United States Government Accountability Office
Washington, DC 20548

July 21, 2008

The Honorable Harry Reid
Majority Leader
United States Senate

The Honorable Jeff Bingaman
Chairman
Committee on Energy and Natural Resources
United States Senate

The Honorable Nick J. Rahall II
Chairman
Committee on Natural Resources
House of Representatives

Subject: *Hardrock Mining: Information on State Royalties and Trends in Mineral Imports and Exports*

Since the passage of the General Mining Act of 1872, miners have extracted billions of dollars worth of gold, silver, copper, and other hardrock (locatable) minerals from federal lands without having to pay a royalty.[1] Congress is now considering amending the General Mining Act to, among other things, assess a royalty to ensure that the public is compensated for hardrock minerals extracted from federal lands, as more recently enacted laws require for oil, gas, and other minerals. The vast majority of the federal lands where hardrock mining operations occur are in 12 western states, including Alaska (hereafter referred to as the 12 western states).[2,3]

These western states have statutes governing hardrock mining operations on lands in their state. However, unlike the federal government, these states charge royalties that allow them to share in the proceeds from hardrock minerals extracted from state-owned

[1]Under U.S. mining laws, minerals are classified as locatable, leasable, or saleable. Locatable minerals include those minerals that are not leasable or saleable, for example, copper, lead, zinc, magnesium, gold, silver, and uranium. Only locatable minerals continue to be "claimed" under the Mining Act. For the purposes of this report, we use the term "hardrock minerals" as a synonym for "locatable minerals." Leasable minerals include, for example, oil, gas, and coal. The Mineral Leasing Act of 1920, 41 Stat. 437 (codified at 30 U.S.C. § 181) created a leasing system for coal, gas, oil and other fuels, and chemical minerals. Saleable minerals include, for example, common sand, stone, and gravel. In 1955, the Multiple Use Mining Act of 1955, 69 Stat. 367 (codified at 30 U.S.C. § 601) removed common varieties of sand, stone, and gravel from development under the Mining Act.
[2]Mining operations consist of three primary stages—exploration, mining, and mineral processing.
[3]The 11 other western states are Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

lands. In addition, most of these states charge taxes, such as severance taxes, mine license taxes, or resource excise taxes, on hardrock mining operations that occur on private, state, and federal lands.[4] For the purposes of this report, we use the term "functional royalty" to refer to taxes that function like a royalty in that they permit the state to share in the value of the mine's production. Although states may use similar names for functional royalties they assess, there can be wide variations in their forms and rates. To aid in the understanding of royalties, including functional royalties, the royalties are grouped as follows:

- *Unit-based* is typically assessed as a dollar rate per quantity or weight of mineral produced or extracted, and does not allow for deductions of mining costs.

- *Gross revenue* is typically assessed as a percentage of the value of the mineral extracted and does not allow for deductions of mining costs.

- *Net smelter returns* is assessed as a percentage of the value of the mineral, but with deductions allowed for costs associated with transporting and processing the mineral (typically referred to as mill, smelter, or treatment costs); however, costs associated with extraction of the mineral are not deductible.

- *Net proceeds* is assessed as a percentage of the net proceeds (or net profit) of the sale of the mineral with deductions for a broad set of mining costs. The particular deductions allowed vary widely from state to state, but may include extraction costs, processing costs, transportation costs, and administrative costs, such as for capital, marketing, and insurance.

Hardrock minerals play an important role in the U.S. economy, contributing to multiple industries, including transportation, defense, aerospace, electronics, energy, agriculture, construction, and health care. For example, copper is used extensively in building construction (in products like electrical wire, water pipes, and plumbing fixtures) and in consumer electronic products. The Department of the Interior's (Interior) U.S. Geological Survey (USGS) annually calculates U.S. "net import reliance as a percentage of U.S. apparent consumption" (hereafter referred to as "net import reliance") for nonfuel minerals using production data from annual USGS mineral industry surveys and import and export data from other sources.[5,6] A net import reliance of 50 for a particular mineral would indicate that 50 percent of the domestic consumption of that mineral was supplied through net imports. A net import reliance of less than zero indicates that the United States was a net exporter of that particular mineral in that year. According to

[4]A severance tax is generally a tax or fee that a state imposes on the extraction of natural resources, including hardrock minerals; a mine license tax generally is a tax assessed in conjunction with a mine license for the privilege of mining; and a resources excise tax generally is a tax a state imposes on the extracting or processing of natural resources.
[5]Nonfuel minerals generally include all minerals except those that can be used for fuel, such as coal, oil, and gas. Most hardrock minerals are also nonfuel minerals.
[6]USGS calculates apparent consumption as production plus imports minus exports with adjustments for changes in government and industry stocks.

USGS, in recent years the United States has relied heavily on foreign sources for raw and processed minerals, including many hardrock minerals.

In this context, you asked us to provide information on (1) which types of royalties the 12 western states assess on hardrock mining operations and (2) trends on imports and exports of hardrock minerals. In addition, you asked us to provide data on hardrock mining operations on federal lands that the federal government either does not routinely collect or consistently maintain. This information is presented in enclosure IV. In our March 2008 testimony before the Senate Committee on Energy and Natural Resources, we provided information on federal expenditures to clean up abandoned hardrock mines, the estimated number of abandoned mine lands, and the value and coverage of financial assurances operators use to guarantee reclamation costs on Bureau of Land Management (BLM) land.[7]

To identify the types of royalties, including functional royalties, that the 12 western states assess on hardrock mining operations, we reviewed state statutes and regulations pertaining to royalties on hardrock mining operations. To aid in understanding general patterns in state royalties, we consulted academic and industry sources and then we categorized each royalty according to how it is assessed. To identify import and export trends, we interviewed officials from BLM and the U.S. Department of Agriculture's Forest Service to identify those hardrock minerals commonly produced on federal land. We also reviewed reports on hardrock mining from the Congressional Research Service (CRS), GAO, and the National Academy of Sciences and identified additional minerals that are frequently referred to as examples of hardrock minerals. Through these efforts, we identified the following 15 hardrock minerals for our review: barite, copper, fluorspar, gold, gypsum, lead, magnesium compounds, magnesium metal, nickel, palladium, perlite, platinum, silver, tungsten, and zinc. To determine trends in U.S. imports and exports of these 15 minerals, we analyzed USGS's net import reliance data for 1975 through 2007. In addition, through interviews with BLM and Forest Service and the review of relevant agency documents and reports, we identified information on hardrock mining operations on federal lands that is not collected or consistently maintained by the federal government, including data on the amount of hardrock minerals being produced on federal land and the amount of hardrock minerals remaining and the total acreage of federal lands withdrawn from hardrock mining operations.

We conducted this performance audit from November 2007 through July 2008, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. Enclosure I provides more detailed information on our scope and methodology.

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[7]GAO, *Hardrock Mining: Information on Abandoned Mines and Value and Coverage of Financial Assurances on BLM Land,* GAO-08-574T (Washington, D.C.: Mar. 12, 2008).

In Summary

The 12 western states assess multiple types of royalties, including functional royalties, on mining operations, which often differ depending on land ownership and the mineral being extracted; in addition, each royalty can be governed by different sets of exclusions, deductions, and limitations. For example, for private mining operations conducted on federal, state, or private land, Arizona assesses a net proceeds functional royalty of 1.25 percent on gold mining operations, and an additional gross revenue royalty of at least 2 percent for gold mining operations on state lands. In addition, 9 of the 12 states assess different types of royalties for different types of minerals. For example, Wyoming employs three different functional royalties for all lands: (1) net smelter returns for uranium, (2) a different net smelter returns for trona—a mineral used in the production of glass, and (3) gross revenue for all other minerals. Finally, the royalties the states assess often differ in the allowable exclusions, deductions, and limitations. For example, in Colorado, a functional royalty on metallic mining excludes gross incomes below $19 million, whereas in Montana a functional royalty on metallic mining is applied on all mining operations after the first $250,000 of revenue. The actual amount assessed for a particular mine may depend not only on the type of royalty, its rate, and exclusions, but also on such factors as the mineral's processing requirements, mineral markets, mine efficiency, and mine location relative to markets, among other factors. Enclosure II provides information on royalties, including functional royalties, that the 12 western states assess.

