Testimony
On S. 1600, the Critical Minerals Policy Act
Before the
U.S. Senate Committee on Energy and Natural Resources

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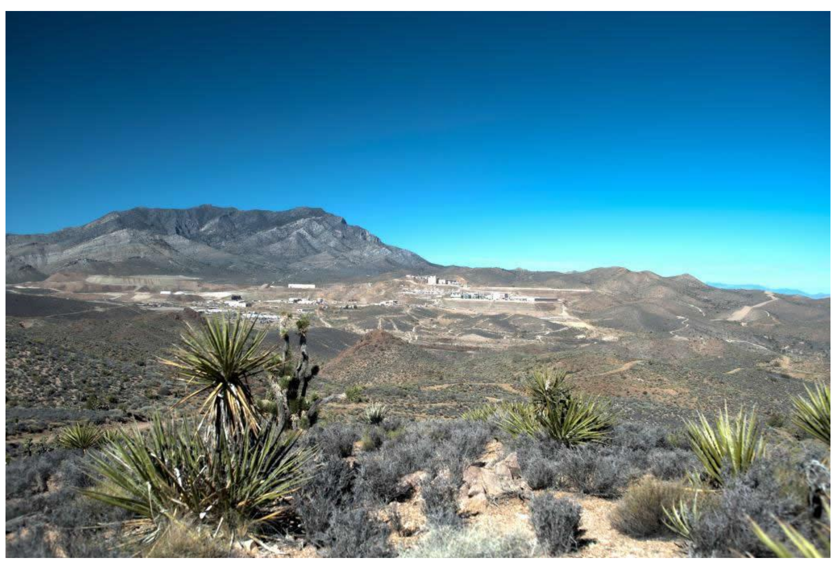
Chairman Wyden, Ranking Member Murkowski, and distinguished members of the Committee, my name is Jim Sims, and I am Vice President of Corporate Communications for Molycorp, Inc. I very much appreciate the opportunity to appear before you today to discuss S. 1600, the Critical Minerals Policy Act.

A U.S. company headquartered in Greenwood Village, Colorado, Molycorp is the only advanced material manufacturer in the world that both controls a world-class rare earth resource and can produce high-purity, custom engineered rare earth products to meet increasingly demanding and varied customer specifications. With 27 locations in 11 countries, Molycorp produces a wide variety of specialized products from 14 different rare earths (lights, mids and heavies), the transition metals yttrium and zirconium, and five rare metals (gallium, indium, rhenium, tantalum and niobium). Molycorp produces rare earth magnetic materials through its Molycorp Magnequench subsidiary, including neodymium-iron-boron (NdFeB) magnet powders used to manufacture bonded NdFeB



The U.S.' only rare earth oxide producing facility is located at Mountain Pass, California, in the high Mojave desert.

permanent rare earth magnets. Through its joint venture with Daido Steel and the Mitsubishi Corporation, Molycorp manufactures next-generation, sintered NdFeB permanent rare earth magnets. The Company also markets and sells a line of rare earth-based water treatment products.

HOW S. 1600 WILL ADVANCE THE CAUSE OF DOMESTIC MINERAL SUPPLY CHAIN REVITALIZATION

Rare earth elements (REEs), and rare metals more broadly, are increasingly critical to high-tech, clean tech and advanced civilian and defense systems. While the U.S. has significantly increased its domestic production capabilities of REEs in recent years, a wide variety of critical and strategic metal and mineral supply chains are missing a domestic production component. The Critical Minerals Policy Act is a solid step forward in the effort to revitalize domestic mineral supply chains in the U.S.

Given that permitting reform is often a 'third rail' in natural resource policy discussions, the fact that a majority of both parties on this Committee have found common ground on this issue is an extraordinary achievement. It demonstrates both courage and principled leadership by the bill's authors and cosponsors. Chairman Wyden, Ranking Member Murkowski, Senators Udall and Heller, and the other original cosponsors of this bill, all deserve praise for working so hard to forge the compromise that resulted in this legislation. Your demonstration of bipartisan commitment significantly increases the chances of Congressional passage of this legislation.

On behalf of a company that walked a regulatory pathway that took 15 years and more than 500 permits to restart rare earth production in California, let me offer some observations on several elements of S. 1600:

- By launching a process to update and modernize critical minerals policies in the U.S., and by encouraging better coordination across the many federal agencies that oversee aspects of mineral development, this bill would provide additional regulatory certainty for all parties in permitting processes. Increased regulatory certainty is a must if the U.S. is to encourage greater private sector investment in domestic mineral exploration, processing, and downstream supply chains that can help meet the needs of manufacturers here in the U.S. and around the world.

