NATIONAL CENTER FOR POLICY ANALYSIS

# Rare Earths Mining Potential in the United States

Policy Report No. 348 by Tom Tanton April 2013

*America's well-being — our homes, workplaces, schools, hospitals and transportation systems — are all possible because of this country's vast mineral wealth. The United States ranks as among the world's largest minerals users and minerals producers; but we depend on foreign sources for rare earths.*

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## Executive Summary

Rare earths and rare earth mining are crucial to modern life. Rare earths are elements found underground that mix diffusely with other minerals. They provide critical components of a wide array of products from iPhones to computers, medical CAT scans, defense equipment, wind turbines and more. The United States depends on other countries, some of which are not very friendly, for these elements. America currently imports over 96 percent of its rare earths, adding to the trade imbalance. However, domestic production of rare earths can be expanded, adding jobs to the economy and revenues to state budgets.

The key to these opportunities lies with reforms to mine permitting. Obtaining the permits and approvals required to build a mine in the United States takes an average of seven years — among the longest wait times in the world. Both state and federal regulations contribute to delays. For example:

- The Mountain Pass mine in California, once the world's main source for rare earth metals, closed from 2002 to 2012, even though the required Environmental Impact Statement was completed in 2004.
- Augusta Resource Corp.'s Rosemont copper mine has faced delays from the Army Corps of Engineers, the U.S. Fish and Wildlife Service, the state Historic Preservation Office, American Indian tribes and the Center for Biological Diversity.
- Finally, Rare Element, the owner of Wyoming's Bear Lodge Project in Wyoming, has an exploration permit to expand their test drill programs on up to 200 acres; but the company faces at least three more years until final federal permits are issued.

Thus, despite a vast underground store of raw materials, the United States is one of the least desirable countries in which to begin a new mining project.

Economic and strategic military considerations will require new mine development in the next few years. U.S. safety and performance efforts excel in the global marketplace. Thus, as processing and mining methods become more sophisticated, and exploration activities increase, technology-driven environmental improvements should alleviate the concerns of the public. Federal and state governments should also take such advances into account by revising mine safety legislation.

## About the Author

**Tom Tanton** is President of $T^2$ & Associates, a firm providing consulting services to the energy and technology industries. $T^2$ & Associates are active primarily in the area of renewable energy and interconnected infrastructures, analyzing and providing advice on their impacts on energy prices, environmental quality and regional economic development. As the General Manager at Electric Power Research Institute, from 2000 to 2003, Mr. Tanton was responsible for the overall management and direction of collaborative research and development programs in electric generation technologies, integrating technology, market infrastructure, and public policy. From 2003 through 2007, Mr. Tanton was Senior Fellow and Vice President of the Houston based Institute for Energy Research.

## Introduction[1]

America's well-being — our homes, workplaces, schools, hospitals and transportation systems — are all possible because of the country's vast mineral wealth. The United States ranks as among the world's largest minerals users and minerals producers; but we depend almost entirely on foreign sources for rare earths.

More than 250,000 people work directly in metals and nonmetals mining throughout the United States, and mining creates an additional 650,000 jobs elsewhere in the economy. Mining jobs offer the highest average annual wage of any industrial category — 33 percent higher than the combined average for all industrial jobs.

Despite the benefits of domestic minerals mining, this country has seen a prolonged period of underinvestment in exploration. As a result, America has become increasingly dependent on foreign sources for minerals vital to its economic and national security — including minerals for which there are proven U.S. reserves. Today, the United States accounts for a meager 8 percent of spending on exploration worldwide, and depends 100 percent on foreign sources for 19 mineral commodities.

To further job creation and to meet domestic needs for infrastructure development, military equipment and consumer products, the United States should further develop its domestic resource base to capitalize on the advantages of stable government, economic strength, an educated workforce, and a technologically advanced and environmentally aware mining industry.

Several states have economically developable resources, including Virginia, California, Utah, Colorado, Idaho, Wyoming, Alaska and Montana. Currently, however, environmental regulations cause inordinately long waits for mining companies to obtain state permits. The government indiscriminately applies laws protecting habitat and wildlife, and favors some industries and technologies over others. Furthermore, a patchwork of regulations cover mining on federal, state, tribal and private property.

## Global Production of Rare Earths

What are rare earths? Listed on the periodic table as 17 metallic elements commonly found in conjunction with other mineral deposits around the world, 15 belong to the group known as lanthanides, and the remaining two are scandium and yttrium. Rare earths provide critical operating components in computers, CAT scan machines, wind turbines and more. The metals have been found around the world, but rarely in high enough concentrations to make mining practical.

Despite the name, rare earths actually exist in moderate abundance. The presence of these elements in the earth's crust range from cerium — which at 60 parts per million (ppm) is more prevalent than copper — to thulium and lutetium, the least abundant rare earth elements, at about 0.5 ppm. The elemental forms of rare earths range from iron gray to silvery lustrous metals that are typically soft, malleable, ductile and usually reactive, especially at elevated temperatures or when finely divided. They naturally occur most often as rare earth oxides.

The recoverable amount of individual rare earth oxides depends on the composition of the deposit. Generally, the light rare earth elements — constituting

80 percent to 99 percent of most rare earth deposits — are more easily extracted. Therefore, deposits containing relatively high grades of scarcer and more valuable heavy rare earths are particularly desirable.

