



November 15, 2021

The Honorable Frank Pallone, Jr.  
Chairman  
Committee on Energy and Commerce  
2125 Rayburn House Office Building  
Washington, D.C. 20515

The Honorable Cathy McMorris Rodgers  
Ranking Member  
Committee on Energy and Commerce  
2125 Rayburn House Office Building  
Washington, D.C. 20515

The Honorable Paul Tonko  
Chairman  
Energy and Commerce Subcommittee on  
Environment and Climate Change  
2125 Rayburn House Office Building  
Washington, D.C. 20515

The Honorable David McKinley  
Ranking Member  
Energy and Commerce Subcommittee on  
Environment and Climate Change  
2125 Rayburn House Office Building  
Washington, D.C. 20515

The Honorable Bobby Rush  
Chairman  
Energy and Commerce Subcommittee  
on Energy  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Fred Upton  
Ranking Member  
Energy and Commerce Subcommittee  
on Energy  
2125 Rayburn House Office Building  
Washington, D.C. 20515

**RE: Hearing on “Securing America’s Future: Supply Chain Solutions for a Clean Energy Economy”**

Dear Chairmen and Ranking Members:

As Chairman and Chief Executive Officer of MP Materials Corp., I applaud the Committee for holding a hearing on securing America’s supply chains in support of a clean energy economy. This is a topic of paramount national importance and one that aligns with the fundamental goals of our company.

In recent years significant national security and economic competitiveness risks have emerged due to the erosion of the U.S. rare earth element (REE) supply chain. The United States currently lacks domestic capacity to produce both separated REEs and the downstream NdFeB (neodymium-iron-boron) permanent magnets which are used in a wide variety of clean technology, defense, and consumer product applications. Instead, the United States and our allies depend on imports to fulfill practically all rare earth magnet requirements. These imports primarily rely on China’s dominant capacity to both separate rare earth products and manufacture NdFeB magnets. Moreover, China has recently begun a process to exercise even

more centralized control over its permanent magnet supply chain by further consolidating its domestic REE materials industry.<sup>1</sup>

The establishment of large-scale, commercially viable capabilities across the full U.S. rare earth supply chain is the most effective and most efficient way to counteract this dynamic. MP Materials is leading this effort through our strategy to develop and operate a wholly domestic, vertically integrated REE value chain in America. Supportive engagement from the U.S. Government is important in helping the private sector establish domestic capacity at commercially meaningful levels across the entire REE supply chain, including production of materials, metals, alloys, and magnets, thereby ensuring a sustainable supply base capable of serving commercial and defense needs.

### **Background**

Headquartered in Las Vegas, Nevada, MP Materials is the largest rare earth materials producer in the Western Hemisphere and the largest such producer outside of China. The company owns and operates the nation's only significant rare earth element mine and processing site at Mountain Pass, California. The Company's mission is to restore the *full* rare earth supply chain to the United States by implementing a three-stage strategy to produce (1) REE concentrate, (2) separated REEs, and (3) NdFeB magnets. MP Materials is publicly listed on the New York Stock Exchange under the ticker symbol "MP."

MP Materials acquired Mountain Pass in July 2017, after severe operational and financial challenges forced the site's prior owner into bankruptcy. At the time, the site was in a state of care and maintenance with just eight employees. In four short years, MP Materials has scaled production at Mountain Pass dramatically, and we now have over 365 employees.

REEs have a number of key applications, which include strong permanent magnets made from REE alloys. A typical NdFeB magnet contains about one-third neodymium (Nd) or a combination of Nd and praseodymium (Pr). As such, NdFeB magnets are also commonly referred to as NdPr magnets. These magnets are considered the most high-performing, compact, and lightweight permanent magnet commercially available. They are essential components in green technology products, including motors of electric and hybrid vehicles and wind turbines. Like semiconductors, which became linked to virtually every aspect of modern life as computers and software proliferated, rare earth magnets are fundamental building blocks, which will increase in importance as the global economy electrifies and decarbonizes.

U.S. production of separated REEs has been constrained and domestic production of sintered NdFeB magnets is virtually non-existent. The last major vertically integrated U.S. magnet producer ceased operations in 2003 and relocated to China.<sup>2</sup> Today, China produces

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<sup>1</sup> See <https://www.bloomberg.com/news/articles/2021-09-24/china-s-rare-earth-minersannounce-plan-to-restructure-assets>.

<sup>2</sup> See Building Resilient Supply Chains, Revitalizing American Manufacturing, And Fostering Broad-Based

approximately 80 percent of the world's separated REEs and approximately 90 percent of NdFeB magnets.

