

ENERGY & ENVIRONMENT

Lithium executive calls for more aggressive US clean energy policy

Production must ramp up to meet aggressive goals

By Abby Smith

James Calaway, who leads the board of lithium mining company Ioneer, is wondering why his phone isn't ringing off the hook.

He's working on a project he argues could be a boon to the United States. The U.S. doesn't have a robust domestic supply of lithium, which is increasingly a risk as the world transitions to cleaner energy and all-electric car fleets that depend on lithium-ion batteries.

Ioneer, an Australian company, is racing to build a lithium mine to tap into the reserves in Nevada's Rhyolite Ridge, located about halfway between Las Vegas and Reno. The region has one-of-a-kind mineralogy that Ioneer hopes to take advantage of to produce lithium at some of the world's lowest costs.

The World Bank has said that global production of lithium would need to increase by nearly 500% by 2050 to deploy enough low-carbon technologies to meet the Paris climate agreement's goal to keep global warming below 2 degrees Celsius.

Calaway, who started his energy career in the oil and gas business, said U.S. policymakers aren't nearly as bullish as he thinks they should be on scaling up domestic supply chains for the critical materials needed to power a clean energy future.

"You would think ... that our phone would be ringing off the wall from the government saying, 'What in the world can we do? How can we assist you to get that thing built as fast as we can?'" Calaway told the *Washington Examiner* in a recent interview.

He doesn't see those conversations

happening yet, though. Even as policy-makers are paying closer attention to the issue amid concerns heightened by the coronavirus pandemic, the U.S. faces security risks by relying on China and other countries for its supply chains.

"We need policy response that's proportionate and that takes into account the industrial scale of what's required," Calaway said. Discussions need to go beyond "just talking about the importance of critical minerals" to identifying opportunities and working to scale projects up as quickly as possible.

Calaway, a Texas native, is no stranger to scaling up lithium mining operations. He led Australian-based lithium miner Orocobre for eight years, building out large-scale lithium mines in Argentina, before retiring and joining Ioneer's team.

He entered the lithium space after being "completely taken aback" by the potential of electric cars to secure the U.S. fuel supply by reducing reliance on foreign oil and taking on climate change. As he dove into research on electric vehicles, Calaway said he realized people weren't paying enough attention to the raw materials, particularly lithium, that would soon be in much higher demand.

The lithium industry is proliferating, expanding by about 19% each year for the last five years, said Vivas Kumar, a principal at Benchmark Mineral Intelligence. That pace will continue or accelerate in the upcoming years, he added.

Calaway is bullish about the Rhyolite Ridge project, which Ioneer aims to have up and running by 2023. Many energy analysts expect electric car markets to



pick up more substantially. What makes Ioneer's project different, he said, is that it will produce not just lithium but also boric acid, giving the company another revenue stream and driving down the cost of its lithium production.

Ioneer expects the project to produce more than 20,000 tons of lithium carbonate, which would be converted to lithium hydroxide, and more than 174,000 tons of boric acid each year, according to a definitive feasibility study the company released in April. Calaway said that lithium hydroxide would be enough to provide the lithium for the batteries of about 500,000 electric cars per year.

Kumar, who previously managed Tesla's lithium-ion battery supply chain, welcomed Ioneer's innovation in the lithium space.

"The companies that will succeed in lithium are the companies that have a strategy to do both" mining and chemical refining, two critical pieces of the lithium supply chain, Kumar said. Ioneer "checks off those boxes."

Other mining analysts are wary of Ioneer's reliance on boric acid to produce lithium, however. "Any time you're depending on a byproduct, that's not a

The Uyuni salt flats in Bolivia and Chile are estimated to contain 100 million tons of lithium, making it one of the largest global reserves of this mineral.



great thing,” said Joe Lowry, president of the consulting firm Global Lithium LLC. There are other regions in Nevada, too, with more significant lithium reserves and a higher grade resource, such as Thacker Pass in northern Nevada, Lowry added

Ioneer is also trying to head off opposition from environmental activists who say the company’s project would destroy the habitat of a rare wildflower, known as Tiehm’s buckwheat, that’s only known to grow in Nevada’s Rhyolite Ridge. In May, a coalition of conservation groups called on Nevada regulators to protect the wildflower under state law.

“Without immediate protection, Tiehm’s buckwheat is doomed to extinction,” said Patrick Donnelly, Nevada state director for the Center for Biological Diversity, in May. According to the group, the entire species consists of just 20,000 to 40,000 plants that live only on 21 acres in the region.

Calaway said Ioneer is “doing everything in our power” to protect the wildflower, including working with researchers at the University of Nevada,

da, Reno to determine whether the plants could grow in different soil types and conditions. The company has also proposed “conservation zones” to preserve the wildflowers even as Ioneer begins construction.

“I think that, in the end, we will find a compromise where a reasonable environmentalist interested in biodiversity can be happy but also allow this project to go on in an expedited way,” Calaway said.

Even so, Ioneer’s biggest challenge, like other lithium mining projects in the U.S., is funding.

“Mining, in general, has had a rough go of it,” said Jordy Lee, a research associate with the Payne Institute for Public Policy at the Colorado School of Mines. Not a lot of people want to invest in mining because it’s risky due to environmental considerations, requires significant upfront capital, and has uncertain returns because commodity markets aren’t very stable, he added.

Lee and other analysts said what’s missing from U.S. policy is a top-down market signal.

“It’s not really clear what the government wants or how they’re going to help,” Lee said.

The U.S. is “still sleepwalking” on battery technology, Lowry said. “We’re so far behind in electric vehicles and energy storage for the size of our economy.”

Lowry also said that, globally, the lithium industry wouldn’t be able to support more than a 10% adoption of electric cars by 2025, suggesting people may have to temper their near-term expectations of electric vehicle and battery storage adoption.

Calaway hopes U.S. policymakers can more aggressively position the country to be competitive in the electric car and battery markets. That ultimately means more full-throated support for lithium mining projects in the U.S., too.

“What we need now is we need an overarching policy that’s committed to this new future,” Calaway said. “We need to have America get very, very focused, and the government included, in securing a firm and comprehensive supply chain for electrification.” ★

Abby Smith is an energy & environment reporter for the Washington Examiner.

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