- The bill recognizes that much can be done to make permitting processes more efficient, even without wholesale changes in underlying law. Requiring performance metrics for the processing of permit applications should spark new thinking and innovative ideas for reasonable reforms.

- The bill's directive to complete a comprehensive national resource assessment for each element designated as critical should help to prioritize resource opportunities for both government officials and private sector interests.

- Its focus on encouraging more efficient production and use of critical materials, development of alternative materials, and increased recycling is equally important. For a number of critical materials, increased production will need to be supplemented by these strategies to meet future global demand.

- Strengthening the education and workforce training infrastructure related to critical material, a goal of this bill, also is a high priority. The U.S. lags behind many nations in this area, which in turn can negatively impact investment decisions by private sector companies in critical material supply chain development.

THE RE-BIRTH OF U.S. RARE EARTH PRODUCTION

REEs offer a window into many of the issues listed above as well as the challenges of bringing more critical minerals and metals through permitting and into production.

The U.S. was once the world's largest producer of REEs, thanks to the more than 60 years of rare earth production at Mountain Pass, California, home to one of the largest, richest and most readily processable REE ore bodies in the world.

Primary production activities were curtailed at the Mountain Pass facility in 1998, and active mining was suspended between 2002 and 2010. Since operations commenced in 1952, the facility has continuously manufactured and sold rare earth products.

However, fast forward to today: the U.S. is back online in REE production. Construction is complete at Molycorp's new, $1.55 billion state-of-the-art rare earth processing facility at Mountain Pass, and production is ramping up. Not only that, but once this facility has reached full-scale operation and its chemical processes are fully optimized, we will be able to produce REE materials with a dramatically smaller environmental footprint and at a cost of production that will make the U.S. competitive with any REE material producer in the world.

Taking REEs from the ground, separating them from one another, and converting them to usable REE materials involves a highly complex, multi-stage series of chemical processes. The Mountain Pass facility is actually a collection of 12 operating systems that must work together both in series and in parallel. As our current rare earth production ramp-up continues, we are working to optimize and strengthen the system, improve rare earth recovery rates, improve on-time reliability, add redundancy, and increase product throughput.

In order to better understand the process by which REE ore is converted into useful REE products, a short 4.5-minute Technology Tour video outlining this process can be seen here: http://www.brainshark.com/molycorp/vu?pi=zHCzU9yV6zCQamz0. You can also click on the photo at left to see the Technology Tour.

Click on the above image to take a technology tour of the new, state-of-the-art rare earth processing facility at Mountain Pass, California, via streaming video.

All key production components of the Mountain Pass facility are operational, and we are in the process of conducting an orderly ramp-up of the many systems that work together to convert REE ore into usable products. The new facility was designed to be able to produce at an annual rate of about 20,000 metric tons (mt) of rare earth oxide (REO) equivalent[1] products. Output can vary during the ramp-up and optimization phase, and that is normal for new chemical plant start-ups. To date, the system has demonstrated an annualized production rate of 15,000 mt of REO equivalent product, but we haven't sustained that rate due to the demands of process optimization. After we complete these procedures, which we expect to do in the first half of 2014, we anticipate increasing production volumes as demand requires.

[1] "Rare earth oxide equivalent" is the industry's standardized unit of measurement across all rare earth containing products. It is comparable to the oil and gas industry's "barrels of oil equivalent" unit of measurement.

TECHNOLOGY INNOVATION: REDUCED ENVIRONMENTAL FOOTPRINT

Mountain Pass may be a re-started rare earth mine, but it is by no means the same facility it was in the late 1990s. After rare earth production was curtailed at Mountain Pass, Molycorp scientists went back to the drawing board to design new processes and technologies that could help to dramatically shrink the environmental footprint of rare earth production.

These new technologies and process innovations, some of which have never before been used in the rare earth industry, have been successfully integrated in our new facility. They include:

- High-efficiency, on-site power generation through a clean-burning natural gas-fired Combined Heat and Power (CHP) plant. Among other things, this technology is helping us reduce our greenhouse gas emission (GHG) intensity as compared to legacy operations.

- A high-efficiency water treatment and recycling plant. This plant allows us to greatly reduce our fresh water usage and helps to recycle process water.

