



Battery Materials & Technology Coalition Response to the Department of Defense Request for Information on Executive Order 14017 “America’s Supply Chains”

I. Introduction to BMTC

The Battery Materials & Technology Coalition (BMTC) represents private sector entities in the upstream and midstream battery and critical material sectors that are united behind a shared interest in growing a secure North American supply chain. Comprised of companies that mine, extract, process, and recycle battery and critical materials as well as develop cathode, anode, and battery technologies, BMTC members are committed to ensuring that the U.S. does not bypass the present opportunity to secure the supply chains that electrify our economy and power our way of life.

The U.S. is at a pivotal juncture with the upstream and midstream segments of the battery supply chain largely underdeveloped or nonexistent, standing in stark contrast to our allies and adversaries who are growing their mineral and manufacturing capabilities to supply critical industries. A strategic and bold federal investment in the minerals, materials, and technologies that meet national security needs and sustain our way of life is needed desperately. The U.S. must secure this critical supply chain, create high value jobs in the process, and address climate change at a time when it is most needed.

To learn more about BMTC and the coalition’s priorities please reference the coalition primer in the appendix.

II. Domestic Capabilities Needed to Secure Minerals and Materials in Battery Supply Chains

Battery minerals and materials are the new engines of the global economy. The materials used in the variety of battery technologies that exist today are also critical in other defense, energy, industrial, and consumer applications. With demand for critical materials skyrocketing as a result of the global transition to digitization and electrification, global markets for these commodities and technologies are volatile and plagued with supply chain vulnerabilities. These vulnerabilities threaten U.S. national security as the Defense Department is forced to rely upon China and other foreign sources for many of the materials used in manufacturing weapons and critical electronic systems due to the lack of domestic production and manufacturing capabilities.¹ While nearly all batteries used by the military are assembled in the United States, we are tremendously reliant on China for the production of battery cells, as well as access to material and mineral supply chains that are currently lacking in North America. The federal government, and especially the Defense Department, must develop a holistic and coordinated approach to scaling critical material production capabilities at an expedited pace, or risk a prolonged reliance on foreign competitors for critical supply chains, putting our energy and national security in great peril.

¹ SAFE, “The Commanding Heights of Global Transportation.” 2020.

Mining and Extracting Battery Minerals:

The primary minerals and materials used in battery technologies today include lithium, graphite (natural and synthetic), silicon, nickel, cobalt, and manganese. Outside of battery technologies, these materials are also used in other industry applications such as electronics, nuclear energy, body armor, munitions, and in industrial practices such as steelmaking. Due to this range and the criticality of these applications, many battery materials are on one, if not both, the Interior Department's Critical Minerals List and the Defense Logistics Agency's (DLA) Strategic Materials List. Despite acknowledging the role these materials play in the strategic national defense, the U.S. has not adopted a comprehensive approach to securing the upstream elements that feed critical supply chains for batteries and other defense and energy industries.

The U.S. sits on deposits of lithium, nickel, cobalt, and graphite, among other critical minerals, but has only a few operational mines supporting a domestic battery materials industry. Other nations, notably China, are aggressively pursuing critical mineral supplies across the globe to secure ownership of the world's raw material resources. To ensure the U.S. has access to the raw materials needed to supply consumer and defense battery industries, the federal government must assess and fund domestic opportunities as well as work with allies to expand our access to mineral resources. The federal government needs to promote safe and sustainable mining and extraction of domestic resources for critical applications like batteries to improve the security of the U.S. industrial base.

Processing, Manufacturing, and Recycling Materials and Value-Added Products:

Material processing, manufacturing, and recycling capabilities are also vital to securing U.S. critical material and battery supply chains. The U.S. has almost no commercial-scale battery material processing capabilities. This means even if lithium ore or brine was mined or extracted in the U.S., it would still need to be sent abroad for processing into lithium hydroxide, which is used in the battery cathode. The lack of a processing industry is not just a logistical difficulty, but a significant vulnerability given China's stranglehold on this sector. In 2019, China controlled 59% of lithium processing, 65% of nickel processing, 93% of manganese processing, and 100% of natural graphite processing.² Recycling battery materials for re-processing and reuse in batteries will also help the U.S. reduce critical mineral vulnerabilities, but even enabling a recycling industry requires the U.S. to scale its mineral and material processing capabilities to ensure materials can be re-introduced to the supply chain.

