs that did not include a royalty owed to the federal government.

A royalty of any kind (especially a gross royalty) does more than shrink the existing orebody. It also disincentivizes future growth. Precious metals orebodies are not just discovered as they may have been in the 19th Century, when prospectors often could find a visible outcrop of minerals on the surface.

Discoveries of gold, copper, lithium, and other hardrock minerals today are made by the application of technology and investment. Gold ore in place has value only to the miner willing to take risks and invest in bringing the mine into being. In our current operations, we are constantly making decisions about what investments to make going forward. Even on existing mines and mills we are making capital decisions, such as whether to continue exploration drilling in a certain area, whether to construct additional underground infrastructure to make additional material accessible, whether to expand an open pit by removing overburden, whether to modify a processing plant to accommodate changed chemical conditions in the orebody, or whether to replace expensive processing components that have worn out or otherwise need replacement. An affirmative decision to make any of these investments extends the life of the mine, creates and preserves jobs and generates tax revenue. Decisions not to invest further have the opposite effect. The higher the rate of any additional royalty or other burden, the earlier the mine shutdown.

Hyde-Smith Question 2: In her testimony, Ms. Sweeney described total royalties, taxes and other fees paid by mining companies as "government take," and that the current government take in the U.S. is on average above 40% or more, similar to other major mineral producing countries. A punitive royalty and dirt tax would most certainly push the U.S. well above the upper limit of that range, putting the U.S. at a significant disadvantage and discourage mining investment. How much of Nevada Gold Mines and planned future operations are on federal land?

Response:

About 50% of our current operations are on unpatented mining claims. Many of the rich gold deposits identified to date in Northern Nevada occur along the path of the transcontinental railroad that was constructed in the 19th Century. In order to encourage and subsidize railroad construction, the federal government granted railroads every other section of land along the rail corridor for miles on either side of the corridor. Much of Nevada Gold Mines' private lands are former railroad sections.

Going forward, and looking to the new projects in our development pipeline, it is clear that a much larger portion of Nevada Gold Mines' future production will be from federal lands.

a. Can you discuss the real-world impacts of this to your U.S. operations?

Response:

As I explained above, and in responses Senator Barrasso's first question and Senator Cortez-Masto's second question, imposition of a federal royalty on an existing operation results in an earlier shutdown. With respect to future projects, they will be reduced in size at the margins, and some lower-grade deposits may not make the cut at all. Our company has been very public that our "hurdle rate-of-return" for capital investment – the minimum rate of return on Barrick investments – is a minimum of 15%. For many mining companies the hurdle rate-of-return is lower. There is a misconception that mining projects have massive rates of return. They don't. A project that has a 20% rate of return is a very good mine development prospect. It doesn't take much royalty to turn a project that otherwise had an acceptable rate-of-return into a marginal project or an unacceptable investment. From my thirty plus years in this industry, I can tell you that we are constantly making decisions about capital allocation. While we

cannot move our existing mines themselves quickly, we can and do move capital investment to favorable projects and jurisdictions very quickly.

b. Would the new royalties and fees in the House reconciliation bill disproportionately affect states with higher amounts of federal land?

Response:

Yes. Please see my answer above to Senator Cortez-Masto's first question. Any federal royalty will have a greater impact in Nevada than in any other state.

Hyde-Smith Question 3: Can you explain the processing costs in hardrock mining and how that differs from production of other natural resources like oil, gas, coal, and even other commodities?

Response:

Please see my responses above to Senator Cortez-Masto's third and fourth questions, and also to Senator Barrasso's first question. Oil, gas, and coal are valued for royalty purposes at the wellhead or mine mouth, and Interior regulations allow deductions for processing costs (and transportation costs). The purpose of these deductions is to approximate mineral value at the wellhead or mine mouth. Hardrock minerals are fundamentally different; in almost all cases, they cannot be valued at the mine mouth or have very low value at the mine mouth, and they require significant processing to create a valuable product. A federal royalty for hardrock minerals also must allow appropriate deductions for processing costs.

Hyde-Smith Question 4: How would Nevada Gold Mines be able to further contribute to mine reclamation if Congress would enact Good Samaritan legislation?

Response:

Barrick and our joint venture partner Newmont have a long history of partnering with organizations and communities to achieve positive environmental outcomes. In Nevada Barrick and Newmont have partnered extensively with Trout Unlimited on stream restoration projects. We have funded abandoned mine closures undertaken by the Nevada Department of Minerals. In the Dominican Republic Barrick and Newmont have a joint venture that has developed a mine in partnership with that country's government, and in the process have remediated an environmental mess left by an historic operation. That project would not have been possible in the U.S. under our existing legal framework. Mining companies will not engage directly in the U.S. at major abandoned mine sites because of strict, joint and several liability pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) and in some cases the Clean Water Act. Good Samaritan legislation would enable us to directly deal with significant abandoned mine issues, and in some cases even to remine minerals left behind and remedy environmental degradation in the process. The expertise and technology to address abandoned mine sites is found in the hardrock mining industry, but the industry is kept away from any significant involvement because of these major liability concerns. With our extensive experience in mine reclamation, nobody would be better suited to partner with communities and organizations to address abandoned mine land issues.

Hyde-Smith Question 5: In Nevada, the state legislature recently passed an excise tax legislation on mining operations. The new excise tax brings millions of dollars annually to state and local communities to support school and education services. Will the imposition of a new federal gross royalty and dirt tax impact the income base that states like Nevada use to calculate and levy taxes?

Response:

Yes. By imposing additional burdens on operations, the federal government is in effect shrinking the pie, and reducing the amount that the state would otherwise receive through its taxes. See my responses above to Senator Barrasso's first question and Senator Cortez-Masto's third question for further explanation.