

# Women's Mining Coalition

## About WMC

WMC is a grassroots organization with over 200 members nationwide. Our members work in all sectors of the mining industry including hardrock and industrial minerals, coal, energy generation, manufacturing, transportation, and service industries. We hold annual Washington, D.C. Fly-Ins to meet with members of Congress and their staff, and federal land management and regulatory agencies to discuss issues of importance to both the hardrock and coal mining sectors. For more information about WMC, visit our website at [www.wmc-usa.org](http://www.wmc-usa.org).

## Our Mission

We advocate for today's modern domestic mining industry which is essential to our Nation.



# Women's Mining Coalition 30th Anniversary Fly-In

Thank you to all of our sponsors



## Reliable, Sustainable Energy Starts with Mining in the U.S.

**Sourcing minerals from environmentally sound, scientifically managed mining operations based in the U.S. is the best way to responsibly develop our future energy needs.** Timely access to this country's mineral wealth is critical to our energy goals.

- ✓ **Mining requires access to land for mineral exploration, extracting mineral resources, and building and using infrastructure during operations.** Large-scale mineral withdrawals and restrictive designations like Areas of Critical Environmental Concern on federal lands inhibit exploration and development of essential minerals.
- ✓ **Mining companies must have security of land tenure throughout the mining life cycle, from prospecting to closure, to justify investing the hundreds of millions to billions of dollars required to find, develop, and mine economic mineral deposits.** H.R. 1, the Lower Energy Costs Act, contains language that reverses the 9th Circuit Court's Rosemont decision and ensures that payment of the annual claim maintenance fee secures the right to use the lands required for mineral exploration, development, mining, and mine support facilities, which are authorized by the General Mining Law, as amended.
- ✓ **The permitting reforms in H.R. 1, which recently passed the House of Representatives, would streamline permitting for all of the kinds of projects needed** for our energy future including renewable energy and mining projects, and all types of infrastructure including roads, pipelines, and electrical transmission lines. These permitting reforms can be achieved while maintaining very high levels of environmental protection and worker safety.
- ✓ **Permitting a mining operation can take over 10 years in the U.S. and often involves litigation.** We need to enact the strong permitting provisions in H.R. 1 to facilitate domestic mining of lithium, rare earths, copper, nickel, cobalt, platinum group elements, and other minerals and to build the infrastructure needed for our energy future.
- ✓ **Last year, President Biden used his authority under Title III of the Defense Production Act to provide Department of Defense grants to qualifying critical minerals projects.** Unfortunately, despite these grants, the protracted permitting process seriously impedes the Nation's ability to strengthen domestic mineral supply chains and reduce our dependency on adversaries like China for the minerals needed for our energy future, national security, technology and manufacturing sectors, infrastructure, and economic well-being.
- ✓ Similarly, without improving the permitting process, **the policy objective in the Inflation Reduction Act's EV tax credits to stimulate domestic mining and processing of battery metals is illusory and unachievable.**
- ✓ **S. 912, the Mining Schools Act of 2023, will help fund U.S. mining schools to educate the next generation of mining professionals.** The shortage of mining professionals contributes to our reliance on foreign minerals. Only about 600 students are currently enrolled in U.S. mining schools compared to the 1.4 million students enrolled in Chinese mining schools. Companion legislation is expected to be introduced soon in the House of Representatives.

### Mining Requires Access to



Lands



People



Permits



Capital

WMC Fact Sheets





## The U.S. Urgently Needs More Mining Students and Educational Programs to Compete with Chinese Mining Schools

### The Mining Schools Act of 2023 (S. 912) will Strengthen Domestic Mining Education

There is an enormous disparity between the number of U.S. mining engineering schools and students compared to China.

U.S. has only 14 mining schools accredited by the Accreditation Board for Engineering and Technology, Inc. The estimated enrollment at these schools has rapidly declined from almost 1,500 in 2015 to just under 600 students today. Roughly 200 students are anticipated to graduate with Bachelor of Science degrees in mining engineering from U.S. schools this year.

**China has over 1 million more mining students than the U.S.**



**600**  
enrollments  
per year  
in USA

**VS**



**1.4M**  
enrollments  
per year  
in China

In comparison, **China has at least 44 mining engineering schools that have an aggregate enrollment of over 1.4 million students.**

Source: <https://edurank.org/engineering/mining/cn/>

In addition to mining engineering, many Chinese schools offer degrees in extractive metallurgy, mineral processing engineering, and other related fields that are critically important to the mineral supply chain. Some U.S. mining schools no longer offer degrees in these fields resulting in a critical shortage of students trained in extractive metallurgy and mineral processing.