The world's largest producer of rare earth oxides is China. [See Figure I.] Their major source is the iron-niobium-rare earth deposits at Bayan Obo, where oxides are mined as biproducts of iron ore. Clay deposits in southern China provide important sources for heavy rare earth elements. Called ion-adsorption ores, they are advantageous for their relatively high proportions of heavy rare earths and especially for the ease with which they can be mined. The United States has also produced small amounts of oxides (mostly from stockpiles of tailings from other mining operations), as has Russia and India.

Various estimates of Chinese production show highly concentrated sources of rare earths. Their monopoly position in the global marketplace, however, increases China's ability to interrupt supply and influence prices, actions which dissuade other potential mine developers.[2] Figure II shows how China's dominance of the world market has affected long-term price increases.[3] Worldwide prices plummeted in 2012, which indicates continuing price volatility in rare earths. The ability of China to affect supplies and prices is a ongoing and significant concern for investors considering developing mines in other regions of the globe.

## State Permitting and Other Regulatory Hurdles

In the United States, obtaining the permits and approvals required to build a mine takes an average of seven to ten years, among the longest wait times in the world, according to Behre Dolbear Group, an international mining and mineral advisory group.[4] By contrast, Australia and Canada — ranked the best places to invest in minerals mining this year — operate under environmental laws similar to U.S. mining regulations, but those countries enjoy two year timelines! Thus, despite a vast underground stores of raw materials, mine operators rarely consider America when beginning a new project.

> *"Permitting a mine takes roughly two years in Canada and Australia — seven to 10 years in the United States."*

Indeed, among the 25 top mining countries in the world, the United States ties with Papua New Guinea for the longest approval process.

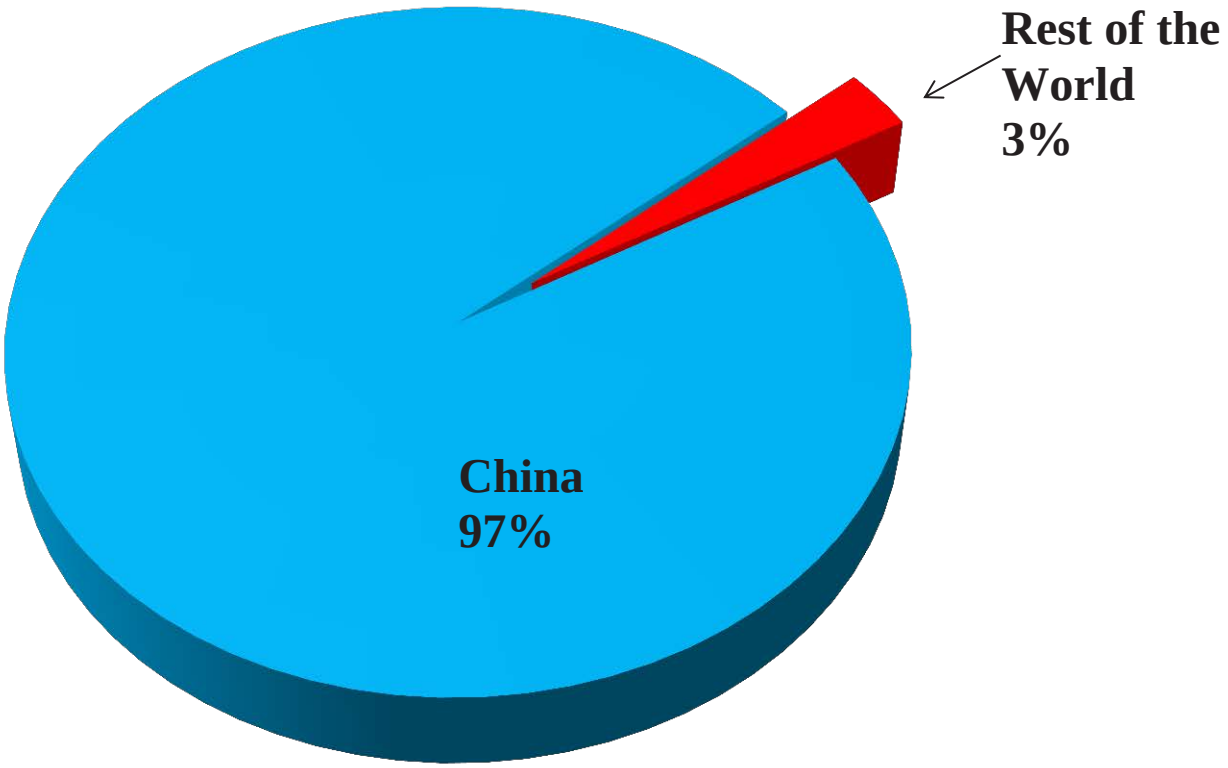
Of the eight U.S. regulatory agencies that oversee mining operations, the Environmental Protection Agency (EPA) and the Mine Safety and Health Administration already have laws in place to safely regulate mining and milling. For instance, an EPA measure called the National Pollutant Discharge Elimination System (NPDES) requires all industrial facilities to obtain a permit through the state. Compliance with this regulation prevents storm water discharged from mining facilities from entering water supplies.