MP Materials is taking action to develop large-scale capacity across the full rare earth supply chain in the United States. In 2020, production of rare earth oxides ("REO") contained in concentrate at Mountain Pass reached an all-time high, bringing the United States to more than 15 percent of global production from 0 percent in 2017.<sup>3</sup> MP Materials is also addressing the lack of separation facilities in the United States by investing more than \$220 million to restore REE separations capability to Mountain Pass. This work is supported by the Department of Defense ("DoD") through the Defense Production Act and Industrial Base Analysis and Sustainment programs. The Company plans to begin producing separated rare earth products at Mountain Pass in the second half of 2022.

Informed by our experience over the past four years, MP Materials holds a deep conviction that private entities in the United States can challenge Chinese dominance and achieve commercial success across the rare earth supply chain, including NdFeB metal and magnet production. Against the backdrop of an industrial renaissance towards electrification and decarbonization, MP Materials believes that ensuring a sustainable, domestic supply base of all REEs necessary for magnet production is essential to the defense, industrial security, and global economic competitiveness of the United States.

### **MP Materials' Three-Stage Strategy**

To help lead the revitalization of the U.S. REE industry, MP Materials is implementing a three-stage strategy as follows:

- **Stage I: Production of REE Concentrate (*completed*):** extracting ore from Mountain Pass and purifying and concentrating the ore to create a mixed rare earth concentrate.
- **Stage II: Production of Separated REEs (*2022*):** applying a complex chemical process to the mixed rare earth concentrate in order to purify, recover, separate, and precipitate individual rare earth elements.
- **Stage III: Production of NdPr Metal, Alloy and Magnets (*ASAP*):** further processing separated REEs into products such as NdPr metal, alloys and magnets.

### **Stage I: Production of REE Concentrate**

In Stage I, bastnaesite ore is recovered from an open-pit surface mine. Through a process of crushing, milling, conditioning, and flotation, REEs are separated from waste to produce a mixed rare earth concentrate containing approximately 60 percent REO.

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Growth, 100-Day-Reviews under Executive Order 14017, June 2021 ("100-Day Supply Chain Report") at 174.

<sup>3</sup> See USGS, Rare Earths 2021, <https://pubs.usgs.gov/periodicals/mcs2021/mcs2021-rare-earths.pdf>.

MP Materials has already been successful in implementing its Stage I strategy, and due to the tremendous geological advantages of the Mountain Pass ore body, which averages seven percent REE content (versus 0.1 to 4 percent for most global deposits in operation, including the major Chinese producers),<sup>4</sup> we believe that MP Materials enjoys a leading cost position.

The Company's efforts to optimize Stage I production of rare earth concentrate have yielded a highly profitable business generating significant free cash flow that the Company is now reinvesting to expand its capabilities in downstream production.

In addition to having a low-cost position, the Company believes that Mountain Pass is the world's cleanest, most environmentally sustainable REE facility.

For example:

- **Clean ore body:** At a geological level, the bastnaesite ore at Mountain Pass has low levels of thorium and uranium relative to other rare earth deposit types around the world. The concentrate produced at Mountain Pass has no radioactive by-product and contains only trace levels of thorium and uranium.
- **Dry tailings:** To substantially eliminate seepage risk, Mountain Pass employs a drystacked tailings process. Dry tailings produced at Mountain Pass are retired in lined impoundments, meaning we believe the material is returned to ground with nearly as little risk to the environment as the hard rock from which it is extracted. This facility is the only one of its kind in the global rare earth industry.<sup>5</sup>
- **Closed loop, zero discharge facility:** The Company maintains and operates a well field for potable and process water, which pumps directly to Mountain Pass and has no connection to public water sources. To conserve water and further minimize the Company's environmental footprint, approximately 95 percent of the water used is recycled – more than one billion liters per year. Mountain Pass is a zero-discharge facility with no process water disposed offsite or to the ground.
- **Environmental compliance:** Mountain Pass is fully permitted for rare earth extraction, separation, and waste management. The Company complies with all Federal and California environmental regulations.

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<sup>4</sup> As of July 1, 2020, SRK, an independent consulting firm the Company has retained to assess its reserves, estimates probable reserves of 1.47 million short tons of REO contained in 20.8 million short tons of ore, with an average ore grade of 7.04 percent.

<sup>5</sup> It is reported just 13 dry-stacked tailings facilities of any mineral resource have been placed into operation in the past decade worldwide, and only three to six percent of global tailings facilities in operation today are dry stacked, with MP Materials operating the only one of its kind in the rare earth industry. See <https://www.nature.com/articles/s41598-021-84897-0>.

Today, the rare earth concentrate that MP Materials produces is exported to a distributor, which, in turn, sells that product to multiple customers in China who process the concentrate into separated rare earth products. There is no domestic alternative today, as no viable REE separations facilities exist in the United States. MP Materials' Stage II strategy seeks to address this situation.