**China's domination over the world's mineral supply chains extends beyond mining and processing of minerals – it starts with educating the mining professionals workforce**



### Accredited U.S. Mining Engineering Schools

University of Alaska (Fairbanks)

University of Arizona

Colorado School of Mines

University of Kentucky

Michigan Tech

Missouri University of Science & Technology

Montana Technological University

University of Nevada (Reno)

New Mexico Institute of Mining & Technology

Penn State (Pennsylvania)

South Dakota School of Mines & Technology

University of Utah

Virginia Polytechnic Institute & State University

West Virginia University



## The Barrasso – Manchin Mining Schools Act of 2023 (S. 912) will Help Train the U.S. Mining Professionals Workforce

Establishes a Department of Energy grant program for mining schools to receive funds to recruit students and to pay for studies, research projects, and demonstration projects related to minerals production;

Authorizes the appropriation of \$10,000,000 for fiscal year 2024 through 2031 for this grant program; and

Creates the Mining Professional Development Advisory Board to evaluate applications, recommend recipients to the Secretary of Energy, and to conduct oversight to ensure that grant funds are appropriately used.

### S. 912 will



**increase the number of well-trained mining professionals** specializing in exploration, mine planning and execution, mine site reclamation and remediation, and metallurgy/mineral extraction (which includes the following disciplines: comminution, mineral separation, refining, alloying, smelting, concentration and purification).



**develop professionals with expertise in rare earths and other critical minerals exploration, extraction,** and refining, and who specialize in recovering critical minerals from previously mined materials including rare earths from coal and coal residue.

## Strengthening domestic mineral supply chains and reducing the Nation's reliance on foreign minerals requires a much larger, well-educated mining professionals workforce

The S. 912 DOE grant program will educate the future mining professionals workforce to address the current shortage of U.S. students enrolled in domestic mining education programs

Read a copy of S. 912 at:



For more information, please contact

Women's Mining Coalition at

✉ [wearewmc@wmc-usa.org](mailto:wearewmc@wmc-usa.org)



## Federal Land Withdrawal Actions and Proposals Inhibit the Nation's Ability to Achieve the President's Energy Transition Objectives

President Biden states in Executive Order 14057, “as the single largest landowner in the Nation,” the federal government has an opportunity to promote providing the raw materials needed to create the infrastructure required to move toward a sustainable future. Unfortunately, the Administration has taken recent actions and proposed policies that will make it harder to access federal land to develop domestic sources of the minerals needed to achieve the Nation’s energy transition objectives.

- Rather than withdrawing lands from mineral entry, lands which host the minerals essential to build wind turbines, solar panels, large capacity batteries, power EVs, and other products must remain open to exploration and development.
- Instead of putting more lands off-limits to mining, the Administration should release Wilderness Study Areas (WSA) deemed not suitable for Wilderness designation to multiple-use.
- Strict enforcement of existing environmental laws and regulations should be continued, but minerals must be sourced from US deposits to provide the raw materials needed for our future.

Current actions to put federal lands off-limits to mining or to restrict exploration and mining include:

- **HR 668, the Boundary Waters Wilderness Protection and Pollution Prevention Act** - Northern Minnesota hosts significant mineral deposits critically needed for copper, nickel, cobalt, and platinum group elements. Withdrawing the approximately 234,328 acres of Federal land and waters in the Rainy River Watershed of the Superior National Forest in the State of Minnesota from (1) all forms of entry, appropriation, and disposal under the public land laws; (2) location, entry, and patent under the mining laws; and (3) operation of the mineral leasing, mineral materials, and geothermal leasing laws, as proposed in **HR 668** removes those deposits from the country’s inventory of critical minerals available for development.
- **HR 1236 and S 540, the Protect the West Act**, proposes to establish a fund for restoration of acreage managed by the USDA. Any lands restored using these funds will be withdrawn from mineral entry. There is no provision to assess the mineral potential of the acreage or allow public comment prior to withdrawal. The advisory council established by the Act does not include a mining industry representative.

The Bureau of Land Management published a new proposed rule in the Federal Register on April 3 entitled **Conservation and Landscape Health (FR Doc. 2023-06310)** which increases the use of the Area of Critical Environmental Concerns



(ACEC) designation to restrict development and creates “conservation leases” which would allow self-initiated proposals for reclamation and remediation of the leased area. Once leases are issued no other use of the lands are permitted that are “inconsistent with the authorized conservation use. The land will be under a *de facto* withdrawal from mineral entry.