Based upon USGS data on 15 common hardrock minerals, over the past 32 years, the degree to which the United States has relied on imported minerals to satisfy its domestic consumption has held relatively constant for 4 of those minerals (fluorspar, gypsum, palladium, and platinum); fluctuated for 5 (copper, lead, silver, tungsten, and zinc); increased for 4 (barite, magnesium compounds, magnesium metal, and perlite); and decreased for 2 (gold and nickel.) Moreover, in some years, the United States was a net exporter of some hardrock minerals. Over the period, for example, the United States has

- consistently relied on imports to provide between 77 percent and 100 percent of its fluorspar needs—a key ingredient in the manufacture of aluminum, gasoline, steel, and uranium fuel;

- fluctuated in its reliance on imports to meet its need for copper, importing copper in most years and providing net exports in 1975 and 1991;

- decreased its reliance on imports of nickel from a high of 80 percent in 1978 to a estimated low of 17 percent in 2007;

- consistently been a net exporter of gold between 1982 and 2003; and

- been a net exporter of magnesium metal until 1997, when the United States began to import magnesium metal.

Enclosure III provides information on trends in U.S. imports and exports of 15 common hardrock minerals.

Agency Comments
We provided a draft of this report to the Secretaries of Agriculture and of the Interior for review and comment. The Department of Agriculture told us in an e-mail that it had no comments on our report. The Department of the Interior provided technical comments, which we incorporated as appropriate.

As agreed with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution for 30 days from the report date. At that time, we will send copies of this report to interested congressional committees and the Secretaries of Agriculture and of the Interior, and other interested parties. We will also make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at http://www.gao.gov.

If you or your staffs have any questions about this report, please contact Robin M. Nazzaro at (202) 512-3841 or nazzaror@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are included in enclosure V.

Robin M. Nazzaro

Robin M. Nazzaro
Director, Natural Resources
and the Environment

Enclosure I: Objectives, Scope, and Methodology

This enclosure details the scope of our review and the methods we used to obtain information on (1) which types of royalties the 12 western states assess on hardrock mining operations and (2) trends on imports and exports of hardrock minerals. In addition, we identified data on hardrock mining operations on federal lands that the federal government either does not collect or consistently maintain.

To identify the royalties, including functional royalties (taxes that function like a royalty), that 12 western states (Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming) assess on hardrock mining operations,[8] we reviewed state statutes and regulations authorizing royalties on state, private, and federal lands. States charge royalties on the hardrock mining operations on state lands and taxes that function like a royalty, which we refer to as functional royalties, on the hardrock mining operations on private, state, and federal lands. For each royalty that we identified, we recorded the type of minerals assessed; the land ownership on which the royalty applied; the current royalty rate; the base on which the rate is applied; the deductions, limitations, and exclusions allowed; and other determinants of how the royalty is assessed. We contacted state officials responsible for managing state lands in five states (Colorado, Idaho, Nevada, Utah, and Washington) when we needed additional information or clarification. We characterized the royalty rate as (1) uniform, if the rate was the same for all mines of the same mineral type or size; (2) progressive, if the rate increased as production or revenue increased; or (3) case by case, if the rate was determined individually for each lease.

To aid in understanding the types of royalties, including functional royalties, in western states, we reviewed reports by GAO, the Congressional Research Service (CRS), the World Bank, and other experts. Because there are no broadly accepted definitions for the different types of royalties, we also interviewed private sector experts knowledgeable about hardrock mining royalties in the western United States and mineral-producing foreign countries. We then placed each of these royalties according to how the royalty is assessed and the allowable deductions, exclusions, and limitations in one of the following four categories: (1) *unit-based royalties* are typically assessed as a dollar rate per quantity or weight of mineral produced or extracted and do not allow for deductions of mining costs; (2) *gross revenue royalties* are typically assessed as a percentage of the value of the mineral extracted and do not allow for deductions of mining costs; (3) *net smelter returns royalties* are also assessed as a percentage of the value of the mineral, but with deductions allowed for costs associated with transporting and processing the mineral (typically referred to as mill, smelter, or treatment costs); and (4) *net proceeds royalties* are assessed as a percentage of the net proceeds (or net profit) of the sale of the mineral with deductions for a broad set of mining costs. In some cases, a royalty, including a functional royalty, generally fits into one of these four categories, but with some difference; we identified these royalties as *modified*. In addition, for those royalties that are lease-specific, a state statute typically delegates to a state board or

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[8]These states are the principal hardrock mining states and contain nearly all the land subject to the General Mining Act of 1872.

agency the authority to determine the royalty rate, the basis for assessing the royalty (base), deductions, exclusions, and limitations.

To select minerals to identify import and export trends, we interviewed officials from the Department of the Interior's (Interior) Bureau of Land Management (BLM) and the U.S. Department of Agriculture's Forest Service to identify those hardrock minerals commonly produced on federal land. We also reviewed reports on hardrock mining from CRS, GAO, and the National Academy of Sciences and identified additional minerals that are frequently referred to as hardrock minerals. Through this process, we identified the following 15 hardrock minerals for our review: barite, copper, fluorspar, gold, gypsum, lead, magnesium compounds, magnesium metal, nickel, palladium, perlite, platinum, silver, tungsten, and zinc.

To determine trends in U.S. imports and exports of these 15 hardrock minerals, we obtained data from U.S. Geological Survey (USGS) on net import reliance for 1975 through 2007. USGS mineral commodity specialists calculate net import reliance for a particular mineral as imports minus exports, with adjustments made for changes in government and industry stocks. Net import reliance is presented as a percentage of U.S. apparent consumption—calculated by USGS as production plus imports minus exports, with adjustments for changes in government and industry stocks. A net import reliance figure of 50 for a particular mineral would indicate that 50 percent of the domestic consumption of that mineral was supplied through net imports. A net import reliance figure of E represents a negative percentage, which indicates that the United States was a net exporter of that particular mineral in that year. We analyzed the USGS data to determine which hardrock minerals had remained relatively constant, experienced a decrease or increase in net import reliance, and had fluctuated over time.

In addition, we identified data on hardrock mining operations on federal lands that is not routinely collected or consistently maintained by the federal government through interviews with BLM and Forest Service officials and the review of relevant agency documents and reports. These data include the amount of hardrock minerals being produced on federal land and the amount of hardrock minerals remaining and the total acreage of federal lands withdrawn from hardrock mining operations.

We conducted this performance audit from November 2007 through July 2008, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Enclosure II: Types of Royalties Assessed on Hardrock Mining Operations

States charge royalties on the hardrock mining operations on state lands and taxes that function like a royalty, which we refer to as functional royalties, on the hardrock mining operations on private, state, and federal lands. Table 1 shows the types and definitions of royalties, including functional royalties, assessed and table 2 shows the types of functional royalties the western states assess on all lands, including federal, state and private lands, as well as the royalties assessed only on state lands.[9] Tables 3 through 14 provide information on the royalties and functional royalties, including rates, deductions, and limitations in Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

Table 1: Types of Royalties, Including Functional Royalties Assessed, Definition, and Formula Used

Type of royalty	Definition	Formula
Unit-based	These royalties are typically assessed as a dollar rate per quantity or weight of mineral produced or extracted, and do not allow for deductions of mining costs. While this type of royalty is often applied to minerals used in construction, it is sometimes used for hardrock minerals, such as those that are homogenous and typically sold in bulk; certain types of limestone and potash are examples of homogenous minerals.	Unit-based royalty payment = royalty rate x quantity or weight of mineral extracted
Gross revenue[a]	This type of royalty is typically assessed as a percentage of the value of the mineral extracted. To determine the value of the mineral, states often use the actual sales price used in a sales transaction. In other instances, however, a state may calculate the value of the mineral on the basis of a reference price, such as the price of the mineral traded in a commodities exchange like the New York Mercantile Exchange (NYMEX). We refer to these royalties as "gross revenue royalty with reference price." Generally, gross revenue royalties do not allow producers to deduct mining costs, although in some instances, some deductions are allowed for such costs as transportation from the mine to the point of sale. When the gross revenue is measured at the mine opening and the mineral must be processed prior to sale, the gross revenue royalty is similar or identical to a net smelter returns royalty.	Gross revenue royalty payment = royalty rate x production volume x price (price = sales price or reference price)
Net smelter returns	Like the gross revenue royalty, the net smelter returns royalty is assessed as a percentage of the value of the mineral, but with deductions allowed for costs associated with transporting and processing the mineral (typically referred to as mill, smelter, or treatment costs); however, costs associated with extraction of the mineral are not deductible. A common variation of the net smelter returns royalty provides a standard deduction rate (such as a percentage of the value of the mineral) intended to represent the processing costs.	Net smelter returns royalty payment = royalty rate x production volume x price – deductible costs (limited to processing and transportation costs) (price = sales price or reference price)

[9]The actual royalty amount owed for a particular mine may depend not only on the type of royalty and its rate, but also such factors as the processing requirements of the mineral, mineral markets, mine efficiency, mine location relative to markets, and others.

