

# Economic Overview of the Nevada Mining Industry

2006



*Blasting Panel at Jerritt Canyon Mine*

# **Economic Overview of the Nevada Mining Industry 2006**

Prepared by John L. Dobra, Ph.D.,  
Director, Natural Resource Industry Institute, University of Nevada

For the  
**Nevada Mining Association**  
9210 Prototype Drive, Suite 200  
Reno, Nevada 89521  
(775) 829-2121 (775) 852-2631

# Table of Contents

Executive Summary	1
Highlights of Nevada Mineral Production	3
Other 2006 Mineral Production	5
Mining Employment and Payrolls	7
Economic Impacts of Mining	8
Taxes Paid by Nevada Mining	8
Nevada Mining: A Review and Outlook	9
2006 Industry Developments	10
Exploration Activities in 2006	19
State and Local Taxes Paid in 2006	21
Precious Metals Industry Profitability	25
Nevada's Minerals Industry Outlook	29

## **Executive Summary**

2006 and the first half of 2007 has been a booming period for Nevada's minerals industry. Driven by rising commodity prices in virtually all sectors, operators are straining to increase production capacity and reserves.

The value of mineral output in the State increased 38 percent in 2006 to a record \$5.1 billion, according to the Nevada Division of Minerals (NDOM). Approximately 75 percent of this value was accounted for by the State's gold production with an estimated value of \$3.8 billion. This reflects a 25 percent increase in the value of gold production over 2005 in spite of a slight decline in production of 6.305 million ounces versus 6.85 million ounces in 2005. The increase in value reflects a significant, 36 percent, increase in gold prices in 2006 to an annual average of \$603 per ounce from \$445 in the previous year.

Other metals production, most notably copper and silver, also increased significantly in terms of value in 2006. In the case of copper, rising output and prices to 127.5 million pounds at \$3.05 per pound puts the estimated value of output at \$389 million. In the case of silver, the value of output increased 34 percent in spite of declining production because prices in 2006 averaged \$11.55 per ounce versus \$7.32 in 2005.

According to the NDOM, other minerals produced in the State including aggregates, barite, clays, diatomite, dolomite, gypsum, lime and limestone, lithium compounds, magnesium compounds, mercury, molybdenum, opals, perlite, salt and silica sand also increased significantly in value in 2006. Production of these other minerals increased in value to \$860 million in 2006 from \$560 million in the previous year.

As in the last several years, the same global forces that have been driving commodity prices upward have also been driving up production costs. In the gold sector, weighted average total cash costs of production, which excludes non-cash items such as depreciation and amortization, increased 27 percent from \$288 per ounce in 2005 to \$365 in 2006. Total costs, which include non-cash items, increased 28 percent from \$341 per ounce in 2005 to \$435 in 2006. There are a variety of factors driving costs higher in addition to rising material and equipment costs. As precious metals prices rise operators choose to process lower grade ores that become economical to process because of the higher prices. This lowers output and raises costs. In addition, there are a number of operations going through start and expansion phases during 2006, which also tends to raise costs.

In calendar year 2006 direct taxes by mining companies in the state to the state and local governments, not including any taxes paid by suppliers and employees, reached an unprecedented level of over \$190 million. This includes a record level of Net Proceeds of Minerals taxes of over \$61 million, \$103 million in Sales and Use taxes on purchases of supplies and equipment, and an estimated \$25 million in ad valorem property taxes on property, plant and equipment.

Employment in the industry also increased in 2006 by about 1,000 workers from 12,800 in 2005 to 13,800 in 2006 in the natural resources and mining sector. Almost 9,000 of these jobs are in the metal ore mining segment of this sector. As in the past, average annual earnings in mining were far higher than other sectors of the State economy. Average

annual earnings in mining were \$69,400 and \$73,900 in metal ore mining. This compares with state-wide average earnings in all industries of \$40,100.

NDOM also reports record levels of exploration spending in the State in 2006. Its exploration survey reports \$164.9 in exploration spending by 28 companies that responded to the survey. This represents the fifth straight year when reported expenditures have increased and the highest figure since the survey began in 1995. These expenditures are critical to the future of the industry because operators must replace the minerals they produce by finding more reserves in the ground. For the State's two largest producers, this requires finding millions of ounces each year.

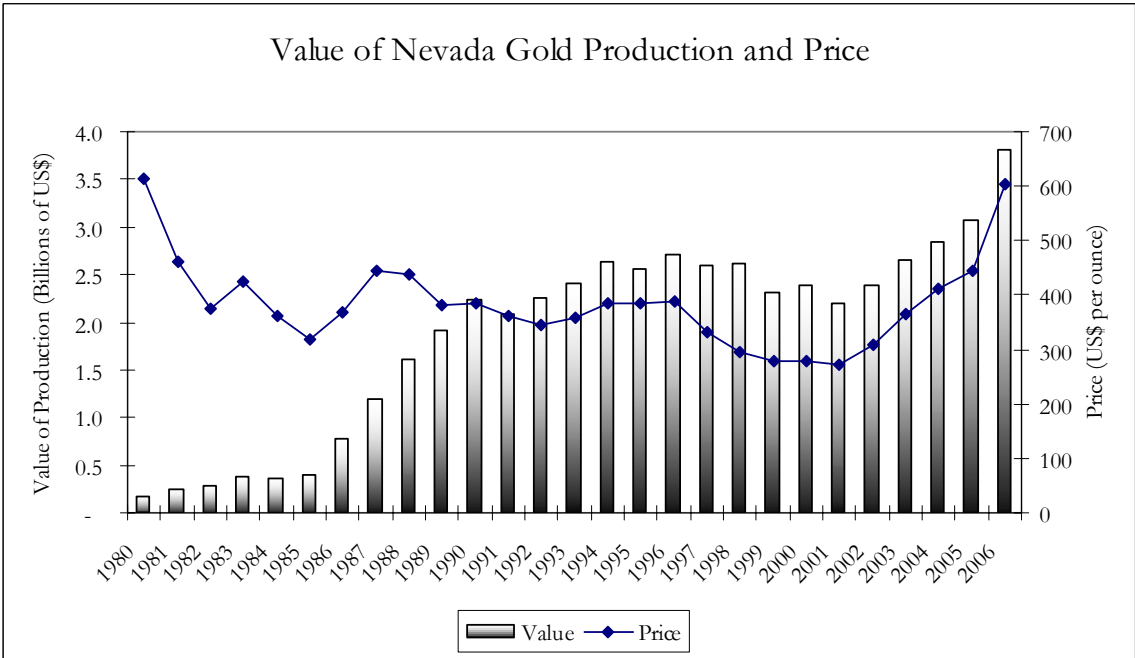
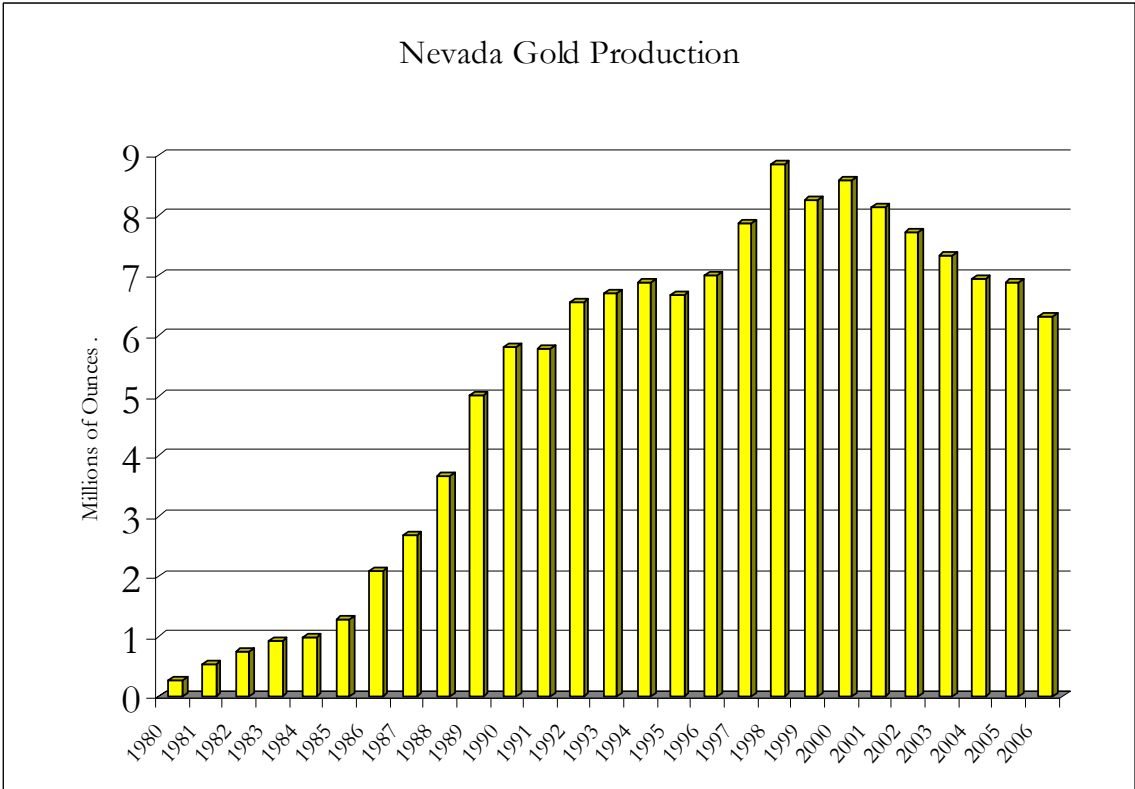
Reserve estimates depend on a number of factors but primarily the price used to estimate the cut-off grade in a particular deposit and the quantity of recoverable mineral. Because of the volatility in gold prices, in particular, the price used to estimate reserves is generally quite conservative, that is, well below the current price. In 2005 a significant increase in the price used reflecting higher prices resulted in a significant increase in reported reserves. In 2006 these adjustments were smaller and reserve estimate increases were more modest, but still at a record level of approximately 80 million ounces, sufficient to maintain current levels of production for over 12 years.

Other notable developments in 2006 and the first half of 2007 include:

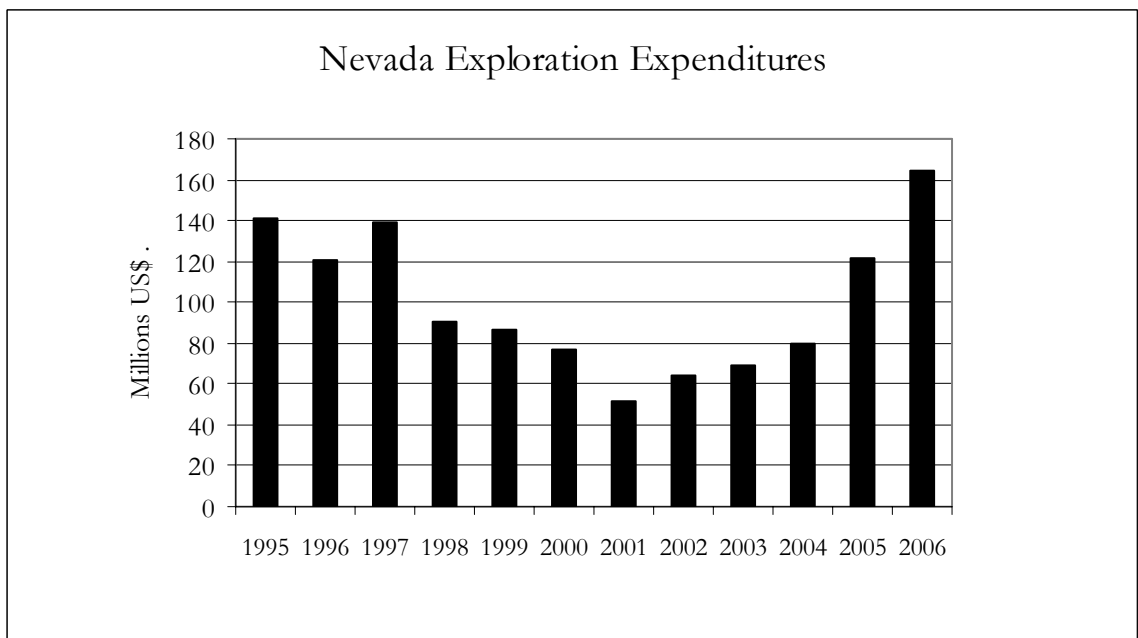
- Barrick Gold's "Western 102" 115 megawatt power plant in Storey County saw its first full year of operations in 2006. The company estimates that plant will lower production costs by as much as \$9 per ounce.
- Newmont Mining began construction of its 200 megawatt power plant near Dunphy. The company estimates that when completed, the plant will lower its production costs by up to \$25 per ounce.
- Newmont Mining commissioned two new mines in the fourth quarter of 2006, the Phoenix mine near Battle Mountain and the Leeville mine on the Carlin Trend.
- Barrick Gold continued exploration and development work at its Cortez Hills Joint Venture south of its Cortez/Pipeline operations on the Cortez/Battle Mountain Trend. The company expects to receive operating permits for Cortez Hills in 2008.

