An 'America First' Critical Mineral and Mining Strategy

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EXECUTIVE SUMMARY

Arguably, no nation on earth has been endowed with a greater abundance of critical and rare earth minerals than the United States.[1] The National Mining Association estimates that the United States sits atop $6 trillion in mineral resources.[2] We could be easily adding $50 to 100 billion to our GDP every year through a smart, pro-growth mining policy.

But foolishly, we are not. As recently as 1990, the United States led the world in mining output. But, according to 2017 data from the U.S. Geological Survey, the United States is today nearly 100 percent import-dependent for at least 20 critical minerals (not including each of the "rare earths"), and between 50 and 99 percent reliant for another group of 30 key minerals.[3] If all 17 rare earth elements were counted separately—as they should be—the United States is importing 37 minerals at 100 percent, for a total of 67 key minerals imported at more than 50 percent reliance.

Herein lies the frustrating paradox. The United States today is highly reliant on China and Russia for critical minerals, even though we probably have more of these valuable resources than both these nations combined. These are two nations that are adversarial to America's economic and security interests. Worse yet, our nation's import dependency has drastically increased over the last decade.[4] We are now dependent on imports for vital critical minerals and metals that are necessary components for everything from military weapon systems to cell phones and scores of other future-forward products. We don't even have a reliable reserve stockpile of most of these resources.[5]

Fortunately, the constraints to reversing this crisis in mining have little to do with geological discovery or technological barriers to production. The constraints are almost all linked to wrong-headed and anti-growth political decisions have has been the driving force behind the pervasive anti-mining ethos in Washington. For example, it takes seven to 10 years to get mining permits in America, versus two or three years in Australia and Canada.[6] The United States must also ramp up geological mapping and exploration, just as we did early in our nation's history, when mining for gold, copper, coal and other resources was common.[7]

The Trump administration has taken valuable first steps in reversing decades of policies that have inhibited our ability to mine our abundant resources, mostly in the states like Montana, Colorado, Wyoming and the Dakotas. In December 2017, the Trump administration issued a long-overdue policy directive designed to open up federal lands and streamline the permitting process so America can start seriously mining again.[8]

Executive Order 13817 is crafted to stimulate exploration and mining of critical minerals, and will task federal agencies to formulate a plan for obtaining those minerals domestically—just like other countries in the industrial world do. But our government's focus has to begin with increasing geologic mapping output and using state-of-the-art technology to collect newer and better quality geophysical data on federal lands, which is arguably the most important first step in the mineral resource evaluation and exploration processes.

However, these reforms are being held up and thwarted by anti-growth green groups that are threatening lawsuits and throwing up other obstacles, much like they did with oil and gas drilling. The irony of this anti-mining stance is that the green energy sources that they crave—solar and wind power—are dependent on rare metals to be viable.[9] [10]

This study presents the case for the Trump administration to speed up its pro-mining agenda to promote economic growth, create jobs, and reduce our dependence on foreign nations for critical minerals. This America First mining agenda will require three steps:

1) Immediately streamline the environmental permitting process, as other major mining countries, like Canada and Australia, have done.

2) Provide better access to public lands that contain known mineral deposits or that are geologically likely to host mineral deposits.

3) Allow mapping of our public lands so that we know how large mineral deposits are and where they are located.

These actions alone would enable the United States to begin playing the "long game" with its energy and mineral resource wealth, as China has done successfully for more than six decades.

America cannot shortsightedly allow itself to become dependent on foreign nations for critical minerals in the way we allowed ourselves to become dependent on OPEC for oil for decades at the end of the 20th century.
That is why a 21st century America desperately needs to "use and conserve"—not "lock up and preserve"—its federal lands and the mineral deposits that exist in abundance for our benefit. Our world-class mineral deposits belong to the people, and are an American endowment that is here for our benefit.[11]

INTRODUCTION

Thanks to hostility toward mining, huge portions of public lands in the west have not been explored or mapped in nearly enough detail to satisfy the hunt for minerals. It takes seven to 10 years to get mining permits in the United States, compared to two or three years in Australia and Canada.[12] The nation must also map and explore again as we did early in our country's history, when mining for gold, copper, coal, and other resources was common.[13]

Mineral imports from China and Russia are providing enormous geopolitical leverage to these countries at precisely the wrong time in world events and American history. China, Russia, and others have used their mineral wealth to hold importing countries hostage. Do we want Russian President Vladimir Putin to hold the commanding heights on critical minerals?