- An onsite chlor-alkali plant, which will allow us take wastewater and convert it into the chemical reagents used in rare earth processing

- Prospectively higher rare earth recovery rates from our ore, which means that the facility can produce more rare earth products using the same amount of ore as before.

- An innovative tailings disposal system, which removes most of the water from mine tailings (for recycling) and allows tailings to be formed into a paste, which sets up into a solid substance for permanent onsite disposal. This eliminates the creation of a tailings "dam."

In short, once fully operational and optimized, this facility will operate as the world's most environmentally advanced rare earth processing complex.

TECHNOLOGY INNOVATION: GLOBALLY COMPETITIVE PRODUCTION COSTS

In addition to significantly reducing environmental externalities associated with REE production, the technology innovations developed by Molycorp also will help reduce the cost of producing REE materials at Mountain Pass. Producing REEs at a cost that is competitive in global markets is vital to the viability of any REE production facility.

For example, Molycorp dedicated a significant amount of early-stage capital to install an onsite chlor-alkali plant, which when fully operational and optimized will enable Mountain Pass to convert what was once wastewater discharge -- hundreds of gallons per minute of salty water -- into chemical reagents needed for rare earth processing. In essence, Molycorp has built a recycling loop at Mountain Pass that continually regenerates these reagents from wastewater and will also recycle most of our process water.

This capability will significantly reduce the overall environmental footprint of rare earth production, as well as drive down our cost of production. By making our own reagents from wastewater, we will be able to do the following:

- Buy less reagents from the open market. (Chemical reagents are a significant portion of rare earth production costs);
- Sell excess reagents we produce; and
- Significantly reduced wastewater disposal costs.

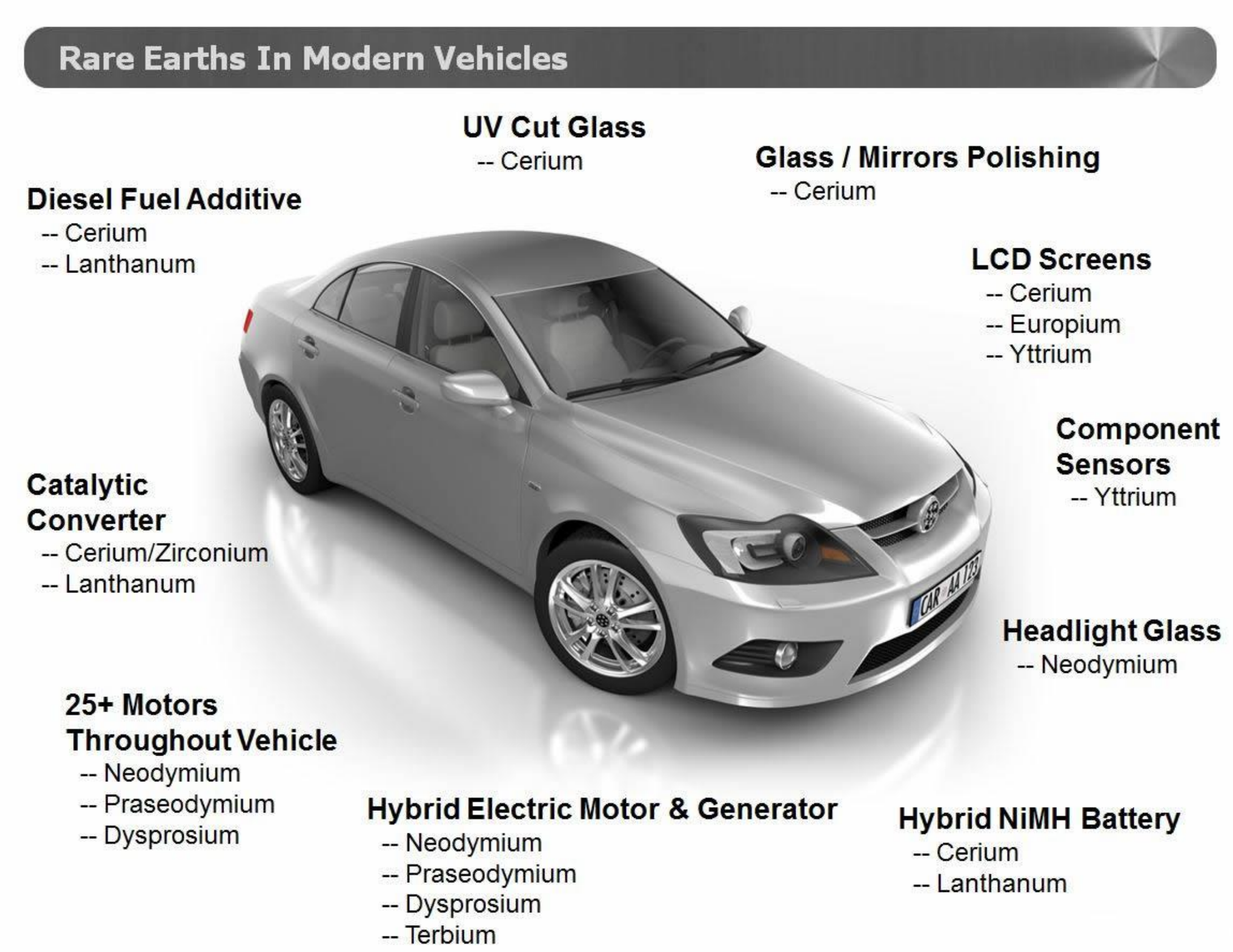
The Chlor-Alkali plant at Mountain Pass, which will help convert wastewater into chemical reagents needed for rare earth separation.