This is an administrative attempt to amend the multiple use principles in the Federal Land Policy and Management Act (FLPMA) by emphasizing preservation of “intact landscapes” rather than balancing multiple uses as FLPMA mandates. It also requires compensatory mitigation which is not consistent with FLPMA’s prevent unnecessary or undue degradation standard. It is premised on landscape-scale land use planning which Congress rejected in 2017 when it used the Congressional Review Act to revoke BLM’s Planning 2.0 rule.

- March 21, 2023, the Bureau of Land Management (BLM) and the USDA Forest Service announced a proposal initiating consideration of a 20-year **withdrawal of the Pactola Reservoir-Rapid Creek Watershed (FR Doc. 2023-05659)** in the Black Hills National Forest, South Dakota on National Forest System Lands from location, entry, appropriation, and disposal under the mining laws and the mineral and geothermal leasing laws, subject to valid existing rights. The proposal stems from concerns over possible future impacts of mining in an area with a long history of mining. This region potentially contains large lithium resources which are being explored to determine the whether a valuable deposit of lithium is present. The proposed 20-year withdrawal will set back the development of the exploration and scientific research needed to understand if this lithium deposit could become a domestic lithium mine that would strengthen our lithium supply chain and reduce our Nation’s dependence on China for this critical mineral.
- **Two unprecedented administrative actions** have recently put world-class deposits of minerals essential to the energy transition off-limits to mining. The EPA, preemptively vetoed the Pebble Copper – Gold Project in Alaska using its authority under the Clean Water Act. The DOI revoked Twin Metals’ minerals leases for the Maturi copper, nickel, cobalt, palladium and platinum deposit in the Superior National Forest and withdrew the entire Forest from mineral leasing. Companies must have access to land and security of tenure in order to invest the hundreds of millions to more than a billion dollars required to search for, find and develop economically viable mineral deposits. In order to achieve the energy transition, we must invest in responsibly sourced raw materials from U.S. mines to build new energy infrastructure and technologies.

## Keeping Lands Open to Mineral Exploration and Streamlining Permitting are Essential to Achieving the Nation’s Energy Transition Objectives

For more information on this subject and other mining-related topics, please contact WMC via email at [wearewmc@wmc-usa.org](mailto:wearewmc@wmc-usa.org) or visit our website at [www.wmc-usa.org](http://www.wmc-usa.org).

# Meeting the Clean Energy Demand

## THE SOARING DEMAND FOR MINERALS

**4X** Increase in total value of mineral production by 2040, rivaling the total value of world crude oil production

&

**2.5X** Increase in Lithium prices

## NUMBER OF U.S. MINES NEEDED TO MEET THE CLEAN ENERGY TRANSITION

**359**

Additional mines across all commodities

## NUMBER OF KEY MINERALS NEEDED FOR CLEAN TECHNOLOGIES



**19** minerals needed for EVs (frame, wiring/circuitry, batteries)



**15** minerals needed for wind turbines (frame, wiring/circuitry, concrete)



**17** minerals needed for solar panels (solar cells, semiconductor chips, steel frame, photovoltaic cells & batteries)

## SAMPLE OF ESSENTIAL MINERALS FOR CLEAN ENERGY

3 <b>Li</b> Lithium	13 <b>Al</b> Aluminum	23 <b>V</b> Vanadium	25 <b>Mn</b> Manganese	26 <b>Fe</b> Iron Ore	27 <b>Co</b> Cobalt
28 <b>Ni</b> Nickel	29 <b>Cu</b> Copper	30 <b>Zn</b> Zinc	42 <b>Mo</b> Molybdenum	51 <b>Sb</b> Antimony	57-71 <b>La</b> Lanthanides
78 <b>Pt</b> Platinum	79 <b>Au</b> Gold	82 <b>Pb</b> Lead	 Coal (coke)		