The 20th century philosophy of "lock up and preserve" needs to be replaced with an ethic of "use and explore" when it comes to federal land development. We have hundreds of years of these resources recoverable with existing technology.[14]

Rare earth minerals are the seeds for building new technologies. A strong case could be made that these critical metals are the "new oil" of the 21st century. The suite of 15 primary rare earths—which the United States has in abundance—has been referred to as "the vitamins of chemistry." They exhibit unique attributes like magnetism, stability at extreme temperatures, and resistance to corrosion—properties that are key to today's manufacturing. These rare earth elements are essential for military and civilian use for the production of high-performance permanent magnets, GPS guidance systems, satellite imaging and night vision equipment, flat screens, sunglasses, and myriad other technology products.[15] [16] [17]

China's leaders have been known to boast that the Middle East has the oil and China has the rare earth minerals. But that's false. The United States actually has more rare earth minerals than China. With a pro-mining policy, we can make America a mineral exporting superpower, not an importer reliant on our adversaries. This strategy has worked like a charm when it comes to energy production, and should be employed to yield the same America First results for critical minerals.

Other industrial countries all have policies for obtaining minerals they need, using a combination of their own domestic mining and trade with trusted partners. Amazingly, as the world's largest industrial economy, the United States has no reliable policy for obtaining needed critical mineral supplies. We are one of the few rich nations that does not have a

reliable stockpile of critical minerals.[18] Our nation is now—in 2018—more reliant on mineral imports than at any time in American history. Somehow, policymakers and their surrogates do not value our mineral resources and—like our abundant energy—the choices and the freedoms they afford us.[19]

This predicament we find ourselves in today is easily solvable. According to the U.S. Geological Survey (USGS), America is a mineral resource powerhouse. We have trillions of dollars of identified mineral "reserves" that can be mined in an environmentally safe way with existing and new technologies. That number does not even count the nation's unidentified "resources"—the upper end of which is undetermined, but will dwarf the value of identified U.S. mineral "reserves."[20]

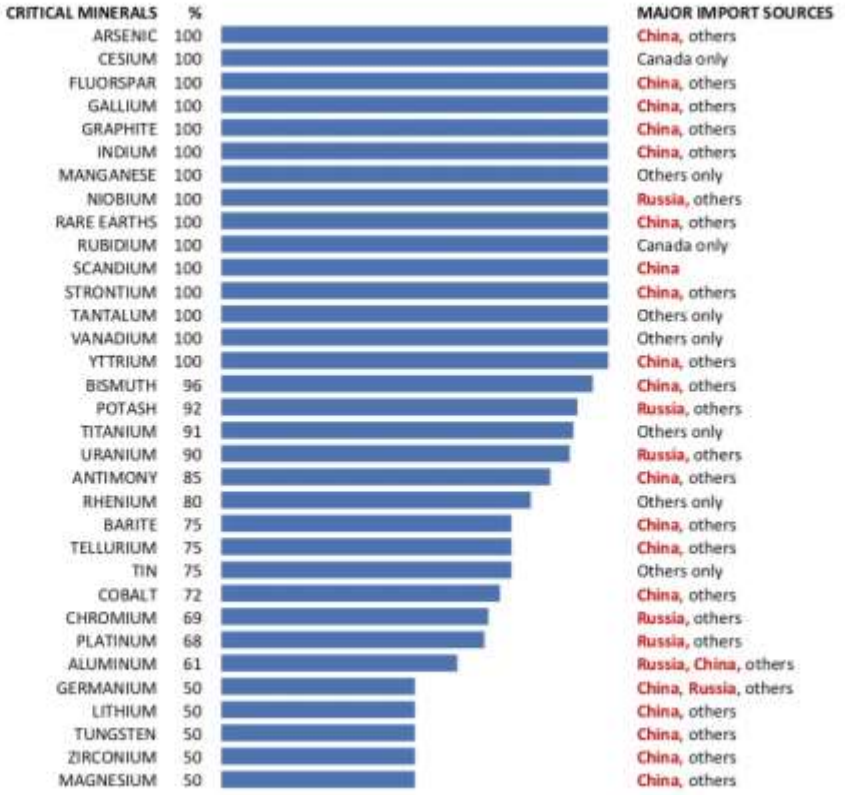
This study also addresses specific questions about the economic significance of U.S. mineral resources. For example, what is the estimated value of mineral resources beneath our feet? That number is in the many trillions of dollars range, but only if the mineral resources can be geologically located and mined economically. The question is can they? How much will the economy benefit from mineral extraction? How many jobs have been or can be created from mine to market? In the global market, can the United States compete with China, the world's leading minerals producer? And if not, why not?

Regarding environmental stewardship, do modern mining methods save or cause irreparable damage to the environment? Is mined land reclamation at a high-enough standard to begin to silence some critics of mining? Does mining need to occur in national parks and national monument areas, or can we maintain our national scenic treasures and develop the minerals needed by the world's largest economy? Finally, how can the public be informed about the essential role of mining to produce the metals that are required for "green technologies" such as renewables and electric vehicles?

HOW RELIANT ARE WE ON FOREIGN MINERALS?

As recently as 1990, the United States was the world's largest producer of minerals. However, in the past three decades, quite a different trend has emerged. According to the latest data from the USGS, the United States is 100 percent import-dependent for more than 20 critical and critical minerals, and between 50 and 99 percent reliant for another group of 30 key minerals.[21] The chart on the next page shows which critical minerals are being imported from China, Russia, and others, and total percentages being imported.

