

Chapter 4. Mining Industry

In this report the mining industry includes coal, hard rock, and placer gold mines. The information in this report does not include sand and gravel operations. Also for this report, revenue to the State of Alaska includes revenue to the Alaska Mental Health Trust, a quasi-independent state agency which funds a state function, providing mental health services to Alaskan citizens.

4.1 Mining Industry Revenue to the State of Alaska

Mineral industry revenue to the State of Alaska includes traditional taxes, such as the mining license tax or corporate income tax, and also mineral rents and royalties. Most of these taxes are a percentage of a company's net profits. Because world mineral prices can fluctuate rapidly, mineral revenue to the State of Alaska vary greatly from year to year. For example, in 2011 world gold prices fluctuated between a low of \$1,319 per ounce in late February and a high of \$1,895 at the beginning of September, a change of 44% over half a year.¹⁴ Other minerals such as coal or zinc vary greatly as well. Because of the fluctuation, a single year's analysis of revenue is less accurate than a longer picture. This analysis averages five years of revenue, from 2010 to 2014.

Table 11 shows the average annual revenue, from 2010 to 2014, adjusted to 2014 dollars. An expanded version of the table is provided in Chapter 8.

Table 11. State of Alaska Mining Revenue
Average of 2010-2014; Figures in Million 2014 Dollars

		Average Revenue 2010-2014	% of Total
These taxes and fees apply to all landowners	Mining License Tax	\$39.9	41%
	Corporate Income Tax, mining sector	31.9	33%
	State mining misc fees, total	2.5	3%
	Large Mine Projects Fees through DNR OPMP	1.9	2%
	Motor Fuel Tax, mining share	0.6	1%
State land only	Mining rents and royalties, total	19.5	20%
	Total Funds Received	\$96.4	100%

The mining industry has three somewhat different segments: hard rock, coal, and placer mining. Hard rock mines are typically large mines that extract minerals from bedrock. They may be open-pit or underground. Coal mines are large mines, but the technology, economics, and some taxes are different for coal than for hard rock mines. Placer mines are typically smaller and separate free particles of gold from current or old floodplain gravels using the flow of water. Taxes affect these three segments in somewhat different ways.

The five hard rock mines and Alaska's lone coal mine, the Usibelli Coal Mine, are Alaska's large mines.

¹⁴ Kitco. http://www.kitco.com/scripts/hist_charts/yearly_graphs.plx;

- Greens Creek silver mine within the City and Borough of Juneau (underground);
- Kensington gold mine within the City and Borough of Juneau (underground);
- Pogo gold mine north of Delta Junction (underground);
- Fort Knox gold mine within the Fairbanks North Star Borough (open pit);
- Red Dog lead zinc mine within the Northwest Arctic Borough (open pit); and
- Usibelli Coal Mine within the Denali Borough (open pit).

These six large mines pay the vast majority of the taxes and fees. They are large, capital-intensive facilities with sometimes hundreds of employees.

Placer mines are much different. There are many more of them, but they are much smaller. According to a DNR estimate, 295 placer mines had some activity in 2013. The average placer mine had four workers; 27% were run by one person though there were a few significantly larger mines (50+ workers).¹⁵ Most of the income from these mines is paid out as wages or payments to individuals. While important in the areas where it occurs, placer mining production was roughly 100,000 ounces of gold in 2013, while the rest of total statewide production of over one million ounces of gold was produced mostly from Alaska's hard rock gold mines.

Like the fishing industry, the mining industry has a special tax, the ***Mining License Tax***. The tax is up to 7% of net profits of mineral production. It produces the most revenue for the state, 41% of the total for the five years listed in Table 11. The ***Corporate Income Tax*** for mining is no different than for other industries, up to 9.4% of taxable income, and provides approximately a third of the mining revenue to the state. These two taxes apply to all mines in the state, though almost all of the revenue comes from the six large mines. These taxes are a percentage of net business profits; most of the placer mine income is paid out in wages and payments to individuals who are not subject to these taxes. These two taxes apply to mines on all lands: state, Native, federal, or private.

