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OF THE
UNITED STATES OF AMERICA

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CHAIN SECURITY POLICY

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April 28, 2021

The Honorable Lloyd J. Austin III
Secretary
U.S. Department of Defense
1000 Defense Pentagon
Washington, DC 20301-1000

Re: Notice of Request for Comments on Executive Order "America's Supply Chains"; 86 FR 19230; Docket No. DoD-2021-OS-0022

Dear Secretary Austin:

The U.S. Chamber of Commerce (Chamber) submits these comments in response to the U.S. Department of Defense's (Department or DoD) request for comments regarding risks in the supply chain for strategic and critical materials and policy recommendations to address these risks. The Chamber welcomes this review as part of the Biden Administration's Executive Order (EO) 14017 on America's Supply Chains, and we appreciate the administration's efforts to engage closely with the private sector to identify policy recommendations and priorities.

Strategic and critical minerals are fundamental components to many emerging and important U.S. industries, including defense, aerospace, renewable energies, semiconductors, electric vehicles, medical equipment, and consumer goods. The U.S. previously led the world in the production and processing of certain critical minerals though today we rely on certain countries for most of our supply. The Chamber's membership includes companies across the strategic and critical mineral (SCM) supply chain including those involved in exploration, extraction, processing, end-product manufacturing, and recycling. Our comments are informed by this cross-sector perspective and underscore the criticality of a robust strategic and critical mineral strategy.

The Chamber is committed to working with the administration to promote common sense policies that will enable the U.S. and its allies to maintain a resilient SCM supply chain. Below are nine principles guiding our efforts that help inform our responses to the specific questions in the Federal Register notice (FRN):

- **Fund Critical Mineral Research.** The administration should work with Congress to fund the initiatives authorized in Title VII of the Energy Act of 2020 and other programs that will develop a robust domestic SCM sector to include increasing mapping availability for U.S. production.

- **Expand the Discussion of "Critical Minerals" to Include "Strategic Minerals and their applications."** The current list of "critical minerals" (CM) does not mention minerals such as copper, silver, nickel, gold, zinc, and molybdenum that are also essential to many industries critical to the U.S. economy.[1] Among these, copper stands out in particular due to its importance in the development of electric vehicles and other green technologies that are expected to lead to significantly increased demand over the next decade, as well as its unique properties that make at least four other critical minerals byproducts of copper extraction.[2] Some of these commodities also have strategic applications for the defense industrial base, such as the use of high-nickel alloys as a critical component in advanced aerospace systems. The U.S. government should advance the broader conversation and address minerals based on their importance to - and applications for - certain products, as well as their ability to serve as gateways to other critical mineral co-products.

- **Permitting Reform.** The federal government must reduce the delays and uncertainties associated with the permitting process to approve strategic mineral mining projects and infrastructure, including through the National Environmental Policy Act (NEPA). Some provisions are being reintroduced in legislation like the American Critical Mineral Independence Act.[3,4] The administration should also look at ways to advance bipartisan legislation like the House's Reclaiming American Rare Earths (RARE) Act that includes important permitting reforms.[5]

- **Pursue a Multilateral Effort to Diversify Supply Chains**. The Biden administration should work with allies to develop cooperative agreements and use the National Technology and Industrial Base (NTIB) statutes to encourage close allies and partner nations to become producers of SCMs. Countries might include the European Union, Australia, Canada, the U.K., New Zealand, Japan, South Korea, and others rich in minerals like South Africa and Argentina.[6] The Department of Commerce explicitly addressed cooperation in its Critical Minerals Strategy, but further international engagement on the issue is needed.[7]

- **Promote Investment in Domestic Supply Chains**. The Biden Administration should support legislation that promotes the ability of U.S. companies to successfully enter the SCM

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[1] On expanding the materials in focus – we would also encourage key elements necessary to chemicals and other products such as Palladium, Rhodium Sponge, and iridium be considered.

[2] McGroarty, Daniel. (2018). Department of the Interior Comment on FR Doc 2018-03219: Primary minerals, gateways & co-products: articulated chart of DoI's 35 critical minerals. Comment DOI-2018-0001-0303. https://www.regulations.gov/comment/DOI-2018-0001-0303

[3] Committee on Science, Space, & Technology. American Critical Mineral Independence Act. Press Release. URL: https://republicans-science.house.gov/news/press-releases/house-republicans-invest-americas-energy-future

[4] American Critical Mineral Independence Act. https://republicans-science.house.gov/sites/republicans.science.house.gov/files/american_critical_mineral_independence_act.pdf

[5] Reclaiming American Rare Earths Act. https://www.congress.gov/116/bills/hr8143/BILLS-116hr8143ih.pdf

[6] South Africa currently supplies about 70% of the global iridium mine supply. Demand for iridium demand has risen significantly due to its applicability in the electrical and electrochemical sector and is used to support key technologies like 5G and medical devices.