U.S. Critical Mineral Import Dependence: All Over 50%, Many at 100%, Too Many From Adversaries



After U.S. Geological Survey (USGS) 2017 Mineral Commodity Summaries, U.S. Net Import Reliance; and Department of the Interior, February 15, 2017 Federal Register "Draft List of Critical Minerals

At present, the United States is more than 50 percent import-reliant for at least 50 key minerals. That total is actually much higher if the 17 rare earth elements were listed individually rather than grouped into one "rare earths" category, as the USGS has reported. In other words, we are more than 50 percent import-reliant for 67 minerals. Of those 67, we are importing 37 minerals at 100 percent dependency. Unfortunately, the trend is growing worse. In its annual Mineral Commodity Summary for 2016 (published in 2017), the USGS noted:

> *Several U.S. metal mines and processing facilities were idled or closed permanently in 2016, including iron ore mines in Michigan and Minnesota; three primary aluminum smelters in Indiana, Missouri, and Washington; one secondary zinc smelter in North Carolina; a titanium sponge facility in Utah, the only such facility in the United States; and titanium mineral operations in Virginia.*

Rare earth elements (REE) have become the poster child for mineral import reliance on China. These 17 minerals, which the United States has in domestic abundance, have been referred to as "the vitamins of chemistry." They exhibit unique attributes like magnetism, stability at extreme temperatures, and resistance to corrosion—properties that are key to today's manufacturing.[22] [23]

REE are essential for military and civilian use for the production of high-performance permanent magnets, GPS guidance systems, satellite imaging and night vision equipment, cell phones, iPads, flat screens, sunglasses, and myriad other technology products.[24]

As recently as 1993, the United States produced 33 percent of global REE, while China produced 38 percent, Australia produced 12 percent, and Malaysia, India, and several other countries produced smaller amounts. By 2011, China accounted for more than 95 percent of the world's REE production.[25] In 2015, U.S.-based Molycorp filed for bankruptcy after all other REE manufacturers had already closed up shop. Molycorp was the last operating rare earth mine in the United States.

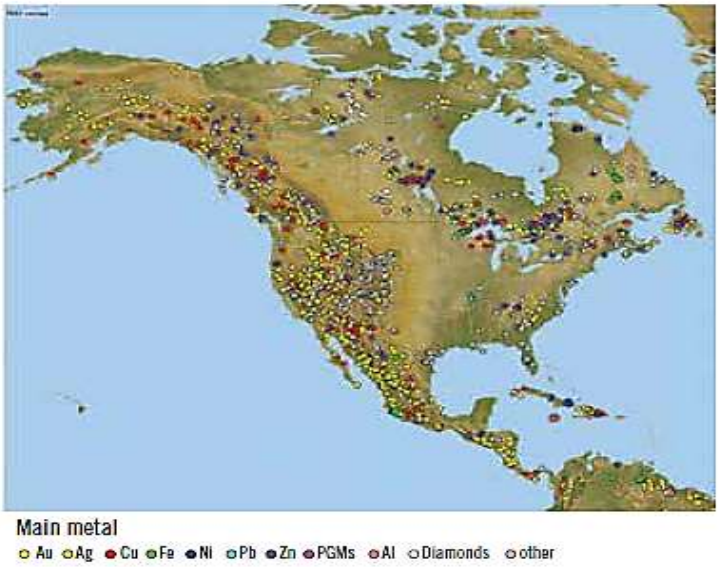
Today the United States is 100 percent dependent upon Chinese imports for rare earth minerals. During a recent discussion of rare earth minerals, a defense industry analyst was quoted as saying, "Absolutely, China could cut off the supply." The same applies to many other minerals imported by the United States from China, Russia, and elsewhere. In October 2018, Reuters reported that China would further restrict its exports of rare earths to the world, possibly signaling the first embargo since the well-publicized 2010 cutoff of Japan.[26]

> *Yet these* minerals and others are needed for virtually everything. The industries that rely on minerals such as construction and manufacturing contributed more than $2.78 trillion to the domestic economy, or about 15% of gross domestic product (GDP) according to the Bureau of Economic Analysis. On that basis alone, boosting U.S. minerals production needs to rank among the highest policy priorities of the Trump administration—hence the President's Executive Order 13817.[27]

AMERICA'S TREASURE TROVE OF MINERALS

The United States is mineral-rich and, for its first 150 years, was largely self-sufficient, with a surplus minerals trade balance. That enormous mineral wealth originated largely from public lands in the Western states.
One of the largest mineralized regions on earth occurs in the geologic terrain extending from Colorado to the Pacific Ocean across the Western United States. According to USGS reports, this mineral belt (Figure 1) contains world-class deposits of antimony, arsenic, chromium, cobalt, copper, fluorine, gold, iron, lead, manganese, mercury, molybdenum, nickel, platinum, silver, tin, titanium, tungsten, uranium, vanadium, and zinc—many of which are of enormous importance.