The states with rare earth resources do not have identical permit processes or requirements; some are less onerous than others. Time, not the severity of regulations, is the greatest problem with the permitting process, as shown in Table I. Nongovernmental organizations (NGOs), and environmental groups, also create unnecessary delays. Whether these organizations are opposed to mining development of any sort, or have legitimate concerns about a project's effect on a community or lifestyle, they obstruct the permitting process. Objections to operations in one location are communicated over the Internet and become concerns used against completely unrelated mining projects elsewhere, delaying the approval of those projects, too.

Permitting delays create a significant risk to mining projects in the United States. Though Nevada, Utah, Kentucky, West Virginia, Idaho, Wyoming and Arizona are considered "mining-friendly," federal regulations causing long wait periods before mine development affect even those states. And in other examples:

- The Mountain Pass mine in California, once the world's main source for rare earth metals, closed in 2002 due to concerns about air and water pollution. The required Environmental Impact

**Figure I**
**Production of Rare Earth Oxides**
**(Total: 133,233 metric tons)**




**Source: Polinares: EU Policy on Natural Resources, "Fact Sheet: Rare Earths Oxides (REO)," Polinares working paper no. 37, March 2012. Available at http://www.polinares.eu/docs/d2-1/polinares_wp2_annex2_factsheet3_v1_10.pdf.**

Statement was completed in 2004, but operations at the mine did not resume until 2012. Both federal and state regulations contributed to the eight-year delay.

- Augusta Resource Corp.'s Rosemont copper mine — in the Santa Rita Mountains near Tucson — has the potential to also recover molybdenum. In 2011, reports *Greenwire*, the Forest Service released a draft environmental impact statement, but has not yet finalized its report. Furthermore, mine operators still wait for a key Army Corps of Engineers Clean Water Act permit, and continue consultations with the U.S. Fish and Wildlife Service, the state Historic Preservation Office and American Indian tribes. Meanwhile, the Center for Biological Diversity is seeking endangered species protections for wildlife in the area.[5]
- Finally, the Bear Lodge Project in Wyoming contains one of the largest rare-earth element deposits in North America, including an estimated 17.5 million tons of high grade ore, of which rare earth oxides constitute 3.46 percent.[6] Rare Element, the project owner, has an exploration permit to expand their test drill programs on up to 200 acres; but even in the mining friendly state of Wyoming, the company faces at least three more years until final federal permits are issued.

Rep. Mark Amodei (R-Nevada)

has introduced the *National Strategic and Critical Minerals Production Act of 2013* (H.R. 4402), which seeks to more efficiently and promptly develop domestic sources of the minerals, including rare earths, of strategic and critical importance to U.S. economic and national security and manufacturing competitiveness, while ensuring continued environmental protection.

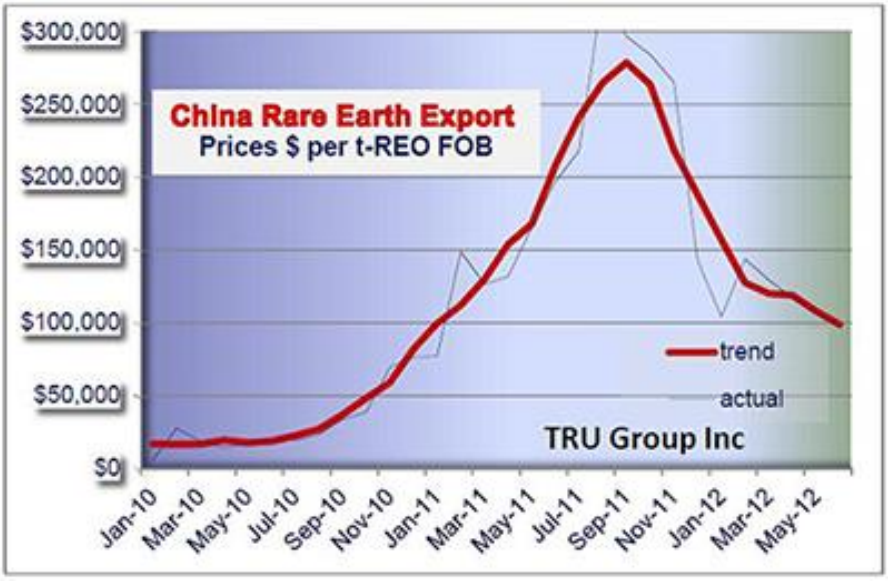
## Economic and Budgetary Impact of Developing Reserves

Though the national economy is slowly recovering, many state budgets remain in extreme straits.[7] Projected budget gaps in 31 states totaled $55 billion for fiscal year 2013, with losses resulting principally from weak tax collections combined with increased spending. The Great Recession that started in 2007 caused the largest collapse in state revenues on record. Since bottoming out in 2010, revenues have begun to grow again but remain far from fully recovered to pre-recession levels.