In addition, the U.S. has almost no domestic battery component manufacturing capabilities despite this being a high value-add element of battery supply chains and a critical capability to secure domestic defense and energy industries. China dominates the midstream battery supply chain, with over 60% of global cathode production, 80% of global anode production, and 140 battery cell factories built or planned by the end of the decade.³ In comparison, the U.S. has plans for 10 battery factories to be operational by 2030. The U.S. needs these capabilities at home to have a vibrant and secure battery industry complete from the mine to battery cell, to reduce our dependence on China, and to bolster our industrial base.

² Benchmark Minerals Intelligence, "Benchmark Summit 2020." October 20, 2020.

³ Ibid. Washington Post, "Biden wants to create millions of clean-energy jobs. China and Europe are way ahead of him." February 2021.

III. The Importance of a North American Critical Materials Supply Chain

The U.S. has an opportunity to capitalize on North American mineral resources and manufacturing expertise to build a secure materials industry that promotes job creation, strong safety standards, and provides an alternative to supplies on global markets that rely on forced labor and other malpractices. Already there are important steppingstones in place, including: the American Minerals Security Act of 2020, several Executive Orders on critical materials and supply chains during the previous administration, President Biden's Executive Order on America's Supply Chains, and the Biden Administration's renewed commitment to working with Canada on bolstering critical mineral supplies. But more can and must be done. To avoid crises similar to those that have recently unfolded with semiconductors and medical equipment, the U.S. must commit to growing a minerals and manufacturing capability that will buoy the economy, create jobs, and secure our defense industry.

As the RFI notes, there is a need to diversify sources of supply for strategic and critical materials. In the case of battery materials, the U.S. is almost wholly reliant on imports from foreign nations. To strategically build a secure materials supply chain, the U.S. must work closely with Canada and prioritize domestic capabilities to differentiate American products in global materials markets.

Coordination with Canada, which has strategic resource deposits, is of the utmost importance to securing supply chains and will ensure that North America becomes a key player in global material markets. Both nations already have a rich history of collaboration on these issues through efforts such as the U.S.-Mexico-Canada Agreement and the U.S.-Canada Joint Action Plan on Critical Minerals. With shared infrastructure and existing geographical, environmental, and economic benefits, the U.S. and Canada are poised to compliment one another's mineral resources as well as critical technology, energy, and defense industries.

Partnerships with Canada on enhanced safety and sustainability requirements, such as sustainable mining, efficient manufacturing, and material transportation safety, will ensure a competitive edge for North American products and distinguish the U.S. as a global leader in responsible and sustainable battery production best practices. In addition, by addressing reliance on foreign minerals and materials the U.S. will also reduce transportation and offshored emissions associated with complex, overseas supply chain dependence.

IV. Recommendations for DOD to Foster Resilient Material Supply Chains

Due to U.S. reliance on foreign sources for mining, processing, and manufacturing of critical materials, the U.S. military's supply chains are increasingly vulnerable to foreign manipulation. The Defense Department is equipped with the authority and expertise to respond to these vulnerabilities and scale critical mineral and material industries.

- **Innovative Contracting Authorities and the Office of Industrial Policy's Defense Production Act (DPA) Title III:** Given the importance of batteries to Defense Department capabilities, it is recommended that President Biden sign a Determination, under DPA Title III authorities, to bolster critical materials production for batteries. Given the capital-intensive nature of scaling industrial capabilities such as battery material processing, manufacturing, and recycling, a domestic industry needs the federal government to

provide significant financial and policy levers to develop, maintain, modernize, and expand critical production capabilities. DPA Title III authority holds these levers, and the President and Congress should utilize these authorities to make long-term purchasing commitments for battery materials and technologies, provide subsidies for domestically produced battery materials and components, and work with private industry to expand production capacity using grants or loans. Congress should also significantly augment the annual budget for DPA Title III critical materials efforts, and the Defense Department should ensure coordination with appropriate Agencies such as the Departments of Energy, Interior, and Commerce to most effectively use these resources.