Mining Rents and Royalties apply differently to different parts of the industry. Hard rock and placer mines on state land operate on state mining claims. Coal mines operate on a coal lease. The two categories are subject to different rent and royalty provisions. Also, mining rents and royalties apply only to mines on state land, not to those on federal, Native or private land.

Hard rock and placer mines on state land are subject to a 3% net profits royalty. While most of the placer mines are on state land, only two of Alaska's hard rock mines are on state land. Royalty, like Mining License and Corporate Income Tax, is based on net business profits.¹⁶ Rents apply to all placer and hard rock mining properties, including exploration sites and mineral properties not in production. Mining rents are charged as escalating fees that apply to mining claims on state land. They begin at \$35/year for a 40-acre claim and escalate after 11 years to \$170/year for each 40-acre claim. Despite the relatively small fee

¹⁵ Information from The Economic Impacts of Placer Mining in Alaska, October 2014. Prepared by the McDowell Group for the Alaska Miners Association. Pages 1 and 2.

¹⁶ Actually, one of them, Fort Knox, mines ore from land owned by the Alaska Mental Health Trust. However, the Trust is treated as a state agency for purpose of this analysis.

per claim, the industry requires thousands of acres of claims; the cumulative rent added up to \$7.5 million in 2013.

Hard rock and placer mines on state land are also subject to an ***Annual Labor*** requirement. Each year the owner of a mining claim must either perform \$100 of work per claim, or may pay \$100 to the state per claim. Revenue from the annual labor requirement amounted to approximately a half- million in 2013.

Coal Rents and Royalties are different than those for hard rock and placer mines. The economic characteristics of the coal industry are different from placer or hard rock mines and the terms are not directly comparable. Coal mines operate under a lease with the state, rather than a mining claim. The rent and royalty rates are specified in the lease. The terms of a typical coal lease have changed over time. Leases issued within the last decade require 5% payment of adjusted gross royalty (i.e., of revenue minus transportation costs internal to the mining area and a few other adjustments), plus \$3 per acre as rent.

State Mining Fees is a catch-all category that includes a number of various fees including application fees and filing fees. A significant part of these fees comes from bonus bids received from the auction of offshore leases near Nome.

Large Mine Project Fees are an unusual category. They are part of an unusual financial arrangement for mining, oil and gas, and a few other large projects. Mining-related pre-permitting review, permitting activities, and agency inspection are coordinated through DNR's Office of Project Management and Permitting (OPMP). Mines voluntarily pay for this coordinating function, and reimburse the agencies for the work involved. This arrangement requires the mining company to develop a reimbursement agreement with DNR. In turn, DNR reimburses the individual agencies and divisions that work on the mine project. In this manner, the mining industry pays for most of the permitting and regulatory compliance work accomplished by DNR, DEC, DF&G, and frequently the Department of Law. These payments totaled \$1.9 million in 2014.

The mining industry share of the ***Motor Fuel Tax*** is taken from the Alaska Mineral Industry Report, published by DNR and DCED.¹⁷

Potential, Excluded Revenue Sources

- *Usibelli Coal Mine, Inc.'s Payments to the Alaska Railroad*. The Alaska Railroad's main source of income is the shipment of freight. In 2013, Usibelli Coal Mine, Inc. paid the Alaska railroad \$18.9 million in tariffs for shipping coal on the railroad. This amount was approximately 20% of the railroad's freight revenue.¹⁸ This revenue is excluded for two reasons. First, we cannot include revenue without including the related cost. The related cost is the expense that the railroad incurs to ship the coal. That cost is unknown (to us) and proprietary. Second, the Alaska Railroad Corporation acts as an independent corporation, though it is state owned.

¹⁷ <http://dggs.alaska.gov/pubs/id/29128>

¹⁸ Statewide Socioeconomic Impacts of Usibelli Coal Mine, Inc. January 2015. Prepared by the McDowell Group for Usibelli Coal Mine, Inc. Page 11.

It does not deposit revenue into the General Fund nor does it receive General Fund appropriations. It is functionally not part of state revenue and expenses that are allocated by the legislature. Therefore, we excluded the mining payments to the Alaska Railroad from the calculations in this report.

