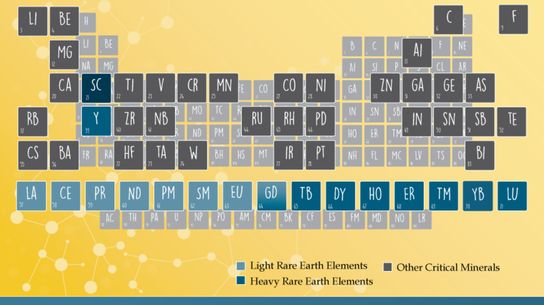
CRITICAL MINERALS:
WHY WE NEED A DOMESTIC SUPPLY

Developing a domestic supply of critical minerals is a national priority, relevant not only to climate change but to economic and national security.

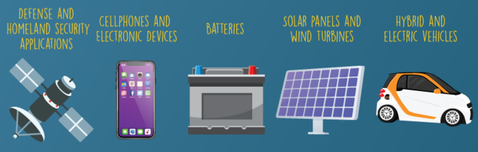
WHAT ARE CRITICAL MINERALS?

Critical minerals, which include rare earth elements, are a group of 50 chemical elements in the periodic table of elements. These critical minerals form the building blocks for many modern technologies and clean energy technologies.



WHAT ARE CRITICAL MINERALS USED FOR?

Critical minerals are integral to the way we live and to America's economic growth and national security. They have unique magnetic, heat-resistant, and phosphorescent properties unlike any other elements. They are essential components in:



Demand for critical minerals is increasing as the world transitions to a clean energy economy. In fact, the global demand for critical minerals is set to skyrocket by 400-600 percent over the next several decades. The need for some minerals, such as lithium and graphite used in electric vehicle batteries, will increase even more—by as much as 4,000 percent.

WHERE ARE CRITICAL MINERALS PRODUCED AND SUPPLIED?

Up until the mid-1980s, the United States was the leading global producer of critical minerals. But these elements are often found in low concentrations, mixed together in other mineral deposits, which can be challenging and expensive to separate.

The United States is increasingly dependent on foreign sources for many of the processed versions of critical minerals. Globally, China controls most of the market for processing and refining lithium, rare earth elements, cobalt, and other minerals.

Because these elements are essential to our everyday lives and will help us achieve the nation's climate goals, the U.S. Department of Energy's Office of Fossil Energy and Carbon Management is supporting the development of the United States' own supply of critical minerals.

MAJOR U.S. SOURCES FOR KEY CRITICAL MINERALS

Lithium	Chile	Argentina	China	
Rare Earth Elements	China	Estonia	France	Japan
Cobalt	Norway	China	Japan	Finland
Graphite	China	Mexico	Canada	Brazil
Gallium	China	Germany	United Kingdom	Ukraine

View more data on U.S. critical minerals import reliance.

WHERE ARE CRITICAL MINERALS FOUND IN THE UNITED STATES?

A vast quantity of critical minerals exist as trace elements within the United States' large supply of natural resources. Critical minerals can also be found in "unconventional and secondary" sources, such as wastes from fossil fuel and other industries, including mine tailings, refuse piles, acid mine drainage, fly ash, and water produced by oil and gas supply chains. Initial estimates suggest these unconventional and secondary sources currently contain, for example, more than 10 million tons of rare earth elements.

WHAT ARE THE BENEFITS OF DEVELOPING A DOMESTIC SUPPLY OF CRITICAL MINERALS?

In addition to supporting our national security and economic prosperity, developing a domestic supply of critical minerals will:

REDUCE U.S. DEPENDENCE ON FOREIGN SOURCES

SUPPORT THE CREATION OF NEW MANUFACTURING JOBS

SECURE DIVERSE, RESILIENT, AND DOMESTIC CRITICAL MINERAL SUPPLY CHAINS

SUPPORT ENVIRONMENTAL STEWARDSHIP AND CLEAN UP OF LEGACY WASTE

SUPPORT THE TECHNOLOGICAL DEVELOPMENT OF A CLEAN ENERGY FUTURE

HOW IS FECM ADVANCING THIS EFFORT?

FECM's research, development, demonstration, and deployment portfolio is focused on technologies that enable the cost-effective and sustainable extraction of critical minerals. FECM will scale these technologies to small- and large-scale pilots and larger field demonstrations to create domestic critical minerals supply chains across the United States. FECM will pursue this work while engaging with local communities to ensure their voices are heard and communities receive lasting benefits from the outset of extractive activities. Recent efforts include:

- $19 million awarded to 13 projects across the United States to support the production of critical minerals in traditional fossil fuel-producing communities across the country.
- Advancements on a first-of-its-kind critical minerals refinery to turn mine waste into critical minerals, supported by a $140 million investment from the Bipartisan Infrastructure Law.

To learn more about the work FECM is doing to support the development of a domestic supply of critical minerals, visit FECM's Office of Resource Sustainability website.

Visit energy.gov/fecm
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