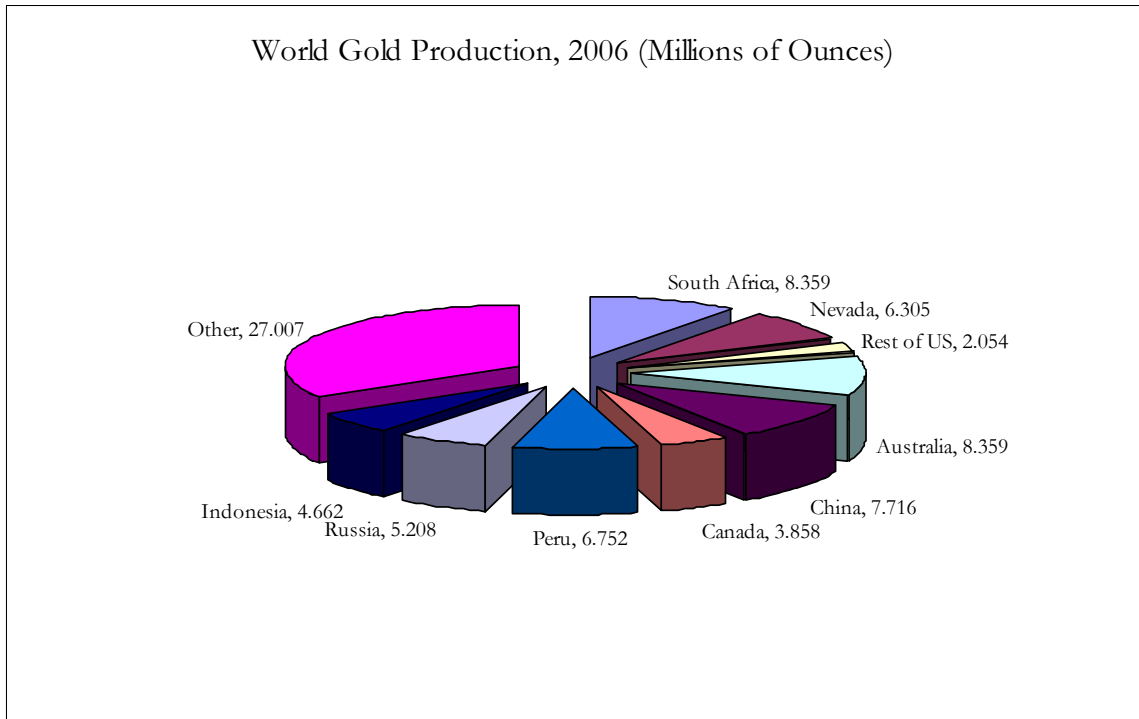
# HIGHLIGHTS OF NEVADA MINERAL PRODUCTION

## GOLD



- Nevada operators produced 6.31 million ounces of gold in 2006 worth approximately \$3.8 billion at the 2006 average price of \$603 per ounce. This compares with 6.85 million ounces of gold in 2005 worth approximately \$3.05 billion.
- Nevada’s production declined for the sixth straight year as a result of processing lower grades because of higher prices. However, the value of gold production increased for the fifth straight year because of higher gold prices.
- Nevada gold production accounted for over 75 percent of total US production and approximately 7.8 percent of world production.
- According to the USGS Nevada ranks as the fifth largest gold producer in the world behind South Africa, Australia, China and Peru.
- The Nevada Division of Minerals reports over 20 major gold/silver mines in Nevada although several of these (e.g. Hycroft, McCoy/Cove, Denton-Rawhide, and Ruby Hill) are closed or operating at reduced levels (e.g. the Rain Mine, Trenton Canyon Mine). In addition, a number of these “operations” have multiple points of extraction, that is, actually consist of several “mines”.
- Gold exploration expenditures grew significantly in 2006 to \$164.9 million, up from \$121.3 million in 2005, the highest figure since the NDOM survey began in 1995.





## **OTHER 2006 MINERAL PRODUCTION**

### **COPPER**

- For the first time in over a decade copper production has reappeared as a major mineral product because of renewed production at the Robinson mine near Ely.
- 2006 copper production was 127.5 million pounds with an estimated value of \$389 million. Copper prices have increased significantly over the past few years and averaged \$3.05 per pound in 2006.

### **SILVER**

- Nevada silver production fell slightly in 2006 to 8.45 million ounces from 9.9 million ounces in 2005. These levels, however, are down significantly from the levels seen in the late 1990's due to the closure of several large silver producing mines.
- The Coeur-Rochester mine in Pershing County remains the state's largest silver producer at 5.1 million ounces in 2006, down from 5.7 million ounces in 2005.

- Silver prices have risen significantly in the past several years and averaged \$11.54 in 2006 compared to \$7.32 per ounce in 2005 and \$6.67 per ounce in 2004. Current prices (mid-2007) are over \$13 per ounce.
- Because of higher prices the calculated value of 2006 silver production in Nevada rose to \$98 from \$73 million in 2005 in spite of lower production.

## **OTHER MINERALS**

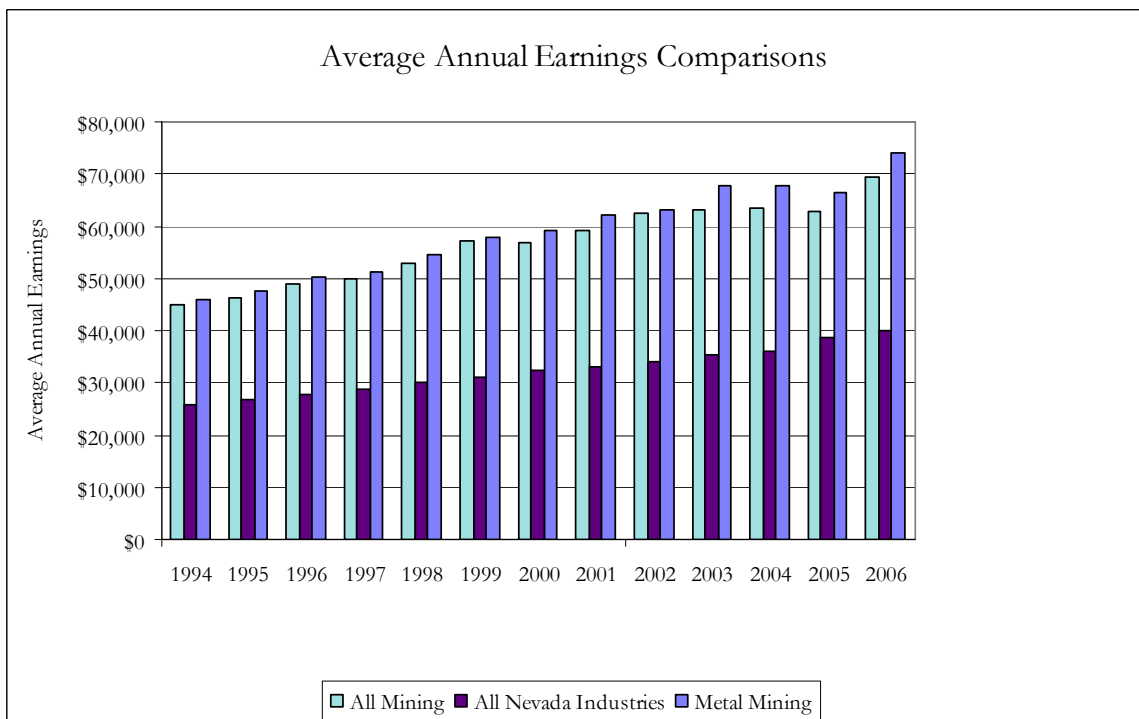
- Nevada geothermal wells produced 1.3 million megawatt hours of electricity in 2006 as well as providing domestic, public and commercial heating in several parts of the state. Geothermal electric production came from 15 plants at 10 different sites, and is sufficient to provide electrical energy for approximately 80,000 typical homes.
- Nevada mines also produced numerous other minerals including aggregates, barite, diatomite, dolomite, gypsum, limestone, lithium carbonate, molybdenum, magnesium oxide, perlite, precious opals, salt, silica sand, and specialty clays.
- The value of the production of these other minerals is an estimated \$860 million, up about 54 percent from the previous year.
- The total value of all mineral production (excluding oil and geothermal production) in 2006 was a record \$5.1 billion, up from \$3.7 billion in 2005, which was also a record.

(Sources for the above include the Nevada Division of Minerals, US Geological Society, and various company and industry publications)

## MINING EMPLOYMENT AND PAYROLLS

2006 Average Direct Employment	13,800 jobs
2005	12,770
2004	11,690
2006 Payrolls	\$859 million
2005	\$720
2004	\$605
2003	\$553
2006 Average earnings for Metal Mining	\$73,888/year
2005	\$66,508
2004	\$67,652
2003	\$67,795
2006 Average earnings for All Mining	\$70,023/year
2005	\$62,712
2004	\$63,388
2006 Average earnings in All Industries Statewide	\$40,057

(Source: Nevada Department of Employment, Training and Rehabilitation)



## **ECONOMIC IMPACTS OF MINING**

- Mining increased state output 2006 by \$9.1 billion including both direct and indirect impacts, up from \$6.6 billion in 2005.
- Generated more than 75,000 total jobs in Nevada in 2006 including both direct and indirect impacts compared to 70,000 total jobs in 2005.
- Contributed \$2.8 billion to Nevadans' personal incomes in 2006 compared to \$2.03 billion in 2005.