Type of royalty	Definition	Formula
Net proceeds	Unlike the other royalty types, the net proceeds royalty is assessed as a percentage of the net proceeds (or net profit) of the sale of the mineral with deductions for a broad set of mining costs. The particular deductions allowed vary widely from state to state but may include extraction costs, processing costs, transportation costs, and administrative costs, such as for capital, marketing, and insurance. If a particular mining operation is not profitable (e.g., if the operation was inefficient or the price of the mineral falls too low, so that revenues do not cover the deductible costs), there will be no royalty collected. A common variation of net proceeds royalty provides a standard deduction rate (such as a percentage of the value of the mineral) intended to represent the mining costs and any other allowed deductible costs.	Net proceeds royalty payment = royalty rate x production volume x price – deductible costs (including mining and other costs) (price = sales price or reference price)

Source: GAO analysis of state statutes, regulations, and expert literature.

[a]Gross revenue royalties are also sometimes referred to as gross receipts, gross income, or gross value of the products royalties.

Table 2: Types of Royalties, Including Functional Royalties, Assessed on Hardrock Mining Operations in Western States, by State

State	Unit-based	Gross revenue	Net smelter returns	Net proceeds
Alaska				
State lands				•
All lands				•
Arizona				
State lands		•		
All lands		•		•
California				
State lands		•		•
All lands	•			
Colorado				
State lands		•		•
All lands	•	•		
Idaho				
State lands		•	•	
All lands				•
Montana				
State lands		•	•	
All lands	•		•	
Nevada				
State lands				
All lands				•
New Mexico				
State lands		•	•	
All lands		•	•	•
Oregon				
State lands	•	•		
All lands				
Utah				
State lands		•		
All lands				•
Washington				
State lands		•		
All lands		•		
Wyoming				
State lands	•	•		
All lands		•	•	
Total				
State lands	**2**	**10**	**3**	**3**
All Lands	**3**	**5**	**3**	**6**

Source: GAO analysis of state statutes and regulations.

Note: Sales and use taxes are excluded. Royalties often apply only to specific minerals.

Table 3: Royalties, Including Functional Royalties, Assessed on Hardrock Mining Operations in Alaska

Alaska	Type of mines/minerals assessed	Type of royalty	Royalty rate	Royalty deductions and limitations
State lands				
Production royalty[a]	Minerals locatable under U.S. General Mining Act (excludes coal, sodium, potassium, oil, and gas) extracted from mining claims, leaseholds, or leases on state land	Modified net proceeds *Rate determination:* Statutory	*Rate type:* Uniform *Current rate:* 3% *Base:* Mine's net income	*Deductions:* Overhead and operating expenses, development costs properly charged to expense, depreciation, some taxes, losses sustained, among other things *Limitations:* Subject to exploration incentive credit
All lands				
Mining license tax[b]	Valuable metals, ores, minerals, asbestos, gypsum, coal, marketable earth, or stone (but not oil and gas) extracted from all mines (including that on federal, state, and private lands)	Modified net proceeds *Rate determination:* Statutory	*Rate type:* Progressive *Current rate:* 3% to 7% *Base:* Taxpayer's net income from all mines in state, less depletion; depletion is percentage that varies by mineral	*Deductions*: Overhead and operating expenses, development costs properly charged to expense, depreciation, some taxes, losses sustained, among other things *Limitations:* Exemption for first 3.5 years of new mine; subject to exploration incentive credit

Source: GAO analysis of state statutes and regulations.

[a]Alaska Stat. § 38.05. 185, § 38.05.212, § 27.30, § 43.65.; Alaska Admin. Code tit. 11, § 86, art. 9; Alaska Admin. Code tit. 11, § 86.760.

[b]Alaska Stat. §§ 43.65.010, 43.65.060 (definitions) 27.30.030; Alaska Admin. Code tit. 15, § 65.

Table 4: Royalties, Including Functional Royalties, Assessed on Hardrock Mining Operations in Arizona

Arizona	Type of mines/minerals assessed	Type of royalty	Royalty rate	Royalty deductions and limitations
State lands				
Royalty—minerals[a]	All metallic ore minerals and industrial minerals other than common variety minerals (e.g., stone, gravel, clay, sand) extracted from state lands	Gross revenue royalty with reference price *Rate determination:* Statute delegates determination to the State Land Commissioner, subject to statutory standard and minimum	*Rate type:* Case by case *Current rate:* Market royalty rate; at least 2% of gross value *Base:* Gross value determined by quantity and published prices (or, where unavailable, appraisal of fair market price). Where processing is performed after the mineral is extracted, the mineral shall be deemed produced and sold when the concentrate or cathode results from that processing.	*Deductions*: None specified in law or regulation *Limitations*: None identified in statute or regulation
All lands				
Severance tax—metallic minerals[b]	Metalliferous minerals ("copper, gold, silver, molybdenum or other metal or any ore or substance containing such metals including turquoise") extracted from federal, state or private land	Net proceeds royalty *Rate determination:* Statutory	*Rate type:* Uniform rate *Current rate*: 2.5% on net severance base (effectively 1.25% of net revenue) *Base:* Net severance base is 50% of difference between gross value of production and production costs. Gross value of production is the sale price (or price from last period, if no sale) multiplied by the number of recoverable units of the mineral.	*Deductions:* Production costs; generally the costs incurred in mining and processing until the point of sale (e.g., primary crusher, reduction works, or delivery of leach liquor to precipitation or solvent extraction facility); includes depreciation and property taxes; does not include severance tax and depletion, as well as corporate expenses and income tax (e.g., these are not deductible). *Limitations:* None identified in statute or regulation
Transaction privilege tax—mining classification[c]	Oil, natural gas, limestone, sand, gravel, or any other nonmetalliferous mineral product extracted from all lands; applies to persons in the business of mining, quarrying, or producing for sale, profit, or commercial use any nonmetalliferous mineral product.	Modified gross revenue royalty *Rate determination:* Statutory	*Rate type:* Uniform rate *Current rate*: 3-1/8% of the tax base *Base:* The tax base is the "gross proceeds of sales or gross income derived from the business," "the value of the entire product mined, quarried or produced for sale, profit or commercial use in this state." [d]	*Deductions:* Municipal and Indian sales taxes *Limitations:* None identified in statute or regulation

Source: GAO analysis of state statutes and regulations.

[a]Ariz. Rev. Stat. § 27-231 et seq.

[b]Ariz. Rev. Stat. § 42-5201 to -5204; gross proceeds or income from retail sales are not subject to the Severance Tax, but are taxed under the Transaction Privilege Tax.

[c]Ariz. Rev. Stat. §§ 42-5010, 42-5072, 42-5001-02; sales that are taxed under the retail classification (5 percent) are not subject to the mining classification tax.

[d]"Gross income" means the gross receipts of a taxpayer derived from trade, business, commerce, or sales of tangible personal property or services. "Gross proceeds of sales" means the value proceeding or accruing from the sale of tangible personal property without any deduction on account of the cost of property sold, expense of any kind, or losses. Retail tax does not apply to sale of precious metal bullion or monetized bullion.