[7] U.S. Department of Commerce. Critical Minerals Strategy. https://www.commerce.gov/sites/default/files/2020-01/Critical_Minerals_Strategy_Final.pdf

market through pilot projects, tax incentives for the purchase or acquisition of critical minerals extracted from deposits in the U.S. and U.S.-licensed deposit areas, and allowances for property used for mining and processing. The administration should also support policies that address multipliers for products that were extracted, refined or processed, and manufactured in the U.S. This would decrease the cost of capital for companies across the value chain.

- **Promote Environmentally Sound Domestic Production**. The federal government should openly support/broadcast the importance of environmentally sound domestic U.S. mining as a key pillar to securing a critical material supply chain. Given our nation's vast supply of carbon-based resources, we should increase focus on feedstocks associated with recycling and reprocessing coal-based waste and byproducts, as well as waste permanent magnets and lithium-ion batteries. This could serve the dual purpose of restoring/establishing a sustainable, domestic supply chain while at the same time bring real solutions to existing environmental problems and revitalizing regions of the country most severely impacted by the trend of transitioning away from fossil fuels.

- **Streamline Review of Investment from Trusted Nations**. Congress gave the Committee on Foreign Investment in the United States (CFIUS) the ability to streamline its review process to allow companies from trusted nations to investment in sensitive sectors, including critical minerals mining and refinement. However, CFIUS has yet to use this authority to establish such a streamlined process. The Chamber believes it is important that foreign investment from trusted nations be encouraged to make investments in exploration, mining, and metallurgical technologies.

- **Invest in Deep-Sea Mineral Extraction.** The U.S. should support investment in additional processing capabilities and provide research and development incentives to support environmentally responsible deep-sea minerals extraction, including polymetallic nodules, as part of the strategic and critical mineral supply chain. The U.S. should closely examine opportunities for the use of renewable energy and seawater to support the development of environmentally sound processing capabilities. Finally, the U.S. should ratify the United Nations Convention on Law of the Sea.

- **Preserve Access to Foreign Markets.** While the geopolitical relationships may be complex and tenuous at times, access to these markets is critical for U.S. companies. The Chamber requests federal government take a measured approach that focuses on diversification of supply chains and rather than decoupling.

Our comments on the specific policy objectives in the EO are as follows:

Title I. Increasing transparency in strategic and critical material supply chains;

Manufacturers of complex end products are often multiple layers deep or more within the SCM supply chain, which makes it difficult, if not impossible, to determine and report the source of materials used in the components. A recent Government Accountability Office (GAO) report found that most companies are still unable to determine the origin of the minerals in their supply

chain despite undertaking a reasonable country of origin inquiry and due diligence.[8] This data point captures the reality that industry often does not have visibility to the mine through the widely used standard tools and processes. Supply chains are highly complex, dynamic networks rather than simple and linear processes, and there is usually a lack of contract privity between a prime contractor and lower tier contractors. In addition, it is challenging to meet transparency and reporting requirements due to different regulations and implementing programs that ensure compliance while liaising with suppliers and developing tools to support compliance work. In the meantime, companies may face delays and additional costs from their suppliers as organizations across the value chain face similar challenges.

Industry endeavors intended to help address this problem, such as voluntary, collaborative exchanges, are unlikely to provide timely and accurate visibility into the supply chain. On the other hand, government efforts to mandate suppliers provide sub-tier data as part of the proposal process drives increased compliance burden and cost into the system, and likely will not render meaningful results. As a result, we urge the federal government to be thoughtful in its approach to promoting transparency in SCM supply chains by considering the full scope of potential costs and benefits, including examining ways to leverage technology like advanced data analytics and artificial intelligence to aid in the development of our understanding of complex SCM supply chains.

The Chamber supports responsible sourcing requirements, but we also believe transparency efforts should be focused on raw materials importers rather than finished-goods manufacturers. The Chamber looks forward to continuing to work with the administration and Congress to ensure that workable, appropriate actions and initiatives can be implemented to address human rights abuses related to the mining of critical minerals.

Title II. Diversifying sources of supply for strategic and critical materials, including domestic sources and foreign allies/partners;

According to reports published by the U.S. Geological Survey, the U.S. is 100% reliant on imports for 14 of the 35 critical minerals listed in the list developed by the Department of the Interior (DoI). Additionally, the U.S. is more than 50% reliant on imports for an additional 15 critical minerals contained in DoI's draft list.[9] Currently, countries like China, Russia, Brazil, and Canada dominate the industry as sources for the raw minerals, but China maintains approximately 80% of the world's processing capabilities.[10]

Before taking any action, a thorough review should be conducted to determine the true sources of these materials before any prohibitions are contemplated that could inadvertently and

[8] Government Accountability Office. (2020, September). *Conflict Minerals: Actions needed to assess progress addressing armed groups' exploitation of minerals.* (Publication No. GAO-20-595). pg 15. https://www.gao.gov/assets/gao-20-595.pdf

[9] U.S. Geological Survey. Mineral Commodity Summary 2021. pg 7 https://pubs.usgs.gov/periodicals/mcs2021/mcs2021.pdf

[10] SAFE. Critical Minerals Supply Chain Development Vital for American Economic And National Security. December 2, 2020. https://secureenergy.org/critical-minerals-supply-chain-development-vital-for-american-economic-and-national-security/

adversely impact supply chains for products and services critical to the national defense and other important industries. In cases where SCMs can be mined, refined, produced in the U.S. or allied nations, there should be efforts to strengthen and ensure long standing availability. Otherwise, there must be agreements in place to ensure availability. Blanket prohibitions can be costly and have a disproportionate impact on small and medium-sized businesses.