- *Red Dog Road Payments to AIDEA.* Payment by the Red Dog Mine to the Alaska Industrial Development and Export Authority (AIDEA) is often considered revenue from the mining industry to the state. The payments are significant; approximately \$12 million in 2013. However, the payments are not included in Table 11. AIDEA issued bonds to finance the road from the Red Dog Mine to the port site where Red Dog's ore is exported. AIDEA owns the road and leases it to Red Dog in return for a per-ton fee on ore shipped over the road. It is not appropriate to include revenue without also including the related cost (the bond payments), and so both were excluded from this analysis. In addition, Red Dog payments do not go to the general fund but to AIDEA, which like the railroad is a state-owned corporation. Its revenue and costs are not a part of the general fund. Periodically, some AIDEA funds are transferred to the general fund; however, we did not determine the portion of those funds attributable to the net of Red Dog Payments minus AIDEA bond payments. Thus, excluding this amount from mining revenue results in a small underestimate of the revenue.

This analysis also excludes revenue from state sand and gravel sales. Sand and gravel is not included as "mining" in this report, and so its revenue and costs are both excluded.

Individual taxes and fees are explained in greater detail in Chapter 8.

4.2 Operating Budget Expenditures by the State for Mining

This section of the report describes Alaska's operating budget expenditures in FY 14. The operating budget was taken from budget components published on the state's Office of Management and Budget website. It does not include federal funds or most inter-agency transfers (except that large mine project fees were included to balance the project fee revenue described above). It does not include capital budget funds that are included in the next section. Finally, the authors of the report interviewed managers and budget analysts at departments listed in Table 12.

**Table 12. FY 14 State Operating Expense due to Mining
Figures in Million Dollars**

Expense by Department	\$	%	Expense by Division	\$	%
Environmental Conservation	\$0.7	6%	Environmental Health	\$0.01	0.1%
			Air Quality	\$0.4	4%
			Spill Prevention & Response	\$0.04	0.4%
			Water	\$0.2	2%
Natural Resources	\$6.6	61%	Office of Project Management & Permitting	\$1.6	15%
			Recorder's Office	\$0.2	2%
			Public Information Center	\$0.1	1%
			Mental Health Trust Land Office	\$0.4	3%
			Mining, Land and Water	\$2.4	22%
			Geological & Geophysical Surveys	\$1.9	18%
			Office of History and Archaeology	\$0.05	1%
Fish and Game	\$0.4	3%	Habitat	\$0.4	3%
Commerce, Cmty & Econ Dvpt	\$0.4	3%	Economic Development	\$0.4	3%
Revenue	\$1.5	14%	Tax Division	\$1.5	14%
Law	\$1.2	11%	Various Sections	\$1.2	11%
Total, All Departments	\$10.7	100%	Total, All Divisions	\$10.7	100%

The table suggests a number of conclusions. First, the total state operating cost — \$10.7 million — is a relatively small cost to manage an important Alaska industry.

Second, the majority of costs are concentrated within the Department of Natural Resources, and these, in turn, are concentrated in the Division of Mining, Land and Water, the Office of Project Management and Permitting (OPMP) and the Division of Geological and Geophysical Surveys. The OPMP costs are slightly misleading, however. While they are shown as OPMP expenditures, the office manages reimbursable services agreements by which the large mining companies agree to pay for coordination and the work performed in permitting and regulating the mines. Different divisions — primarily within DNR, DF&G, and DEC but also the Department of Law and sometimes others — charge OPMP for time spent on this work.¹⁹ OPMP, in turn, bills the mines. Therefore, while \$1.6 million is shown in the table as OPMP expenses, most is actually spent on work done by DF&G, DEC, DOL and other divisions within DNR and is reimbursed by the industry under the Large Mine Project Fees described above.

