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Testimony on Critical Minerals and Materials Legislation, including S.383, S.421, and S.1113

Good afternoon. My name is Luka Erceg, and I am the President and CEO of Simbol Materials. Thank you for the opportunity to speak with you today regarding the important legislation under consideration by this Committee. Simbol supports these three bills, which will drive innovation, support job creation, and advance America's competitiveness in the global clean energy economy.

Simbol is commercializing innovative, sustainable processes for the domestic production of lithium (Li), manganese (Mn) and zinc (Zn). We currently operate a demonstration plant in the Salton Sea region of California, where we co-produce minerals from geothermal brines at an existing geothermal power plant. Following power production, we "borrow" the brine for about 90 minutes to selectively extract the targeted minerals. The brine is then reinjected into the ground. This process has a smaller environmental footprint and cost profile than any other method for producing these materials.

We are currently in the permitting process for the construction of a full-scale production and processing facility. Upon completion, we will be the only U.S. producer of manganese and electrolytic manganese metal. We also expect to double U.S. production of lithium by 2012.

The U.S. government can drive investment by establishing a clear definition for "critical" minerals and materials.

By any objective measure, both Li and Mn should be considered "critical." As is the case with rare earth metals, this designation is not due to scarcity in global supply, but rather due to the lack of U.S. production.

Li is an essential component of advanced batteries for electric vehicle and grid storage applications. The U.S. is approximately 76% import dependent on Li, with most global production from salt flat evaporation in South America and growing supply in China. While some government studies – including the Department of Energy's (DOE) 2010 critical materials strategy – have labeled lithium as "critical," other assessments have not included it.

Electrolytic manganese metal (EMM) is a fundamental input for specialty steels for defense and commercial applications, and Mn dioxide increasingly is emerging as one of the leading metal components for electric vehicle battery cathode powders. The U.S. is 100% import dependent on foreign sources of manganese ore, as well as electrolytic manganese metal – 95% of which is produced in China. Signaling U.S. concern with foreign production and trade patterns, the U.S. Congress three years ago passed anti-dumping legislation penalizing Chinese and Australian Mn producers. Despite this, Mn was not included in the DOE's strategy, although in April of this year the Defense Logistics Agency identified it as one of the Department of Defense's top ten shortfall materials.

These examples are not intended to serve as a criticism of any agency, but rather as a demonstration of the need for clarity across the U.S. government in defining what makes a material "critical."

The current legislative proposals delegate the activity of defining a set of critical materials to specific federal agencies, with an opportunity for review and updating. We are concerned that this structure will force the government to evaluate a globally competitive market through the rearview mirror. Any assessment that follows this structure will reflect market conditions as they existed several years ago, rather than market conditions today. Instead, a self-classifying definition, which could be based on 1) use of specific materials in industries that support strategic or policy priorities (e.g. advanced batteries, wind turbines and specialty steels) and 2) the level of U.S. production and processing, would provide real-time signals to industry. Such a definition should apply across the entire federal government. This will ensure that the government is not picking winners and losers at a given moment in time, but rather structuring programs based on the realities of the rapidly changing global marketplace.

A self-classifying definition would allow market participants to quickly determine policy-makers' priorities without waiting potentially years for agency review and update. A straightforward, clear definition will immediately communicate to the market that designated materials are critical to U.S. policy goals. This will rapidly drive private investment to strategic federal priorities.

Federal support for research and development (R&D) is a powerful driver of private investment in critical materials.

We strongly support the proposed legislative programs to develop research, development and deployment activities for critical materials. These programs will jump-start the development of a domestic supply chain for the clean energy, defense and other strategic sectors in the face of aggressive policy support for entrenched foreign producers.

The establishment of a new industry is inherently risky, and it requires a concerted effort by both the public and private sectors. We believe that federal support for basic research remains essential to advancing our country's competitive position in the clean energy economy. The Advanced Research Project Agency – Energy (ARPA-E) plays a critical role in driving cutting-edge, game-changing technologies. In addition, the DOE and other agencies play an important function in supporting R&D efforts to develop and demonstrate technologies that lower operating costs, allow access to new resources, and improve quality and environmental performance.