Meanwhile, state education and health care obligations keep growing. To the extent that spending cuts reduced these shortfalls, they continue to occur on top of previous years' deep cuts in such critical public services as education, health care and human services. The additional cuts mean that state budgets will continue to drag down the national economy, threatening hundreds of thousands of private- and public-sector jobs, and reducing job creation. Potential strategies to lessen the impact of deep spending cuts include more use of reserve funds in states that have them, more revenue through tax-law changes and state-level economic growth policies. Resource development could

**Figure II**

**Export Prices for China's Rare Earths Oxides**
**(U.S. dollars per metric ton)**




**Source: Press Statement, "Rare Earth Prices will continue to decline says TRU Rare Earth Consultants," TRU Group, April 23, 2012. Available at http://trugroup.com/rare-earth-conference.**

**Table I**

## Length of Time Required to Obtain Permits

| Mine | Commodity | Permitting |
|---|---|---|
| Ashdown, Nevada | Molybdenum, Gold | 3 years |
| Buckhorn, Washington | Gold | 14 years |
| Carlota, Arizona | Copper | 15 years |
| Eagle, Michigan | Nickel, Copper, Cobalt, Platinum Group Elements | 6 years |
| East Boulder, Montana | Platinum Group Elements | 3 years |
| Kensington, Alaska | Gold | 17 years |
| Leeville, Nevada | Gold | 5 years |
| Lisbon Valley, Utah | Copper | 8 years |
| Pend Oreille, Washington | Zinc | 9 years |
| Phoenix, Nevada | Gold | 5 years |
| Pogo, Alaska | Gold | 6 years |
| Rock Creek, Alaska | Gold | 4 years |
| Rossi (Storm), Nevada | Gold | 17 years |
| Safford, Arizona | Copper | 8 years |
| Turquoise Ridge, Nevada | Gold | 8 years |

**Source: Keith R. Long, Bradley S. Van Gosen, Nora K. Foley, and Daniel Cordier, "The Principal Rare Earth Elements Deposits of the United States," USGS Scientific Investigations Report 2010-5220 USGS. Available at http://geology.com/usgs/developing-a-rare-earth-elements-mine/.**

potentially play an important role in the recovery of economic and fiscal health in a number of states.

Initially, the U.S. economic downturn avoided some areas. Resource-rich states — such as New Mexico, Alaska and Montana — saw revenues grow at the beginning of the recession, as a result of high oil prices. Later, however, the decline in oil prices affected revenues in these same states. While national economic problems have negligibly affected a few other states, only two, North Dakota and Montana, did not report budget shortfalls in any of the recession years. One other state — Alaska— faced shortfalls in fiscal year 2010, but projects no gaps for subsequent years.

States that rely on natural resources for a substantial share of their revenues derive them from both state severance taxes and resource leases on federal lands within their borders.[8] Table II shows the potential economic benefits from development of several states' mining resources. Each state shows increases in gross state product (GSP), number of jobs created (directly or indirectly), and state revenues from corporate and worker income tax and applicable severance taxes. Sales taxes are included but not property taxes; thus, the estimates are conservative. These calculations assume fully developed and fully operational extraction and processing of natural resources.

For example, the U.S. Department of the Interior projects Wyoming's gross state product to increase by $6 billion, person-year employment by 600 jobs per year, and state revenue by $90 million. Gross State Product for several other mining states' are shown for comparison.[9]

## Comparing Domestic and Global Environmental and Safety Records

Worker safety and environmental protection are crucial to the future of mining, and by extension to the wealth and health of America. Worldwide, thousands of miners die each year, but relatively few die in U.S. operations.

U.S. mines rate among the safest in the world. According to the Mine Safety and Health Administration, from 1991-1999, only 93 U.S. deaths were related to mining. In 2011, 16 deaths were attributed to American metal and nonmetal mines.[10] And mine safety records continue to improve. Figure III shows a 67 percent reduction in injuries of all types in mines of all types since 1990.[11] Finally, U.S. mine safety compares favorably to other sectors of the U.S. economy. [See Figure IV.]

**Table II**

## Potential Economic Impact of Rare Earths Mining

| States | Rare Earths (millions of tons) | Increased Econ Development (millions of dollars) | Jobs | State Revenue (millions of dollars) | 2012 Gross State Product (millions of dollars) |
|---|---|---|---|---|---|
| Alaska | 34 | $11,000 | 1,000 | $160 | $44,700 |
| California | 13.7 | $4,500 | 400 | $108 | $1,735,400 |
| Colorado | 2,540 | Undefined* | | | |
| Idaho | 0.1 | Not estimated | | | |
| Illinois | 14.7 | $4,800 | 430 | $116 | $58,2100 |
| Missouri | 0.6 | Not estimated | | | |
| Nebraska | 39.4 | $12,900 | 1,150 | $250 | $79,900 |
| New Mexico | 2.4 | Not Estimated | | | |
| New York | 9 | Not Estimated | | | |
| Wyoming | 17.5 | $6,000 | 600 | $90 | $37,600 |