Potential Operating Budget Sources Excluded. Some previous discussions of state expenditures for the mining industry have allocated some Division of Forestry firefighting costs to the mining industry. Some have not. While the large mines are asked to defend their facilities from wildfires, isolated small placer mines are not. However, the majority of firefighting expenses related to placer mines are to defend structures that have existed for decades. These structures and the associated cost will exist whether or not the placer mining industry continues to function. Few new structures are being built. If gold prices

¹⁹ Interestingly, the Department of Law's cost for the mining industry is twice what it expends for commercial fishing and tourism combined.

drop and the number of placer mines radically decreases, firefighting expenses will only decrease marginally because the old structures will still exist. For that reason, we decided to exclude that cost from our analysis. Old analyses have sometimes included a million or two for firefighting costs, and so including this cost would not have significantly changed the conclusions of this report.

As indicated previously, we also excluded costs associated with excluded revenue: material sales (sand and gravel) and AIDEA costs related to the Red Dog Road.

More detail about operating budget expenditures is provided in Chapter 6.

4.3 Capital Budget Expenditures

This section of the report is short: There are five capital budget items that fund mining-related projects during the period FY 12 through FY 14. As explained previously, we reviewed all capital improvement projects (CIP) appropriated to DEC, DNR, and DF&G; and we reviewed capital appropriations to DCCED using a search methodology explained in section 2.5 and in Appendix B. That procedure produced three capital projects related to mining, all allocated to the DNR Division of Geologic and Geophysical Surveys. From personal knowledge, we knew that DOT and AIDEA had expended funds planning for the Ambler Mining District, and so we found the projects within the DOT capital appropriations (the 2013 appropriation information was gathered from AIDEA staff. Also, the AIDEA funds are part of a DOT CIP. AIDEA was funded through an agreement with DOT). These five mining-related projects are shown in Table 13.

Table 13 shows the amount actually appropriated (i.e., the value in nominal dollars). Over the three years, the capital project total is \$11.9 million in nominal dollars. When adjusted for inflation, the total is \$12.0 million in 2014 dollars. The average annual cost of these projects is \$4.0 million, in FY 14 dollars. All of that is allocated to mining.

**Table 13. Mining Capital Projects FY 12-14
Figures in millions of dollars**

Agency	Year	Cost in Million \$	% of Cost Allocated to		Project Name
			Mining	Project Name	
DNR	2012	.5	100%		Rare Earth Elements and Strategic Minerals Assessment
DNR	2013	2.7	100%		Strategic and Critical Minerals Assessment
DNR	2014	2.5	100%		Strategic and Critical Minerals Assessment
DOT	2012	\$1.3	100%		Ambler Mining District Road (study)
DOT	2013	\$4.9	100%		Ambler Mining District Road (study)

Total 3-year cost of the 5 projects in 2014 dollars: \$12.0 million

Average annual cost of the projects in 2014 dollars: \$4.0 million

Annual cost allocated to mining: \$4.0 million

4.4 Mining Revenue Collected by Local Government

Large mines are capital-intensive facilities. They have significant property and are subject to property taxes in the boroughs in which they are located. These mines are generally the largest property taxpayers in those communities.

- The Red Dog mine is the only taxpayer in the Northwest Arctic Borough. In 2013, the mine paid \$11 million to Borough government, including a \$2.4 million payment directly to the school district. Between 1982 and 2013, the mine's payments have totaled \$116.4 million. These are payments in lieu of taxes—essentially an agreed-upon substitute for a property tax or other assessment.²⁰
- Fort Knox mine is a large taxpayer in the Fairbanks North Star Borough. Its 2015 property tax bill is \$7.5 million, up from \$5 million in 2011.²¹
- The Greens Creek and Kensington mines are the first and second largest taxpayers in the City and Borough of Juneau. In 2014, Greens Creek paid more than \$1.7 million in property taxes and Kensington paid more than \$1.2 million.²²
- The Usibelli Coal Mine pays a severance tax of \$0.05 per ton of coal, which results in a payment of approximately \$100,000 per year to the borough. In addition, the mine pays approximately \$25,000 per year to other boroughs in Alaska.²³

Collectively, the mines in Alaska paid an average of \$22.5 million per year in FY 14 dollars for the years 2010 through 2014. These payments are important for each community where a large mine exists. The payments to municipalities are shared only with four boroughs: Juneau, Fairbanks, the Denali Borough, and the Northwest Arctic Borough. The payments do not include other local taxes such as sales tax.

