

OTCQB: REEMF



Rare Element Resources

# The MoneyShow

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**Building the Cornerstone to a  
US-Base Rare Earth Supply Chain**



October 2023

# Disclaimer



This presentation contains forward-looking statements and forward-looking information (collectively, the “forward-looking statements”) within the meaning of securities legislation in the United States and Canada. Except for statements of historical fact, certain information contained herein constitutes forward-looking statements. Forward-looking statements are usually identified by our use of certain terminology, including “will”, “believes”, “may”, “expects”, “should”, “seeks”, “anticipates”, “plans”, “has potential to”, or “intends” (including negative or grammatical variations thereof) or by discussions of strategy or intentions. Such forward-looking statements include statements regarding our vision and strategic near-term and longer term objectives, the planned progress of our rare earth demonstration plant, including the likelihood of the continuation of the financial award from the U.S. Department of Energy or grant from the Wyoming Energy Authority/State of Wyoming and ability to progress through go/no-go decision points, the planned demonstration plant timing, cost and expected outcomes, plans to advance toward full-scale production, current and future demand and supply affecting the rare earth element markets, and other aspects of our business and our prospects as well as those of industry participants.

Our forward-looking statements are based on assumptions and analyses made by us in light of our experience and our perception of historical trends, current conditions, expected future developments, and other factors that we believe are appropriate under the circumstances. Such forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause our actual results or achievements to be materially different from any future results or achievements expressed or implied by such forward-looking statements. These statements are subject to numerous known and unknown risks and uncertainties that may cause actual results to be materially different from any future results or performance expressed or implied by the forward-looking statements. These risks and uncertainties include those described in the “Risk Factors” section of our Annual Report on Form 10-K for the fiscal year ended December 31, 2022, and our quarterly and other filings with the Securities and Exchange Commission, which are incorporated by reference in this presentation. Many of the forward-looking statements in this presentation relate to events or developments anticipated to occur numerous years in the future, which increases the likelihood that actual results will differ materially from those indicated in such forward-looking statements. The forward-looking statements made in or in connection with this presentation speak only as of the date hereof. Except as required by law, we disclaim any obligation subsequently to revise any forward-looking statements to reflect events or circumstances after the date of such statement or to reflect the occurrence of anticipated or unanticipated events. Certain information contained in this presentation has been obtained by the Company from its own records and from other sources deemed reliable, however no representation or warranty is made as to its accuracy or completeness.

The technical information relating to the Project disclosed herein is based upon a historical technical report prepared and filed pursuant to National Instrument 43-101 – Standards for Disclosure of Mineral Properties (“NI 43-101”) and other publicly available information regarding the Company, including the Company’s technical report entitled, “Pre-Feasibility Study Report on Reserves and Development of the Bull Hill Mine, Wyoming,” filed on October 10, 2014, available on the Company’s website and under its profile at [www.sedar.com](http://www.sedar.com) (“SEDAR”). This historical technical information must be update and should not be deemed current or reliable.

# **A Rare Earth Primer**

**What They are and  
Why are They so Important**

# Rare Earth Elements



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Rare Earth Elements

H																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	*	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	**	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Uut	Fl	Uup	Lv	Uus	Uuo
		*	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
		**	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

Light Rare Earth Element

Heavy Rare Earth Element

- ◆ Defined by their location in the periodic table
- ◆ Lanthanides with the addition of scandium and yttrium

# Rare Earth Element Applications



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## MAGNETICS

Computer Hard Drives  
Disk Drive Motors  
Anti-Lock Brakes  
Automotive Parts  
Frictionless Bearings  
Magnetic Refrigeration  
Microwave Power Tubes  
Power Generation  
Microphones & Speakers  
Communication Systems  
MRI



## METAL ALLOYS

NiMH Batteries  
Fuel Cells  
Steel  
Super Alloys  
Aluminum/Magnesium



## DEFENSE

Satellite Communications  
Guidance Systems  
Aircraft Structures  
Fly-by-Wire  
Smart Missiles



## CATALYSTS

Petroleum Refining  
Catalytic Converter  
Fuel Additives  
Chemical Processing  
Air Pollution Controls



## GLASS & POLISHING

Polishing Compounds  
Pigments & Coatings  
UV Resistant Glass  
Photo-Optical Glass  
X-Ray Imaging



## CERAMICS

Capacitors  
Sensors  
Colorants  
Scintillators  
Refractories



## PHOSPHORS

Display phosphors-  
CRT,LPD,LCD  
Fluorescents  
Medical Imaging  
Lasers  
Fiber Optics