Table 5: Royalties, Including Functional Royalties, Assessed on Hardrock Mining Operations in California

California	Type of mines/minerals assessed	Type of royalty	Royalty rate	Royalty deductions and limitations
State lands				
Production royalty[a]	Minerals except oil, gas, and other hydrocarbons extracted from leases and prospecting permits on state lands	Modified gross revenue royalty or net proceeds royalty *Rate determination:* Statute delegates choice of type and rate determination, subject to a minimum, to State Land Commission	*Rate type:* Case by case *Current rate:* (1) Preferential lease. At the option of the Commission, either (a) a royalty, in money or in kind, of not less than 10% of the gross value of all mineral production from the leased lands, or (b) a percentage, to be determined by the Commission, of the net profits derived from mineral extraction operations under the lease. (2) Negotiated leases. At the option of the Commission, "a royalty in money or in kind or a percentage of the net profits." (3) Competitively bid leases. Bidding on the basis of "cash bonus, royalty rate, net profit, or other single biddable factor." *Base:* Gross value or net profits (except for competitively bid leases) (the terms are not defined in the code or in regulations.)	*Deductions*: For gross value, approved charges associated with transporting or processing the state's share *Limitations*: None identified in statute or regulation
All lands				
Fee on gold and silver[b]	Gold and silver extracted from all lands	Unit-based royalty *Rate determination:* Statutory	*Rate type*: Uniform rate *Current rate*: $5 per ounce gold, $0.10 per ounce silver *Base:* Ounces of gold/silver mined	*Deductions:* None identified in statute or regulation *Limitations*: None identified in statute or regulation

Source: GAO analysis of state statutes and regulations.

[a]Cal. Pub. Res. Code § 6895-97; Royalties are also assessed on any minerals extracted under a prospecting permit (prior to a lease). The permit royalty is 20 percent.

[b]Cal. Pub. Res. Code § 2207(d)(4)(b)(i); Cal. Code Regs. tit. 14, § 3698.

Table 6: Royalties, Including Functional Royalties, Assessed on Hardrock Mining Operations in Colorado

Colorado	Type of mines/minerals assessed	Type of royalty	Royalty rate	Royalty deductions and limitations
State lands				
Royalty—general; gems, specimens, and placer minerals[a]	All minerals; includes construction materials, natural oil and gas, oil shale, coal, and geothermal resources	Gross revenue royalty *Rate determination:* Statute delegates to Board of Land Commissioners ("such royalty upon the product as the board may determine")	*Rate type:* Case by case; generally uniform for gems category *Current rate:* No general rate; gems, specimens, and placer minerals, 7% *Base*: Gross revenue of mineral at the mine	*Deductions:* None identified in statute or regulation *Limitations:* None identified in statute or regulation
Royalty—gold and silver[b]	Gold and silver extracted from state lands	Either gross revenue or net proceeds *Rate determination:* Statute delegates to Board of Land Commissioners ("such royalty upon the product as the board may determine")	*Rate type:* Uniform *Current rate:* 5% of gross value or 10% of net value *Base*: Either gross value or net value	*Deductions:* For gross value, none identified in statute or regulation; for net value, as specified in lease *Limitations:* None identified in statute or regulation
Royalty—uranium[c]	Uranium extracted from state lands	Gross revenue royalty *Rate determination:* Statute delegates to Board of Land Commissioners ("such royalty upon the product as the board may determine")	*Rate type:* Progressive *Current rate*: 5% to over 12% depending on the published price per pound of yellowcake (U3O8); rate increases as price increases *Base:* Gross value	*Deductions:* None identified in statute or regulation *Limitations:* None identified in statute or regulation
All lands				
Severance tax—metallic minerals[d]	Metallic minerals; all minerals except molybdenum, oil, gas, coal, oil shale, rock, sand, gravel, stone products, earths, limestone, carbon dioxide, dolomite extracted from all mines/lands	Modified gross revenue royalty[f] *Rate determination:* Statutory	*Rate type:* Uniform rate above income exclusion *Current rate:* 2.25% *Base*: Gross income above $19M / year Gross income is "the value of ore immediately after its removal from the mine, and does not include any value added subsequent to mining by any treatment processes."	*Deductions:* Any value added after mining (e.g., crushing, transportation, etc.) *Limitations:* Subject to credit for amount of the royalty, up to 50% of the severance tax
Severance tax—molybdenum[e]	Molybdenum ore extracted from all mines/lands	Unit-based royalty *Rate determination:* Statutory	*Rate type*: Uniform above exclusion *Current rate:* $0.05 per ton above 625,000 tons per quarter *Base:* Not applicable	*Deductions:* None identified in statute or regulation *Limitations:* None identified in statute or regulation

Source: GAO analysis of state statutes and regulations.

[a]Colo. Rev. Stat. § 36-1-113 and correspondence, State of Colorado, Mar. 27, 2008.

[b]Colo. Rev. Stat. § 36-1-113 and correspondence, State of Colorado, Mar. 27, 2008.

[c]Colo. Rev. Stat. § 36-1-113 and correspondence, State of Colorado, Mar. 27, 2008.

[d]Colo. Rev. Stat. § 39-29-102, 103.

[e]Colo. Rev. Stat. § 39-29-102, 104.

[f]The gross revenue royalty can function much like a net smelter returns royalty depending on how the gross revenue is measured and the deductions allowed.

Table 7: Royalties, Including Functional Royalties, Assessed on Hardrock Mining Operations in Idaho

Idaho	Type of mines/minerals assessed	Type of royalty	Royalty rate	Royalty deductions and limitations
State lands				
Royalty—general[a]	Phosphate, sodium, asbestos, gold, silver, lead, zinc, copper, antimony, geothermal resources, and all other minerals extracted from state lands	Net smelter returns royalty (most minerals) *Rate determination:* Statute delegates to Board of Land Commissioners subject to standard of "fair and in the interest of the state," with a statutory minimum of 2.5%	*Rate type:* Uniform *Current rate:* 5% *Base:* Value of mineral produced and saved; market value or actual price, whichever is higher; gross receipts earned or received at point of sale of first marketable minerals	*Deductions:* Reasonable transportation costs to closest feasible point of sale, smelter or treatment costs for material that requires additional processing to obtain marketable minerals after being mined and removed from leased land *Limitations:* Rental payments are credited toward the royalties
Royalty—riverbed mineral leases[b]	Gold extracted from submerged state lands	Gross revenue royalty *Rate determination:* Statute delegates to Board of Land Commissioners subject to standard of "fair and in the interest of the state," with a statutory minimum of 2.5%	*Rate type:* Uniform *Current rate:* 5% *Base:* Value of mineral produced and saved; market value or actual price, whichever is higher	*Deductions:* None identified in statute or regulation *Limitations:* Rental payments are credited toward the royalties
All lands				
Mining license tax[c]	Quartz, gold, silver, copper, lead, zinc, coal, phosphate, limestone, and other metals and minerals extracted from all mines	Net proceeds royalty *Rate determination:* Statutory	*Rate type:* Uniform *Current rate:* 1% *Base:* Net value of ore; taxpayer may select either of two methods of computation[d]	*Deductions:* (1) Internal Revenue Service method - deductions include costs of mining and processing, and depletion[e] (2) Interior method—deductions include costs of mining and transportation, and depletion *Limitations*: None identified in statute or regulation

Source: GAO analysis of state statutes and regulations.

[a]Idaho Code § 47-701 et seq; correspondence, State of Idaho Minerals Program, Mar. 25, 2008; at present, there is no production from hardrock mineral leases in Idaho.

[b]Idaho Code § 47-701 et seq. Idaho Admin. Code r. 20.03.05.001 et seq.; State of Idaho Minerals Program, Mar. 25, 2008.

[c]Idaho Code §§ 47-1201, 47-1202, 47-1205; State of Idaho Minerals Program, Mar. 25, 2008.

[d]Depletion is an accounting method used to reflect the actual physical reduction of natural resources in asset value; two-thirds of the tax is placed into an abandoned mine reclamation fund.

[e]Referencing an Internal Revenue Service method and an Interior method.