4.5 Comparison of Revenue and Expenditures for the Mining Industry.

This section uses information in the previous sections to compare the revenue for the mining industry with expenditures. In the three comparisons that follow, state mining revenue is much greater than expenditures.

²⁰ Source: NANA Development Corporation, quoted in Economic Development Journal, published by the International Economic Development Council. Mining and Sustainable Communities: A Case Study of the Red Dog Mine. R. Loeffler. Volume 14, No. 2. Spring 2015. Pages 23-31.

²¹ Fairbanks North Star Borough Property Assessor's Website.

<http://co.fairbanks.ak.us/Assessing/propacctsum.aspx?idx=478318>

²² For Greens Creek: personal communication Hecla Greens Creek Mine personnel; for Kensington property information supplied by the City and Borough of Juneau personnel; millrate from the borough website.

²³ Statewide Socioeconomic Impacts of Usibelli Coal Mine, Inc. January 2015. Prepared by the McDowell Group for Usibelli Coal Mine, Inc. Pages 2 and 3.

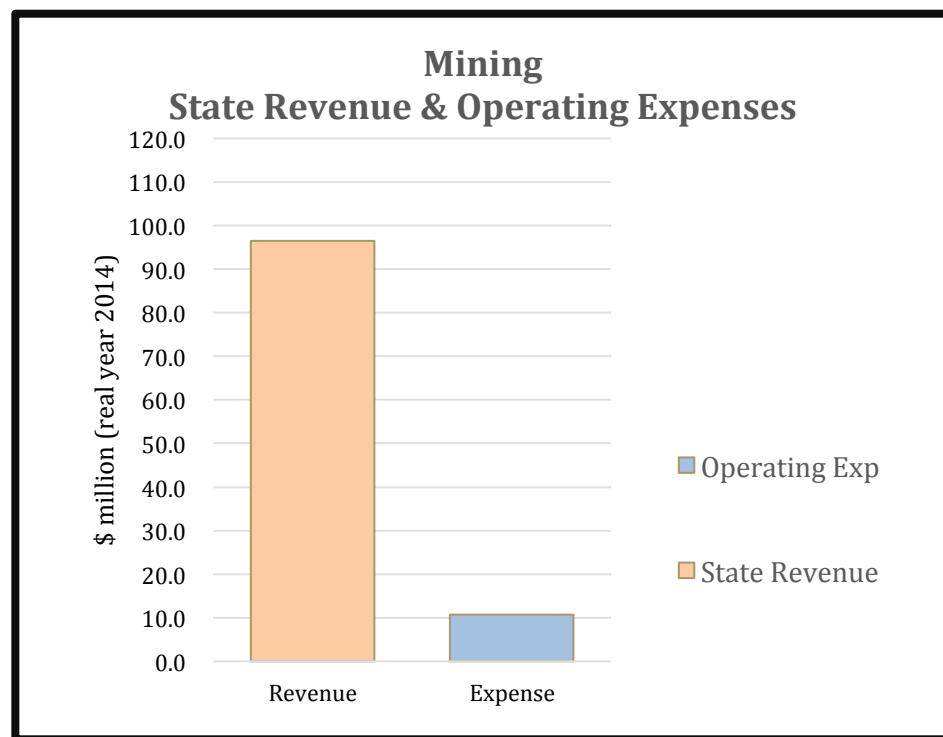
4.5.1 Comparison of State Revenue with State Operating Expenditures

Table 14. Comparison of State Mining Revenue with State Operating Expenditures

Mining	Real 2014 \$ million
Average state revenue (2010-2014)	\$96.4
Operating expenditures (FY 2014)	10.7
Surplus (Deficit)	\$85.7

Table 14 shows that the State of Alaska receives \$85.2 million more in revenue from the mining industry than it spends. State revenue is almost ten times state operating expenses.