- **Procurement Strategies and Defense Logistics Agency (DLA):** DLA provides a critical role managing the Defense Department’s critical material supply chain efforts through programs like Strategic Materials within the National Defense Stockpile program. Expanding DLA’s capabilities and budget to sustain and build domestic capabilities for battery technologies is strongly recommended. DLA, the Office of the Secretary of Defense, and the Armed Services must also commit to supporting the whole of the battery supply chain by increasing requirements that critical products and systems used by the military be made with domestic materials. Similarly to DPA Title III, DLA, OSD, and the Armed Services should also adopt long term contracts for the procurement of critical materials to provide certainty to industry, eliminate use of lowest priced technically acceptable awards to instead emphasize awards for better technologies, and aggressively protect domestic sources of supply and IP from foreign competitors.
- **Interagency Coordination:** The Defense Department, in coordination with the Departments of Energy, Interior, Commerce, and State, should develop a comprehensive and holistic cross-agency strategy to bolstering critical mineral mining and extraction as well as material processing, manufacturing, and recycling industries. The Federal Consortium for Advanced Batteries has showcased government interest in starting this coordination, but much more is needed to provide certainty to industry that the U.S. is ready to compete globally. Given DOD’s expertise in securing and scaling supply chains, the Department is primed to be a strong leader in such an effort across relevant agencies to ensure the U.S. has the minerals, materials, and technologies to power our economy and military.

V. Capturing an Enormous Opportunity

President Biden has already made clear his commitment to batteries given his proposal of investing \$174 billion in the EV market as part of his \$2.25 trillion infrastructure plan, which includes funding to “spur domestic supply chains from raw materials to parts... and support American workers to make batteries and EV.”⁴ Despite uncertainty around what portion of this funding will go toward mineral and material supply chains, it is clear that a significant investment and comprehensive approach to battery materials will grow U.S. manufacturing leadership, advance climate goals, expand job growth, and secure supplies for a range of defense and energy applications.

⁴ The White House. “FACT SHEET: The American Jobs Plan.” March 2021.

BMTC appreciates the opportunity to submit this response and urges DOD to consider the programmatic, funding, and policy suggestions to address mineral and material supply chain vulnerabilities. As a strong and united voice of North American critical material supply chain companies, we welcome the opportunity to further discuss the challenges and opportunities in this sector and look forward to reading the Defense Secretary's report on the risks and policy recommendations for critical material supply chains. Please contact Ben Steinberg at bsteinberg@vennstrategies.com or (240)-899-7447, or 1341 G St NW, 6th Floor, Washington DC, 20005, if you have any questions about the RFI response.

APPENDIX

I. BMTC Primer

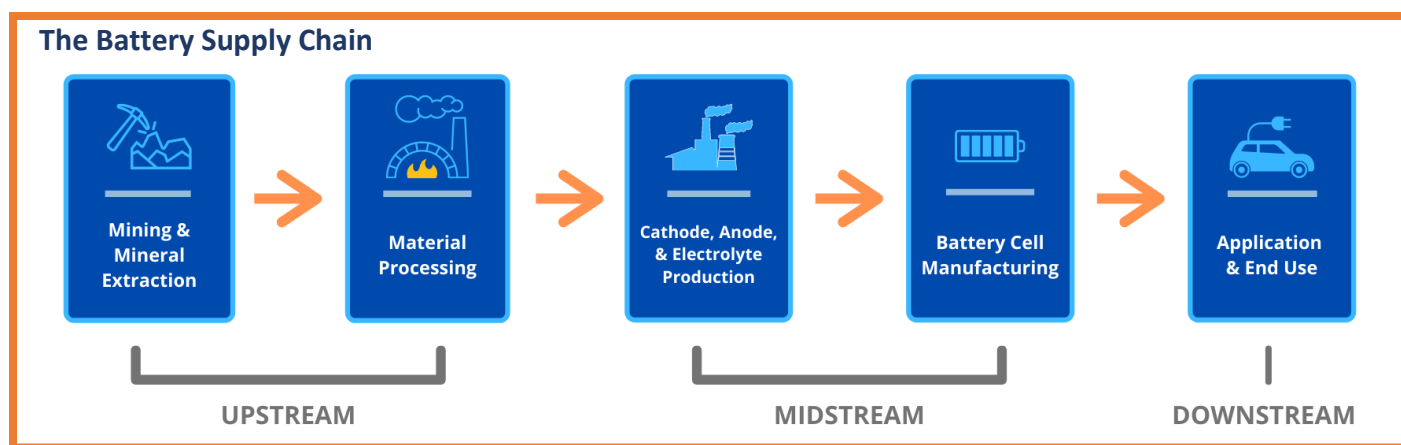
Appendix I

Battery Materials & Technology Coalition - Primer

The Battery Materials & Technology Coalition (BMTC) was launched in December 2020 as the voice of the upstream and midstream battery supply chain. Member companies are united behind a shared interest **in growing a North American supply chain** – complete from mine to battery cell production on the factory floor. Comprised of companies that mine, extract, process, and recycle battery materials as well as develop cathode, anode, and battery technology enhancements, BMTC members are established companies in the U.S. and Canada looking to ensure that North America does not bypass the opportunity to be a leader in a growing global battery market and electrified economy. BMTC is advocating for the U.S. to significantly scale investments in the upstream and midstream battery supply chain to ensure that batteries manufactured and used in the U.S. are made with North American materials and developed in a safe and sustainable way.