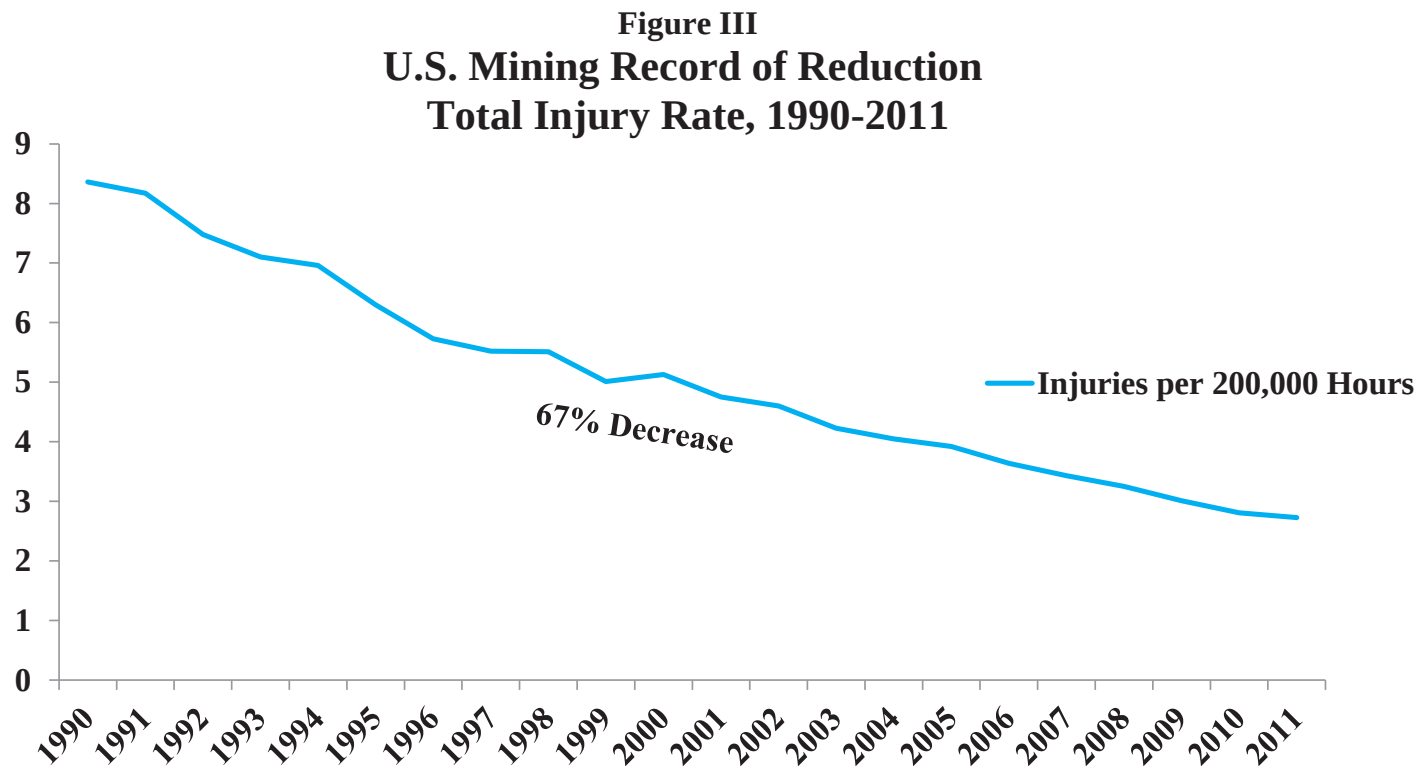
***Note: Colorado's rare earths resources are "undefined." This is a broad estimate with no drilling or detailed geology yet performed, and it is therefore premature to provide economic estimates.**

**Source: U.S. Department of the Interior, U.S. Geological Survey, "The Principal Rare Earth Elements Deposits of the United States—A Summary of Domestic Deposits and a Global Perspective," Scientific Investigations Report 2010–5220. Available at pubs.usgs.gov/sir/2010/5220/downloads/SIR10-5220.pdf.**

The American mining industry experiences fewer accidents than other mines around the globe. China and South Africa give the greatest cause for concern, with China showing the worst safety record in the world. According to *China Daily*, the State Administration of Work Safety stated that, in 2003, the country produced 35 percent of the world's coal, but also reported 80 percent of total deaths in coal mine accidents. In 2006, about 5,000 Chinese miners died. However, *Time* magazine reports that the number of miners killed in Chinese mines is actually much higher.[12] To put this into perspective, China's coal output is 2.2 percent greater than the United States, but the death rate for every 100 tons of coal is 100 times greater.

South Africa's safety problems arise primarily from gold and platinum mines. South Africa is the world's largest platinum producer and one of the largest gold producers. In 2006, South Africa recorded 113 deaths in gold mining operations and 40 deaths in platinum mining operations.

On January 2, 2006, a coal mine




**Source: Bureau of Labor Statistics VIA National Mining Association, "U.S. Mining Record of Reduction Total Injury Rate, 1990-2011" *National Mining Association*. Available at http://www.nma.org/pdf/s_total_injury_rate_011806.pdf.**

exploded in Sago, West Virginia. The blast and collapse trapped 13 miners for nearly two days; one miner survived. The National Conference of State Legislatures, an advocate for the interests of state governments before Congress and federal agencies, reports that soon after the Sago Mine disaster, several states took action to modernize their mining safety laws, including Alabama, Illinois, Kentucky, Missouri, New Mexico, Ohio, Pennsylvania, West Virginia, Utah and Virginia.[13] However, tragedies are not required to bring about changes in mine safety legislation.

In addition, improvements were made to federal mine safety regulations. In 2006, President George W. Bush signed the Mine Improvement and New Emergency Response Act of 2006 (MINER Act). This measure amended the Mine Safety and Health Act of 1977 and contained a number of provisions to improve safety and health in America's mines. The Mine Safety and Health Administration lauded the MINER Act as the most significant mine safety legislation in 30 years. Globally, much of the attention on mining safety and hazards focuses on underground coal and metal mining, but other types of mining show comparable safety improvements.