## 2020 U.S. CONSUMPTION OF KEY MINERALS



**Co**

6,700  
Metric Tons

**Li**

3,000  
Metric Tons

**Ni**

99,000  
Metric Tons

## PERCENTAGES OF KEY MINERALS DERIVED FROM FOREIGN SOURCES



Copper



Cobalt



Lithium



Nickel

## SAMPLE OF COUNTRIES OF ORIGIN FOR ESSENTIAL MINERALS IMPORTED BY THE U.S.



China



Russia



India



Iran



# Families need affordable and reliable electricity

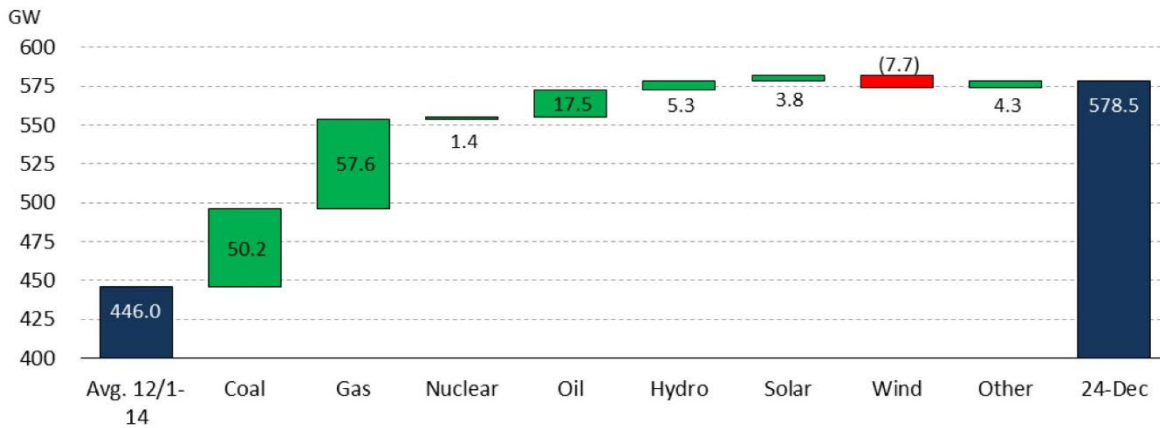
The coal fleet provides consistent, dispatchable, fuel-secure power on a 24/7 basis.

## Coal stands ready in times of extreme weather

This graph was created by Energy Ventures Analysis for an America’s Power report entitled “Operation of the US Power Generation Fleet During Winter Storm Elliott”, February 23, 2023.

**EXHIBIT 5** quantifies how the peak electricity demand on December 24 for the U.S. Lower-48 was met by the various types of electric generating resources compared to the first two weeks of December 2022.

**EXHIBIT 5: U.S. LOWER-48 CHANGE IN NET GENERATION BY FUEL TYPE DURING WINTER STORM ELLIOTT**

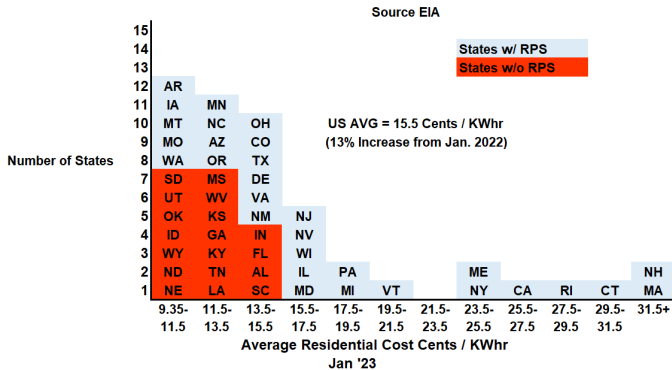


Source: EIA Hourly Grid Monitor

Coal plants increased their output by over 50 GW during winter storm Elliott when electric demand peaked on December 24, 2022. Yet 82 GW of current coal generation is scheduled for retirement by 2030, meaning this resource will not be there when needed for future weather emergencies. Manu Asthana, CEO of PJM RTO, “I think the math is pretty straightforward. We need to add resources faster, but we need to subtract generation slower.”\*

## Coal is affordable domestic energy

**RESIDENTIAL ELECTRICITY PRICE DISTRIBUTION BY CONTIGUOUS STATES WITH OR WITHOUT RPS - Renewable Portfolio Standards (Not Goals)**



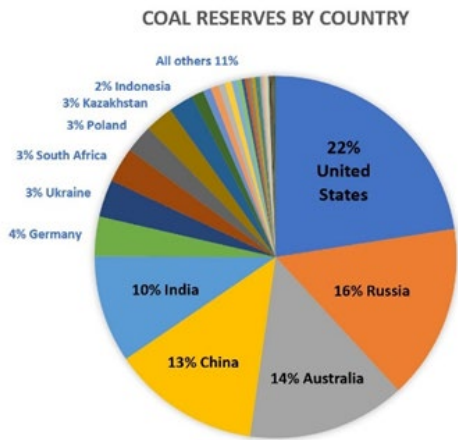
The price of coal is expected to remain low and relatively unchanged next year. But coal plant closures expose consumers to higher and volatile natural gas prices. Last year, 42 states relied on coal for electricity. Coal plants have months of fuel stored on site. They are not impacted by fuel supply disruptions during extreme weather like gas, wind, or solar generation can be.