Figure 11. Comparison of State Mining Revenue with State Operating Expenses



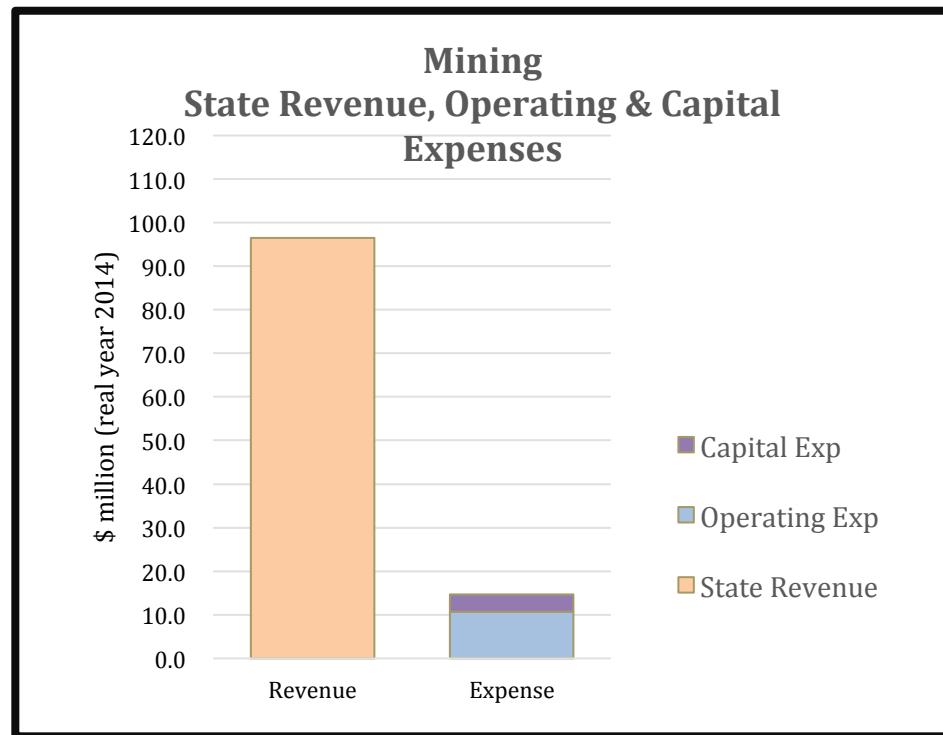
4.5.2 Comparison of State Revenue with Operating and Capital Expenditures

Table 15. Comparison of State Mining Revenue with Operating and Capital Expenditures

Mining	Real 2014 \$ million
Average state revenue (2010-2014)	96.4
Operating expenditures (FY 2014)	10.7
Average capital expenditures (2012-2014)	4.0
Surplus (Deficit)	\$81.7

The legislature has made relatively few capital appropriations for the mining industry. The addition of capital budget expenses to the operating revenue described above does not change the conclusions much. The difference between state revenue and operating plus capital expenditures is \$81.7 million. See Table 15 and Figure 12.

Figure 12. Comparison of State Mining Revenue with Operating and Capital Expenses



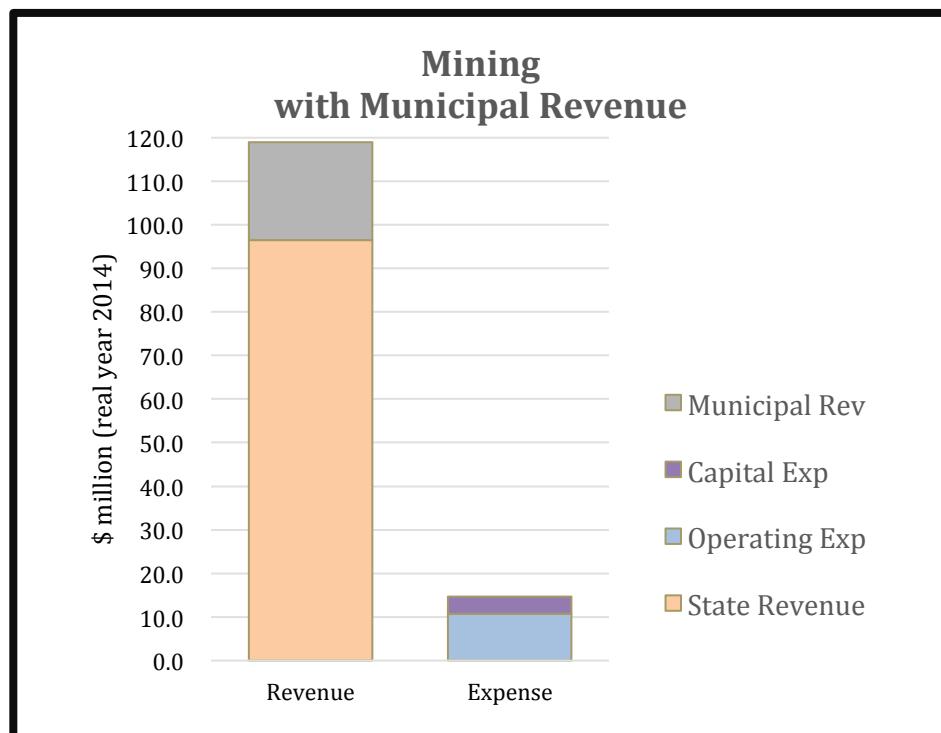
4.5.3 Comparison of State and Local Revenue with Expenditures