Additionally, this capability allows Molycorp to produce REE materials that are recognized in downstream markets for the environmentally superior manner in which they are produced. We believe that what is good for the environment can also be good for business.

How REEs Are Enabling Technologies That Increase Energy Efficiency and Lower Power-Related Emissions

One of the more exciting rare earth materials that we make from Mountain Pass ore is permanent rare earth magnetic materials, which when made into magnets can significantly improve the energy efficiency of motors, generators, compressors, and other devices. Because they also are significantly smaller than competing, less efficient "ferrite" magnet technologies, rare earth permanent magnets allow for smaller motors. This allows manufacturers to save on the use of other materials such as copper, steel, etc.

Rare earth permanent magnets are increasingly used in a wide variety of products, including HVAC systems, home appliances, electric motors used in vehicles, advanced wind turbine generators, and too many other technologies to list here.



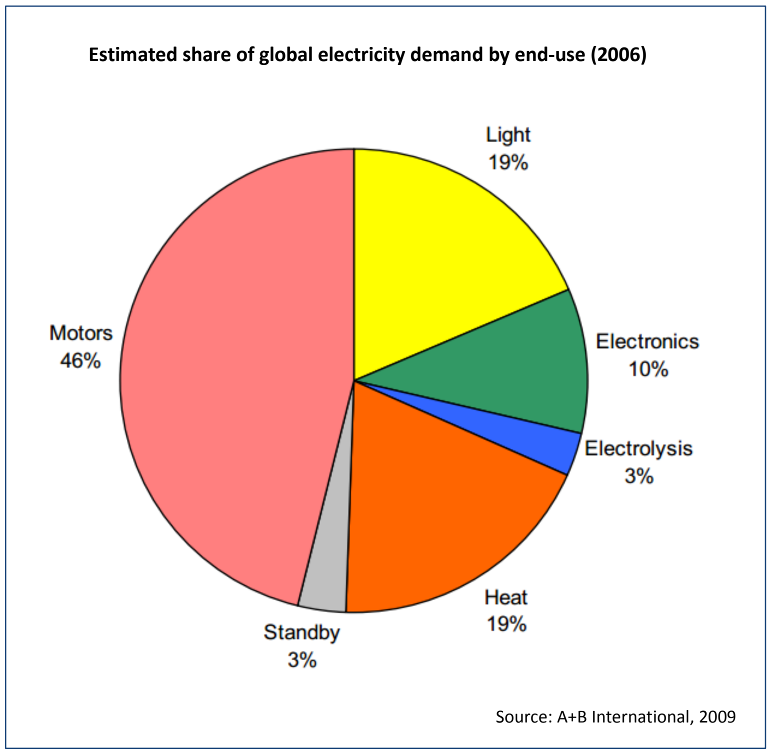
One example of the growing use of rare earth permanent magnets is in residential water circulation pumps.

In Europe, regulations now require the use of high efficiency water circulation pumps to distribute heat in buildings. The European Commission (EC) estimates that there are more than 100 million of these devices currently installed in the EU, and that their energy draw can make up between 5 and 10 percent of the typical electricity bill in households. That adds up: across the EU, these devices consume more than 50 terrawatt-hours per year of electricity, which is equivalent to about two percent of the overall electricity consumption in the EU. This amount of electricity generation equates to more than 30 million tons per year of CO2, according to the EC.