\*(March 2023 Electric Power Supply Association conference)

# The Opportunity of Carbon Capture Utilization and Storage (CCUS)

CCUS is expected to play a crucial role in meeting global climate targets.

The world uses coal because they have it



Coal is abundant worldwide, making it economical for both developed and developing countries to utilize this fuel source to make electricity. Germany's recent return to coal underscores the need for domestic supplies of fuel for all countries. Access to electricity is essential to provide clean water, sanitation, healthcare and reliable lighting, heating, and cooking.

**1990-2010: 1.7 Billion people gain access to electricity**

Thanks to coal:



Thanks to wind & solar:



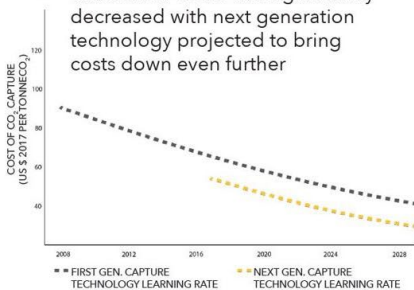
Manhattan Institute

## CCUS is capable of decarbonizing many industrial processes



CCUS Investment

- The cost of CCUS has significantly decreased with next generation technology projected to bring costs down even further



Graph modified from GCCSI data

CCUS Impacts

- Potential for gigaton carbon mitigation
- Job creation and retention  
*A potential project in Wyoming could create up to 480 new net jobs during construction, with 150 new net jobs during ongoing operations\**
- Transition ready workforce



CCUS Opportunities

- Continued and increased research and development funding
- Pore space ownership on federal lands
- Liability
- Extension of 45Q tax credit
- Closing the cost gap (45Q direct pay, etc.)

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## American Mining for America's INFRASTRUCTURE

Metallurgical coal, also known as met coal, coking coal, or steelmaking coal, has the characteristics that make it ideal for heating and transforming it into coke.

### Usage in Expanded Renewable Energy Sources

Currently, there is no substitute for met coal in producing new steel or for new steel in de-carbonization efforts. Steel has a critical role to play in building the U.S.'s energy infrastructure as the world transitions to a low-carbon economy. Steel is needed to build wind turbines, solar panels, tidal power systems, and bioenergy infrastructure.



### Usage in Infrastructure Development

Steel is also required in the construction of vital infrastructure components, such as bridges, rail lines, etc. Other end uses of steel made from met coal includes metals used in everything from buildings, tools, trains, airplanes, and automobiles, to cookware, cutlery, surgical tools, and medical implants.

Steel is one of the most widely used building materials on earth and a critical component of many types of infrastructure including bridges, dams and all kinds of transportations system such as trains, electric vehicles and more. Its high tensile strength, relatively light weight compared to other materials and low cost have made it an ideal construction material for over a century. Steel is also 100 percent recyclable, meaning it can be recycled indefinitely without losing its quality.



# COAL - A CRITICAL RESOURCE

## DID YOU KNOW? YOUR LIFE DEPENDS ON COAL



### STEEL

Did you know? Metallurgical coal, or coking coal, is a vital component of steel making. Our everyday life relies on products from steel - bridges, autos, cell phone towers, medical equipment, and kitchen appliances.

**Steel represents on average 80% of all materials used to construct wind turbines**



### ELECTRONICS

Did you know? Coal and its by-products are found in our everyday consumer electronics (i.e. smartphones, tablets, and computers).



### TRANSPORTATION

Did you know? Coal is needed for the steel, aluminum and electronics found in your automobile. Coal and coal by-products can also be found in your electric vehicles batteries.



### ATHLETICS

Did you know? Graphene is produced from coal and is a popular component of sports equipment, bicycles, skis, tennis rackets, and even apparel including shoes.



### CEMENT

Did you know? Coal and coal ash are used in the production of cement. Cement is used in a variety of construction applications.



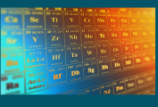
### MEDICINE

Did you know? Coal is found in medical applications such as activated carbon that is used in kidney dialysis.



### PERSONAL COMFORT

Did you know? Coal and coal by-products are found in cosmetics, soaps, shampoos, deodorant, and toothpaste.



### NET-ZERO INITIATIVES

Did you know? Rare Earth Elements (REE) are found in Coal. REE are vital elements in emerging technologies: superconductors, magnetic cooling, hydrogen storage and high performance permanent magnets.

FOR MORE INFORMATION  
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