Figure 1. Major North American Mineral Deposits



The Western "mineral belt" is unusual because of its abundant concentration over such a vast area, compared to other mineral belts on earth. The region hosts some of the largest mines in the world, such as Colorado's Climax molybdenum mine, Alaska's Red Dog lead-zinc mine, the Nevada's Newmont and Cortez gold mines, Arizona's Morenci copper mine, and the Greens Creek polymetallic mine in Alaska.[28]

The USGS has compiled lists of hundreds of major mineral deposits in the belt, along with thousands of lesser mineral "occurrences," which are indicative of ore deposits. Well over a thousand of these occurrences are thought to be significant, and most remain unexplored. Presently, most of the mineral resources and mining in the United States are associated with a small number of major deposits.[29]

Current USGS assessments of deposits of the most valuable metals in the economy—iron, aluminum, gold, silver, copper, lead, and zinc—indicate that various deposits of these metals not yet produced will exceed the totals of all previous production to date. [30]

Current estimates of U.S. mineral reserves is in excess of $6.2 trillion, as reported by the National Mining Association, an estimate that appears to have derived from the USGS Minerals Program. However, this figure is an educated guess for known mineral "reserves" and does not contemplate inferred or unknown "resources." Reserves are minerals we have in hand; resources are not in hand until economic conditions dictate they are viable to be developed.[31] [32] [33]

Even for U.S. mineral "reserves," the $6.2 trillion figure is grotesquely low. We have no real idea what is in our "mineral account" because of stewardship policies, lack of geologic mapping, and manpower limitations that prohibit proper mineral resource evaluation of federal lands, which is where the lion's share of critical minerals are to be found. And, although the mineral wealth is extraordinarily vast, access for many of the mineral deposits is either now off limits, or hindered by an unforgivingly long permitting process. These issues are within the purview of the Executive Branch and Congress to correct in order to boost mining and reduce wildly excessive imports of critical minerals.

Technology will also play a key role in reducing mineral imports. Extraction operations in most of the industrial mineral and metallic deposit areas is economically feasible. In fact, new mining technologies for some metals are promising because they would use borehole *in situ* recovery techniques, which could preclude traditional open pit or underground mining.[34] [35] [36]

Finally, the economics of many of these deposits are scalable because there is usually more than one mineral available from each location. These are called "co-products." It is commonplace to have secondary and tertiary recovery of "co-product" minerals from the primary or "gateway mineral." [37] [38]

A PROBLEM OF POLICY, NOT GEOLOGY

A variety of "environmental roadblocks" over the past 40 to 50 years, such as permitting, environmental opposition, and land withdrawals, have restricted access to federal and state lands. These actions and decisions of the federal government on public lands, and even state and private lands, suggest that *policy*—not *geology* (the geologic occurrence of mineral deposits)—will determine when, where, and if mining will occur.

These restrictions on access to exploration and mining force manufacturers to look elsewhere for mineral resources—fueling our import reliance. Opposition to mineral development has also caused investment in exploration and mining companies to plummet at an alarming rate, down 30 percent in 2015 alone.

Permitting Delays

The United States is the top nation for minerals and metals consumption, but ranks seventh in the world in mining output because of overregulation and permitting. Canada and Australia have environmental permitting processes as stringent as the United States, but their permitting processes are highly streamlined compared to the United States.[39]

U.S. mining projects require multiple permits and the involvement of the relevant federal and state land management agencies, other government agency stakeholders, nongovernmental groups, local indigenous groups and the general public. Input from all of these groups requires substantial coordination and can force mining companies to alter plans or mine designs, revise timelines, and accommodate numerous and varied interests. Poor agency coordination and unconstrained government timeframes usually make the environmental permitting process the lengthiest step in approving a mine.

Shorter permitting timeframes with high-quality environmental analyses help stabilize investors' interest in the mining industry in those countries. In the United States, significant delays increase uncertainty for investors and close out the potential development of many otherwise available mineral resources.[40] The National Mining Association described the problem this way:

> *A permitting process that appears to be "bogged down," and takes longer than projected, increases the risk profile for the project. If investors associate the delay with the increased possibility the project may ultimately not proceed, or the delay will decrease the returns from their investment, they may re-evaluate their financial commitments to the project and withdraw their funds.*[41]

The Bear Lodge REE deposit in Wyoming's Black Hills National Forest offers a telling example. Developer Rare Element Resources submitted an application to develop a high-grade REE resource in 2012. They met with officials at the White House, the Departments of Defense and Energy, and other government agencies. Despite considerable political support and the exciting promise of a high-grade domestic REE supply—more than five years later, the Forest Service has yet to complete the Environmental Impact Statement required by the National Environmental Policy Act (NEPA). The project remains stalled and investors have pulled out.[42]

Environmental Opposition and Overregulation

In the last few years, activists have been moving away from expensive environmental litigation and other forms of obstructionism. Instead, they directly prod federal agencies—the Environmental Protection Agency (EPA) in particular—to exact undue influence over the permit approval process.