Manufacturers are now turning to pumps that utilize rare earth permanent magnets in order to increase efficiencies. These next-generation, variable speed pumps can reduce annual electricity use by 60% or more, according to the EC. This equates to more than 30 TWh/year of avoided energy consumption.

Another example of rare earth materials used to increase energy efficiency is in electric motors used in automobiles. There can be dozens of individual electric motors in a modern automobile. When these motors utilize permanent rare earth magnets, instead of larger, heavier and less powerful iron-based permanent magnets, manufacturers are able to significant reduce vehicle weight. That translates into higher fuel efficiency and an enhanced ability to meet increasing stringent Corporate Average Fuel Economy (CAFÉ) standards. Additionally, rare earth permanent magnets allow motors to be smaller and more compact, which in turn allows more space in the passenger compartment. Hybrid electric, plug-in hybrid, and all-elective vehicles especially benefit from rare earth permanent magnets.

From a macroeconomic perspective, motors and motor-driven systems are estimated to be the single largest end use of electricity in the U.S., consuming over twice as much electricity as lighting, the second largest end use. Even small increases in the efficiency of these systems can translate into very significant reductions in energy demand and associated emissions, such as GHGs.



Energy efficiency experts and motor industry leaders agree that enhancing motor and motor-driven system efficiencies is one of the most promising – and currently overlooked – pathways to lower energy use and emissions reductions. Rare earth permanent magnets can play a key role in those efforts.

ADVANCES IN REE MATERIAL SCIENCE ARE INCREASING THE EFFICIENT USE OF SCARCE HEAVY REEs

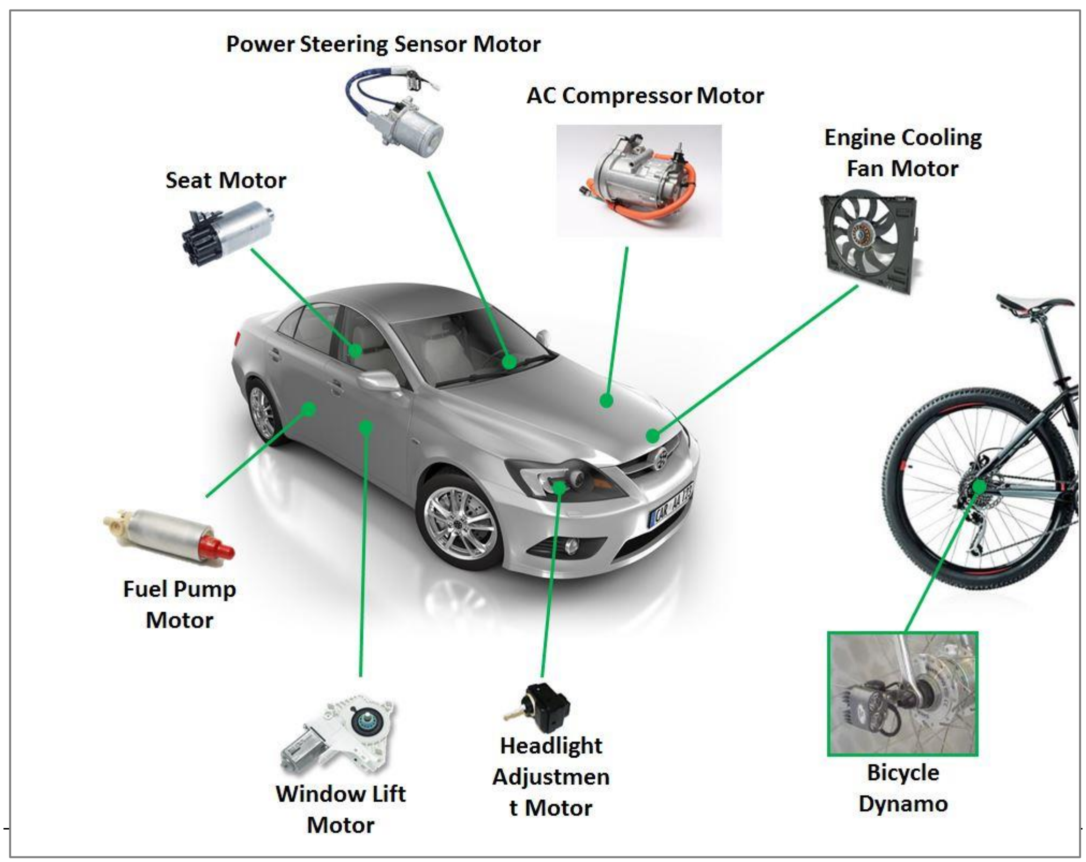
One of the most important technology advances being made today in rare earth material science relates to the use of relatively scarce heavy rare earths, such as Dysprosium, in permanent rare earth magnets. This heavy rare earth (HREE) generally exists in very small quantities relative to other rare earths in virtually all known REE ore bodies. It is added in small amounts to high-performance rare earth permanent magnets that must operate in relatively higher temperature, 'under the hood' operating environments, generally those above 150^{0}C. When added at levels between 2% and 10%, Dysprosium helps these magnets retain their magnetic power.