Federal R&D support that assists firms in de-risking new technologies, when coupled with commercial sector investments, send loud signals to the market that encourage follow-on investing in areas of policy interest. In the critical materials arena, these federal R&D commitments are powerful drivers of private investment, and they support the development of a competitive domestic supply chain for electric vehicles and materials for defense applications.

For example, in 2009, DOE's Geothermal Technologies Program (GTP) announced its intent to award Simbol a $3 million grant to demonstrate its processes for competitive production of lithium, manganese and zinc chemicals for energy storage applications. Since being awarded the grant, we have grown our workforce from 16 to 40, and we will reach 60 by year-end. We also have leveraged those federal funds to raise approximately $43 million in further capital -- the majority of which was committed prior to the actual delivery of the first grant dollar, strongly demonstrating the investment signal provided by the government's technology validation.

Financing risk remains the greatest barrier to commercialization of production and processing facilities.

While basic R&D support is essential to restoring U.S. leadership in mineral production technology, the most significant role for the federal government is in helping overcome commercialization risk. This Committee has heard a series of testimony in recent weeks and months regarding the challenges associated with financing first commercial facilities throughout the clean energy sector. This risk is arguably even more pronounced for mineral producers like Simbol, which are not able to secure offtake agreements to reduce financing risk.

While Simbol has been highly successful in raising private capital, the investment required for a full-scale plant is significant. Private investors require a demonstrated market for our product, but the reality is that – at least here in the U.S. – we are selling into a nascent industry. While growth projections for advanced batteries (and associated Li and Mn consumption) are high, investors continue to hold back, awaiting the emergence of downstream industry consumption for electric vehicles and grid storage. Furthermore, the absence of a federal strategy for the development of supply chains to support priority policy areas causes confusion in the marketplace regarding the importance of critical materials.

Federal support for commercialization will help us bridge this so-called "valley of death." In the same way that our GTP grant attracted an initial round of private capital, we anticipate that federal commercialization assistance would stimulate private investment for the full-scale production facility. It is important to note that mineral production facilities do not qualify for assistance under existing commercialization programs. For example, neither the Section 1703 loan guarantee program nor the Section 48(c) advanced energy manufacturing tax credit reaches sufficiently far back in the supply chain to support mineral production or processing activities. The current legislative proposals would be strengthened by adding provisions to expand eligibility.

Building a domestic supply chain for critical materials will spur domestic manufacturing and innovation throughout the clean energy sector.

The development of a domestic supply chain for critical materials will reduce the risk of supply disruption and mitigate exposure to price spikes. (For example, Mn dependence has exposed DoD to price spikes of up to 350% over 2003 levels.) However, the greatest benefit of developing a domestic supply chain is bolstering our nation's competitive position throughout the entire clean energy sector.

At every point in the supply chain, manufacturing drives innovation. As a supply chain lengthens, each step is strengthened through industry collaboration – which creates a more competitive overall domestic industry. In the case of electric vehicles and grid storage applications, critical materials are the cornerstone of the supply chain. It is important to realize that production processes to convert raw materials to usable products for downstream markets are highly technology intensive. At Simbol, we have 8 PhDs and 3 MS degrees on staff (representing 25% of our current workforce), all with backgrounds in chemical engineering, electrochemistry and chemistry. Our scientists and engineers are consistently finding innovative ways to improve the quality of materials and to develop the next generation of products. This is the case throughout the entire critical materials industry, where highly skilled teams are consistently developing and improving materials – to the benefit of our nation's clean energy, defense, and industrial sectors.

Domestic innovation in critical materials also will drive workforce growth. Because domestic production of these materials largely ended in the 1970s, today it is inordinately difficult to hire individuals with experience in Mn and Li processing. In fact, it is taking us up to 9 months to find qualified candidates for key positions at Simbol. Market growth in the production and processing of critical materials will lead to increased training of students in these fields, and subsequent technology advancements through our university system.

Conclusion

The development of an industry for critical materials production and processing is essential to the growth of our domestic clean energy economy and our nation's energy security. I appreciate the Committee's attention to this important set of issues, and I look forward to your questions.

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