Table 8: Royalties, Including Functional Royalties, Assessed on Hardrock Mining Operations in Montana

Montana	Type of mines/minerals assessed	Type of royalty	Royalty rate	Royalty deductions and limitations
State Lands				
Royalty—Metalliferous Mines[a]	Metalliferous minerals (including gold, silver, lead, zinc, copper, platinum, iron, and all other metallic minerals) or gems (sapphires, rubies, and other stones commonly known as "precious stones" or "semiprecious stones")	Gross revenue or net smelter returns *Rate determination:* Statute requires royalty, and delegates to Board of Land Commissioners subject to standard of "a royalty which shall, together with other considerations to be paid by the mining lessee, constitute the full market value of the leasehold interest," and a minimum percentage.	*Rate type:* Case by case, within direction of statute *Current rate:* 5% to 8% of returns, but no less than 5% of the fair market value *Base:* Fair market value is defined as the value of the minerals or gems in raw crude form as recovered at the mine site. Returns are defined as the net amount received by the shipper after deducting reasonable transportation costs to the closest feasible point of sale, smelting charges and deductions, and other treatment costs.	*Deduction:* (Note: For returns, any cost of producing or treating at the mine is not included as a deduction) *Limitation:* None identified in statute or regulation
Royalty—non metallic minerals[b]	Nonmetallic minerals (not including coal, oil, or gas)	Lease-specific *Rate determination:* Statute requires royalty, and delegates to Board of Land Commissioners subject to certain bases and the standard that the rates shall be as would be charged by private owners under similar circumstances, or as in the determination of the board is fair and reasonable.	*Rate type:* Case by case, within direction of statute *Current rate:* Not available *Base:* Gross value by either weight or cubic measurement	*Deductions:* Not applicable *Limitations:* Not applicable
All lands				
Mining license tax—metal mine[c]	Gold, silver, copper, lead, or any other metal or metals or precious or semiprecious gems or stones of any kind extracted from all mines on state lands	Net smelter returns royalty *Rate determination:* Statutory	*Rate type:* Uniform within each category *Current rate:* Precious and base metal processed concentrates shipped to a refinery— 1.6%; mineral concentrates shipped to smelter, mill, or reduction works— 1.81% *Base:* Gross value of product, less first $250,000; Gross value is the receipts received from the sale of concentrates or metals extracted from mines or recovered from the	*Deductions:* Treatment and refinery charges; costs of transportation from the mine or mill to the smelter, roaster, or other processing facility, quantity, price, impurity and penalty charges; and interest *Limitations:* None identified in statute or regulation

Montana	Type of mines/minerals assessed	Type of royalty	Royalty rate	Royalty deductions and limitations
			smelting, milling, reduction, or treatment of such ores. Receipts received is defined as the payment received, less allowable deductions.	
Mining license tax—micaceous mines[d]	Vermiculite, perlite, kerrite, maconite, or any other micaceous minerals extracted from all mines on state lands	Unit-based *Rate determination:* Statutory	*Rate type:* Uniform *Current rate:* $0.05 per ton *Base*: Not applicable	*Deductions:* Not applicable *Limitations:* None identified in statute or regulation
Resource indemnity and groundwater assessment tax[e]	Any precious stones or gems, gold, silver, copper, coal, lead, petroleum, natural gas, oil, uranium, talc, vermiculite, limestone, or other nonrenewable, merchantable products extracted from all mines on state lands	Metals—net smelter returns royalty; Selected minerals—revenue royalty with reference price *Rate determination:* Statutory	*Rate type:* Uniform within each category *Current rate:* Default rate: 0.5% of gross value > $5,000; garnets: 1% of gross value > $2,500; Limestone: 10% of gross value > $250; vermiculite: 2% of gross value > $1,250; talc: 4% of gross value > $625 *Base:* Gross value, defined as the market value of any merchantable mineral extracted. For several minerals, the gross value is fixed by the statute, with reference to a price index. For metals and gems, the gross value is the receipts received (see above under License Tax).	*Deductions:* Generally, none; metals and gems— as outlined above under License Tax *Limitations:* None identified in statute or regulation

Source: GAO analysis of state statutes and regulations.

[a]Mont. Code Ann. § 77-3-101 et seq; Mont. Admin. R. 36.25.601-617.

[b]Mont. Code Ann. § 77-3-201-211.

[c]Mont. Code Ann. §§ 15-37-101 et seq.; Mont. Code Ann. §§ 15-23-801.

[d]Mont. Code Ann. § 15-37-201.

[e]Mont. Code Ann. § 15-38-101-136; persons who have paid the license tax for metal mines are exempt from this tax.

Table 9: Royalties, Including Functional Royalties, Assessed on Hardrock Mining Operations in Nevada

Nevada	Type of mines/minerals assessed	Type of royalty	Royalty rate	Royalty deductions and limitations
State lands				
Royalty[a]	Minerals extracted from state lands	Lease-specific *Rate determination:* Statute delegates broad authority for lease of public lands to Administrator of the Division of State Lands, for such terms and consideration as the Administrator of the Division of State Lands may determine reasonable based upon the fair market value	*Rate type:* Case by case *Current rate:* Not available *Base:* Not available	*Deductions:* None identified in statute or regulation *Limitations:* None identified in statute or regulation
All lands				
Extraction/ severance tax[b]	Ores, coal, oil, gas, or other mineral substances, but not sand and gravel extracted from all lands	Net proceeds royalty *Rate determination:* Statutory	*Rate type:* Progressive (tax rate increases as mining efficiency increases, and maximum rate imposed at threshold proceeds level) *Current rate:* 2% to 5%; rate is progressive based on the ratio of net proceeds to gross proceeds (seven steps between <10% and >50%). Also: If net proceeds over $4M then at 5%; if below $4M, and the county tax ad valorem is more than 2%, then that rate shall be the minimum tax. *Base:* Net proceeds defined as gross value less deductions. Gross value of mineral product is defined as the proceeds of the sale of the product (applies to all minerals including any reduction, beneficiation or any treatment used by the producer to obtain a commercially marketable mineral product).	*Deductions:* Deductions include extraction costs, processing, refining and sale costs, transportation from the mine to place of processing and sale, marketing costs, operating costs, royalties, reclamation costs, and certain administrative overhead costs; taxes and liability insurance costs are not deductible *Limitations:* None identified in statute or regulation

Source: GAO analysis of state statutes and regulations.

[a]Nev. Rev. Stat. §§ 322.010-322.075; in practice, there are no current state lands mineral leases because Nevada owns very little available land.

[b]Nev. Rev. Stat. Ch. 362; Nev. Admin. Code Ch. 362.

Table 10: Royalties, Including Functional Royalties, Assessed on Hardrock Mining Operations in New Mexico

New Mexico	Type of mines/minerals assessed	Type of royalty	Royalty rate	Royalty deductions and limitations
State Lands				
Royalty (general)[a]	Minerals other than common salt, oil and gas, coal, shale, clay, gravel, building stone and building materials, potassium, sodium, phosphorus and other minerals of similar occurrence, and their salts and compounds; and excepting rare earths, etc., extracted from public lands over which the Commissioner of Public Lands has jurisdiction[j]	Net smelter returns royalty *Rate determination:* Delegated to Commissioner of Public Lands with statutory minimum	*Rate type:* Case by case, subject to statutory minimum *Current rate:* As determined by the Commissioner, but not less than 2% *Base*: Gross returns shall be based on the arm's length sales price of the produced minerals (from the smelter, mill, reduction process, or other sale) (including all premiums, bonuses, and other consideration of any kind received by the lessee for the minerals produced).	*Deductions:* Reasonable transportation and smelting or reduction charges, up to 50% of gross returns *Limitations:* None identified in statute or regulation
Royalty on selected minerals, such as uranium, and gems[b]	Rare earths, precious stones or semiprecious stones, uranium, thorium, plutonium, and any other mineral designed by the Atomic Energy Commission to be peculiarly essential to the production of fissionable materials extracted from all public lands over which the Commissioner of Public Lands has jurisdiction[j]	Net smelter returns royalty *Rate determination:* Delegated to Commissioner of Public Lands with statutory minimum of 5%	*Rate type:* Case by case subject to statutory minimum *Current rate:* Not available; no less than 5% *Base:* Gross returns shall be based on the arm's-length sales price of the produced minerals (from the smelter, mill, reduction process, or other sale) and shall include, if applicable, all premiums, bonuses, and other consideration of any kind received by the lessee for the minerals produced.	*Deductions:* Reasonable transportation and smelting or reduction charges, up to 50% of gross returns *Limitations*: None identified in statute or regulation
Royalty on selected minerals and salts[c]	Potassium, sodium, phosphorus, and other minerals of similar occurrence and their salts and compounds, including chlorides, sulphates, carbonates, borates, silicates, nitrates, and any and all other salts and compounds; except sodium chloride extracted from all public lands over which the	Gross revenue royalty *Rate determination:* Statute delegates to Commissioner to grant leases; leases must contain a royalty, to be established by regulation[k]	*Rate type:* Case by case, within direction of statute, and for selected minerals, subject to a minimum *Current rate:* Not available *Base:* Gross value of the product after processing	*Deductions:* None identified in statute or regulation *Limitations:* None identified in statute or regulation