(Source: U.S. Department of Commerce, Regional Multipliers (RIMS II), 1992)

## **TAXES PAID BY NEVADA MINING**

Estimated Direct Taxes Paid by the Mining Industry 2002 - 2005 (\$1,000)

	2003	2004	2005	2006
Net Proceeds of Mines Tax				
County Portion	\$ 20,139	\$ 21,808	\$ 22,425	\$ 32,177
State General Fund	<u>\$ 18,657</u>	<u>\$ 17,749</u>	<u>\$ 19,381</u>	<u>\$ 29,74</u>
Total NPOM Tax	\$ 38,796	\$ 3,55796	\$ 41,806	\$ 61,881
Sales & Use Tax	\$ 43,350	\$ 43,170	\$ 68,973	\$ 101,087
Property Tax	\$ 18,480	\$ 17,000	\$ 20,016	\$ 25,000
Business License/ Modified Business Tax	<u>\$ 700</u>	<u>\$ 3,710</u>	<u>\$ 2,889</u>	<u>\$ 2,662</u>
Total	<u>\$ 102,121</u>	<u>\$ 103,437</u>	<u>\$ 133,684</u>	<u>\$ 192,439</u>

(Source: Nevada Department of Taxation and industry surveys)

## **NEVADA MINING: A REVIEW AND OUTLOOK**

### **HISTORY**

Nevada is the “Silver State” because at the time of admission into the Union in 1864 silver mines in the Comstock Lode under Virginia City were the driving force in its economy and a major rationale for its admission. Nevada is still a silver producer and produces more silver ounces than gold. But with gold prices currently well over \$600 per ounce and silver at around \$12, gold has long replaced silver as the state’s most important mineral commodity in terms of value of output and economic impacts.

As described in previous editions of this Overview, Nevada’s mining industry is in what some have labeled as a “second renaissance.” From its beginnings in the Comstock era, its first renaissance occurred after the turn of the 20<sup>th</sup> century in silver and gold mining towns like Tonopah and Goldfield and with the beginning of copper mining near Ely. The Tonopah and Goldfield booms were relatively short lived and, although copper production in Ely and later in Yerington had longer lives, by the 1970’s the mining industry had ceased to be an important economic force in the state. The 1980’s, however, saw the development of numerous large-scale gold mining operations in central, northern, and eastern regions of the State that has vaulted Nevada into the position of a major world gold producer – its “second renaissance.”

Since the revival of the industry in the 1980’s the industry has been through several price cycles that have driven investment cycles. High prices in the early 1980’s, when gold prices ranged from an annual average over \$600 in 1980 to the high \$300 range, spurred the revival. Prices declined in the mid 1980’s to the low \$300 range then revived again at the end of the decade. The pattern was much the same in the 1990’s, prices declined in the early part of the decade, revived in the mid 1990’s and then declined to 30 year lows in the late 1990’s. The recent price recovery that began in 2002 possibly starts yet another round.

What is important to note about these cycles is that throughout the past two decades, and in spite of these cycles, the industry has managed to build a large, efficient and economically viable capital base that is fundamentally sound and sustainable well into the next decade. This capital base has been built through the investment of over an estimated \$25 billion in exploration and expenditures on plant and equipment since 1980. The sustainability of this capital base is evident in both the industrial, commercial and social infrastructure that has developed around the industry and, more recently, a significant expansion of its reserve base as a result of the recovery of prices and increased exploration.

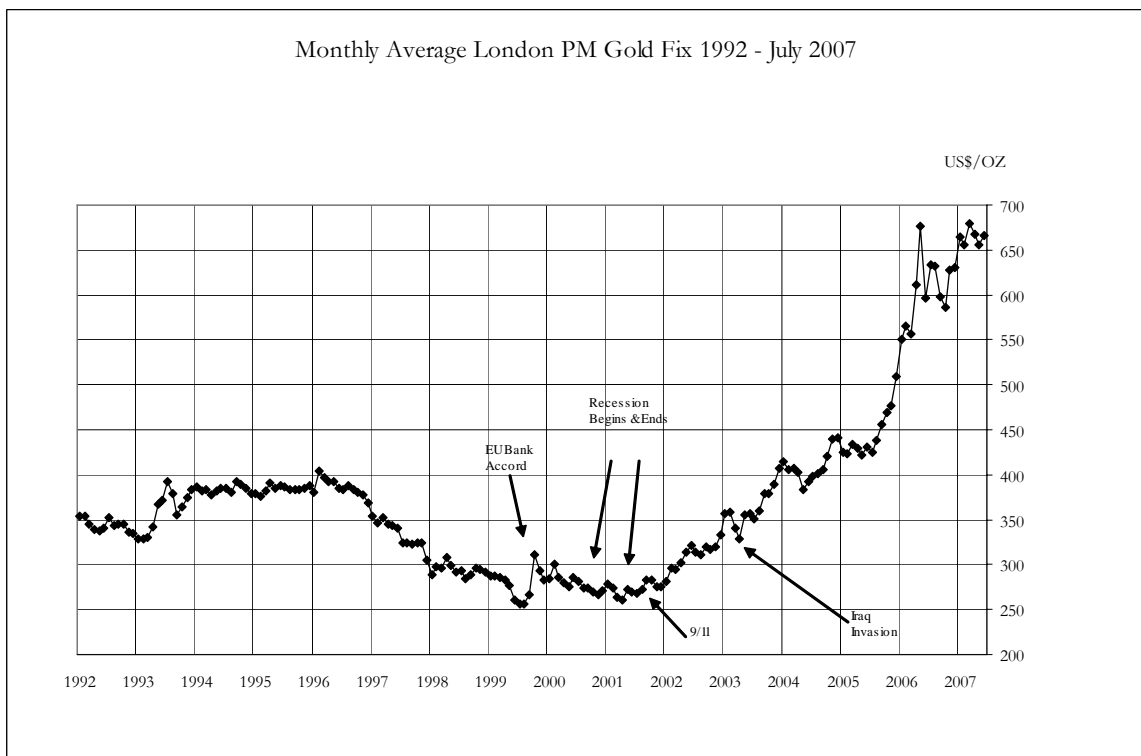
As of 2006 proven and probable gold reserves in the state have increased to over 80 million ounces in spite of having mined just under 20 million ounces over the past three years. The Carlin Trend itself, in northern Eureka and western Elko counties has produced over 50 million ounces, and is one of the world’s largest gold

producing areas. The Battle Mountain Trend in Lander County is not far behind and both of the trends contain significant reserves for the future. These reserves represent the future of the industry and will allow it continue current levels of production for over a 14 years at current prices and cost levels. This level of statewide reserves is unprecedented and bodes well for the future.

## 2006 INDUSTRY DEVELOPMENTS

### GOLD PRICES

Clearly, the most significant factor affecting Nevada's mining industry and its economic health is the price of gold. The effects of major developments in world gold markets over the past decade can be seen in the graphs below, but basically what we have seen has been a major decline in prices beginning in 1996 falling to 30 year lows in inflation adjusted terms in the late 1990's, and then a rebound beginning around 2002. These trends reflect the global nature of world gold markets and the confluence of a number of international financial, economic and political events.



Below it is argued that what we have observed over the past decade is the result of the interaction of three principal factors: (1) central bank activities including

those related to the creation of the new European currency, the euro; general commodity price trends but especially the price of oil; and general macroeconomic developments. (2) Growing world demand for all commodities, led in importance by oil, and reflected in gold prices. And finally, (3) macroeconomic/political developments that influence the value of the U.S. dollar relative to other currencies and have a direct impact on the dollar price of gold because it is an internationally traded commodity.

Arguably, European central bank activities influence on gold prices has diminished over the past decade but they are, nonetheless, an important factor if for no other reason than the fact they hold so much of it in the form of monetary reserves. In the mid and late 1990's as they prepared to launch the new European currency, the Euro, a number of banks sought to sell gold stocks that would be considered "surplus" once they no longer managed their individual national currencies. This, along with some other factors, led to a slide in prices from over \$400 per ounce in early 1996 to \$252 per ounce in July 1999.

In September 1999 the banks entered into an agreement to limit gold sales to 400 tonnes per year through 2004 and to make the process more orderly. In 2004, the agreement was renewed. However, the initial agreement appears to have calmed the market and stemmed the slide in prices.

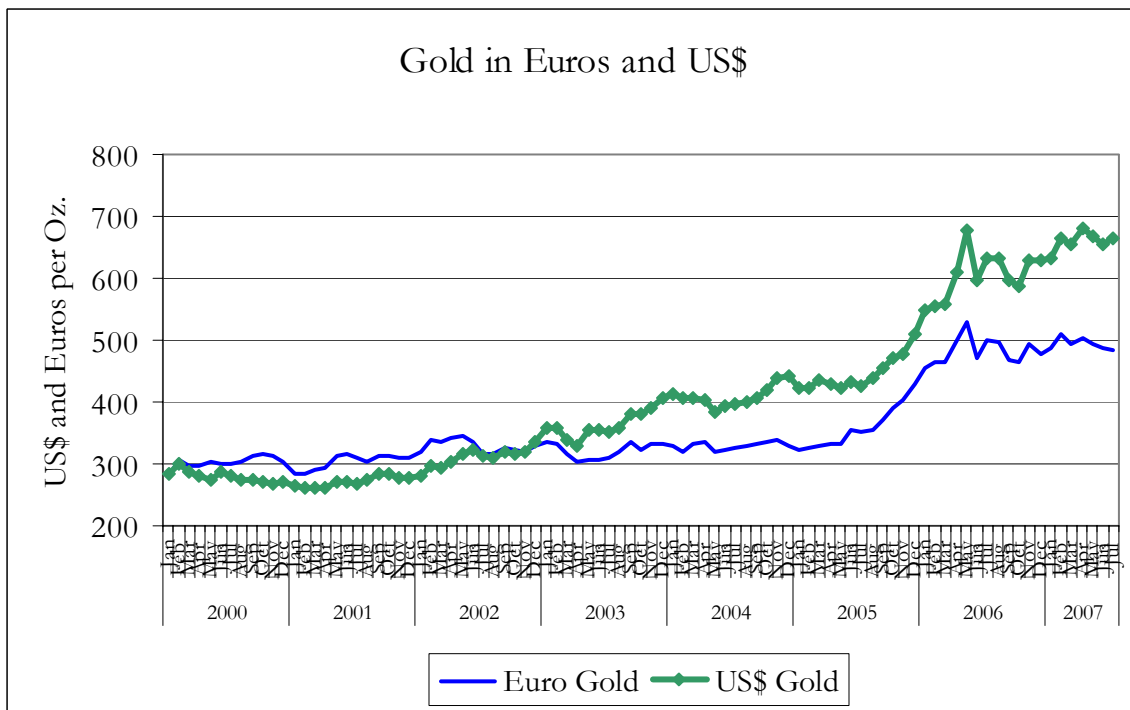
Undoubtedly, the fact that the banks were liquidating their stocks at price levels that were at the lowest level in real terms since the 1970's was a motivating factor. More recently, some of the banks have stepped up their sales, but now at much higher prices.

Growing world demand for all commodities reflects relatively rapid growth in the world economy, which can arguably be attributed to the liberalization of trade and increased globalization. Symptomatic of this growth are the economies of China and India, but U.S. economic growth has remained strong except for a brief mild recession in 2000 and 2001, and European economies have picked up their growth. This growth has most notably impacted energy markets and particularly oil, but all metals and agricultural commodities as well. The significance of oil price increases is that much of the supply comes out of the Middle East, which has traditionally been a large consumer of gold for a variety of cultural and economic reasons. The significance of globalization and rising incomes in India in particular, is that consumers on the subcontinent have traditionally been the leading gold importer in the world again for a variety of cultural and economic reasons.

"Macroeconomic and political factors" affecting gold markets is a very broad category. However, conventional wisdom generally holds that wars, disasters and financial panics increase the price of gold. A cursory look at the graph above suggests that this is not the case, at least in the long run. Gold markets did react to the terrorist attacks of September 11, 2001 but the impact was small and not long lasting. The price did appear to run up prior to the invasion of Iraq in the spring of

2003 but quickly retreated after the invasion occurred. Although not shown on the graph, the same thing occurred in 1991 with Operation Desert Storm.