While the geopolitical relationships may be complex and tenuous at times, access to these markets is critical for U.S. companies. Earlier this year, the Chamber released its *Understanding U.S.-China Decoupling: Macro Trends and Industry Impacts* [11]report, which illuminated the costs of decoupling for the U.S. In the report, the U.S. Chamber highlights three key industries relevant to the strategic and critical minerals conversation that would be significantly impacted by decoupling including the aviation, semiconductor, and medical device industries. Each of these three industries could be expected to lose billions of dollars in market share over the course of the next decade.[12]

Furthermore, we encourage the administration to work with allies to develop cooperative agreements and use National Technology and Industrial Base (NTIB) statutes to encourage partner nations to become key producers of SCMs. Countries might include the European Union, Australia, Canada, the U.K., New Zealand, Japan, and South Korea and others rich in mineral resources like Argentina and South Africa. As identified in the U.S. Geological Survey's report, some of these strong partnerships are already being leveraged as demonstrated by the U.S. importing a significant amount of SCMs from Canada including cesium, graphite, nepheline syenite, rubidium, and tellurium.[13] However, more can be done to facilitate greater coordination among allies that have enough resource supplies to support resource development and market access for end products.

Title III. Diversifying production sources, such as primary extraction, co-production, and to include reclamation from mine, industrial, and end-of-life products;

To diversify sources of production, the U.S. must invest domestically and work with allies and partners to increase the number of sources for extraction and co-production. Apart from limited development of U.S. based separation and processing capabilities, China serves as a primary source for processing capabilities. The U.S. should develop trusted partner networks among allies and partners that leverage their capabilities and decrease reliance on a single source across the supply chain. Additionally, the federal government should look to legislative action that reduces the cost of capital for U.S.-based companies to enter the market in this space through incentives, grants, and other programs.

Greater emphasis on transparency is also needed to create demand for products using SCMs processed outside of China. Efforts to illuminate and differentiate where SCMs are sourced could help to raise awareness and create sustained demand (as a separate market). This,

[11] U.S. Chamber of Commerce. Understanding U.S.-China Decoupling: Macro Trends and Industry Impacts (2021). https://www.uschamber.com/sites/default/files/024001_us_china_decoupling_report_fin.pdf
[12] Ibid, pg 3.
[13] U.S. Geological Survey. Mineral Commodity Summary 2021. Pg 7 https://pubs.usgs.gov/periodicals/mcs2021/mcs2021.pdf

in turn, could curb the ability for China to lower prices or otherwise create difficulties for others to be competitive and stay in business.

For instance, to promote supply chain resiliency and the other goals outlined in the *America's Supply Chains EO*, we urge the administration to establish a national framework for recycling electric vehicle (EV) batteries. In the absence of federal leadership, a patchwork of state and possibly even local rules is likely to arise, inhibiting the development of a positive-value EV battery recycling market. Conversely, if the administration develops a federal recycling framework and implements the necessary tax and other incentives, it will catalyze the growth of a robust battery recycling ecosystem. Moreover, this increased access to locally recycled materials will further encourage increasing localization of the U.S. domestic cell manufacturing supply chain. U.S. government leadership, support and collaboration will be critical to the realization of these goals. Given the nation's vast supply of carbon-based resources, the U.S. should also increase focus on feedstocks associated with recycling and reprocessing coal-based waste and byproducts, as well as waste permanent magnets and lithium-ion batteries. This could serve the dual purpose of restoring/establishing a sustainable, domestic supply chain while at the same time bring real solutions to existing environmental problems and revitalizing regions of the country most severely impacted by the trend of transitioning away from fossil fuels. These investments will enable the U.S. market to be U.S. market needs to be innovative, low-cost, and environmentally safe.

In addition to addressing extraction and production concerns, the U.S. should also work to advance ties with allies who currently perform recycling and reclamation of strategic materials, such as India. Furthermore, incentives for domestic recycling of strategic materials such as tax credits should also be considered and implemented as appropriate.