As technology advances, both federal and state governments should continuously search for ways to improve mine safety regulations. Safety and environmental protection are the result of institutional arrangements, use of best practices and long-term commitment. Enhanced performance criteria, not ever-changing prescriptive "how to" standards, will best serve to achieve improved safety records.

## Conclusions and Recommendations

Developing America's natural resources would provide both economic and security benefits, but unnecessary regulatory and

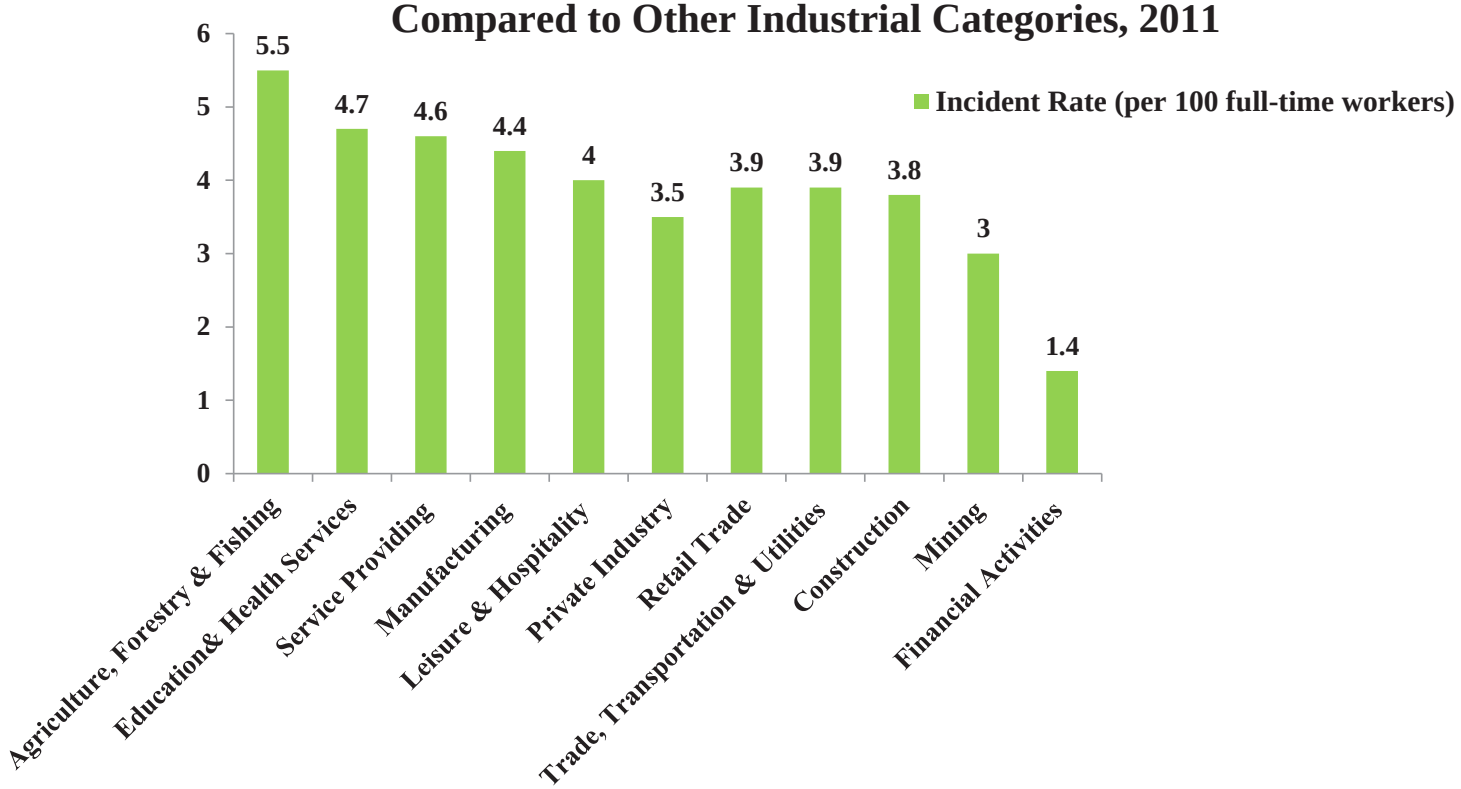
political barriers currently hamper the process. State economies and budgets would also benefit from expanded mineral development, which would in turn improve national trade deficits and energy security. America should model Australia's and Canada's successful regulations, and dramatically shorten domestic permitting time. The federal government should consider a trade mission to both countries to discover how they permit mines in one-fourth the time it takes in the United States, while meeting similar worker safety and environmental protection goals.

Some general principles should be embraced:

1. Process permitting issues and address concerns concurrently rather than sequentially.
2. Acknowledge past problems, and use them to drive technological solutions.
3. Where multiple agencies (for example, air permitting and water permitting) and multiple levels of government have separate permitting authority (for example, state and federal), combine all permitting into a single "one-stop" authority.
4. Rapidly dispense with non-substantive issues, and put the financial burden on the interest group raising them, to avoid spurious delay tactics.
5. Once a permit is issued, any "re-opening" or reconsideration of a final decision should happen only if *compelling* evidence shows an error in the original process or facts. The burden of proof must rest entirely on the entity requesting re-opening or reconsideration.