Adding local revenue to the comparison increases the difference between mining revenue and state expenses. This study does not include local costs to service the mining industry, but these costs are likely much lower than the state's costs and are unlikely to change the conclusion. Table 16 shows that revenue is \$104.2 million greater than the state expenses. The relationship is also shown in Figure 13.

Table 16. Comparison of State and Local Mining Revenues with Operating and Capital Expenditures

Mining	Real 2014 \$ million
Average state revenue (2010-2014)	96.4
Average municipal revenue (partial, 2010-2014)	22.5
Operating expenditures (FY 2014)	10.7
Average capital expenditures (2012-2014)	4.0
Surplus (Deficit)	\$104.2

Figure 13. Comparison of State and Local Mining Revenues with Operating and Capital Expenses



4.6 A Caution: “Average” conclusions are not accurate for any individual mine, nor for the different segments of the mining industry. The conclusions of this report are for the mining industry as a whole: hard rock, coal, and placer. The three parts of the industry

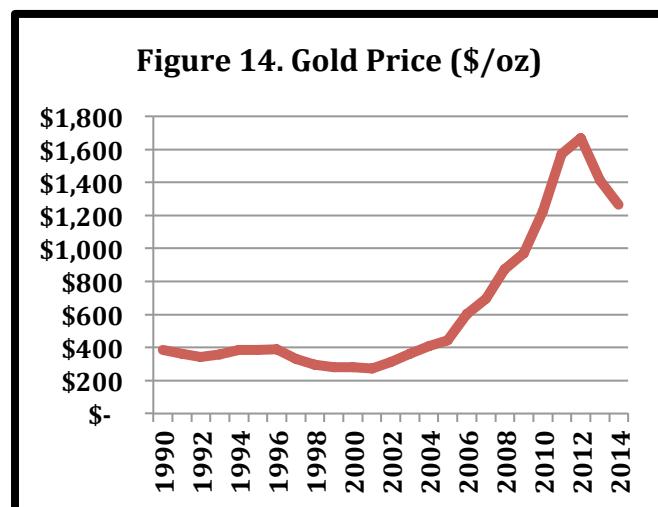
operate under different economic conditions. The figures in this report do not represent any individual segment, although Alaska's hard rock mines contribute most of the revenue, and are responsible for much of the operating budget expenditures. Half of coal mine regulatory expenses are funded by federal funds, which are not costs to the state and are excluded from the analyses. While the hard rock segment may be most responsible for the figures in this report, the conclusions do not represent any individual hard rock mine. Every mine is different. At some mineral prices, some mines may be making a significant profit, while others may be losing money. The economics of individual mines can be very different. Mineral prices do not move in lockstep. Gold prices can be increasing while zinc prices are falling sharply. Or the opposite. It is similar with lead and silver prices. Therefore, it is important not to assume that the overall payments and costs represent any individual mine.

4.7 Differences from previous analyses

Previous analyses have come to somewhat different conclusions when comparing mining industry related costs and revenue than does this analysis. Analysis completed for FY 95, FY 97, and FY 02 concluded that the state's management costs for mining were greater than its revenue. The analyses concluded that mining revenue accounted for between 49% and 58% of costs for those years. By FY 05 and FY 06, the analyses showed that mining returned significantly more than the state's cost. The FY 06 analysis showed General Fund revenue of \$44.8 million and costs of \$12.9 million.