We encourage the administration to pursue streamlined NEPA and associated environmental permitting processes, specifically utilizing innovative, digital approaches, where appropriate and not involving broadband-constrained stakeholder environments. These will save time while providing more useable documents that enhance decision-making and achieve optimal triple-bottom line outcomes. Use of the digital platforms enhances the ability to visually and graphically show project design and impacts, thereby producing better understanding of project impacts. Specifically, we reference the July 2020 CEQ NEPA Implementing Regulation revisions at 40 Code of Federal Regulations (CFR) 1506.6, 1503.1(c), and 1507.4 that allow for digital innovation.[14,15,16] In order to for the administration to implement robust federal initiatives, it will be imperative to continue to work to streamline the environmental review and permitting process while ensuring better environmental, social, and economic outcomes. In addition, the administration should consider using existing NEPA mechanisms - such as programmatic NEPA documents, tiering, incorporation by reference – as are used in other federal programs such as O&G and interstate transmission – working overarching issues ahead of project-specific

[14] 40 CFR 1506.6, Public Involvement. https://www.law.cornell.edu/cfr/text/40/1506.6
[15] 40 CFR 1503.1, Inviting comments and requesting information and analyses. https://www.law.cornell.edu/cfr/text/40/1503.1
[16] 40 CFR 1507.4, Agency NEPA program information. https://www.law.cornell.edu/cfr/text/40/1507.4

analyses, and providing developers with better certainty on issues, protective measures, and opportunities and constraints.

The administration should also aggressively promote intra- and cross-agency collaboration. While there is currently some intra-agency technical expertise collaboration across regions or districts, as well as some cross-agency collaboration, this needs to increase so that the right technical expertise is applied to reviewing proposed mining projects. This would prevent time spent trying to educate agency personnel and provide for a tailored, streamlined, and more effective NEPA review. This should also include limiting other agency involvement to only those areas where the agency has regulatory authority.

The administration should put in place requirements for project proponents to begin conversations with relevant agencies and community stakeholders well before the formal NEPA process is initiated, so that concerns over site layout, design, and potential effects can be addressed as early in the process as possible. This would apply to both new mining locations and new processing facilities. The U.S. currently has limited processing facilities for some strategic metals and those existing facilities have limited capacities, limiting our mining production to what can be processed. New processing facilities are often difficult to permit. As such, there should be a focus on identifying where processing capacity is limiting US production and new or expanded facilities are needed and then on streamlining permitting for new processing facilities.

Title IV. Promoting environmental, health and safety, labor, fair trade and a level playing field in global markets;

Currently, the critical mineral market in other countries, like China, remains largely unregulated, generating negative environmental impacts. In contrast, U.S. companies take great care in ensuring environmentally sustainable extraction approaches to protect the environment. The U.S. should examine promoting international health and processing standards for SCMs (particularly rare earth elements) as another means of leveling the playing field in global markets.

In addition to adopting environmental standards for extraction and processing, permitting reform is a necessary step that can work in conjunction with more robust recycling programs that substantially increase recycling of these materials from all domestic sources. For example, paying premium prices domestically for discarded items that contain these materials should be explored and leveraged. Integrating renewable energy sources to render terrestrial and deep-sea mining of these materials would further improve environmental outcomes by reducing carbon emissions. Working globally across allied nations, international standards for mining and processing should be developed and implemented to better "certify" that materials were sourced as sustainably as possible while minimizing environmental impact.

The federal government should also increase its focus on feedstocks associated with recycling and reprocessing coal-based waste and byproducts, as well as waste permanent magnets and lithium-ion batteries. This could serve the dual purpose of restoring/establishing a sustainable, domestic supply chain while at the same time bring real solutions to existing

environmental problems and revitalizing regions of the country most severely impacted by the trend of transitioning away from fossil fuels.

Title V. Establishing and strengthen manufacturing of value-added products, containing strategic and critical materials, which support the U.S. economy;

Strengthening manufacturing is one spectrum of a greater picture. Critical materials would still need to be located (and accessible), mined, and refined in the U.S. If not, the manufacturing of products dependent upon or containing these critical materials remain susceptible to global politics, policy, health, and other concerns. For that reason, we encourage development of a strategy that ensures quality, reliable raw material source when establishing stronger manufacturing of value-added products. One action to address many of these topics would be to develop systemic, prioritized government financial incentives (e.g., tax breaks, tax deferrals, research grants) that would encourage investment in building up domestic industry and requisite skilled labor in specific targeted areas that the government deems at risk under the current global economic system. By incentivizing strategic domestic production capabilities and development of substitutes for strategic minerals, supply chain risk could be significantly reduced.

Title VI. Methods to reduce exposure to price volatility and supply shocks in strategic and critical material supply chains;

Strategic competitors of the U.S. remain engaged in practices that induce price volatility through flooding the market with supply or limiting supplies. This creates price volatility and shocks to the supply chain that negatively impact U.S. companies that rely upon these minerals for their products. Several elements of the Critical Minerals Strategy published by the U.S. Department of Commerce would ameliorate problems with market-distorting foreign economic conduct and ensure U.S. access to necessary mineral resources, such as:[17]

- Exploring opportunities to utilize existing and future security of supply arrangements (SOSA), reciprocal defense procurement (RDP) agreements, and National Technology and Industrial Base collaborations to reduce U.S. vulnerability to potential supply disruptions of critical mineral materials and their downstream supply chains.
- Monitoring foreign countries' barriers to critical mineral-related trade and investment and seek to remove such barriers when they arise.
- Establishing accurate estimates of supply and demand of critical minerals in partner countries through consultations in conjunction with Ministerial-level forums for producers, buyers, and investors.[18]

We believe these serve as a good starting point and, in addition offer that strategic stockpiling actions by DoD, coupled with policies that encourage and enable companies to establish long-term requirements or futures contracts for SCMs, could aid in offsetting the

[17] U.S. Department of Commerce. Critical Minerals Strategy. pg 29
https://www.commerce.gov/sites/default/files/2020-01/Critical_Minerals_Strategy_Final.pdf
[18] Ibid, pg 28-29.

impacts of price volatility and mitigating shocks in the supply chains. We look forward to working with the federal government on these issues, and on efforts to modernize DoD's approach to stockpiling.