Consider the recent example of environmental opposition to developing the proposed Pebble mine project in southwest Alaska. As the largest undeveloped copper and gold deposit on Earth, the Pebble mine site contains an estimated 6.44 billion metric tons of copper, gold, molybdenum, and silver. Other technology metals and rare earths are probably also present according to the reports from Pebble's parent company, Northern Dynasty.[43]

The Pebble mine site is located on state lands in southwest Alaska that were secured in 1974 as part of a land swap with the federal government, specifically for its mineral potential. The site has since been designated for mineral exploration and development through two public land-use planning processes.[44]

While developer Pebble Limited Partnership was pursuing a permit to develop the deposit, the EPA in 2014 used an obscure section of the Clean Water Act to block the project in advance of any formal permit application from the

Pebble Partnership, effectively vetoing the mine project. The action was widely perceived to be both outside the law and a reflection of corrupt environmentalist capture of the agency decision-making process.[45]

Nevertheless, the EPA is facing pressure to intervene preemptively in a number of similar cases. For example, an iron ore mine in Iron County, Wisconsin, is being challenged by the Bad River Band of the Lake Superior Tribe of Chippewa because it might harm tribal wild rice beds. An environmental group in Minnesota is posturing to kill a nickel-platinum-palladium mine in the northeastern part of the state because it is a popular wilderness vacation destination. The EPA is also facing pressure to veto a planned nickel mine in Oregon near a tributary of the Smith River, ostensibly to protect fish stocks.[46]

All four of these mining projects are still in the initial planning stage and have not progressed through the normal NEPA consideration process used for decision making. Daniel McGroarty of the American Resources Policy Network (ARPN) summarized the problem by stating:

> *What these projects have in common is that none has put forward an actual mine plan. This action would trigger a thorough mine review as required under the National Environmental Policy Act. For more than 40 years NEPA has defined process by which a mine plan is evaluated. Under the law, every one of the concerns raised by opponents to the Wisconsin, Minnesota and Oregon mines would be aired publicly, examined by scientists and a range of technical experts, before approval is granted or denied. Now, using the Pebble mine as precedent, anti-mining activists are urging the EPA to ignore NEPA and bar mining projects with no review necessary*.[47]

Federal Land Withdrawals

A pernicious obstacle to domestic mineral development is the increasing withdrawal of public lands from development opportunities. Vast tracts of public lands have been withdrawn from entry to mineral exploration, leasing, mining, and other activities, for reasons including designation of wilderness areas, national monuments, habitat preservation, and military use.[48]

The Obama administration dramatically increased withdrawals through abuse of the Antiquities Act to satisfy the anti-mining and anti-drilling wishes of the environmental cabal. He used the act a record 29 times to establish or expand national monuments. President Obama was also the first president to use the Outer Continental Shelf Lands Act to withdraw coastal areas from mineral-leasing activities.[49]

The Trump administration has been confronted by plans for major land withdrawals that were rushed through at the end of President Obama's term and are now under review. One example is the egregious Bureau of Land Management (BLM) proposal to protect the greater sage-grouse and its sagebrush habitat. If enacted, the BLM would restrict federal land from future mining operations by placing 10 million acres in Idaho, Montana, Nevada, Oregon, Utah, and Wyoming off limits to exploration and mining in favor of habitat preservation.[50]

The National Mining Association (NMA) has stated that this massive land withdrawal would hurt mining industry jobs and revenue, and further restrict access to critical minerals because the Western states account for 75 percent of U.S. metals mining. In addition, because half of the nations' federal hardrock minerals are already off limits for minerals development, a final decision to enact the greater sage-grouse withdrawal would have an even greater negative effect on mining, causing increasing U.S. import dependence on minerals mined in those areas.[51]

Federal land withdrawals are detrimental to the management of our nation's mineral resources. If, for example, the total of all U.S. mineral wealth were placed in an abstract "mineral bank savings account," some future U.S.

government would not know, and probably could never determine, the "balance" of the "minerals account" because most land withdrawals prohibit exploration and evaluation or our nation's minerals wealth for future generations.[52] [53]

Therefore, with respect to land withdrawals, we need to ask: Has the federal government already withdrawn so much land from exploration and mining that it has seriously disrupted or even precluded future supplies of badly needed domestic critical minerals? We simply don't know, but the negative impact of withdrawals on the mining industry is unmistakable, and is the root cause for much of our steadily mounting foreign critical mineral imports.[54] [55]