New Mexico	Type of mines/minerals assessed	Type of royalty	Royalty rate	Royalty deductions and limitations
	Commissioner of Public Lands has jurisdiction[j]			
All lands				
Severance tax— general provisions[d]	All metalliferous and nonmetalliferous minerals extracted from all lands	Where posted market price available—Net smelter returns royalty Default—Gross revenue royalty Where mineral requires processing before sale—Net smelter returns royalty *Rate determination:* Statutory	*Rate type:* Uniform *Current rate:* 0.125% (1/8) *Base:* Taxable value is defined as the gross value less rental and royalty payments to state or federal governments. Gross value is the sales value of the severed and saved product at the first marketable point; however, where posted field or market price is available, it shall be used.	*Deductions:* Deductions for calculation of gross value: (1) The default is no deductions (2) Where posted field or market price is used, the costs of hoisting, crushing, and loading necessary to place the severed product in marketable form and place are deductible, up to 50% of the posted field or market price (3) For products that must be processed or beneficiated before sale, the freight charges from the point of severance to the point of first sale and the cost of processing or beneficiation may be deducted *Limitations:* None identified in statute or regulation
Severance tax—copper, lead, zinc, gold, silver[e]	Copper, lead, zinc, gold, and silver extracted from all lands	Net proceeds royalty *Rate determination:* Statutory	*Rate type:* Uniform within several categories *Current rate:* Copper 1/2%; gold and silver 1/5% ; lead and zinc 1/8% *Base:* Taxable value = gross value less rental or royalty payments to state or federal governments. Gross value: Copper, lead, and zinc = 66.67% of sales value from published price data; Gold = sales value from published price data; Silver = 80% of sales value from published price data	*Deductions:* Deductions for calculation of gross value: Standard deduction of 50% of sales value for hoisting, crushing, loading, processing, and beneficiation *Limitations:* None identified in statute or regulation
Severance tax—Molybdenum[f]	Molybdenum extracted from all lands	Net proceeds royalty/standard deduction *Rate determination:*	*Rate type:* Uniform *Current rate:* 0.125% (1/8) *Base:* Taxable value is the	*Deductions:* Deductions for calculation of gross value: Standard deduction of 50% of the value

New Mexico	Type of mines/minerals assessed	Type of royalty	Royalty rate	Royalty deductions and limitations
		Statutory	gross value less rental or royalty payments to State or U.S. Gross value is the value of molybdenum in concentrates shipped from mine.	*Limitations*: None identified in statute or regulation
Severance tax—potash[g]	Potash or potash products extracted from all lands	Net proceeds *Rate determination:* Statutory	*Rate type:* Uniform *Current rate:* 2.5% *Base:* Taxable value is the gross value less rental or royalty payments to state or federal governments.; gross value: (1) for potash requiring processing or beneficiation, 33-1/3% of sale proceeds or value (2) otherwise, 40% of the posted field or market price.	*Deductions:* Actual cost of hoisting, crushing, and loading, up to 50% of market price *Limitations:* None identified in statute or regulation
Severance tax—uranium[h]	Uranium extracted from all lands	Net proceeds royalty[i] *Rate determination:* Statutory	*Rate type:* Uniform *Current rate:* 3.50% on taxable value (effectively 1.75% on revenue) *Base:* Taxable value is 50% of sales price of the content of uranium oxide.	*Deductions:* None identified in statute or regulation *Limitations:* None identified in statute or regulation
Resources excise tax (severers and processors)[i]	Metalliferous and nonmetalliferous extracted from all lands	Modified gross revenue royalty *Rate determination:* Statutory	*Rate type:* Uniform within several categories *Current rate:* Default 0.75% ; Potash 0.5% (severers) or 0.125% (processors); Molybdenum 0.125% *Base:* Taxable value, which is the value after severing or processing	*Deductions:* Royalties paid to state or federal governments; proceeds from sales to the State, U.S., tribes, or nonprofit organizations *Limitations:* The Resources Excise Tax imposes a resources tax on severers and a processors tax on processors; however, only one of the two taxes is imposed on a given mineral product. If the mineral is mined and processed in state, only the processors tax is paid.

Source: GAO analysis of state statutes and regulations.

[a]N.M. Stat. Ann. § 19-8-14, -22; N.M. Admin. Code § 19.2.2; if a lease is renewed to a fourth term (where minerals have not yet been discovered), advance royalties are due on a per acre basis.

[b]N.M. Stat. Ann. § 19-8-14, -22; N.M. Admin. Code § 19.2.2.

[c]N.M. Stat. Ann. § 19-8-4, § 19-8-6; N.M. Admin. Code § 19.2.3.2, 19.2.3.12.

[d]N.M Stat. Ann. § 7-26-1 et seq.

[e]N.M Stat. Ann. § 7-26-4, -5.

[f]N.M. Stat. Ann. § 7-26-4, -5.

[g]N.M Stat. Ann. § 7-26-4.

[h]N.M. Stat. Ann. § 7-26-7, § 7-26-4(I).

[i]N.M. Stat. Ann. § 7-25-1-9; there also is a service tax, which essentially imposes the severer's tax on a nonowner severer where the product is not otherwise taxed by the resource excise tax.

[j]For example, granted to New Mexico from the United States in the New Mexico enabling act.

[k]Regulation provides that royalties will be established by the Commissioner on a negotiated basis. The regulation establishes minimum royalties for potassium chloride and sulfates, but the Commissioner may issue a lease at a reduced rate upon a showing of good cause.

[l]Although structured like a gross revenue royalty, the taxable value discount of 50% makes the royalty function more like a net proceeds royalty with standard deduction.

Table 11: Royalties, Including Functional Royalties, Assessed on Hardrock Mining Operations in Oregon

Oregon	Type of mines/minerals assessed	Type of royalty	Royalty rate	Royalty deductions and limitations
State lands				
Royalty—metallics and uranium[a]	Metallic minerals removed in quantities greater than 10 yards per year extracted from on-shore state-owned lands[c]	Gross revenue royalty *Rate determination:* Statute delegates rules and conditions of leases to the Department of State Lands; regulations specify rate	*Rate type:* Uniform *Current rate:* 5% *Base:* Gross value of minerals at the mine mouth	*Deductions:* None specified in statute or regulation *Limitations*: Rent ($1 per acre per year) is credited against annual royalties
Royalty—Non-metallics[b]	Nonmetallic minerals removed in quantities greater than 10 yards per year extracted from on-shore state-owned lands	Unit-based *Rate determination:* Statute delegates rules and conditions of leases to the Department of State Lands; regulations do not specify terms for leases of nonmetallic minerals, and delegate determination of royalty to Director subject to "fair and reasonable" standard.	*Rate type:* Case by case *Current rate:* A rate per ton to be determined by the Director to be fair and reasonable under the particular lease *Base:* Not applicable	*Deductions:* Not applicable *Limitations:* Rent ($1 per acre per year) is credited against annual royalties

Source: GAO analysis of state statutes and regulations.

[a]OR Rev Statute § 273.775 thru 790; Or. Admin. R. § 141-071-0400 et seq, -0610, -0620.

[b]OR Rev Statute § 273.775 thru 790; Or. Admin. R. § 141-071-0400 et seq, -0610.

[c]State statute provides for royalties for use of stream bed materials, but prohibits leases of submersible and submerged lands for hardrock mineral mining.