Title VII. Availability of material and manufacturing process substitutes for at-risk strategic and critical materials;

Currently, the U.S. lacks the capacity for material and manufacturing process substitutes in the SCM sector. The U.S. government, including the DoD, must make investments in alternative technologies for at-risk material supply chains where other risk management methods (e.g., domestic sourcing) are insufficient to ensure adequate and sustained supply. However, there are currently limited opportunities for direct material substitutes for at risk strategic and critical materials for certain processes and systems. The periodic table is finite, and much optimization has gone into development of the specialized alloys affected. Given the current state of technology, there is a concern that substitutes would not perform as well as the baseline materials in certain applications or systems, and as such, their use could have deleterious effects on system performance.

In the past, blanket prohibitions or directed sourcing mandates have often been enacted in attempts to mitigate such risks. The efficacy of such policies is questionable, they can be costly to implement and oversee, and they have a disproportionate impact on small and medium-sized businesses. Before any prohibitions are contemplated that could inadvertently and adversely impact supply chains for products and services critical to the national defense, a thorough review – conducted in collaboration with industry – should be undertaken to determine second- and third order effects and consequences.

Finally, we encourage the federal government to fund the programs authorized under Title II of the Energy Act of 2020 that will promote research and development of substitutes for SCMs. We urge the federal government to work with industry on these RD&D efforts, leveraging the national laboratory network as a key resource for helping industry with technology development.

Title VIII. The availability of skilled labor and other personnel to sustain a competitive strategic and critical materials ecosystem, including the domestic education and manufacturing workforce skills;

Investments in developing skilled labor in targeted areas are needed and should not be overlooked while pursuing government financial incentives to encourage investment in building up the domestic industry. The SCM industry relies on a diverse and highly skilled workforce, so it is critical for the federal government to recognize that the U.S. is behind on research progress and the number of skilled workers needed to expand exploration, extraction, and processing capabilities as well as develop alternatives to SCMs. The U.S. must develop and attract talent in science, technology, engineering, and math (STEM) fields, focusing on areas adjacent to SCMs including material science & mining engineering, computer science, biology, archaeology,

geology, and various other engineering specialties.[19] The Chamber encourages the government to support interdisciplinary programs that will attract top talent domestically and immigration policies that enable the U.S. to maintain its status as an attractive destination for skilled workers and talented students internationally.

The availability of skilled labor and other personnel to sustain a competitive and critical materials ecosystem is a risk that must be assessed and mitigated to ensure adequate material is available to support U.S. defense and industrial needs. In addition to interdisciplinary STEM programs, the United States must make it easier for U.S. companies to recruit, train, and retain top technical talent in the United States. For example, the U.S. government should consider funding and developing U.S.-based expertise in the processing of critical materials, including U.S. government sponsored facilities, that can develop and improve materials processes and provide a center of excellence for education and training resources. In addition, the U.S. government should support middle, high school, and secondary educational programs and government grant and scholarship opportunities to attract and develop interest in a broad array of STEM skills that are foundational for a competitive domestic strategic and critical materials ecosystem.

Title IX. The availability of manufacturing capabilities, such as single points of failure in supply chains or nonexistent, threatened, or single-point-of-failure capabilities, or single or dual suppliers;

Single and sole sourcing lead to increased risks such as obsolescence, capacity constraints, and single points of failure, especially with foreign and financially distressed suppliers. Limited competition decreases leverage when negotiating pricing, and the costs and time needed to diversify can often outweigh any cost savings from dual or competitive sourcing. These costs to diversify stem from issues such as testing and qualification of new suppliers; attracting and developing multiple suppliers on low volume development programs; and addressing supplier-owned intellectual property issues.

Many major defense companies are committed to maintaining a diverse supplier base which includes many small businesses. However, many of these small businesses come to rely on defense contractors for a significant portion of their business, exposing them to financial risk in times of defense budget uncertainty or other economic turbulence. As revealed by the COVID-19 pandemic, government relief programs will continue to be crucial for many of these fragile and distressed critical suppliers in the DIB.

In addition, the defense industry requires a wide variety of specialty metals across a variety of platforms. In many cases, rare earth elements (REEs) are not available domestically and must be sourced internationally. However, the lack of REE supply chain visibility at the sub-tier source makes it challenging to fully assess the risk.