MINERALS NEED TO BE MINED, NOT UNDERMINED

The past three decades have seen a gradual reduction in mining permits and mineral production. The reduced economic contribution of mining and related manufacturing translates directly into a reduced Gross Domestic Product (GDP). As demand for critical minerals continued to rise over the past decade, the Bureau of Economic Analysis states the U.S. mining industry has been in a relative decline from about 2011. Much of that decline in the value of minerals produced is attributable to the previous administration's anti-mining policies, many of which are being reversed by the Trump administration.[56]

According to the USGS, the value of domestic mineral raw materials from U.S. mining in 2016 was $74.6 billion dollars, while the total economic contribution to the GDP of the U.S. mining segment reported by the NMA for the year 2015 was $220.4 billion dollars. Other contributions to 2015 GDP published by NMA[57] (Economic Contributions of U.S. Mining—2015 Update) are listed here:

Contribution of U.S. Mining to GDP ($ billions)	
Direct	$100.6
Indirect and Induced	$120.0
Total	**$220.4**
Mining Labor Income ($billions)	
Direct	$ 39.8
Indirect and Induced	$ 64.0
Total	**$103.7**
Taxes Paid from Mining ($billions)	
Direct, Indirect and Induced	$ 44.0
Total	**$ 44.0**
Grand Total Mining Contribution $368.1 billion	

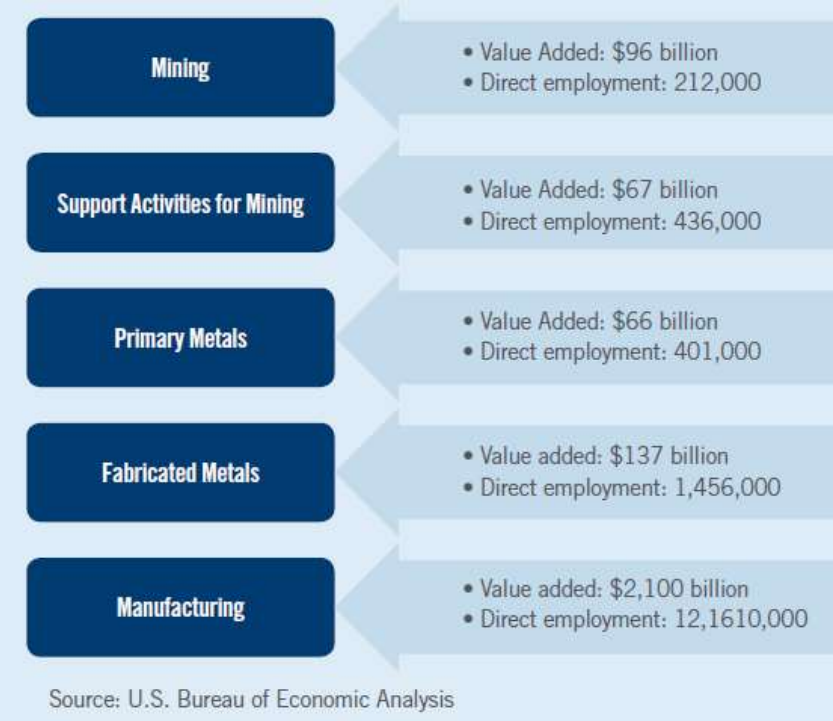
Mining (including support activities, primary metals, and fabricated metals) is directly and indirectly responsible for nearly 2 million existing jobs with wage and benefits well above the industrial sector average. Based on the annual production and annual wages from domestic mining in 2016, combined federal, state, and local taxes generated by the industry were in excess of $44 billion dollars.[58]

Based on these figures, the total economic value from all segments of the U.S. mining industry is roughly $370 billion dollars. The value added to the GDP by major industries that consume those domestic minerals was an estimated $2.78 trillion dollars in 2016, or about 15 percent of U.S. GDP.

According to the NMA, the U.S. mining permitting system is the single major barrier to the domestic mining industry's ability to fully perform and contribute more to the GDP. Currently, the U.S. permitting process is the world's longest for mining projects—somewhere between seven to 10 years, and at times longer. If government was able to solve just the wasteful years-long delays in permitting and scheduling that hamper exploration and mine construction, mining output contribution to GDP would soar.

Mining ripples through the economy. Therefore, eliminating permitting delays would also add tens of billions of dollars to domestic mining support activities, fabrication and downstream manufacturing. The combined increase contribution to GDP would likely be in the hundreds of billions of dollars.[59]

The Bureau of Economic Analysis figures below show value-added dollars and employment related to each stage from mining to manufacturing for 2013, which was a relatively down year. An increase of 10 percent more mining, conceivable in a one- to two-year period, could result in an across-the-board value-add increase (mining, support activities, primary metals, and fabrication of metals) on the order of $35 to 40 billion dollars. The rise in employment over that time period would be in the tens of thousands.[60]



Reducing mine permitting complexities would also attract significantly more investment dollars. In 1997, 20 percent of global mining investments were in U.S. domestic mining projects. However, in 2016, only an anemic 7 percent of global mining investment was made in the United States because of permitting delays. By comparison, Canada's share of global investment in 2016 was 14 percent—twice the amount invested in United States—in large part because Canadian mine permitting requires only two to three years maximum.