Table 12: Royalties, Including Functional Royalties, Assessed on Hardrock Mining Operations in Utah

Utah	Type of mines/minerals assessed	Type of royalty	Royalty rate	Royalty deductions and limitations
State lands				
Royalty[a]	Classified minerals, including metalliferous, potash, phosphate, gemstone/fossil, gypsum, gilsonite, and others extracted from mines on lands and mineral estates owned or held in trust by the state	Gross revenue royalty *Rate determination:* Statute requires a royalty on every mineral lease; directs Division of Forestry, Fire and State Lands to issue rules specifying the basis upon which the royalty shall be computed	*Rate type:* Uniform within each category *Current rate:* metalliferous metals, fissionable (e.g., uranium)—8%; Metalliferous metals, non-fissionable—4% potash, phosphate, gypsum —5%; gemstone/fossil—10% (subject to annual minimum of $5 per acre) gilsonite—10% (additional categories are listed in the regulation) *Base:* Actual compensation received (plus value of any services, in-kind, and other non-monetary compensation)	*Deductions:* None *Limitations:* Rent paid is credited against royalty
All lands				
Severance tax on metals and metalliferous minerals[b]	Ore, metal, or other substance containing gold, iron, mercury, nickel, uranium, or other of 57 listed metals; does not include gem stones, potash, sand and gravel, oil, gas, and coal, and others extracted from all lands	Net proceeds royalty/standard deduction *Rate determination:* Statutory	*Rate type:* Uniform *Current rate:* 2.6% of the taxable value *Base:* For minerals other than uranium, the taxable value is defined as the gross proceeds from sale, less exemption of first $50,000/year/mine, then reduced by standard percentage deduction. For uranium, the gross proceeds is the amount received for the sale of yellowcake.	*Deductions:* Metal, 70% deduction is applied; ore (raw materials with metals content less than 15%) shipped or sold out of state, 20% deduction is applied *Limitations:* None identified in statute or regulation
Severance tax—beryllium[c]	Beryllium	Other[d](cost-based) *Rate determination:* Statutory	*Rate type:* Uniform within several categories *Current rate:* 2.6% of the taxable value *Base:* Taxable value is 125% of the direct mining costs	*Deductions:* Not applicable *Limitations:* None identified in statute or regulation

Source: GAO analysis of state statutes and regulations.

[a]Utah Code Ann. § 65A-6-1, 2; Utah Admin. R. R652-20-200, 1000, 4000; correspondence, State of Utah SITLA, Mar. 25-26, 2008; royalties may be readjusted in leases with readjustment clause.

[b]Utah Code Ann. § 59-5-201, 203; Utah Admin. R. R865-16R.

[c]Utah Code Ann. § 59-5-201-203; Utah Admin. R. R865-16R.

[d]We categorized this royalty as other because it does not fit into the four categories.

Table 13: Royalties, Including Functional Royalties, Assessed on Hardrock Mining Operations in Washington

Washington	Type of mines/minerals assessed	Type of royalty	Royalty rate	Royalty deductions and limitations
State lands				
Royalty[a]	Valuable minerals and specified materials (except rock, gravel, sand, silt, coal, or hydrocarbons) extracted from mines on lands and mineral estates owned or held in trust by the state	Modified gross revenue royalty *Rate determination:* Statute requires production royalty on all leases (mining contracts); delegates to Board of Natural Resources	*Rate type:* Uniform *Current rate: 5*% *Base:* "Gross receipts" are receipts paid, earned, or received, at the point of sale of the first marketable valuable mineral(s) produced, subject to deduction.	*Deductions:* Limited to transportation costs which are part of the development plan approved by the department *Limitations:* None identified in statute or regulation
All lands				
Business tax[b]	All (coal, oil, natural gas, ore, stone, sand, gravel, clay, mineral, or other natural resource product) extracted from all lands	Gross revenue royalty *Rate determination:* Statutory	*Rate type:* Uniform *Current rate:* 0.48% *Base:* The value of products and byproducts extracted for use or sale	*Deductions:* None identified in statute or regulation *Limitations:* None identified in statute or regulation

Source: GAO analysis of state statutes and regulations.

[a]Wash. Rev. Code §§ 79.14.300 et seq, .410, .420; Wash Admin. Code § 333.16155; the royalty may be revised upon renewal of a mining contract, by reference to then existing law.

[b]Wash. Rev. Code § 82.04.100, 230; extractors also may be subject to a retail or wholesaler tax; however, the extracting tax is credited against any retail/wholesale liability, effectively voiding it based on current rates.

Table 14: Royalties, Including Functional Royalties, Assessed on Hardrock Mining Operations in Wyoming

Wyoming	Type of mines/minerals assessed	Type of royalty	Royalty rate	Royalty deductions and limitations
State lands				
Royalty—general[a]	Metallic and nonmetallic rocks and minerals extracted from state lands	Default gross revenue royalty provided in regulation *Rate determination:* Statute delegates to Board of Land Commissioners to establish in rules and regulations for mineral leases[h]	*Rate type:* Progressive (default rates), case by case *Current rate:* Minimum $0.50/ton. Default rates are 5% to 10%, based on the sales value per ton *Base:* Sales value, which is total consideration received for state production	*Deductions:* None identified in statute or regulation *Limitations:* None identified in statute or regulation
Royalty—trona[b]	Trona/sodium extracted from state lands	Gross revenue royalty provided in regulation *Rate determination:* Statute delegates to Board of Land Commissioners to establish in rules and regulations for mineral leases. Regulations provide the royalty “shall be based on the terms of the particular lease agreement,” but that specified default rates shall apply unless specifically authorized by the board.	*Rate type:* Uniform (default), case by case *Current rate:* 6% (default) *Base:* Gross sales value of the soda ash and sodium byproducts sold, which is total consideration received for state production	*Deductions:* None identified in statute or regulation *Limitations:* None identified in statute or regulation
Royalty—uranium[c]	Uranium extracted from state lands	Lease-specific, with default gross revenue royalty provided in regulation *Rate determination:* Statute delegates to Board of Land Commissioners to establish in rules and regulations for mineral leases Regulations provide the royalty “shall be based on the terms of the particular lease agreement,” but that specified default rates shall apply unless specifically authorized by the board.	*Rate type:* Progressive (default rates), case-by-case *Current rate:* 2.5% to 3%, based on the average price of yellowcake based on gross yearly sales realization (default) *Base:* Sales value, which is total consideration received for state production	*Deductions:* None identified in statute or regulation *Limitations:* None identified in statute or regulation
Royalty—zeolite[d]	Zeolite extracted from state lands	Lease-specific, with default unit-based provided in regulation	*Rate type:* Progressive (default rates), case by case	*Deductions:* None identified in statute or regulation

Wyoming	Type of mines/minerals assessed	Type of royalty	Royalty rate	Royalty deductions and limitations
		Rate determination: Statute delegates to Board of Land Commissioners to establish in rules and regulations for mineral leases. Regulations provide the royalty "shall be based on the terms of the particular lease agreement," but that specified default rates shall apply unless specifically authorized by the board.	*Current rate:* $0.55 to $0.60+ per ton, depending on the average sale price for bulk zeolite products (default) *Base*: Tons of mineral production	*Limitations*: None identified in statute or regulation
All lands				
Mining severance tax—general[e]	All "other valuable deposits" (other than coal, oil and gas, trona, bentonite, uranium, and sand and gravel) extracted from all lands	Gross revenue royalty[i] *Rate determination:* Statutory	*Rate type:* Uniform *Current rate:* 2% *Base:* Value of the gross product, which is the fair market value of the minerals at the mouth of the mine, after extraction.	*Deductions:* None identified in statute or regulation *Limitations:* None identified in statute or regulation
Mining severance tax—uranium[f]	Uranium extracted from all lands	Modified net smelter returns royalty/standard deduction *Rate determination:* Statutory	*Rate type:* Uniform; progressive under currently active provision *Current rate:* The statutory tax rate is 4%. However, the tax is suspended for all uranium production occurring between January 1, 1995, and March 31, 2009, except for uranium production beginning with the month that follows 6 consecutive months at which the spot market price per pound of nonenriched uranium concentrate is at least $14.00 (according to specified indices). In such case, the tax is 1% to 4% depending upon the spot market price. *Base:* Value of the gross product, which is the fair market value of the minerals at the mouth of the mine, after extraction, and not including any processing. Fair market value is calculated by multiplying the individual	*Deductions:* The industry factor provides a standard deduction and is an average of all uranium producers' ratios of total mining costs to total mining and processing costs incurred to produce yellow cake. *Limitations:* None identified in statute or regulation

Wyoming	Type of mines/minerals assessed	Type of royalty	Royalty rate	Royalty deductions and limitations
			producer's sales value of yellow cake less all royalties, ad valorem production taxes, and severance taxes; multiplied by the industry factor.	
Mining severance tax—trona[g]	Trona extracted from all lands	Modified net smelter returns royalty/standard deduction *Rate determination:* Statutory	*Rate type:* Uniform *Current rate:* 4% *Base*: Fair market value is that at the mouth of the mine, and not including any processing.	*Deductions:* The value for tax purposes is the fair market value of soda ash at the plant (f.o.b.) multiplied by the industry factor (32.5%) divided by the individual producer's trona-to-soda ash ratio less exempt royalties (the industry factor divided by ration represent a percentage deduction). *Limitations:* None identified in statute or regulation

Source: GAO analysis of state statutes and regulations.