**Figure IV**

**Incident Rates of Non-Fatal Occupational Injuries Compared to Other Industrial Categories, 2011**




**Source: Bureau of Labor Statistics VIA National Mining Association, "Non-Fatal Occupational Injury and Illness Rates for Private Sector Industrial Categories, 2011." Available at http://www.nma.org/pdf/s_fatal_rates_comparative.pdf.**

Economic development and environmental protection occur best under a system of clear and strong property rights. The job of government is to protect those property rights. Doing otherwise is in effect a taking of property by the government. Similarly, once issued, permits create property rights in the permission to participate in an activity like mining. Re-opening or reconsideration of an issued permit should be treated as an impairment of that property right. Mine operators seeking new permits can learn from the Mountain Pass approval process:

- Listen to and address the environmental concerns of neighbors.
- Use best practices and environmental technologies.
- Keep potential risks to a minimum, and keep them entirely on site.
- Constantly look for opportunities to improve safety and environmental performance.

States with rare earths resources could benefit by almost $40 billion in increased gross state product, add nearly 3,600 well-paid jobs, and improve state revenues by $724 million — with no change to tax rates or imposition of new taxes. These shovel-ready opportunities are just waiting for permission.

## Endnotes

1. Adapted from Tom Tanton, "Dig It! Rare Earth and Uranium Mining Potential in the States," American Legislative Exchange Council, 2012.

2. Market concentration (market power) can be measured by the Herfindahl-Hirschman Index (HHI). The Herfindahl-Hirschman Index is the sum of squared values of raw materials production (in %) in each country. See Dirk Rosenau-Tornow, Peter Buchholz, Axel Riemann and Markus Wagner, "Assessing the long-term supply risks for mineral raw materials - a combined evaluation of past and future trends," *Resources Policy*, Vol. 34, No. 4, 2009, pages 161-175. HHI scores between 1,000 and 1,800 have been defined as benchmarks for moderate supply risk (according to joint guidelines issued by the U.S. Department of Justice and Federal Trade Commission in1997); scores above 1,800 are problematic, and scores below 1,000 indicate little risk. Various estimates of the market dominance of Chinese rare earths producers place its HHI score at more than 9,400, which is universally seen as problematic and a sign of monopoly power (China's score is XXXX).

3. Press Statement, "Rare Earth Prices will continue to decline says TRU Rare Earth Consultants," TRU Group, April 23, 2012. Available at http://trugroup.com/rare-earth-conference.

4. Behre Dolbear Group Inc., "2012 Ranking of Countries for Mining Investment Where 'Not to Invest.'"

5. Manuel Quinones, "Mining: Group Complains of Permit Delays for Arizona Project," *Greenwire*, December 14, 2012. Available at http://minedinamerica.org/wp-content/uploads/2012/12/MINING-Greenwire-Rosemont.pdf.

6. M. H. Staatz, "Geology and description of thorium and rare-earth deposits in the southern Bear Lodge Mountains, northeastern Wyoming," U.S. Geological Survey, Professional Paper 1049D, 1983. Available at http://pubs.usgs.gov/pp/1049d/report.pdf.

7. Phil Oliff, Chris Mai and Vincent Palacios, "States Continue to Feel Recession's Impact," Center on Budget and Policy Priorities, updated June 27, 2012. Available at http://www.cbpp.org/files/2-8-08sfp.pdf.

8. Severance taxes are excise taxes on natural resources "severed" from the earth. They are measured by the quantity or value of the resource removed or produced. In the majority of states, the taxes are applied to specific industries such as coal or iron mining and natural gas or oil production. They are usually payable by the severer or producer, although in a few states payment is made by the first purchaser.

9. U.S. Bureau of Economic Analysis.

10. Available at http://www.nma.org/pdf/s_msha_fatalities_type.pdf.

11. Available at http://www.nma.org/pdf/s_total_injury_rate_011806.pdf.

12. Austin Ramzy, "China and West Virginia: A Tale of Two Mine Disasters," *Time*, April 8, 2010. Available at http://www.time.com/time/world/article/0,8599,1978668,00.html.

13. National Conference of State Legislatures, "Mining Safety Laws Reevaluated," *State Legislatures*, April 2006.

*The NCPA is a nonprofit, nonpartisan organization established in 1983. Its aim is to examine public policies in areas that have a significant impact on the lives of all Americans — retirement, health care, education, taxes, the economy, the environment — and to propose innovative, market-driven solutions. The NCPA seeks to unleash the power of ideas for positive change by identifying, encouraging and aggressively marketing the best scholarly research.*

### Health Care Policy.

The NCPA is probably best known for developing the concept of Health Savings Accounts (HSAs), previously known as Medical Savings Accounts (MSAs). NCPA President John C. Goodman is widely acknowledged (*Wall Street Journal*, WebMD and the *National Journal*) as the "Father of HSAs." NCPA research, public education and briefings for members of Congress and the White House staff helped lead Congress to approve a pilot MSA program for small businesses and the self-employed in 1996 and to vote in 1997 to allow Medicare beneficiaries to have MSAs. In 2003, as part of Medicare reform, Congress and the President made HSAs available to all nonseniors, potentially revolutionizing the entire health care industry. HSAs now are potentially available to 250 million nonelderly Americans.