In addition to reducing permitting, the United States could better compete with China, Russia, Canada, Australia, and other mining economies by gaining greater access to lands that have become increasingly off limits to exploration and mining. More mines will translate into more minerals produced.

Another way for U.S. miners to better compete would be to reduce or eliminate burdensome regulations that sometimes discourage secondary or tertiary recovery of critical minerals and metals from the primary mineral ore deposit. Primary, or "gateway" minerals, often include significant amounts of *other* important minerals and metals that can also be processed if regulations don't interfere.[61]

For example, rare earth minerals and thorium are abundant in waste rock from some phosphate mining. Thorium is heavily regulated as a radioactive source material and is therefore routinely buried with the waste rock by phosphate miners. If burdensome thorium regulations were eliminated, miners could, under controlled conditions, process waste rock for thorium and especially for rare earth minerals, which would enable the mining industry to go head-to-head with Chinese rare earth suppliers.[62]

Some critical mineral imports will always be necessary. However, committing to use our domestic minerals according to principles of good stewardship, including the conservation ethic, would be the best counterweight to potential instability of international supply chains of key minerals important to our economy and national defense.[63]

CONSERVATION VERSUS PRESERVATION BATTLE RAGES ON

The federal government manages 640 million acres of land—roughly 28 percent of the United States. More than 90 percent of those holdings are in 12 Western states and contain world-class mineral deposits of massive economic significance, particularly in Alaska, Arizona, Utah, Idaho, and Nevada, where most of the land is federal (Figure 1).[64]

Unfortunately, approximately 390 million acres of land is no longer accessible for mineral exploration, and 520 million acres are not open under the mineral leasing laws of the United States. That's almost a billion acres off limits to mining![65]

These land withdrawals reflect the longstanding debate between the "conservation" versus "preservation" of our natural (mineral) resources. The conservationist ethic of managing public lands in the United States at the beginning of the 20th century held that the public resources are to serve the public good. In his memoir, Gifford Pinchot, the founding chief of the U.S. Forest Service, defined conservation as, "the wise use of the earth and its resources for the lasting good of men."[66]

The conservation ethic implies good stewardship, while the preservation ethic has typically meant preventing development—known today known as "leave it in the ground." Federal resource stewardship policies have largely abandoned the conservation ethic in favor of preservation.[67]

The bottom line is there are so many federal lands that contain ore deposits that there really is no need to contemplate mining in a national park or national monument. A genuine conservation ethic would hold that certain lands should be legitimately off limits to mining because of their designated federal status as a park or national monument or other classification.

Conversely, lands without special federal designation—that contain valuable minerals because of local geological conditions—should be mined and reclaimed according to environmental standards in force. Canada, Australia, and other major mining countries have environmental regulations as strict, if not more so, than the United States. These countries are able to extract minerals that benefit their societies and economies, and reclaim the lands, while the United States lags behind for unrealistic reasons of preservationist ideology.[68]

Today's mining projects, both above ground and underground, are not complete until they are returned as near to original condition as possible. According to NMA, almost 3 million acres of mined lands have been restored since 1978

and others are currently in progress. These lands are now recreation areas, farms, economic development parks, golf courses, schools, housing developments, wildlife habitat, and wetlands.[69] [70]

The United States is the world leader in mined land reclamation because of the depth of experience with various types of mines over a variety of terrains. Loss of land due to mining with today's modern mining techniques is essentially zero.[71] [72]

REASSERTING STEWARDSHIP OVER AMERICAN MINERAL WEALTH

To revive the domestic mining industry, secure supply chains for critical minerals that are 100 percent imported, and better support the nation's economy and defense sector, there are reasonable measures that can be enacted by Congress and the Executive Branch, particularly the land management functions at the Interior Department and the Forest Service.

For example, a January 2016 Government Accountability Office (GAO) study, *BLM and Forest Service Have Taken Some Actions to Expedite the Mine Plan Review Process but Could Do More*, indicates that better government and industry cooperation would shorten review and permitting timelines. The new report is a favorable outlook on this contentious issue.[73]

The United States is the largest consuming nation for minerals and metals, but ranks seventh in the world in mining output because overregulation and permitting. Canada and Australia have environmental permitting process as stringent as the United States, but their permitting process is highly streamlined compared to the United States.

In a September 2016 GAO study, *Strengthened Federal Approach Needed to Help Identify and Mitigate Supply Risks for Critical Raw Materials*, the agency recommended that the Executive Branch define the roles and responsibilities of relevant federal agencies, articulate joint strategies to assess and improve mineral access, and develop a reporting structure that allows all agencies to assess progress on permitting and leasing.[74]

The GAO also suggested that access to critical minerals is too narrow a target; the Executive Branch has no internal metrics for judging when a resource is critical or strategic. The study stipulated that the Executive Branch must engage with industry stakeholders to appreciate ever-shifting private sector needs.