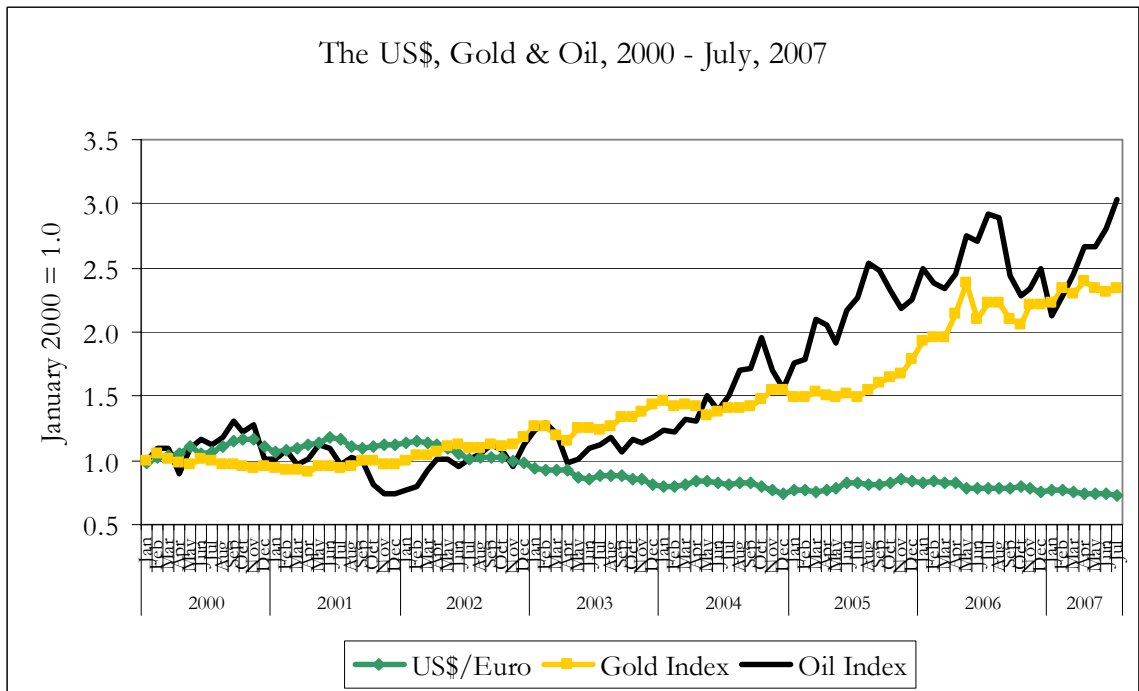
The major macroeconomic factor influencing the price of gold over the past five years, however, has been the steady decline of the U.S. dollar relative to other major currencies that has occurred since 2002. The graph below provides one illustration of the effect of dollar devaluation on the price of gold showing the price of gold in dollars and euros. Until late 2002 the dollar price of gold was nominally lower, reflecting a higher dollar value.<sup>1</sup> After 2002 the value of the dollar the nominal dollar price was higher, reflecting a weakening of the dollar relative to the euro.



A number of factors have been at work to weaken the dollar over this period, but the two primary causes have been rising U.S. trade deficits because the strong U.S. economy has led to higher levels of imports, and federal budget deficits following the 2001 – 2002 recession and the invasion of Iraq. However, beyond these monetary issues, the fact that gold has risen in both currencies shown and, in fact, all currencies, means that the real price has risen over this period for some of the other reasons cited above.

<sup>1</sup> "Nominal" value refers to the "number" of euros and dollars it takes to buy an ounce of gold. Since the value of gold is the same in every currency, the difference in "nominal" values simply reflects differences in the values of the currencies.

The graph below puts the discussion of these monetary issues into a clearer perspective by showing the value of the dollar relative to the euro, the price of gold, and the price of oil. All of these prices have been converted into an index so they can be displayed on the same graph. The value on the vertical axis is the price in each period shown divided by the price in January 2000.



The graph illustrates, like the previous one, the decline of the dollar beginning in late 2002, and up to that period gold prices appear to move inversely to the value of the dollar. In late 2002, however, the price of oil started to rise taking gold with it. After 2002, the gold markets have appeared to be an oil, or demand driven market because many petrodollars were being converted into Middle Eastern gold holdings.

These trends present a “good news, bad news” situation for Nevada’s gold industry and, indeed, the economy of rural Nevada. The “good news” is obviously that the price of gold is up. The “bad news” is that gold and other mining are energy intensive activities and higher oil and energy prices are driving producers’ costs up. The “bad news” for consumers in Nevada’s rural economy is that many frequently drive long distances to work and sometimes even a grocery store, and higher gas prices hit them in their pocketbooks. However, on the whole, the region’s economy is clearly better off in spite of these drawbacks.

## OPERATIONS

Mining operations consist of five distinct activities: exploration, permitting, development, extraction or mining, and reclamation. In a simplistic view, these

activities occur in the order listed above, however, in reality they generally occur simultaneously.

Permits from state and federal regulatory agencies are required for each stage of the process although initially, permits are generally only sought for exploration. Part of this permitting process involves providing financial assurance that land disturbances caused by operations will be reclaimed. The permitting process is required by various environmental laws and regulations, principally the National Environmental Protection Act (NEPA) and the Federal Land Policy and Management Act (FLPMA). However, there are many other laws and associated regulations that regulate mining operations that deal with a wide variety of issues from protecting antiquities to protecting endangered species, water and air quality both during and after mining.

With appropriate permits, prospectors explore for minerals and, if successful, they proceed to the development stage. Development generally consists of constructing access roads, processing facilities, and perhaps removing overburden (non-mineral bearing materials, or waste). Before development can proceed, however, the prospective operator must prepare a “Plan of Operations” which describes what development and mining operations will involve and how disturbances caused by operations will be reclaimed. The Plan of Operations is subject to regulatory and public review and must describe how the operator will avoid or mitigate any adverse impacts on the environment.

Permitting is an increasingly important part of mining operations and has added significantly to the cost of mine development. In the mid 1990’s the permitting process to develop Placer Dome’s Cortez mine took five years at a cost that is difficult to calculate but not the least of these costs was having to wait five years to develop the resource. Newmont’s Phoenix mine, which was commissioned in late 2005, began the permitting process nine years previous. These processes take this long for a variety of reasons, some very legitimate and some less so. The process requires compilation of large quantities of geological, technical and environmental data to develop a Plan. The Plan then requires review by state and federal regulatory agencies as well as by the public before permits to proceed can be issued. It is at this point that the process gets extended as environmental groups in particular but sometimes others generally challenge every permit through administrative appeals and lawsuits. The fact that most appeals are rejected suggests that the process is being abused to the detriment of the industry and the state.

Once the permitting process is completed operators can proceed to development and eventually, mining and processing ore. Currently, there are approximately 18 active gold and silver operations. However, since some of these operations involve multiple points of extraction, or “mines”, where multiple mines feed common processing facilities, it is more accurate to talk about operations than mines. There are a number of mines that are currently closed but where prospective

operators are in some stage of feasibility study or permitting to reopen them and there are also a number of mines in the development phase.

In 2006 active operations produced 6.305 million ounces of gold, 8.45 million ounces of silver, and 127.5 million pounds of copper. The cost of production for operations is determined by factors such as the grade of the ore processed, the amount of waste rock that has to be moved to get at the ore commonly referred to as the “stripping ratio”, the processing methods used, whether the mines are open pit mine or underground, etc. All of these factors will generally be unique to each operation and, consequently, different operations will have different costs of production.

A consequence of low gold and silver prices during the late 1990’s and early 2000’s was that operators made concerted efforts to reduce their production costs. As prices have risen over the last three years operators have been able to expand their reserves and process lower grade materials. This, however, has caused their costs to rise. Other factors contributing to rising production costs at Nevada mines has been significant increases in fuel and energy costs, as well as the cost of steel, labor, and equipment. In the case of the last three items, operators have also been plagued with shortages and delays from suppliers.

Mining costs are generally referred to as “**total cash costs**” and “**total costs.**” **Total cash costs** refer to costs that vary with production and include payrolls, electric power, fuel, chemicals, production taxes, etc. They are costs that producers must pay to stay in operation. They are referred to as “total” cash costs because they include taxes and royalties which are not really costs of production but nonetheless have to be paid to operate legally. Prices above a producer’s total cash costs, but below total production costs, merely allow the producer to maintain a positive cash flow, however, a price equal to a producer’s cash cost does not allow it to recover any of its investment or earn a profit. **Total costs** include total cash costs but also include non-cash costs such as depreciation of capital plant and equipment

The graph below has been constructed to show 2006 total cash costs and total costs for each Nevada gold producer that reports them in public disclosures, primarily their annual corporate reports. The graph also shows the 2006 annual average price of gold of \$603 per ounce.

To construct this graph mines are ordered, from left to right, from the lowest to the highest cost producers. The cost of production is measured on the vertical axis. Hence, the length of each horizontal segment of each “curve” represents the output of one mine or group of mines operated as a unit, and the height of the segment represents its cash and total costs, respectively. Also shown on the graph is a dashed horizontal line at \$603 to show the relationship between production costs and the 2006 average gold price.\*The area between the cost “curve” and the price line

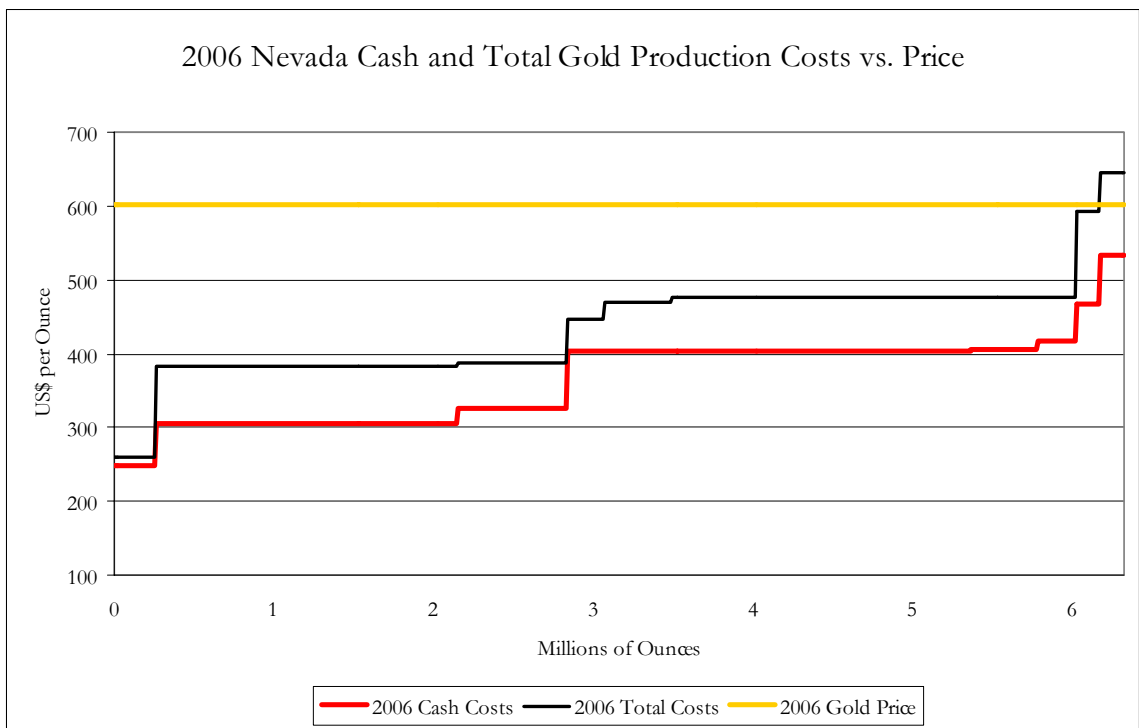
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\* It should be noted that the gold production represented on the horizontal axis is from primary gold producers who report their costs in terms of ounces of gold. The state’s lone primary operation silver also produces some

roughly approximates the operating profit of the mine; however, “operating profit” needs to be qualified. Total production costs for existing mining operations reported do not include exploration and development costs in the area of operations which, particularly in the current high price environment, may be quite substantial, and are substantial in a number of cases.

