# Securing America's Mineral Future: Unlocking the Economic Value Beneath Our Feet

## House Small Business Committee

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## Written Testimony of Laura Stoy, Ph.D., CEO and Founder of Rivalia Chemical Co.

Chairman Roger Williams, Ranking Member Nydia Velázquez, and Members of this Committee, thank you for this opportunity to speak before you today. It's an honor to speak on a topic so vital to the future of U.S. mining and materials. Securing critical mineral supply chains is essential, particularly for our national defense, technological innovation, and manufacturing strength.

My name is Dr. Laura Stoy, and I am the CEO and Founder of Rivalia Chemical Co. Rivalia is pioneering new chemical extraction technologies to recover valuable rare earth elements from industrial wastes. These wastes include coal fly ash and other coal combustion byproducts, phosphogypsum, acid mine drainage sludges, and mine tailings, and from them we produce a rare earth element rich concentrate. Rivalia's patent-pending method both extracts the rare earths from the bulk material and separate them from major elements- major challenges in rare earth processing. Using this method and by targeting secondary materials, Rivalia avoids the high economic and environmental costs of mining and minimizes chemical consumption and hazardous waste generation.

**"Mining" Alternative Sources of Rare Earth Elements**

The U.S. has 1.9 million tons of rare earth elements in reserves, according to the 2025 U.S.G.S. Mineral Commodities Report. There are even more rare earths in our wastes. Last year, researchers at U.T. Austin estimated that there were 11 million tons of rare earth elements in accessible coal ash in the United States, nearly eight times the amount that the U.S. currently has in domestic reserves. Researchers at Oak Ridge National Laboratory identified phosphogypsum supplies in the U.S. containing another 680,000 tons to several million tons of rare earths. At Duke University, scientists found that hundreds of abandoned coal mines collectively release 500–3400 tons of rare earths each year through acid mine drainage. Mine tailings, another type of waste generated from mine activity, may also be a source of rare earths. While typically considered wastes by the mining industry, tailings often contain 5-10% of the target minerals or metal in the parent ore body. In all these applications, we have an

opportunity to not just harvest the rare earths we need, but to also remediate sites where environmental damage may have been done and improve the area for local communities.

I would be remiss if I did not mention electronic wastes as sources of rare earths. While Rivalia does not focus on recycling electronics, recycling magnets are an important contribution to rare earth element sourcing, especially for powerful magnets: neodymium, praseodymium, and dysprosium.

There are no companies currently producing rare earth elements from any of these wastes in the U.S. at scale- though I will note to this committee that there are many small businesses and startups addressing this opportunity space. Rivalia's focus is on mining rare earths from wastes, but it is likely that this will only be one component of a broader rare earth supply chain. It is my opinion that building a broader, more diverse supply chain for rare earths will make the system overall more resilient to disruption.

Beyond what we can mine domestically, the U.S. should strategically ally with countries with growing and active mining operations, including Australia, Canada, and Brazil, among others. This 'friendshoring' will also contribute to a stronger value chain in the West.

**Securing the Midstream**

To build a stable rare earth element supply chain independent of China, the U.S. cannot only mine rare earths: we must **also** separate, refine, metallize, and produce finished products. China's dominance in rare earths comes from their leverage over the entire supply chain; for some other critical minerals, China mines less minerals domestically than other large nations, but it processes minerals not only from its own mines, but from mining partners abroad.

Up until very recently, this has included MP Materials, one of the leading U.S. rare earth element mining companies. This has only changed as of January 2025, when the company began a 'mine-to-manufacturing' program, taking their mined ore all the way to finished NdPr magnets.

**To solve rare earth value chain and bring it back to the West, domestic rare earth producers must have robust mid-stream processing available.** There are significant challenges here, from developing a skilled workforce to fostering innovation, to ultimately de-risking the rare earth market for private capital. The rare earth market is opaque, in large part due to heavily controlled processing and production in China. This makes it vulnerable to price manipulation, making investing anywhere along the rare

earth supply chain less appealing to many forms of private capital due to the added price volatility and risk.

Ultimately, domestically produced rare earth elements must be cost competitive in a global market. China has strategically subsidized domestic mineral supply chains, enabling their businesses to offer products and services at significantly lower costs than their American counterparts. It will be challenging to attract customers, not to mention private capital, without comparable pricing. **It is here that I believe American ingenuity and innovation must be nurtured, to develop new technologies to achieve cost competitive rare earth element production.**

**Building New Technologies for Securing Critical Minerals: The Role of Government and Private Funding for Rivalia**

I founded Rivalia after completing my Ph.D. in environmental engineering at the Georgia Institute of Technology, where I was privileged to be funded with both government and private funding. Government funding through Georgia Tech's President's Fellowship and the National Science Foundation Graduate Research Fellowship Program; private funding through Georgia Power. I developed Rivalia's core technology during my program through the help of these programs.

I've leveraged a similar combination for Rivalia. I've raised venture capital and participated in Techstars, a prestigious startup accelerator program that, on my site, is partnered with Alabama Power. Through our participation, we have secured a pilot with Southern Company to demonstrate our technology.

I have also raised nondilutive capital. I have been awarded a National Science Foundation Phase 1 Small Business Research Grant, which has helped to derisk the technology and validate our method for additional materials. I've also been awarded several Department of Energy EnergyWerx Vouchers, which have helped us to identify and prioritize technical process improvements as well as improve our positioning the market. Finally, I am embedded at Argonne National Laboratory for two years as an awardee of the DOE Lab-Embedded Entrepreneurship Program (LEEP), Chain Reaction Innovations. Chain Reaction Innovations and LEEP support scientific founders like me so that our technologies have a chance to achieve market impact, to make our nation more secure and prosperous. Having access to the deep expertise, world-class facilities, and science environment at Argonne has been pivotal to Rivalia's development. Specifically, we'll be scaling our technology, going from "grams on the bench to tons in the trench." LEEP and the national labs are incredible resources for launching significant and serious scientific and technical innovations for the nation.

Government funding is invaluable for hardtech startups because it provides early capital to high-risk, long-horizon ideas that, while they have immense impact potential, are often too risky for investors. To these investors, a nondilutive funding award offers both third-party validation as well as an opportunity for the founders to make meaningful progress on milestones. Investment then becomes more attractive for all parties. Additionally, unlike software businesses, hardtech startups have upfront capital-intensive needs, including prototyping, lab infrastructure, testing, compliance, and technical hiring.

Without the DOE LEEP and NSF, Rivalia would have had a much harder path. Government funding can and should be used to launch breakthrough advancements that will lead America into prosperity as a global science and technology leader – especially in critical minerals.