[a]Wyo. Stat. § 36-6-101; Wyo. Admin. Code Land LC Ch. 24 § 2, § 7; under certain circumstances, the board can reduce a royalty after the mine is operating.

[b]Wyo. Stat. § 36-6-101; Wyo. Admin. Code Land LC Ch. 20 § 2, § 7(a).

[c]Wyo. Stat. § 36-6-101; Wyo. Admin. Code Land LC Ch. 21 § 2, § 7(a).

[d]Wyo. Stat. § 36-6-101; Wyo. Admin. Code Land LC Ch. 23 § 2, § 7(a).

[e]Wyo. Stat. Tit. 39, ch. 14, art. 7; Wyo. Stat. § 39-14-701 et seq.

[f]Wyo. Stat. § 39-14-503.

[g]Wyo. Stat. § 39-14-301 et seq.

[h]Regulations provide the royalty "shall be based on the terms of the particular lease agreement," but that specified default rates shall apply unless specifically authorized by the board, and subject to a minimum.

[i]For minerals requiring processing before sale (i.e., at the mouth of the mine), the royalty would function similar to a net smelter returns in which the cost of processing is deducted.

Enclosure III: U.S. Import and Export Trends on Hardrock Minerals

This enclosure provides information on trends in U.S. imports and exports of hardrock minerals, as measured by USGS's calculations for net import reliance. Table 15 shows annual net import reliance for 15 hardrock minerals.

Table 15: U.S. Net Import Reliance for 15 Hardrock Minerals, 1975 through 2007

Year	Barite	Copper	Fluorspar	Gold	Gypsum	Lead	Magnesium compounds	Magnesium metal	Nickel[a]	Palladium	Perlite	Platinum	Silver	Tungsten	Zinc
1975	32	E	83	52	34	11	4	E	72	[c]	[b]	[c]	30	46	61
1976	45	12	77	76	35	15	--	E	72	[c]	[b]	[c]	50	53	58
1977	44	13	80	61	31	13	E	E	75	[c]	[b]	[c]	31	52	57
1978	36	20	84	53	32	12	E	E	80	[c]	[b]	[c]	48	56	66
1979	40	13	86	50	35	5	E	E	75	[c]	[b]	[c]	42	58	63
1980	44	16	91	18	35	E	E	E	76	[c]	[b]	[c]	[c]	53	60
1981	40	6	87	15	37	1	2	E	75	[c]	[b]	[c]	53	50	65
1982	55	1	90	E	36	11	4	E	76	[c]	[b]	[c]	55	42	58
1983	65	19	90	E	40	20	8	E	75	[c]	4	[c]	59	52	65
1984	69	23	90	E	38	20	13	E	69	[c]	5	[c]	[c]	70	68
1985	74	27	90	E	38	12	21	E	71	[c]	6	[c]	[c]	68	70
1986	71	27	86	E	36	20	25	E	73	[c]	6	[c]	[c]	70	73
1987	65	26	90	E	38	17	24	E	79	[c]	5	[c]	[c]	79	71
1988	76	13	90	E	36	13	22	E	74	[c]	4	[c]	[c]	86	69
1989	77	7	91	E	35	8	22	E	71	84	2	94	[c]	84	61
1990	71	3	89	E	36	3	15	E	64	81	5	92	[c]	81	41
1991	66	E	88	E	31	6	18	E	61	84	5	90	[c]	91	24
1992	52	2	91	E	31	10	24	E	59	83	6	92	[c]	86	30
1993	72	7	89	E	31	15	35	E	63	85	7	89	[c]	81	45
1994	64	13	91	E	31	19	41	E	64	87	6	89	[c]	95	35
1995	65	7	91	E	30	17	43	E	60	92	6	92	[c]	90	35
1996	70	14	99	E	29	17	31	E	59	93	11	93	[c]	89	57
1997	76	13	100	E	28	14	34	16	56	90	12	91	[c]	84	59
1998	80	14	100	E	28	18	44	25	64	90	14	94	43	77	58
1999	66	27	100	E	25	20	41	38	63	92	12	96	39	65	62
2000	84	37	100	E	27	13	48	43	55	84	17	78	43	66	60
2001	86	22	100	E	27	8	39	44	53	87	18	90	49	64	59
2002	78	37	100	E	27	E	46	55	48	82	26	91	60	69	62
2003	77	40	100	E	25	E	46	53	45	82	30	91	65	63	58
2004	78	43	100	8	28	E	52	61	49	83	28	92	53	73	60
2005	84	42	100	4	27	E	54	60	48	84	24	93	61	68	55
2006	81	38	100	E	27	E	57	53	49	75	32	90	65	68	64
2007[d]	83	37	100	E	26	E	57	47	17	73	30	94	59	70	58

Source: USGS.

Notes: E = Net exporter. Net import reliance shows the amount of net imports of a particular mineral as a percentage of U.S. apparent consumption. USGS calculates apparent consumption as production plus imports minus exports with adjustments for changes in government and industry stocks. For example, a net import reliance figure of 50 for a particular mineral would indicate that 50 percent of the domestic consumption of that mineral was supplied through net imports. A net import reliance figure of E represents a negative percentage, which indicates that the United States was a net exporter of that particular mineral in that year.

[a]Import reliance figures for 1991 to 2002 were recalculated by USGS to incorporate more complete data. Data for stainless steel scrap consumption were included in the net import reliance calculation beginning in 1980.

[b]No trade reported.

[c]Not available.

[d]Estimated.

Enclosure IV: Hardrock Mining Data That Are Either Not Routinely Collected or Not Consistently Maintained by Federal Agencies

During the course of our work, we noted that BLM, the Forest Service, and USGS either do not routinely collect or do not consistently maintain data on the amount of hardrock minerals being produced on federal land and the amount of hardrock minerals remaining and the total acreage of federal lands withdrawn from hardrock mining operations.

- According to officials with BLM and the Forest Service, they do not have the authority to collect information from mine operators on the amount of hardrock minerals produced on federal land, or the amount remaining.

- USGS collects extensive data on hardrock mineral production through its mineral industry surveys and reports these data in monthly, quarterly, and annual reports. However, mine operators' participation in these surveys is voluntary, these data do not include the hardrock mineral uranium because it is also a fuel mineral, and USGS does not collect land ownership data that would allow it to determine the amount of hardrock mineral production on federal lands. As a result, it is not possible to determine hardrock mineral production on federal lands from the USGS data. In addition, although USGS does publish the total amount of hardrock mineral production by mineral type, it is prohibited by law from reporting individual mine production and other company proprietary data unless the mine operator authorizes release of that information. In some cases, mine operators that respond to these surveys report consolidated data that covers production from several mines. Therefore, information on hardrock mineral production for every mine is not available to the public.

Some hardrock mineral production data are available from state sources and through financial reports filed with the Securities and Exchange Commission. However, these data may not always provide the level of detail necessary to determine the amount of mineral production on federal lands. BLM also does not centrally maintain data on the amount of land withdrawn from hardrock mining operations. BLM documents lands withdrawn from hardrock mining operations on its master title plats—detailed paper maps maintained at BLM's state offices.[10] These maps contain land survey information on federal lands, including ownership information, land use descriptions, and land status descriptions. BLM's annual publication, *Public Land Statistics*, does report the total number of acres withdrawn each year, but these data do not account for instances in which multiple withdrawals may have overlapping boundaries, which can result in double-counting the number of acres withdrawn. Furthermore, the reason for withdrawing the land is not always indicated, making it difficult to determine whether it was withdrawn from mining or from other purposes.

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[10]Some of the 12 BLM state offices manage BLM programs in more than one state. For example, the BLM Montana state office manages BLM programs in Montana, North Dakota, and South Dakota, and the BLM Oregon state office manages BLM programs in Oregon and Washington.

Enclosure V: GAO Contact and Staff Acknowledgments

GAO Contact

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Staff Acknowledgments

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