So, for example, the total cash cost curve shows that the state’s lowest cost mine produced just under 250,000 ounces of gold at a total cash cost of just over \$248 per ounce and total costs of \$260 per ounce. The mine with the second lowest production costs was a much larger mine with 1.87 million ounces of production at a total cash cost of \$305 per ounce and total costs of \$382 per ounce.

One of the long horizontal segments of the curve representing over two and one half million ounces of production is Newmont’s operations on the Carlin Trend northeast of Carlin and Valmy Trend near Valmy. This production comes from numerous points of extraction, or mines, but because they are operated as a unit, using common processing facilities by trucking ore between sites, they all have the same average costs.

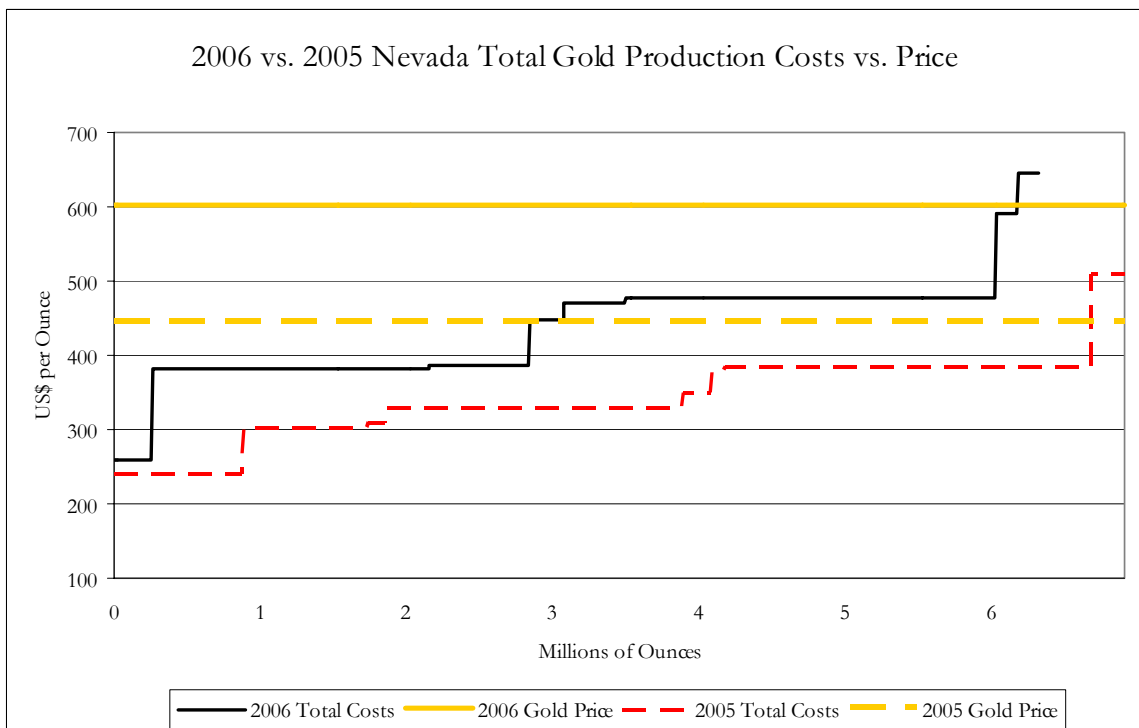


gold but reports their costs in terms of ounces of silver so their gold production is not shown. Similarly, most gold operations produce some by-product silver which they report in terms of “gold equivalent” ounces. Hence, the gold production shown is actually “gold equivalent ounces”. Based on the ratio of 2006 average prices of gold and silver, \$603.46 to \$11.55, it takes 52.25 ounces of silver to make one “equivalent” ounce of gold.

The total cost curve is constructed similarly with each horizontal segment representing the production of one operation. However, because of differences in non – cash costs among producers, the curves do not match up vertically. That is, a mine represented by a segment of the total cash cost curve may be different than the mine represented on the total cost curve directly above it.

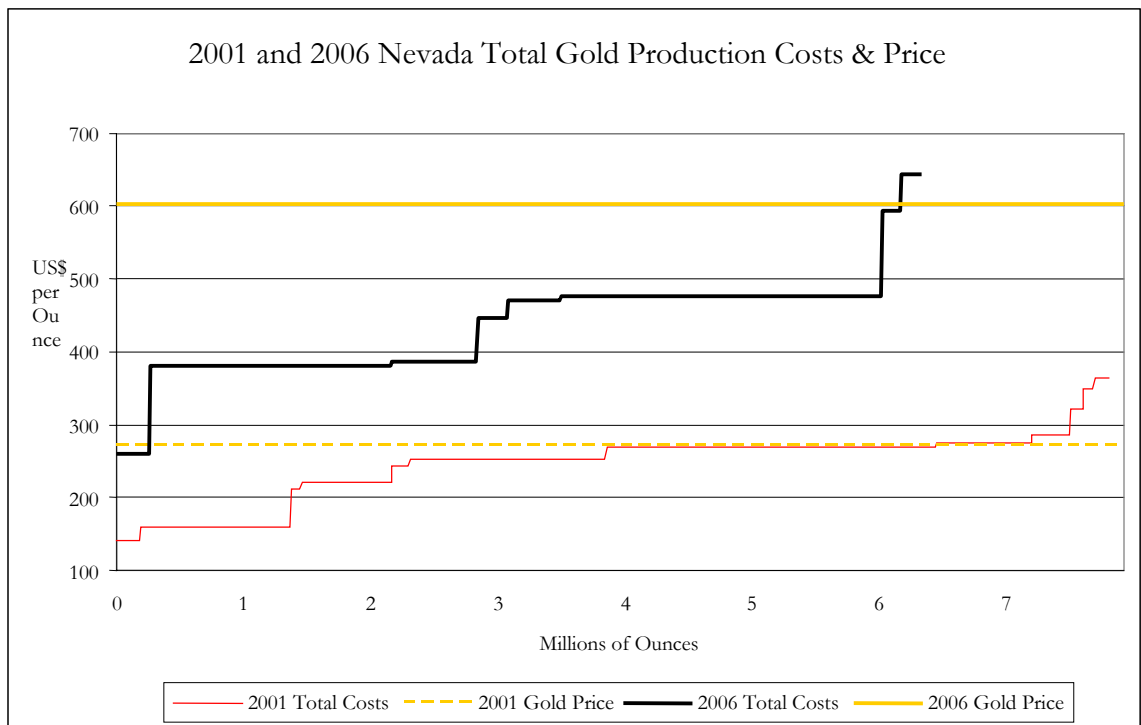
Among other things, the cost curves indicate that all of the state’s mining operations showed an **operating** profit in 2006. That is, the entire total cash cost curve is below the horizontal line representing the average 2006 price of \$603 per ounce. Emphasis is placed on **operating** profit because production costs do not include costs such as corporate overhead items, off – site exploration, and other items. An operating profit simply means the operation has a positive cash flow, not that it is profitable by an accounting or economic definition. The graph also illustrates that all but one of the operations represented operated with total costs below the \$603 line, which is also a significant improvement over the past few years.

It should also be noted that the profitability of operations illustrated on the graph does not necessarily bear any relationship to the profitability of the corporations that own these operations that can be found in annual financial reports. The costs on the graph only represent the cost of producing gold at these operations and do not include funds spent in exploration to find new reserves or, for example as noted above, the cost to Newmont and Barrick to construct power plants which will lower their costs in the future. Also not included in the costs above are the costs for in house experts, consultants and lawyers that are needed for the permitting process.



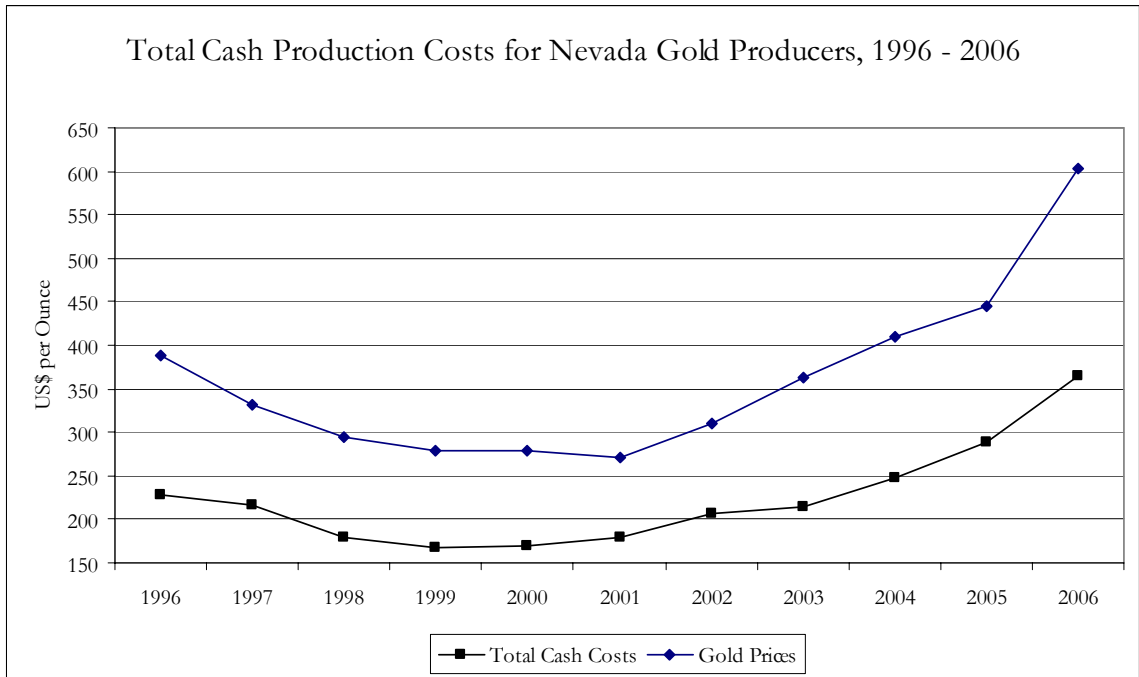
Overall, the weighted average total cash cost in 2006 was \$365 per ounce, up 27 percent from \$288 in 2005. Weighted average total production costs in 2006 were \$435 per ounce, a 28 percent increase over 2005 total costs of \$341 per ounce. These cost increases, as noted, not only reflect higher costs of energy, labor, steel, electricity, equipment and other costs, they also reflect operators' decisions to process lower ore grades processed because of higher gold prices.

The graph above shows a comparison of 2006 total production costs and 2005 total costs and prices in those respective years. The upward shift of the total production costs curve from 2005 to 2006 illustrates the 28 percent increase noted above. While this year to year increase in production costs is significant, over the same period the price of gold increased 35.5 percent.