The cost of compliance with domestic environmental regulations has led to a shift of the REE supply chain to China. Chinese industry has strengthened their REE supply chain through

[19] Ibid, pg 46.

vertical integration from mining to component manufacture. Executive Order 13817 indicates that China is currently the global leader in REE mining, refining, and component manufacturing.

Currently, there are a limited number of U.S. based SCM mining companies supporting domestic supply along with a few foreign companies. We applaud recent U.S. government actions to incentivize domestic mining and processing of REEs and will continue to support efforts by the Defense Logistics Agency (DLA) to assess requirements for Defense National Stockpile inventory levels of SCM, and REEs. We also encourage the federal government to support policies and implement legislation that reduce the cost of capital for U.S. and allied nation companies to enter the U.S. market.

Title X. The spectrum of risk to supply disruption, taking into account the duration (i.e., short, medium, long), geographic scope (local, regional, global), intensity (magnitude of aggregate supply disruption), ability to meet projected demand at a specific supply chain node, and the probability of the disruption event;

Competitors like China are continuing to assert their market dominance in this sector, in certain cases coercing other countries economically. For example, in 2010, China banned all rare earth exports to Japan following a maritime dispute involving a Chinese fishing boat interdicted by a Japanese naval vessel in disputed waters.[20] In the months following the dispute, the rare earths market panicked leading to increases in the price of rare earth oxides. Notably, this series of events impacted some U.S. companies directly by limiting their access to Yttrium and doubling the costs of Yttrium and permanent magnets that leverage Neodymium and Dysprosium. This type of economic coercion is particularly concerning for the national and economic security of the U.S. and underscores the need geographic diversity of supply.

In addition to economic coercion, natural disasters and other events also create disruptions in global supply chains. In 2011, Fukushima experienced a massive earthquake that caused a tsunami and led to the deaths of thousands of people. This tragedy also led to significant disruptions in global supply chains by crippling the infrastructure of the country including roads, business, railways, and nuclear reactors.[21] Because Japan serves as a hub for high tech manufacturing, the damage and disruption had rippling effects through industries that leverage SCMs including lithium batteries and semiconductors that forced companies to suspend production.[22,23] We encourage the federal government to work with industry on mitigating the risks of major supply chain disruptions due to natural disasters and other events.

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[20] Mills, Rick. (January 25, 2019). How the US lost the plot on rare earths. Mining.com. https://www.mining.com/web/us-lost-plot-rare-earths/

[21] National Geographic. March 11, 2011 CE: Tohoku Earthquake and Tsunami. https://www.nationalgeographic.org/thisday/mar11/tohoku-earthquake-and-tsunami/

[22] Fisher, Dennis. (May 31, 2011). Japan disaster shakes up supply-chain strategies. Harvard Business School. Working Knowledge: Business Research for Business Leaders. https://hbswk.hbs.edu/item/japan-disaster-shakes-up-supply-chain-strategies

[23] Shirouzu, Norihiko. (March 8, 2021). How Toyota thrives when the chips are down. Reuters. https://www.reuters.com/article/us-japan-fukushima-anniversary-toyota-in/how-toyota-thrives-when-the-chips-are-down-idUSKBN2B1005

Title XI. The spectrum of risk to the development and maintenance of sustainable supply chains, such as violations of human rights and forced labor;

The U.S. Chamber strongly opposes human rights abuses, including forced labor, and urges the administration (and Congress) to deploy targeted foreign policy tools and to work with the business community to combat such abuses.

The example of U.S. legislation to resolve human rights abuses related to the mining of conflict minerals in the Democratic Republic of the Congo (DRC) offers a cautionary tale, however. Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act required public companies to disclose if any of their products used a defined list of minerals, if the minerals were mined in the DRC, and if the products were conflict mineral-free.[24] Despite its good intentions, there is significant evidence that requirement in many cases worsened the situation on the ground in the DRC. While some reporting mechanisms were kept in place, the requirement to disclose whether products are "conflict free" was struck down by the courts as a violation of the First Amendment.

The Chamber looks forward to working with the administration (and Congress) to ensure that workable, appropriate actions and initiatives can be implemented to address human rights abuses related to the mining of critical minerals.

Title XII. Research, development, and demonstration priorities to support production or and an advanced manufacturing base for strategic and critical materials;

Research, development, and demonstration (RD&D) priorities should focus on advancements in mapping and mining, processing capabilities, recycling capabilities, and deep-sea mineral collection and processing in addition to advancements in substitutes for SCMs. Conservative estimates for finding alternatives for many of the strategic and critical minerals (SCMs) is 5-10 years and often result in using other SCMs as substitutes.[25]

For example, some companies leverage the rare earth elements (REE) Yttrium, Neodymium, and Dysprosium for their products, but none of these REEs currently have viable options for substitutes, Yttrium due to its unique characteristics and Neodymium or Dysprosium due to the strength of the magnets required in products.

We urge the federal government to work with industry on these RD&D efforts, leveraging the national laboratory network as a key resource for helping industry with technology development. When coupled with an environment conducive to fostering investment, these RD&D activities will allow the U.S. to promote resilience in its supply chain by increasing supply, filling expected future demand gaps, and enabling more environmentally sound capabilities.

