

## Summary of Department of Energy Strategic Work on Critical Minerals

The Department of Energy's strategy under E.O. 13817 to ensure secure and reliable supplies of critical minerals involves coordinated investment among program offices agency-wide.

### **Office of Energy Efficiency and Renewable Energy (EERE)**

*Critical Materials Institute (CMI)*, an Energy Innovation Hub currently managed by the Advanced Manufacturing Office (AMO), is a consortium of U.S. national laboratories, universities, and companies. Technologies developed are linked to industrial needs and enabled with fundamental research and cross-cutting analysis.

Lithium Battery Recycling – Vehicle Technologies Office (VTO)'s ReCell Center funds research for current and future battery chemistries, including recycling, recovery materials, cathode-to-cathode recovery, and reuse of recycled materials. The VTO and AMO jointly launched the *Lithium-Ion Battery Recycling Prize* to incentivize cost-effective, disruptive solutions for 90% recycling of spent lithium-ion batteries.

Critical materials extraction activities from geothermal brines are coordinated between Geothermal Technologies Office (GTO) and AMO. Development of seawater mining is funded by Water Power Technologies Office (WPTO).

**Office of Electricity** is working on grid-scale battery storage technologies that use domestically sourced earth-abundant materials.

**Office of Fossil Energy**, National Energy Technology Laboratory (NETL)'s *Feasibility of Recovery Rare Earth Elements Program*, is currently focused on developing technologies for the recovery of rare earth elements (REE) and critical materials from coal and coal-based resources.

**Office of International Affairs** is currently focused on countering attempts to control or distort the critical mineral markets.

**Office of Science** drives fundamental science to advance our understanding of critical materials down to the atomic scale, leveraging novel synthesis techniques and advanced computational and modeling capabilities. This research includes identifying replacements for rare earths in electronic and magnetic applications and alternatives to materials such as lithium and cobalt in batteries, and platinum in catalytic reactions.

**Office of Policy** has led several studies assessing material criticality across energy technologies and potential for supply risk, and vulnerabilities related to market dynamics and volatility across supply chain stages—from mining to final product production and demand.

**Advanced Research Projects Agency-Energy (ARPA-E)** previously funded the Rare Earth Alternatives in Critical Technologies (REACT) program, which has fed into current activities across the Department, such as the EERE's Wind Energy Technologies Office (WETO) research into alternative motor and generator topologies that do not require rare earth permanent magnets.