The process of federal land withdrawals also needs to be seriously examined by the Executive Branch and Congress. A list of 24 federal monuments is now being studied by the Interior Department to determine if redefining some of their boundaries is in order. An executive order should clarify that the importance of mineral resources must be considered as part of a proposed withdrawal decision.

An executive order must also address the need for exploration and resource evaluation on lands that have already been withdrawn, including immediate access to those lands with critical mineral deposits for future contingency planning.

H.R. 520, the National Critical Minerals Production Act (and its companion in the Senate, S. 145) was introduced in Congress in early 2017, but it died because lawmakers could not agree to act. If passed, that law would "require the Secretary of the Interior and Secretary of Agriculture to more efficiently develop domestic sources of the minerals and materials of critical importance to the economic and national security and manufacturing competitiveness of the United States."

A significant part of this proposed legislation was devoted to recognizing the abundance of U.S. mineral resources as well as our increasing dependency on foreign sources of minerals. The fact that these two identical bills could not be

passed in their respective chambers is disappointing and unwise because it would have benefitted our nation's mineral and mining industry and, by extension, our economy and national security. But, we end this discussion about foreign mineral overreliance as we began: For whatever reason, importing minerals from other countries is the preferred solution by many current U.S. policymakers.[75] This is a totally unacceptable and unsustainable mind-set given the bounty of minerals we have in the United States of America.

CONCLUSION

Secure access to critical minerals is vital to maintaining a thriving economy, manufacturing industry, geopolitical strength, and a strong national defense. Decades of unsustainable public policy choices threaten to turn each of those national strengths into weaknesses. The U.S. mineral mining posture is weak from within and, as a result, import-reliant from without. These policies can be and should be immediately reversed.

A number of environmental "policies" carried out by federal and state governments are seen as foolish by many leaders worldwide and by conservationists here at home. However, the environmental cabal that promotes the "leave it in the ground" agenda is serious and politically powerful. Consequently, we are engaged in a battle for the mineral (and energy) inheritance of all Americans. Presently, the cabal appears to be winning.

Viewing this battle from afar, the Chinese and their acolytes are the big winners here, and they have positioned themselves to supply all the minerals the United States requires. Rare earth minerals are only the beginning. They are secure in their geopolitical mineral strength in part because the United States has chosen an unsustainable path of importing an ever-increasing number of minerals at 100 percent reliance. *Our vulnerability to embargoes and political unrest in China and other nations is disturbingly high.*

The technology breakthroughs that catapulted the United States from heavily import-dependent on OPEC in the 1970s to the world's largest producer of oil and natural gas might be a good analogy for the current mineral import dilemma. The mining industry, with the help of the Executive Branch and Congress, should follow this template of success. It could do no worse and may actually find a way forward.

Accordingly, President Trump's December 2017 executive order to ensure secure and reliable supplies of critical minerals is precisely what was needed by a beleaguered mining industry. It is now time for Americans—not mineral-exporting countries—to be the masters of our manufacturing and technology future by using an America First strategy to achieve minerals and mining self-reliance as soon as possible.

This is the first time in American history that a presidential executive order officially calls out and defines critical minerals, along with their role in the economy as a "non-fuel mineral material essential to the economic and national security of the U.S.; the supply chain of which is vulnerable to disruption; and that serves an essential function in the manufacturing of a product, the absence of which would have significant consequences for our economy or our national security."[76]

This definition enables policymakers and others to focus on how serious the issue of critical mineral imports has become from an economic, geological, technological, and manufacturing standpoint. In what is a huge turnaround for reducing dangerous mineral imports through responsible mining, the President's Executive Order states that it: "... shall be the policy of the U.S. to identify new domestic sources of critical minerals, and increase their exploration, mining, concentration, separation, alloying, recycling, and reprocessing; and streamline permitting for creating mines—for the benefit of the American people and in an environmentally acceptable manner."[77]

The executive order commits the country to reducing its vulnerability from mineral-import overreliance while paving the way for a cleaner and safer planet through existing and new technologies used by America's mining industry. Increased domestic mining of abundant mineral resources is absolutely necessary for the economic health of our nation and is long overdue.

Within the past decade, the United States succeeded in becoming energy independent. In fact, America is now on its way to energy *dominance* as the world's new leader in oil and natural gas production. We can do the same thing for minerals, but there is a steep learning curve ahead. People have been conditioned to think about energy's ability to light, heat, and transport, but not the minerals and metals that make up the lamp, furnace, and vehicle. Instead, we have unilaterally disarmed ourselves at great risk to our economy and security.

It is time for Americans—not the Chinese or Russians—to be the masters of our technology future. We have all the mineral wealth we need beneath our feet. Time for groundbreaking—again.

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