Why North America?

Fostering greater battery supply chain coordination and investments between the U.S. and Canada benefits both nations – as well as consumers - and ensures that North America remains a key player in the global battery industry. Building upon existing geographical, environmental, and economic benefits, the U.S. and Canada are poised to compliment one another's mineral resources as well as the technology, energy, and automotive industries. Both nations have a rich history of collaboration on these issues through efforts such as the U.S.-Mexico-Canada Agreement and the U.S.-Canada Joint Action Plan on Critical Minerals, but further public-private coordination is needed to maximize value throughout the supply chain.



What is the Upstream and Midstream Battery Supply Chain?

The battery supply chain is commonly broken into upstream, midstream, and downstream sectors, as demonstrated in the figure above. The upstream battery supply chain is comprised of mining, mineral extraction, and mineral and material processing. Specific to batteries, this is most prominently the mining or extraction of lithium, graphite, nickel, manganese, and cobalt, which are then processed into their anode or cathode-grade form. The midstream supply chain is then comprised of the development of the cathode, anode, and electrolyte components and the assembly of battery components, and the downstream supply chain is the end use application of a battery, such as the instalment of a battery into an electric vehicle.

The Battery Materials & Technology Coalition: Advocating for U.S. Investments to Scale a North American Battery Supply Chain from Mine to Battery Cell

The Challenge: China and the Global Race for Batteries

The electrification of the transportation sector and integration of renewable energy sources into the electricity system is causing global demand for batteries to skyrocket. For example, 300 to 500 million electric vehicles are projected to be on the road around the world by 2040, driving lithium-ion battery demand to grow an estimated 15-fold by 2028, as compared to 2016 levels.⁵ In response, China, Japan, South Korea, and European countries are taking massive strides to meet critical mineral and technology needs by investing in the battery supply chain. Above all others, China has a commanding lead over the market with over 100 battery megafactories built or planned, ownership of more critical mineral reserves than any other country, and a stranglehold on the world's mineral processing industry.⁶ Conversely, despite acknowledging the importance of battery minerals and technologies, the U.S. has plans for only 9 battery megafactories, and is projected to control less than 10% of the global battery supply chain by the end of the decade, creating both a national security risk and a missed opportunity for job growth.⁷ As the U.S. economy grows even more dependent on batteries for transportation, energy, consumer, and defense needs, we must confront our supply chain vulnerabilities to establish ourselves as a leading participant in a global, electrified economy.

The Solution: A North American Battery Supply Chain

To ensure we seize this opportunity, the BMTCC implores the federal government to significantly invest in the upstream and midstream battery supply chain. Investing in the minerals, materials, and technologies that power our way of life provides immense benefits during a time in which economic and national security as well as climate action are of the utmost importance.

- **Strengthen National Security:** Reduce our reliance on adversaries for critical materials and strengthen defense industrial base manufacturing in North America.
- **Bolster Job & Economic Growth:** Build a new North American industry that will stimulate high-value job growth across the country.
- **Meet Climate Goals:** Develop a supply chain that is focused regionally and globally on cutting greenhouse gas emissions and promoting fair workforce development standards.
- **Lead on Technology Development:** Surpass the international community by driving performance, safety and sustainability standards within battery research, development, demonstration, and deployment.
- **Utilize Diplomacy and Trade with Allies:** Establish diplomatic and trade priorities focused on battery supply chains with key allies, which will help increase North American positions in the battery market.



⁵ Securing America's Future Energy, "The Commanding Heights of Global Transportation." 2020. Institute for Defense Analyses, "Lithium-Ion Battery Industrial Base in the U.S. and Abroad." 2019.

⁶ SAFE, "The Commanding Heights of Global Transportation." 2020.

⁷ Benchmark Minerals Intelligence, "Benchmark Summit 2020." 2020.