The NCPA outlined the concept of using federal tax credits to encourage private health insurance and helped formulate bipartisan proposals in both the Senate and the House. The NCPA and BlueCross BlueShield of Texas developed a plan to use money that federal, state and local governments now spend on indigent health care to help the poor purchase health insurance. The SPN Medicaid Exchange, an initiative of the NCPA for the State Policy Network, is identifying and sharing the best ideas for health care reform with researchers and policymakers in every state.

**NCPA President John C. Goodman is called the "Father of HSAs" by *The Wall Street Journal*, WebMD and the *National Journal*.**

### Taxes & Economic Growth.

The NCPA helped shape the pro-growth approach to tax policy during the 1990s. A package of tax cuts designed by the NCPA and the U.S. Chamber of Commerce in 1991 became the core of the Contract with America in 1994. Three of the five proposals (capital gains tax cut, Roth IRA and eliminating the Social Security earnings penalty) became law. A fourth proposal — rolling back the tax on Social Security benefits — passed the House of Representatives in summer 2002. The NCPA's proposal for an across-the-board tax cut became the centerpiece of President Bush's tax cut proposals.

NCPA research demonstrates the benefits of shifting the tax burden on work and productive investment to consumption. An NCPA study by Boston University economist Laurence Kotlikoff analyzed three versions of a consumption tax: a flat tax, a value-added tax and a national sales tax. Based on this work, Dr. Goodman wrote a full-page editorial for *Forbes* ("A Kinder, Gentler Flat Tax") advocating a version of the flat tax that is both progressive and fair.

A major NCPA study, "Wealth, Inheritance and the Estate Tax," completely undermines the claim by proponents of the estate tax that it prevents the concentration of wealth in the hands of financial dynasties. Senate Majority Leader Bill Frist (R-TN) and Senator Jon Kyl (R-AZ) distributed a letter to their colleagues about the study. The NCPA recently won the Templeton Freedom Award for its study and report on Free Market Solutions. The report outlines an approach called Enterprise Programs that creates job opportunities for those who face the greatest challenges to employment.

### Retirement Reform.

With a grant from the NCPA, economists at Texas A&M University developed a model to evaluate the future of Social Security and Medicare, working under the direction of Thomas R. Saving, who for years was one of two private-sector trustees of Social Security and Medicare.

The NCPA study, "Ten Steps to Baby Boomer Retirement," shows that as 77 million baby boomers begin to retire, the nation's institutions are totally unprepared. Promises made under Social Security, Medicare and Medicaid are inadequately funded. State and local institutions are not doing better — millions of government workers are discovering that their pensions are under-funded and local governments are retrenching on post-retirement health care promises.

### Pension Reform.

Pension reforms signed into law include ideas to improve 401(k)s developed and proposed by the NCPA and the Brookings Institution. Among the NCPA/Brookings 401(k) reforms are automatic enrollment of employees into companies' 401(k) plans, automatic contribution rate increases so that workers' contributions grow with their wages, and better default investment options for workers who do not make an investment choice.

The NCPA's online Social Security calculator allows visitors to discover their expected taxes and benefits and how much they would have accumulated had their taxes been invested privately.

### Environment & Energy.

The NCPA's E-Team is one of the largest collections of energy and environmental policy experts and scientists who believe that sound science, economic prosperity and protecting the environment are compatible. The team seeks to correct misinformation and promote sensible solutions to energy and environment problems. A pathbreaking 2001 NCPA study showed that the costs of the Kyoto agreement to reduce carbon emissions in developed countries would far exceed any benefits.

### Educating the next generation.

The NCPA's Debate Central is the most comprehensive online site for free information for 400,000 U.S. high school debaters. In 2006, the site drew more than one million hits per month. Debate Central received the prestigious Templeton Freedom Prize for Student Outreach.

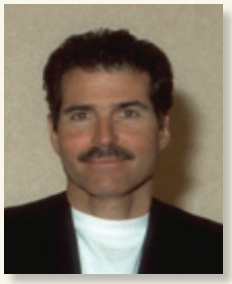
### Promoting Ideas.

NCPA studies, ideas and experts are quoted frequently in news stories nationwide. Columns written by NCPA scholars appear regularly in national publications such as the *Wall Street Journal*, the *Washington Times*, *USA Today* and many other major-market daily newspapers, as well as on radio talk shows, on television public affairs programs, and in public policy newsletters. According to media figures from Burrelles*Luce*, more than 900,000 people daily read or hear about NCPA ideas and activities somewhere in the United States.

## What Others Say About the NCPA

*"The NCPA generates more analysis per dollar than any think tank in the country. It does an amazingly good job of going out and finding the right things and talking about them in intelligent ways."*

**Newt Gingrich,** former Speaker of the U.S. House of Representatives



*"We know what works. It's what the NCPA talks about: limited government, economic freedom; things like Health Savings Accounts. These things work, allowing people choices. We've seen how this created America."*

**John Stossel,**
host of "Stossel," Fox Business Network

*"I don't know of any organization in America that produces better ideas with less money than the NCPA."*

**Phil Gramm,**
former U.S. Senator

*"Thank you . . . for advocating such radical causes as balanced budgets, limited government and tax reform, and to be able to try and bring power back to the people."*

**Tommy Thompson,**
former Secretary of Health and Human Services

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