Given that this HREE is a truly 'rare' rare earth, and is overwhelmingly produced today in one nation (China), manufacturers have been reluctant in recent years to utilize these high-performance magnets in some applications.

Fortunately, continuing advances in REE material science, some of which are being pioneered by Molycorp scientists, are allowing magnet manufacturers to make rare earth permanent magnets with less and less Dysprosium.

Manufacturers are also finding ways to incorporate low-Dysprosium NdFeB magnets into their systems. Together, these efforts are allowing greater use of sintered NdFeB magnets with only 2% - 4% Dysprosium, instead of traditional levels of 8% - 10% Dysprosium. Such reductions are already having an impact on global demand levels for these scarce rare earths. With more Dysprosium available to markets, a greater number of sintered NdFeB magnets can be made and utilized in energy efficiency applications.

Also, advances in material science and engineering are expanding the use of bonded NdFeB magnets, made by Molycorp's Magnequench subsidiary, that have no Dysprosium content.



Some of the motors in a modern automobile that can utilize permanent rare earth magnets with little to no Dysprosium.

A separate technology trend is the continuing migration from tri-phosphor fluorescent lighting to LED lighting. Tri-phosphor lighting utilizes several relatively scarce rare earths, such as Terbium, Europium, and Yttrium. This continuing shift to LED lighting is already helping to soften demand, and increase the availability, of HREEs like Terbium and Yttrium.

CHALLENGES TO EXPANDING DOMESTIC REE PROCESSING CAPACITY IN THE U.S.

The most significant barrier to entry for new rare earth producers is undoubtedly the capacity to take mixed rare earth minerals out of the ground and chemically process them into separated, usable rare earth products. Virtually no two rare earth deposits are the same, and the often complex mineralogy of some deposits makes them highly challenging to chemically process. Consider these facts:

1. There are more than 200 different minerals that contain rare earths.

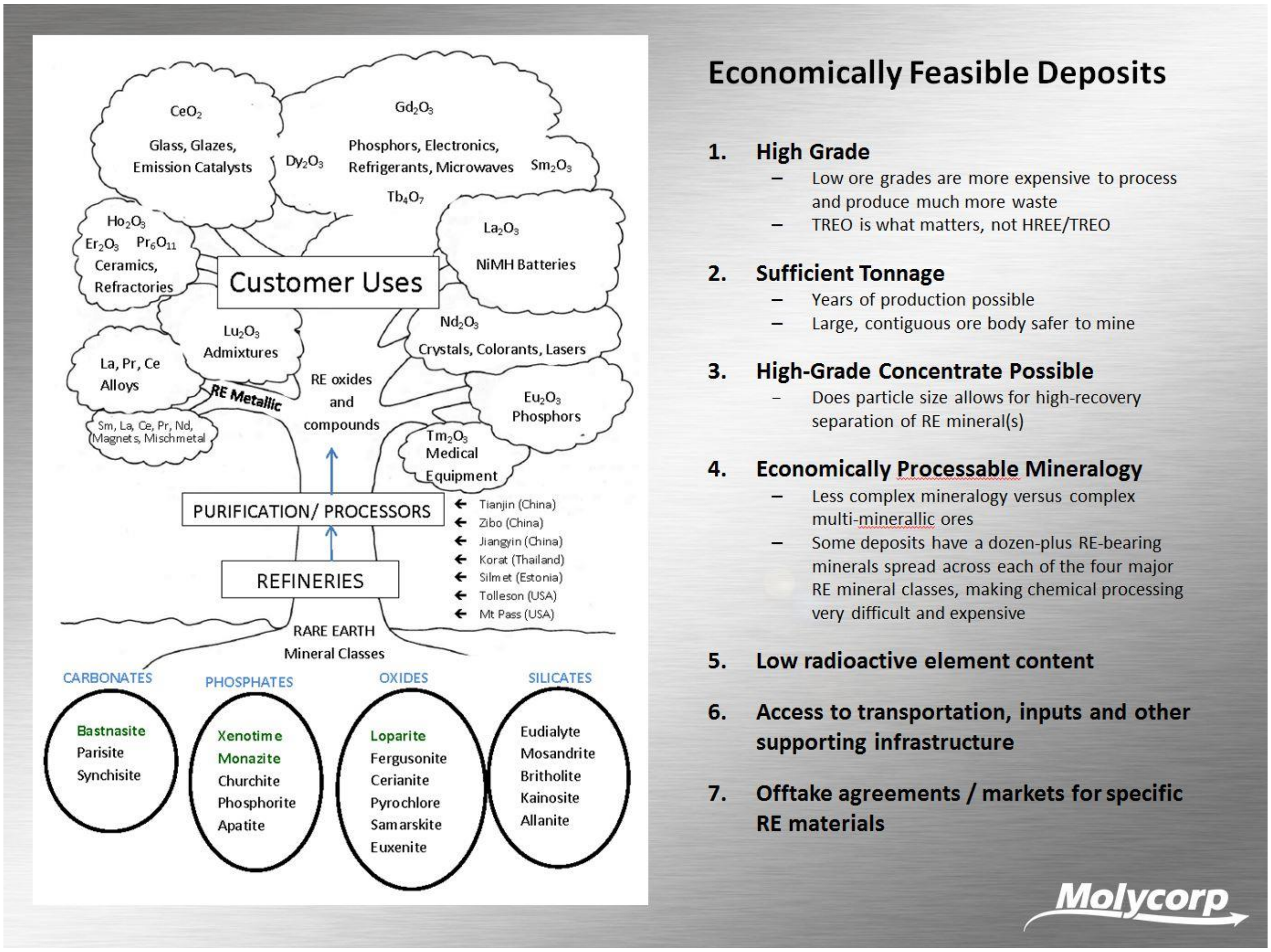
2. Virtually all rare earth deposits are comprised of multiple types of minerals.

3. The unique chemical structure of the rare earth-bearing minerals in an ore body requires a unique physical and chemical processing facility for that deposit. Many rare earth deposits will require their own unique separate chemical processing facility.

4. Some rare earth-bearing minerals in a single deposit can require different chemical approaches to rare earth separation than other minerals found in the same deposit. Such multi-mineralogic ore bodies can be so difficult and costly to process as to be uneconomic.

5. Some rare earth-bearing minerals, including those that have a relatively higher percentage of HREEs, have never been successfully processed at the commercial scale to remove and separate the rare earths they contain.

These factors only scratch the surface of the many challenges inherent to economically extracting and separating rare earth elements from various ore bodies. From the perspective of policymakers, this underscores the importance of encouraging investment and continuing research and development in the area of rare earth chemical processing. With so many technical and economic challenges that must be met, more certainty in permitting and the overall regulatory framework would be welcomed by those seeking to bring new mines and production facilities online.



A close corollary to this is the relative lack of workforce knowledge and training in the U.S. today relative to rare earth chemical processing challenges. Fortunately, several U.S. universities, including Iowa State University, Montana State University, and the Colorado School of Mines, ably represented here today by Dr. Rod Eggert, have in recent years initiated new curricula aimed at better educating the next generation of technical leaders for work in the rare earth industry.

Additionally, the Administration's support for the Critical Materials Hub, housed in the Department of Energy's Ames Research Lab in Ames, Iowa and led by Dr. Alex King, also is helping to strengthen and reinforce the America's knowledge infrastructure in this area.