During the years of declining prices from 1996 to 2001 operators made many efforts to cut their costs to stay in business. From 1996 to 1999 weighted average total cash production costs went from \$229 to \$168 per ounce, a decrease of 27 percent. These cost reductions were achieved by various means such as delaying or reducing development, exploration projects, and when possible, purchases of new equipment. In addition, when possible, operators stockpiled lower grade ores rather than processing them. Operators tried to preserve their workforces by getting rid of contractors and letting their own employees do what the contractors were doing

which also cut costs. Even with these kinds of efforts mining employment still fell by thousands of workers.



As the graph above illustrates, as price declines moderated in 1999 and 2000 production costs leveled off as well, and as prices starting increasing in the past four years costs have returned to their previous levels and higher. The reasons for these costs increases are basically the reverse of why they declined. Exploration and development projects were accelerated and lower grade ores are being processed. Development projects that had been deferred were undertaken and operators sought to replace old equipment. One additional and very significant factor, however, has been the substantial rise in energy and other costs. Through these operational and managerial decisions, operators have managed to maintain, on average, a positive operating margin or cash flow that is represented by the distance between the two curves on the graph above.

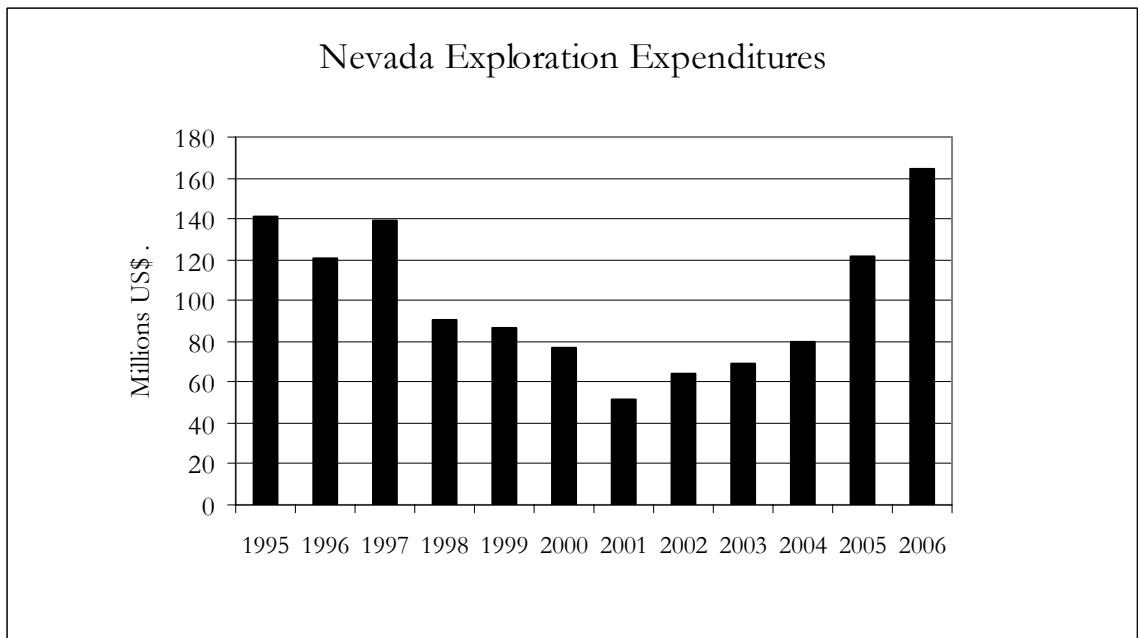
## EXPLORATION ACTIVITIES IN 2006

In 2002 exploration activity in Nevada reversed a 5-year downward trend and increased from \$51.2 million spent on exploration in 2001 to \$64.6 million. 2006 marks the fifth year of this upward trend with expenditures estimated by the Nevada Division of Minerals at \$164.9 million, up 36 percent over the same survey for 2005. This is the highest figure found by the survey since it began in 1995. It also should

be noted that even with this increase, the figure probably underestimates exploration expenditures because the Division must rely on voluntary reporting and tends to get most of its responses from larger companies and mineral exploration tends to attract a relatively large number of smaller companies.

During the period of low prices at the end of the 1990's mining claims held in Nevada recorded with the Bureau of Land Management had fallen to under 100,000 from levels in the several hundreds of thousands in the previous decade. Part of this decline was no doubt the result of a claim holding fee instituted in 1993 that resulted in many unpatented claims being dropped. More recently, however, the number of unpatented claims has rebounded strongly.

Most exploration activity is occurring in the general areas of the Carlin and Battle Mountain Trends since these are proven areas of gold mineralization. The Carlin Trend basically extends from Carlin on Interstate 80 northwest to Midas, although most mining activity is at the southern end of that extension. The Battle Mountain Trend, also sometimes called the Cortez Trend, extends from Valmy on Interstate 80 southeast to Eureka.



The previous edition of this report noted delays in getting approval of the bond amounts for exploration projects from the BLM. These regulatory delays create incentives for companies to explore outside of the U.S., particularly when the permitting process for developing a mine in the U.S. is likely to take years rather than the months it takes overseas. Fortunately, the BLM appears to have worked out some of the problems in the process and exploration activity is on the rebound as the graph above indicates. This rebound, however, is largely due to higher gold prices

and the State's favorable geology. Nonetheless, streamlining regulations and processing permits is welcome news.

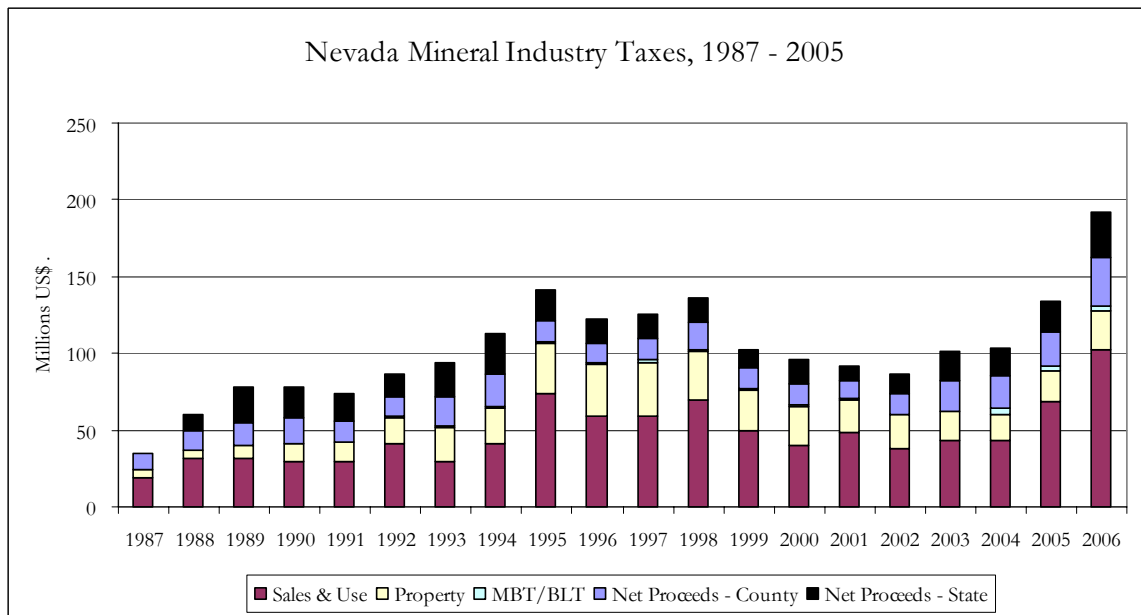
The record shows that this exploration has paid off for companies pursuing gold in Nevada. At year-end 2006 Nevada gold reserves stood at approximately 80 million ounces, about the same as at year-end 2004 in spite of producing about 13 million ounces in the period. Part of this increase was no doubt the result of reclassifying known "resources", that is, material that was known to exist but could not be profitably mined at lower prices, as "reserves" because they can be mined at today's higher prices. The extent to which reserves increased because of reclassification versus discovery is not known.

## **STATE AND LOCAL TAXES PAID IN 2006**

Total state and local taxes paid by the mining industry in 2006 increased by almost 45 percent over 2005 based on information from the Nevada Department of Taxation and industry surveys. The combination of state and local revenues from the four main taxes paid by the industry increased from \$133.7 million in 2004 to \$192.4 million. This was the largest single year percentage increase seen since the late 1980's. Note that this figure includes taxes paid by operators and does not include taxes paid by industry employee or suppliers. The figure below shows taxes paid by the industry in Nevada since 1987.

Much of the increase in taxes paid in 2006 was the result of very strong sales and use tax payments. This component of industry taxes increased from an estimated \$43.2 million in 2004 to \$69.0 million in 2005 and then to \$102.7 million in 2006, an increase of almost 60 percent from 2004 to 2005, and 50 percent in 2006. Sales and use taxes are paid on purchases of equipment and materials used in construction and development of mining and other properties which, in 2005 included two electric power plants. The \$102.7 million total is far and away the highest since surveys began in the late 1980's.

Other taxes increased as well, although less dramatically. Property taxes were up slightly, as new equipment was purchased and new construction was added to the property tax rolls. Net Proceeds of Minerals taxes were up sharply from a combined (state plus local shares) total of \$41.8 million in 2005 to \$61.9 million, an increase of 48 percent, and the highest level ever recorded. These components of the industry's tax bill are illustrated below.

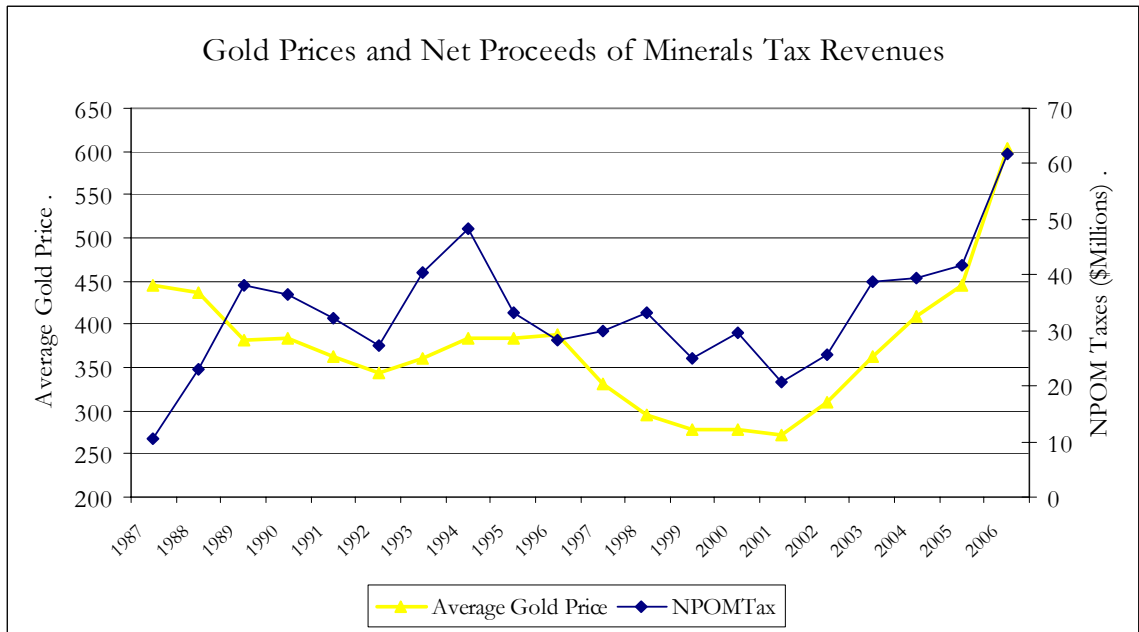


As the figure above illustrates, total taxes paid by the Nevada mining industry in recent years had been in a downward trend from 1999 to 2002. This trend was primarily due to low gold prices affecting Net Proceeds of Minerals Tax (NPOM) receipts. Low gold prices also led several mines to close during this period and others to seek lower assessments for property tax purposes. Low gold prices were also responsible for operators reducing their purchases of equipment, which, in turn, reduced Sales and Use taxes paid.