[24] U.S. Department of Labor. Child Labor and Forced Labors Reports. Democratic Republic of Congo. https://www.dol.gov/agencies/ilab/resources/reports/child-labor/congo-democratic-republic-drc

[25] American Chemical Society. ″New alternatives may ease demand for scarce rare-earth permanent magnets." ScienceDaily. ScienceDaily, 2 April 2019. https://www.sciencedaily.com/releases/2019/04/190402081606.htm

Title XIII. Policy recommendations or suggested executive, legislative, regulatory action to foster more resilient supply chains for strategic and critical materials while promoting stewardship of affected communities and the environment;

The Chamber commends the executive branch and Congress on the passage of Title VII of the Energy Act of 2020. This legislation provided crucial foundations to advancing research and development, production, and recycling of critical minerals and rare earths through innovation hubs, grants, and education and workforce assessments. It also captured features from other pieces of legislation introduced during the previous Congress. With the authorization of appropriations also included, we encourage the federal government to include funding in the President's Budget submission and work with Congress to ensure that appropriations are enacted to facilitate the execution of these initiatives.

In the previous Congress, several pieces of legislation were introduced that could support a more resilient supply chain for strategic and critical minerals. Notably, the ORE/RARE Acts were introduced in the previous Congress but not enacted. These pieces of legislation provide initial frameworks for promoting growth by providing grants to help companies finance pilot projects to develop critical minerals in the U.S., tax deductions for the purchase or acquisition of critical minerals that were extracted from deposits in the U.S., and allowances for real property used to mine critical minerals and metals within the U.S.[26,27]

Additionally, the American Critical Mineral Independence Act has been reintroduced in Congress as an updated version of the American Critical Mineral Exploration and Innovation Act of 2020 introduced by Representative Waltz in the previous Congress.[28] The U.S. Chamber believes that securing adequate access to critical minerals domestically and from our allies is a strategic imperative. Deployment of new transportation, electric generation, and storage technologies that are heavily reliant on this supply chain are projected to increase demand dramatically in the coming decades. The American Critical Mineral Independence Act is an important and necessary step towards growing our domestic production and processing of critical minerals by creating greater permitting certainty as well as developing research and demonstration programming to foster innovation.

Greater permitting certainty will create more favorable federal & state environmental permitting policies (e.g., CEQA and NEPA). Short planning consent durations (<5 years) and large, available land parcels zoned for heavy industry restrict options for development of traditional processing facilities. These challenges are exacerbated by other logistical complexities that have been identified as limiting factors for large-scale mineral processing. While environmentally sensitive mineral processes are in development, they will reduce but not eliminate emissions or effluent; hence consideration of policies associated with air pollution control, green port and waste management will also be necessary. A U.S. domestic electric vehicle/green technology raw materials processing hub serves as one example of a consideration

[26] Onshoring Rare Earths Act: https://www.congress.gov/116/bills/s3694/BILLS-116s3694is.pdf
[27] Reclaiming America's Rare Earths Act: https://www.congress.gov/116/bills/hr8143/BILLS-116hr8143ih.pdf
[28] American Critical Mineral Independence Act. https://www.congress.gov/116/bills/hr7061/BILLS-116hr7061ih.pdf

that would simplify the value chain, reduce the carbon footprint of the operation and reduce overall costs being absorbed by transcontinental logistics. Supply Chains are complex, and industry looks forward to working with the government to ensure legislation that is passed does not place undue burdens on businesses.

Title XIV. Recommendations for long term research, development and demonstration (RD&D) investments necessary for reimagining a more sustainable and secure US critical materials supply chain of the future; or

The U.S. should support investment in additional processing capabilities and provide research and development incentives to support environmentally responsible deep-sea minerals extraction through polymetallic nodules and ratify the United Nations Convention on Law of the Sea. Polymetallic nodules form on or just below the sediment-covered abyssal plains of the global ocean, covering over one million square miles.[29,30] Various SCMs like cobalt, nickel, copper, titanium, and rare earth elements can be found in these polymetallic nodules. China and other countries are already making major investments in developing their capacity to collect and extract these polymetallic nodules. In addition to developing the capacity for extraction, they are also making strides to advance in the development of processing capabilities.

The tonnage of strategic and critical minerals (SCMs) in these seabed deposits dwarf what is available on land resources in some cases. For example, according to a study published in Nature Reviews Earth & Environment, the nodule tonnage of nickel (Ni), is approximately 1.8 times higher than the global terrestrial reserve base.[31] Nickel is commonly used in batteries, appliances, and turbines and is often used in conjunction with other metals to form corrosion resistant alloys.[32] We note that sourcing minerals from polymetallic nodules in the international deep seabed is comparatively simpler by its nature given the bespoke processing plants, lending itself well to a provenance disclosure.

