

## Feedstock supplied to researchers seeking funding from US Defense Agency's (DARPA) new REE bioengineering program

### Highlights

- **Wholly owned US subsidiary, Western Rare Earths (WRE), is supplying feedstocks to researchers seeking funding from the Defense Advanced Research Projects Agency's (DARPA) new Rare Earth Elements (REE) bioengineering research program**
- **WRE has provided REE (mineralised rocks or ore) to three research teams, including researchers from US national laboratories and elite American "Research One" universities applying to the EMBER program**
- **WRE is providing some of the very few REE mineral deposit feedstocks that qualify for use in the program**
- **Feedstocks from Arizona and Wyoming are unique in that they are both non-radioactive and give access to almost all 17 Rare Earths metals in a single source**
- **DARPA is encouraging US scientists to engineer a new REE supply chain by utilising bioengineering or "biomining" approaches through the Environmental Microbes as a Bio-Engineering Resource (EMBER) program**
- **REEs are a group of 17 metals that are critical components to many Department of Defense (DoD) systems, including lasers, precision-guided weapons, fuel cells, magnets for motors, and other devices**
- **The "EMBER program" will aim to fill a critical DoD supply chain gap, stated Dr Linda Chrisey, EMBER Program Manager**
- **EMBER has attracted dozens of world-class researchers working to revolutionise an 80-year-old industry**
- **This initiative demonstrates the strategic importance of our Rare Earth Element deposits to the US domestic supply chain**

American Rare Earths Limited's Managing Director, Mr Keith Middleton, notes "We are delighted by these potential opportunities cultivated by our US-based Leadership Team. Having the domestic team in place early in our journey enabled relationships with key US REE researchers in universities and the national labs to be developed. Timely engagement with US Government programs has put the company in the mix as a valued potential provider of REE feedstock to the emerging US REE domestic supply chain which has become a critical objective of successive US administrations".

"We believe that the EMBER program's focus on a strategy for REEs using domestic sources is an interesting indicator. We are not aware of a competitor that is supplying multiple teams to this program. This provides us with a point of difference, and we like our chances of potentially more than one team being awarded significant funding for their research using our mineralised ore."

American Rare Earths Limited (ASX:ARR)

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In return for its participation and support of this program, WRE expects two primary benefits; initially, the research teams may be able to help WRE isolate the most effective and environmentally friendly extraction methods for its REE mineralised ore. Secondly, WRE expects rights to use any new technology developed by the teams it supports, potentially saving the company money in the future by domestically processing, separating, and purifying rather than offshoring to China.

WRE's US press release follows:

## **Western Rare Earths Working to Address China's Rare Earths Dominance through DARPA program**

Phoenix, AZ – 12 October 2021 Western Rare Earths (WRE), a mining exploration company based in Arizona with additional projects in Wyoming and Nevada, is supplying feedstocks (mineralized rocks or ore) to researchers who are seeking funding from the Defense Advanced Research Projects Agency's (DARPA) new Rare Earth Elements (REE) bioengineering research program.

"For more than a year, we have quietly cultivated supportive relationships with top researchers in the REE processing field. We are excited by the opportunity to contribute to securing US domestic supply chains of rare earths, and doing so in innovative, environmentally responsible and cost-effective ways," said Marty Weems, WRE's CEO. "This program is perfectly congruent with our Environmental and Sustainability goals. REEs are critical to the renewable energy, reduced carbon future and success in this program using our uniquely non-radioactive feedstocks could make the researcher's jobs easier and eliminate the need to manage radioactive waste."

REEs are a group of 17 metals that are critical components to many Department of Defense (DOD) systems, including lasers, precision-guided weapons, fuel cells, magnets for motors, and other devices. According to the USGS's latest numbers, the US is currently 80% dependent on China for its rare earths needs. A less than ideal reality as each F-35 Strike Fighter requires 920 pounds of Rare Earth material, and an SSN 774 Virginia class submarine needs 9,200 pounds.

DARPA is encouraging US scientists to engineer a new REE supply chain by utilizing bioengineering or "biomining" approaches through the Environmental Microbes as a Bio-Engineering Resource (EMBER) program. Biomining is more environmentally friendly than the toxic processing method synonymous with the Chinese REE industry. In addition to its benefits to the environment, the advantage of biomining is that it will facilitate domestic REE separation and purification. This is the critical path to lessen US vulnerability to and dependence on China.

The United States has only one active REE mine, which is in Mountain Pass, Calif., and has operated intermittently since the 1960s but still depends on China for processing. Given these domestic gaps, securing a U.S.-based REE supply chain is a longstanding bipartisan priority, with the DOD leading the charge. This focus, coupled with multiple presidential executive orders, has resulted in hundreds of millions of dollars in funding support through the Department of Energy (DOE) and DOD.

Currently, EMBER has attracted dozens of world-class researchers working to revolutionize an 80-year-old industry. WRE is providing some of the very few mineral deposit feedstocks that qualify for use in the program. WRE feedstocks from Arizona and Wyoming are unique in that they are both non-radioactive and give access to almost all 17 metals in a single source.

Unlike most other REE mineral deposits, these feedstocks from WRE are not plagued with the radioactive element Thorium. WRE has provided REE mineralized ore to three research teams,

including researchers from national laboratories and elite American “Research One” universities applying to the EMBER program.

Finally, WRE is providing some in-kind donations of its staff’s services to the research teams. In return for its participation and support of this program, WRE expects two primary benefits: the research teams may be able to help WRE isolate the most effective and environmentally friendly extraction methods for its REE mineralized ore; and WRE expects rights to use any new technology developed by the teams it is supporting, potentially saving the company money in the future by domestically processing, separating, and purifying rather than offshoring to China.

End of WRE Press Release

This market announcement has been authorised for release to the market by the Board of American Rare Earths Limited.

Keith Middleton  
Managing Director

Disclaimer: No endorsement by DARPA is implied toward any feedstock provider.

Western Rare Earths (WRE), the wholly owned subsidiary of American Rare Earths Limited (ASX: ARR), is an exploration company developing the advanced La Paz Rare Earth Project in Arizona, the Halleck Creek Rare Earth Project in Wyoming and the Searchlight Heavy REE project in Nevada. WRE has assembled world-class technical and leadership teams to advance the development of these projects and collaborate on disruptive sustainable processing of Critical Minerals.

For more information see: [www.westernrareearths.com](http://www.westernrareearths.com)

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#### **About American Rare Earths**

American Rare Earths Limited (ASX: ARR) is the only Australian company listed on the ASX with assets in the growing rare earth metals sector of the United States of America, itself emerging as an alternative international supply chain to China's market dominance of a global rare earth market expected to balloon to US\$20 billion by the mid-2020s. ARR owns 100% of the world-class La Paz rare earth project, located 170km northwest of Phoenix, Arizona. As a large tonnage, bulk deposit, La Paz is also potentially the largest, rare-earth deposit in the USA and benefits from containing exceptionally low penalty elements such as radioactive Thorium and uranium. ARR plans to deliver its first Preliminary Economic Assessment for La Paz by 2022 and is working with leading USA research institutions La Paz's mineral profile incorporated into emerging US advanced rare earth processing technologies. ARR acquired a second USA REE asset in the Searchlight Rare Earths project in the first half of 2021. ARR acquired a third USA REE asset, the Halleck Creek project in Wyoming, in June 2021.