Each of these major taxes paid by the industry responds to the price and industry growth cycle in slightly different ways. In 2006 we appear to have had a “perfect storm” of events that pushed all taxes up simultaneously.

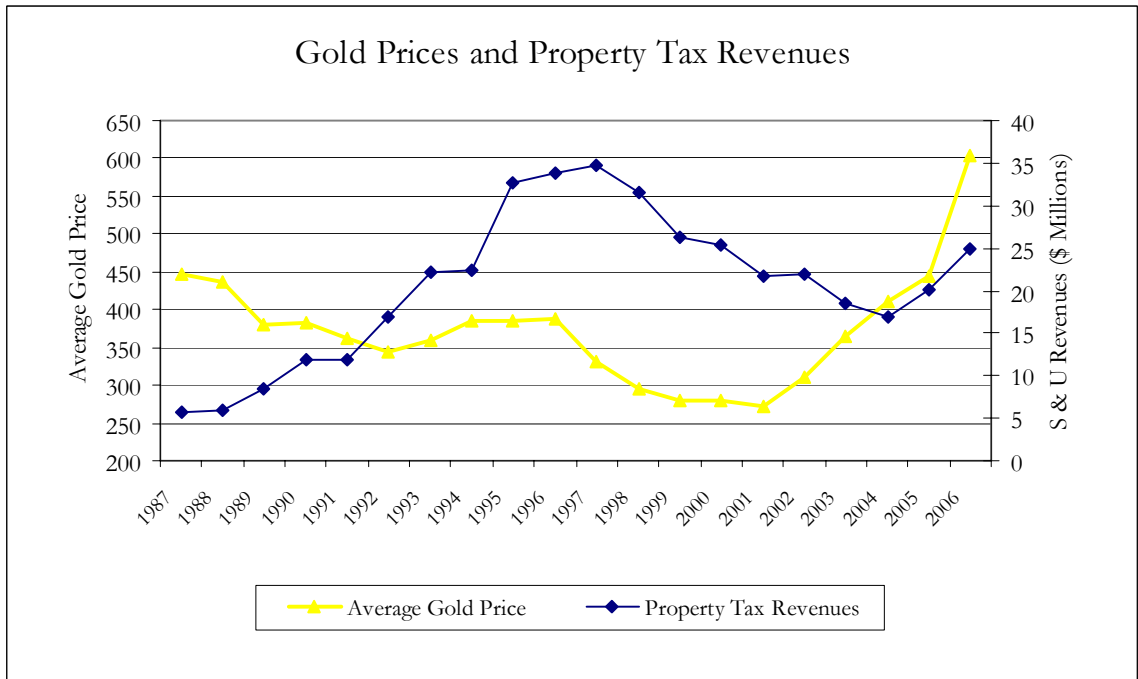
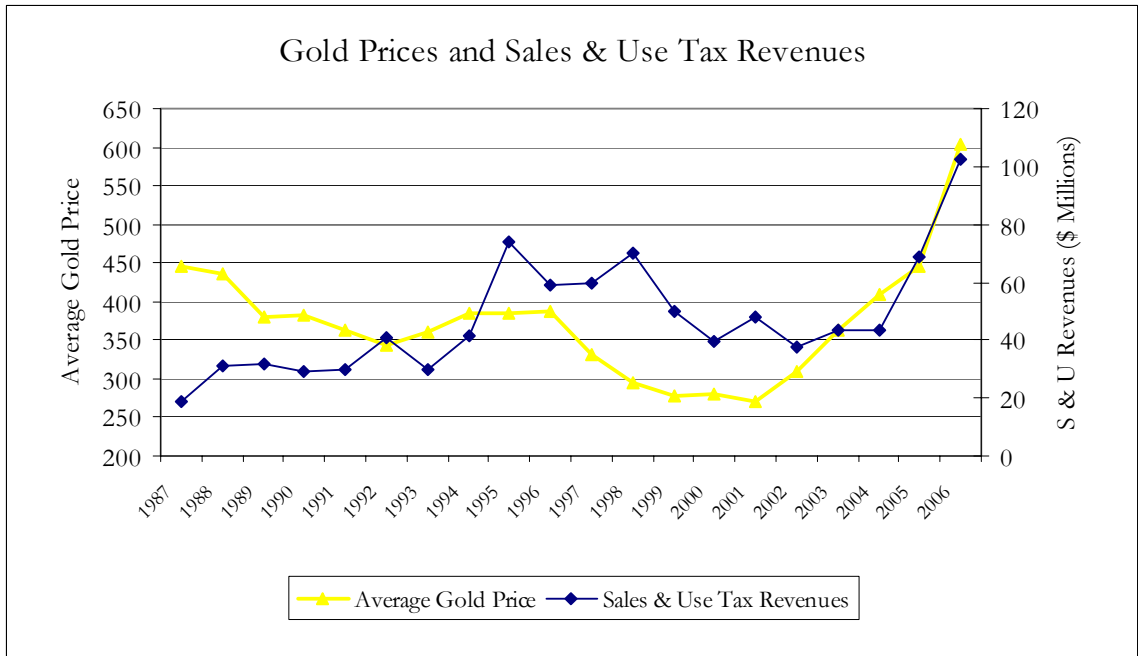
As the graph below illustrates, the increase in NPOM taxes starting in 2003 primarily reflected the increase in gold prices. With the relatively stable production costs and production noted above, commodity price increases directly increase Net Proceeds, which are Gross Proceeds less deductible production costs (not all production costs described above are deductible). Operators with over \$4 million in Net Proceeds pay five percent tax on their Net Proceeds. In 2004 and 2005, although gold prices increased over 2003 levels, NPOM taxes increased very little because of the significant increases in production costs noted above. In 2006 NPOM taxes increased substantially. Other deductible costs such as near mine exploration also increased as noted above. In the future, as newly discovered near mine reserves are developed and brought into production, these development costs will be deductible. Hence, when commodity prices rise significantly, as they have over the past four years, the initial effect on taxes is felt in higher NPOM revenues. However, as operators adjust to higher prices by processing lower grade ores and investing in

exploration and new development, these tend to reduce increases in NPOM tax revenues.



Sales and Use taxes, which are primarily paid on purchases of capital items and equipment, have historically been the largest taxes paid by the industry. These taxes primarily depend on the rate of investment in the industry which typically lags behind price changes. That is, when prices increase as they did in the mid 1990’s and in the past several years, it takes time to get construction plans and permits in order to proceed. On the other side of the price cycle, if prices fall after construction is underway, projects tend to be pursued anyway, so there is a lag before tax receipts fall. As indicated by the graph below, relatively high rates of investment in new plant and equipment in the mid – 1990’s led to relatively high sales and use tax payments. These payments declined in the late 1990’s as the industry reduced its rate of investment and limited equipment purchases to replacing existing capital.

The levels of sales and use taxes reported in our industry survey in the past several suggests that after a bit of lag after prices began increasing in 2002, industry purchases have increased tremendously in the last two years. We would expect these levels to continue and possibly increase further if gold and other commodity prices hold their current levels.



Ad valorem property taxes are also generated by industry investment, but tend to lag even farther behind the commodity price cycle than sales and use taxes as illustrated by the graph above. After a large construction boom in the mid-1990's property taxes paid reached their highest levels at over \$35 million. As prices faded in the late 1990's property taxes declined as a result of mine closures. These closures

led to reassessment of both real and personal property reflecting the reduced value of the site after mining stops and reclamation begins, and the liquidation of capital equipment. Even in some cases where operations continued the value of mining assets were sometimes reduced to reflect their lower value because of lower prices. The small increases in 2005 and 2006 are a result of the resumption of capital investment because of higher prices.

Because of the way the three major taxes paid by mining are allocated, historically approximately 1/2 of the total tax payments stay with local government as opposed to the state general fund. These tax dollars are available for city and county operations, and local education expenditures in the areas where mining takes place.

An issue that is frequently raised in public policy debates at both the state and national level concern the imposition of taxes and royalties on the minerals industry. One of the common misconceptions about the minerals industry that frequently arise in these discussions: This misconception is that since the mining company cannot move the mineral deposit, mines are immobile sources of wealth that can be taxed without consequence. While it may be true that a mineral deposit is immobile, there is ample evidence and numerous examples that will attest to the fact that **mining capital and exploration efforts**, which includes both technical expertise and investment funds, **is highly mobile**. Hence, this rationale for mineral taxation and the imposition of royalties is myopic at best. The failure of exploration spending in Nevada to rebound to mid – 1990's levels in spite of a rebound in gold prices because of the uncertain federal regulatory environment is an indicator of just how mobile mining investment can be. The rebound in exploration spending in the past few years reflects a willingness to take risks on Nevada mining because of higher prices and, to a lesser extent, federal land regulators less hostile to the industry.

As always, the key to sustaining tax revenues from Nevada's minerals industry is maintaining capital investment in the industry's production capacity and investment in mineral exploration. Nevada's unique geology is clearly the most important factor in attracting capital investments and exploration expenditures. However, Nevada's tax and regulatory environments also play a key role in industry investment decisions. Through the cooperation of the industry, the State of Nevada has developed reasonable tax and regulatory environments and, with its unique geology, a world class minerals industry capable of sustaining production well into the next century.

## **PRECIOUS METALS INDUSTRY PROFITABILITY**

Another common misconception about the mining industry, and precious metals mining in particular, is that it is an enormously profitable venture. If this were true, according to conventional wisdom and common sense, we would all become gold miners. Nonetheless, the misconception is difficult to dispel. Indeed, the term "gold mine" is commonly applied to anything highly profitable. Precious metals

mining can be very profitable and producers invest in production capacity in hopes of earning profits, but industry profits are highly leveraged by metals prices and operating costs.

One reason that the misconception about the profitability of the precious metals industry is difficult to dispel is that, indeed, some gold mines are very profitable and, as the discussion of production costs above indicates, some Nevada mines are quite profitable. Hence, the first point to be made with respect to precious metals industry profitability is that, as noted above, the industry consists of mines with a range of costs and the profitability of companies operating the mines varies accordingly. Moreover, as the Nevada industry's experience over the past few years indicates, profitability is influenced by highly cyclical factors. However, when one looks at industry average profitability over the long run rather than focus on an individual mine or mining company in a short period of time, what they will find is that the precious metals mining industry is not particularly profitable.