Given the significant increase in expected future demand for SCMs, these deep seabed deposits could offer the U.S. an opportunity to position itself as a leader in the extraction and processing of these polymetallic nodules. To accomplish this, the U.S. would need to make investments in developing environmentally sound processing capabilities for these nodules because their processing requirements are different than that of terrestrial resources in fundamental ways. We encourage the federal government to partner with industry by promoting research and development of extraction and processing capabilities through grants, loans, programs, and permits that will enable industry to reduce the cost of capital and enter the market. This could also position the U.S. to lead, with key allies, in a measured, science-driven,

[29] Hein, J. (2020). Deep-ocean polymetallic nodules as a resource for critical materials. Nature Reviews Earth and Environment 1, 158-169. https://www.nature.com/articles/s43017-020-0027-0
[30] Letman, John. (August 29, 2018). The race is on to mine the deep sea – but scientists are wary. National Geographic. https://www.nationalgeographic.com/environment/article/news-race-to-mine-deep-sea-drones-seafloor-environmental-impact
[31] Hein, J.R., Koschinsky, A., and Kuhn, T. (2020). Deep-ocean polymetallic nodules as a resource for critical minerals. Nature Reviews & Environment 1 (158-169), 2020. URL: https://www.nature.com/articles/s43017-020-0027-0
[32] Royal Society of Chemistry. Nickel. https://www.rsc.org/periodic-table/element/28/nickel

environmentally sound approach at the start of a new extractive industry, rather than allowing others to define the beginnings of this emerging industry.

Title XV. Any additional comments relevant to the assessment of strategic and critical materials required by E.O. 14017.

Risk Management

In evaluating and prioritizing risks, we recommend use of standard Risk Management methodology as characterized by the U.S. Department of Homeland Security Risk Lexicon which is based on assessments of (1) the threat likelihood, (2) the vulnerability, and (3) the consequences associated with the availability of identified critical materials, sources, manufacturing processes and requisite labor.[33]

Cybersecurity

The federal government must also to consider is how it works with industry to secure critical infrastructure related to sourcing critical minerals. Heavy machinery, and complex heavy machinery, have remote access capabilities. The implication is that these connections can be left vulnerable to intentional and unintentional malicious acts unless the connection is secured. And, if heavy machinery is targeted by ransomware attacks, access to critical minerals could be impacted. We recommend that organizations apply cybersecurity and supply chain risk management practices consistent with the activities described in the voluntary NIST Cybersecurity Framework, or other internationally recognized, widely-adopted security framework.

Nuclear Fuel Cells.

In the sector of nuclear-fuel cells, the U.S. was once a global leader in uranium production, once employing over 21,000 Americans. Today, there is virtually no significant uranium production in the United States and the industry only employs 265 people. The domestic uranium industry needs to be rebuilt to enhance the U.S. nuclear infrastructure, create high paying clean energy jobs, and reduce dependence on foreign sources for carbon-free energy.

- Losing U.S. uranium mining, conversion, and domestic enrichment capacity makes the U.S. entirely dependent on imports for a fuel needed to power:
    - 20 percent of the electricity in the U.S.
    - 55 percent of our carbon free power

- In 2019, uranium imports from state-owned entities climbed to over 47 percent of U.S. reactor demand. The promising advanced nuclear technology needed to augment the aging nuclear fleet is at risk of reliance on hostile countries like Russia and China. We risk losing our only source of future supply for America's nuclear navy and other defense programs.

[33] U.S. Department of Homeland Security. Risk Lexicon. https://www.cisa.gov/dhs-risk-lexicon

- Despite the unlevel global playing field, U.S. mines are cost-competitive on a global basis. With the right policy conditions, the U.S. industry can provide 60 percent of domestic fuel requirements, according to Energy Information Administration reported production capacity.

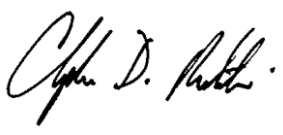
- Addressing the need for a domestic uranium reserve:

    - While some U.S. uranium imports are from entities operating in allied countries, an increasing share is price insensitive material coming from state-owned entities (SOEs).
    - The similarities to our rare earth mineral crisis are startling.
    - Uranium production in the United States will not survive in the face of these challenges unless the playing field is leveled to reflect the commercial realities of free market companies. The interagency Nuclear Fuel Working Group (NFWG) report in April 2020 identified domestic uranium mining and conversation as the most immediately vulnerable elements of the fuel cycle, recommending the creation of a uranium reserve to guard against SOE market manipulation.
    - The Chamber applauds Congress for addressing the need for a domestic uranium reserve by providing $75 million in Fiscal Year 2021 and urges the Department of Energy (DOE) to stand up the program and begin procuring uranium by the end of 2021.

Conclusion

Thank you for the opportunity to comment on this review. The Chamber welcomes the Biden administration's focus on U.S. supply chain resiliency and this focus on risks in the supply chain for strategic and critical materials. We can mitigate risks to our supply chains by working with key international partners to diversify our supply chains and improve the U.S. strategy vis-à-vis our strategic competitors. We trust that the administration will engage closely with the private sector to ensure that any policy recommendations reject punitive approaches, new trade barriers, and one-size-fits-all solutions.

Sincerely,



Christopher D. Roberti

Martin Durbin