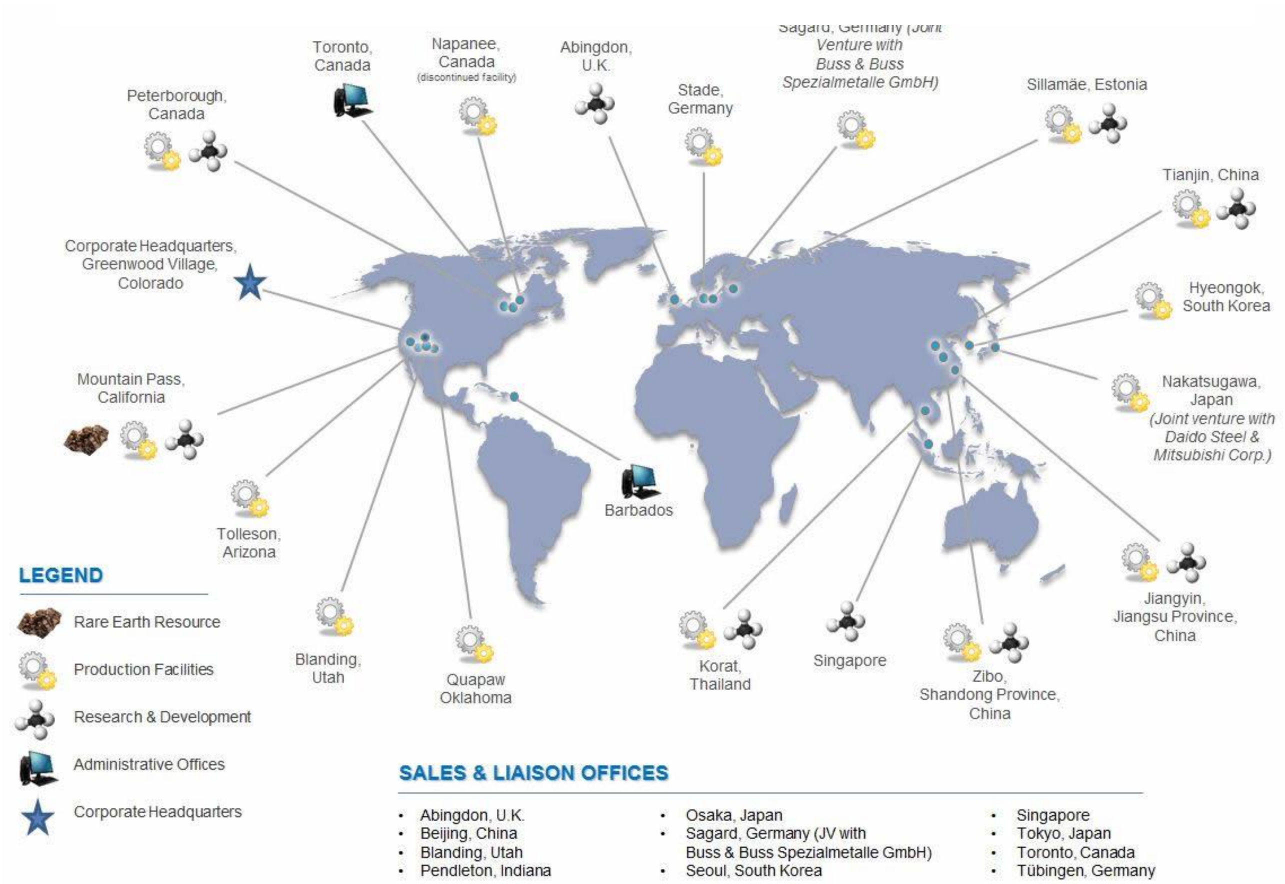
THE ROLE OF INCREASING GLOBALIZATION IN CRITICAL MATERIAL SUPPLY CHAINS

The increasing rare earth production at Molycorp's Mountain Pass facility, as well as new production that has come online in Malaysia by the Australian company Lynas, is helping to diversify global production of rare earths and to reduce the world's collective reliance on the world's predominant rare earth producer, China. Other nations are working to start rare earth mines and associated separations capabilities. Additionally, facilities that process rare earths into various downstream, value-added products, such rare earth metals, rare earth alloys, and rare earth magnetic materials, also have come online in various nations around the world.

One impact of such increasing globalization of vertically integrated rare earth supply chains is to provide manufacturers with multiple options for their rare earth supplies. This helps to de-risk critical material upstream supply chains and to reduce rare earth price volatility. All of these factors are helping to restore confidence in rare earth markets.

The capital market's response to the market instability of 2010 and 2011 has been to shift private capital to the development of these integrated supply chains. This has resulted in a significantly stronger global rare earth supply chain for manufacturers around the world.

Molycorp's Global Footprint of Production and R&D Facilities



SUMMARY

Thank you again, Chairman Wyden, Ranking Member Murkowski, and distinguished members of the Committee, for allowing Molycorp to present our views on S. 1600. This bipartisan legislation represents a very good step forward in the effort to revitalize domestic mineral supply chains in the U.S. It deserves bipartisan support in the Congress and should be supported by critical material producers and the manufacturing community that relies upon reliable supplies of these materials.

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