To some extent the two sets of analyses reflect some different assumptions but most of the difference is due to an increase in mining revenue.²⁴ The increase in mining revenue is the result of higher mineral prices and opening new mines.

Figure 14 shows the change in gold prices since 1990.²⁵ The approximately \$400/ounce gold price in the early 1990s began to drop in 1996. The price hit a low of \$255.95 on April 2, 2001 before rebounding. It reached its highest price of \$1,895.00 on September 2 and 3, 2011. While gold is only part of the industry, zinc, silver and lead prices were low during the late 1990s and the first years of this century. As a result mining profits were low. Greens Creek mine actually shut down from 1992 to 1995. Fort Knox began operation in 1996, but decreased its capital valuation on its balance sheet twice in



²⁴ One of the main differences in assumptions is that the FY 06 analysis includes \$17.7 million in AIDEA revenue and \$9.5 million in cost for the Red Dog Road. These are not included in our analysis for reasons explained in Section 4.1. However, the major difference is the increase in revenue from the industry.

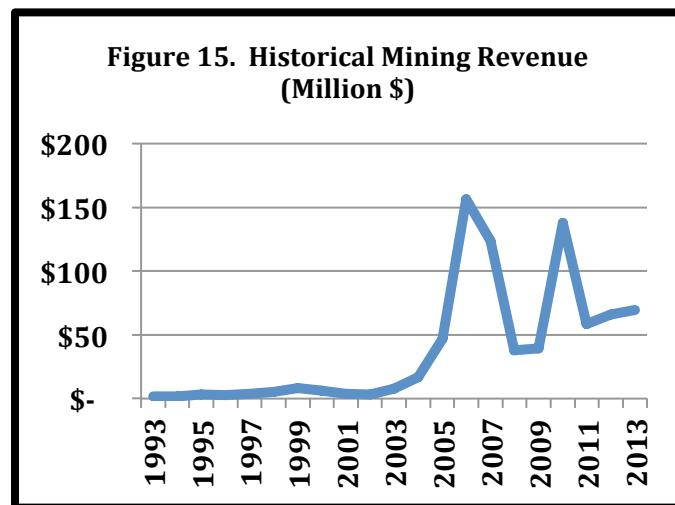
²⁵ Source for Figure 14 and the figures in this paragraph is www.kitco.com.

the late 1990s due to low mineral prices. The Illinois Creek Gold Mine went bankrupt in 1999.

The major mining revenue—mining license tax, corporate income tax, and royalty—tax business profits. When business profits are low or non-existent, these taxes yield little revenue to the state. As profits increase, revenue to the state increases.

In addition to the increase in mineral prices, there has been an increase in the number of large mines. Until Fort Knox opened in 1996, there were no hard rock mines on state land (and therefore no royalty payments to the state). The Pogo Mine began production in 2006 on state land. The Kensington Mine began production in 2010.

Figure 15 shows state revenue taken from DNR's Mineral Industry Reports.²⁶ The figure shows amounts in nominal dollars. It shows that, in general, revenue has increased along with gold prices. Figure 15 and Figure 14 do not match more closely in part because the value of Red Dog Mine's zinc production (price not shown) was greater than that of Alaska's gold production until approximately 2011. The product with the greater statewide value including the amount mined and the price—zinc or gold—changes depending on the year, on relative mining rates, and on mineral prices.



²⁶ See Mineral Industry Report 2013 and previous years. DNR's Division of Geophysical and Geologic Surveys, frequently in cooperation with the Department of Commerce, Community and Economic Development. The figures in the report were adjusted by subtracting AIDEA use fees (which were included in 2003 and later years), and by subtracting material sale revenues, which are not included as "mining" in this report. The annual Mineral Industry Report only began including mining's share of Alaska corporate income tax for the year 2000. Therefore, previous years do not include mining's share of corporate income tax. However, mineral corporate income taxes were low during that period, and were \$400,000 or less through 2003.