### **Stage II: Stage II: Production of Separated REEs**

In this stage, the Company's concentrate product will be separated into NdPr oxide, cerium and lanthanum carbonate, and a heavy rare earth concentrate (SEG+). The Company has been retrofitting the existing processing facility at Mountain Pass to make separated rare earth oxides more reliably, which will materially increase the recovery of NdPr from concentrate and dramatically lower the cost of production, all with an expected smaller environmental footprint.

Although light rare earths such as neodymium and praseodymium are the most abundant REEs in NdFeB magnets, small volumes of heavy rare earth elements (HREEs), namely terbium and dysprosium, are often introduced into NdFeB alloy mixtures to enable high operating temperatures. Currently, there is virtually no capacity to produce separated HREEs outside of China.

Over the last 12 months, in part with funding from the DoD Industrial Base Analysis and Sustainment program, the Company has been conducting research and development and significant piloting to analyze the potential to restore the capacity to produce separated HREEs at Mountain Pass.

### **Stage III: Production of NdPr Metal, Alloy, and Magnets**

In Stage III, MP Materials will use REOs that are purified, recovered, and separated in Stage II to manufacture NdPr metal, alloy and permanent magnets in the United States. We expect to make an announcement on the location of our initial magnetics facility by the end of 2021. This first facility will be modest relative to the size of the resource at Mountain Pass but will have the capacity to grow. Furthermore, we are building capabilities to accept substantial volumes of recycled magnet content into our large-scale refining facilities. This ability to accept both virgin materials and recycled content into the same manufacturing stream will allow us to continue to expand capacity to meet growing demand over time while further reducing the system's carbon footprint.

### **Recommended Government Actions**

To create systemic resiliency and challenge Chinese rare earth dominance, U.S. industry must establish commercially viable capabilities across the full rare earth supply chain, and U.S. policymakers, through a whole-of-government approach, should support these efforts by addressing systemic market inequities and leveling the global playing field.

Interestingly, Congressional policies have routinely supported the scaling of downstream consumer products and industries, including electric vehicles and wind turbines, but they have not equally incentivized the production of requisite materials upstream. Supporting end-use downstream products while ignoring or underinvesting in the necessary upstream critical materials supply chain simply limits the maximum economic and environmental benefits to U.S. workers and the economy.

We believe that in addition to the Department of Energy and Department of Defense's continued support for scaled rare earth separations projects, and related research and development, the U.S. Government should advance demand-driven legislation that supports domestically sourced and produced rare earth products. A production tax credit for domestic magnet production, for example, will benefit the entirety of the domestic REE supply chain by pulling the upstream and midstream components toward the ultimate goal of manufacturing NdFeB magnets in the United States. In this regard, the bipartisan Rare Earth Magnet Manufacturing Production Tax Credit Act (H.R. 5033) is a good first step to accelerate domestic private sector investments in REE materials and NdFeB magnet production.

Under this bill, magnets manufactured in the United States from rare earth materials produced, Recycled, or reclaimed wholly in the United States will be eligible for a \$30/kg production tax credit. A \$20/kg production tax credit would be available for other magnets that are manufactured in the United States. The credit would not be available for a magnet manufactured with any component rare earth material that is produced in a non-allied foreign nation, such as China, Iran, North Korea, and Russia.<sup>6</sup> The tax credit could significantly bolster domestic supply chains by incentivizing the use of domestically produced REE and set the stage for a phased shift of supply away from imports.

Separately, as detailed in the Administration's 100-Day Supply Chain Report, the U.S. Government should work in partnership with the private sector and other stakeholders to develop new standards for REEs that will help environmental and social factors be appropriately valued in the marketplace. "A recognized sustainability standard, potentially backed by legislation, and coordinated with trading partners, would encourage private sector investment in sustainable sources and increase supply chain resilience."<sup>7</sup> MP Materials agrees that the long-term aim should be to promulgate regulations that would support the use of "sustainably produced" REE from domestic and foreign sources.<sup>8</sup> Sustainability standards will ensure that global supply chains do not continue to favor jurisdictions with lax environmental, labor, and governance regimes.

Our experience of the past four years has bolstered our confidence in the ability of MP Materials and other U.S. private sector actors to achieve sustained commercial viability and challenge

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<sup>6</sup> <https://www.congress.gov/117/bills/hr5033/BILLS-117hr5033ih.pdf>.

<sup>7</sup> 100-Day Supply Chain Report at 194.

<sup>8</sup> See id at 194-195.

Chinese dominance in the REE supply chain. Through its efforts to cultivate domestic capabilities, the United States Government can help industry truly turn the corner and establish a secure, domestic supply chain to support clean energy development, defense interests, and global competitiveness.

Thank you for your consideration of these comments.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Litinsky". The signature is written in a cursive style with a large initial "J" and "L".

James Litinsky  
Chairman & Chief Executive Officer  
MP Materials Corp.