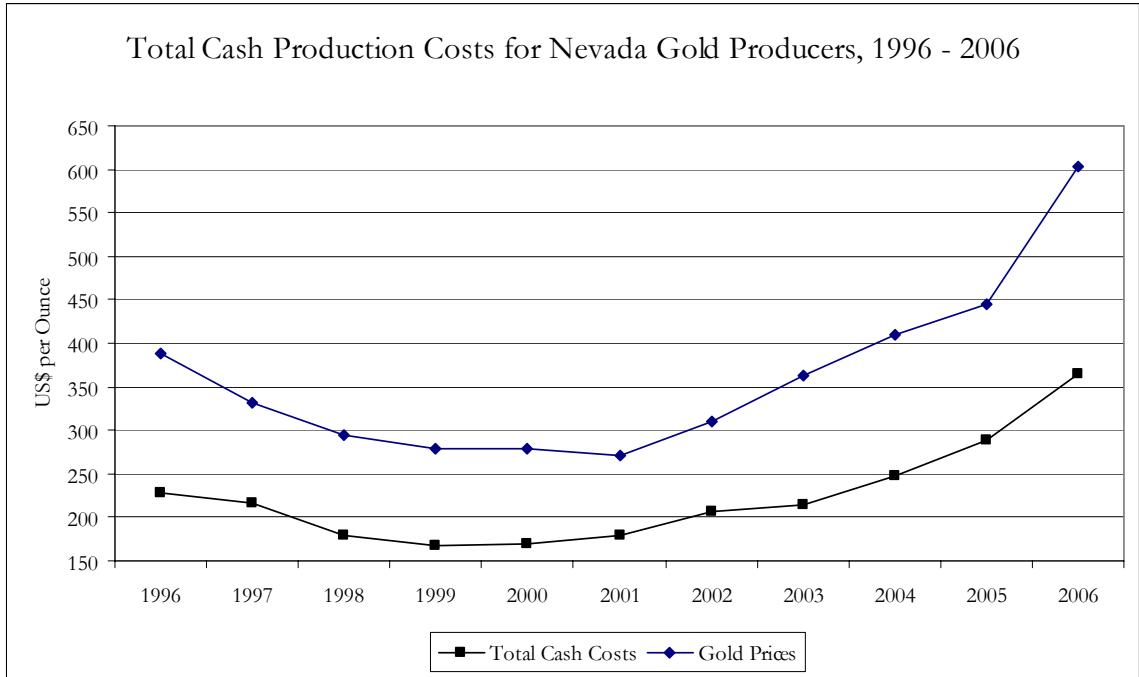
While this observation sometimes seems contrary to common sense, there are some very valid reasons why it is true and they are primarily related to the way operators act over the price cycle. In most other industries, for example, when the price of their product goes up, they try to produce more to increase their profits.

In the gold mining industry, in contrast, when prices rise one of the first things that happens is that operators lower their cut-off grades which reduces the quality, in terms of ounces per ton, of ore that they put through their processing facilities. Unless they can quickly expand the scale of their processing facilities, this reduces output and raises costs, cutting profitability. Lowering cut-off grades frequently has the benefit of extending the mine life of their operations and makes more efficient use of the natural resource, but its impacts on profits are clear.

Another thing that happens when prices rise is that operators invest more in a variety of activities such as more exploration spending, more capital construction, replace aging equipment, conduct deferred maintenance, etc. We have observed all of these actions in Nevada in the past couple years and it occurs in every other gold mining district in the world. And, while these activities have benefits for the operators like extending mine life, which is also a benefit to the communities that the industry supports, these activities clearly cut into profitability. In reference to the production cost curves shown in a previous section it was noted that the area below the price line and above the cost "curve" represented *operating profits*, or cash flow. What those graphs do not show is the increase in *non-operating* costs such as exploration and development expenditures.

When prices fall, the reverse occurs. In most other industries, if prices fall they would cut output in an attempt to lower their costs. In the precious metals mining industry, operators will raise their cut-off grades to lower their costs with the result that their output typically goes up, at least initially. They will also attempt to lower costs by reducing exploration, deferring purchases of new equipment, new construction, and other actions. The result is that over the price cycle the

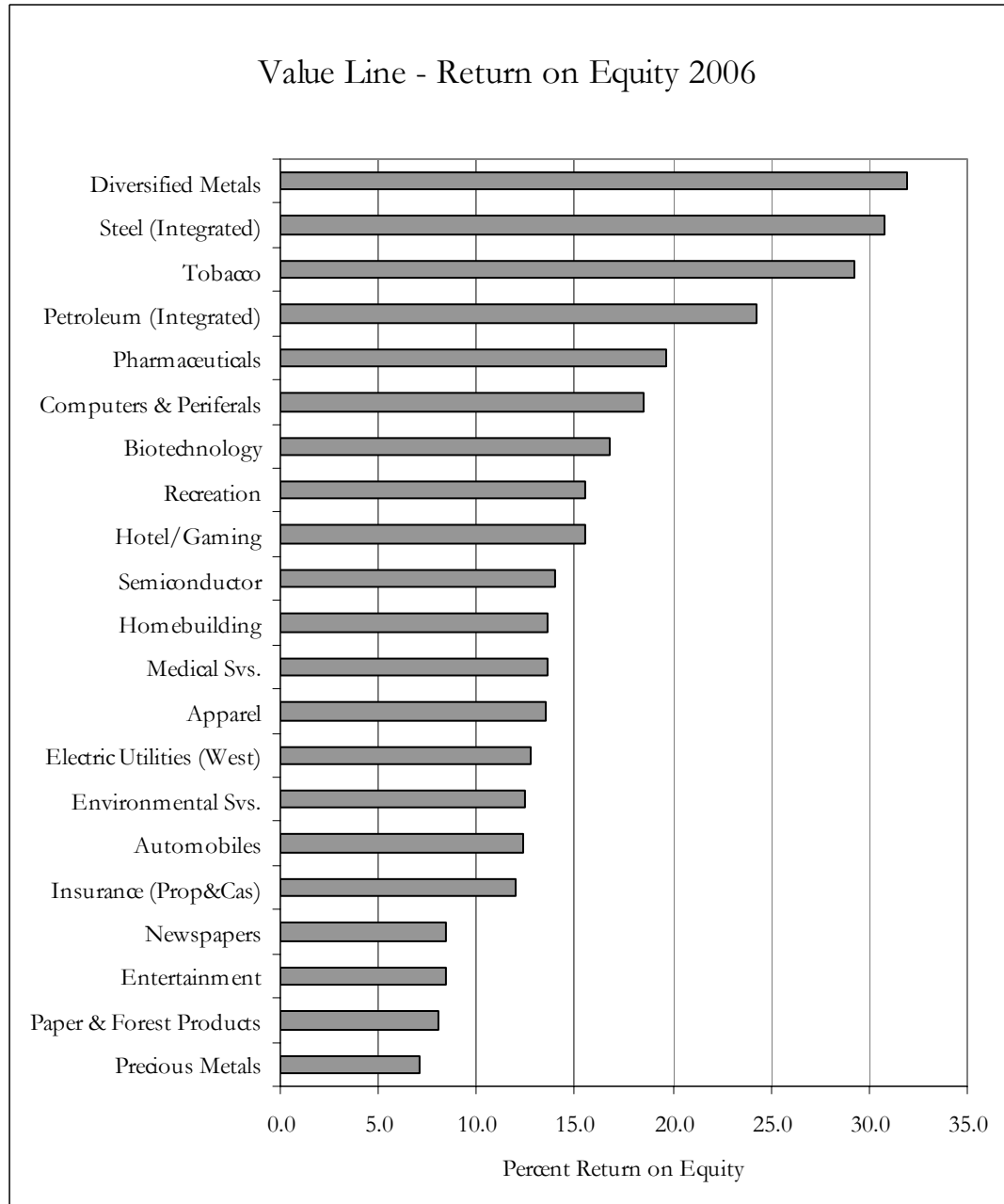
relationship between price and costs is relatively constant as suggested by the graph below (similar to one shown above).



The latter point illustrates why streamlining the permitting process is so critical to the long-term viability of the gold mining industry in Nevada. Long lead times to get approvals for expansions and new projects reduce operators' ability to respond to price increases by increasing capacity. Knowing this, if a company has an opportunity to develop a property offshore where it can get permits and have the mine constructed in 18 months or it can develop an identical property in Nevada where the permitting process and construction will take over five years, the offshore mine is a much more profitable investment. Political risk operating offshore is clearly a factor in these decisions, but so is the time value of the money that has to be invested.

Another basis for comparing precious metals industry profitability to other industries comes from Value Line's Investment Survey, which reports on the profitability of various industry groups using companies selected by Value Line. Value Line's precious metals group in the current report includes eight companies including the two largest companies with operations in Nevada – Newmont and Barrick. It also includes a mutual fund with gold mining stock holdings, two mid-sized Canadian producers (one with a mine in Nevada), South African producer AngloGold Ashanti, and a U.S. platinum group metals mining company, Stillwater Mining, which has operations in Montana. Value Line's group of precious metals producers had a weighted average rate of ROE before write-downs of 7.1 percent, up

from 6.2 percent in 2005. The graph below provides a comparison of ROE in selected industries from the Value Line Survey.



## **NEVADA'S MINERALS INDUSTRY OUTLOOK**

The outlook for Nevada's minerals industry is clearly brighter with \$600 gold that we saw in 2006 than what it was with the \$250 gold that we saw in 1999. The resulting expansion of exploration activity in the state and the growth in reserves are clearly important for sustaining the industry in the future. As noted, 12 years worth of gold reserves at current prices and production rates is unprecedented and points to a bright future.

The industry developments described above clearly show that Nevada's minerals industry remains a major player in the world gold industry. Moreover its large reserve base and existing capital investment make it likely that it will remain a major player for the foreseeable future. Notwithstanding this point, the industry faces numerous technical, environmental, regulatory and legislative challenges in the years ahead.

From a technical perspective, increasing proportions of Nevada's production is coming from underground operations. This trend will clearly continue as the industry matures and as near surface orebodies that can be mined with open pit techniques are exhausted. This will obviously require different production techniques, new equipment, and the need for continued labor force training. This development will also tend to drive up production costs even more than we have seen in the past few years. Increasing underground production also increases concerns about miner safety.

On the environmental front, the industry must continue to work with federal and state regulators and citizen groups to ensure that mining activities continue to have minimal environmental impacts and, when possible, improve environmental conditions for wildlife and other land users. These improved environmental conditions can come from improved reclamation techniques, reclamation of abandoned mines, and other on-going efforts.

One such recent effort is the voluntary reduction of mercury emissions from ore processing facilities in the state. Through a partnership with the Nevada Division of Environmental Protection and the U.S. Environmental Protection Agency the industry has achieved an 80 percent reduction in these emissions over the past four years and will achieve further reductions in the future under a new mercury emission control program supported by the industry.

Another challenge facing the industry comes from cost increases. Increases in energy prices have hit operators particularly hard. As noted above, mines are large consumers of electricity for operating milling equipment, pumping water, and other purposes and large consumers of petroleum products for operating equipment such as haul trucks and shovels. The industry also must deal with rising costs and limited availability of equipment and labor. It should be noted that while this is a good

problem to have, the increase in industry employment over the past few years has made it difficult to find new workers, retain the existing workforce and train entrants into the workforce.

Another challenge is the prospect of mining law reform in Congress. HR 2262, introduced by Rep. Nick J. Rahall, II, Chairman of the House Resources Committee, would make significant changes to the General Mining Law that governs access to locatable minerals on federal lands which include 86 percent of Nevada's surface area. The industry is generally supportive of some changes in the law that would bring greater certainty and reduce administrative discretion in the permitting process. However, the version introduced by Rep. Rahall contains an eight percent gross production royalty on new claims patterned after the royalties paid by the coal, natural gas and oil industries that most agree will all but kill mineral exploration on federal lands.

Industry leaders and, probably more importantly, Nevada Senator Harry Reid, the U.S. Senate Majority Leader, are willing to compromise on a net production tax patterned after Nevada's Net Proceeds of Minerals Tax. There are many questions about what will happen with this legislation that remain unanswered at this point, but this process is clearly a cause for concern for the industry and for the communities in Nevada that rely on the industry for commercial activity and tax revenues.

While the past few years have been challenging for the Nevada mining industry and challenges lie ahead, the state continues to offer a number of positive characteristics which should bode well for mining, especially gold mining. Nevada has geologic conditions that are favorable for the occurrence of outstanding mineral deposits; the industry has developed a skilled workforce; infrastructure and support services are in place, and; the state has maintained a reasonable business environment in which responsible mining can take place.