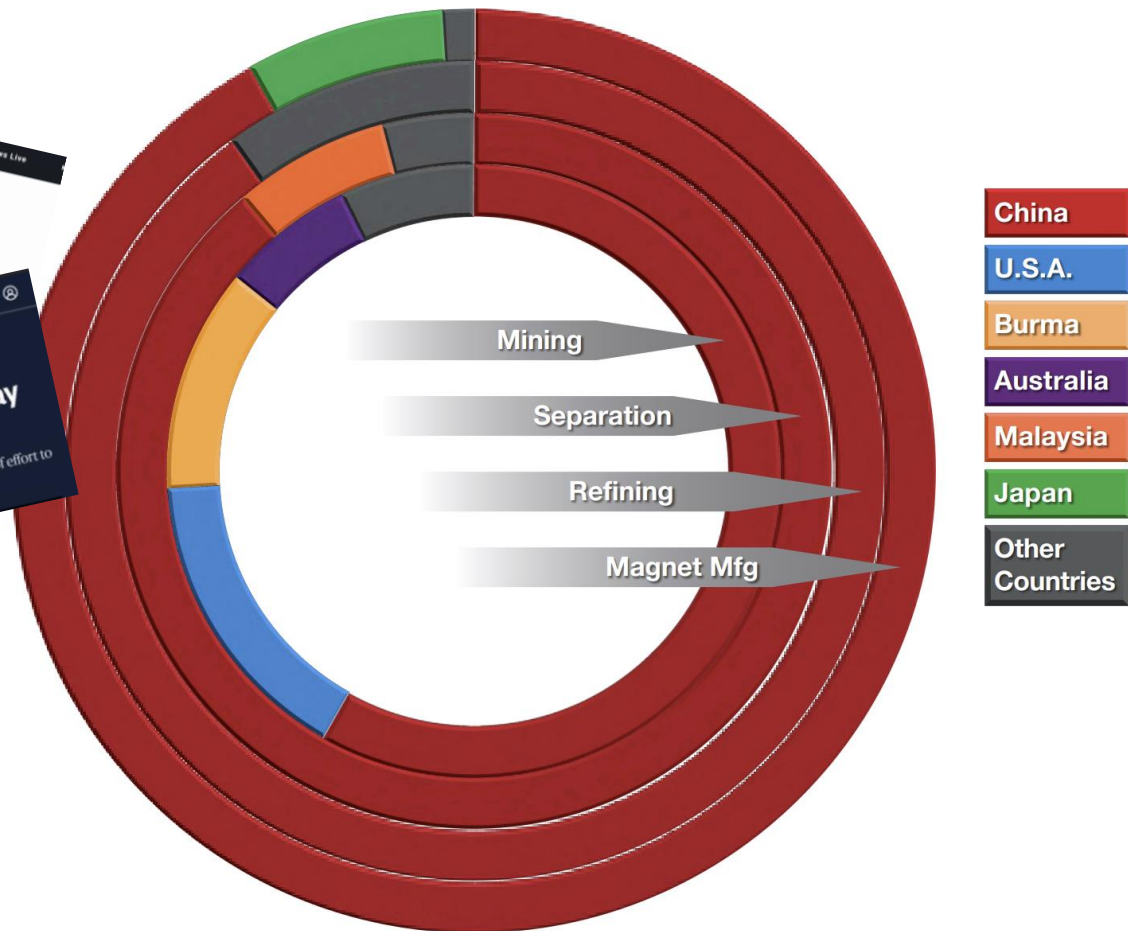


# China's Dominance – An Economic & Security Risk



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**Geographical concentration of supply chain stages for sintered NdFeB magnets**  
From center: Rare Earth mining, oxide separation, metal refining, & magnet manufacturing\*

\* US DOE Report, "Rare Earth Permanent Magnets: Supply Chain Deep Dive Assessment" 2/24/22



## REEs Critical for Rapidly Growing Technology

### Computers

#### Cloud Technology



Multi-billion-dollar market for high intensity magnets

### Defense

#### Aircraft Parts



### High-Speed Transit

#### MagLev Technology



Vital inputs for vast range of future-facing products

### Automotive

#### Cars, HEVs, EVs



Green technologies will drive significant growth in demand<sup>1</sup>

### Energy

#### Wind Turbines



<sup>1</sup>Wood Mackenzie, Global Rare Earths Short-Term Outlook February 2023



## REEs are Essential to Hybrid-Electric and Electric Vehicle Technology\*

### Critical REE

Nd – Neodymium

Eu – Europium

Dy – Dysprosium

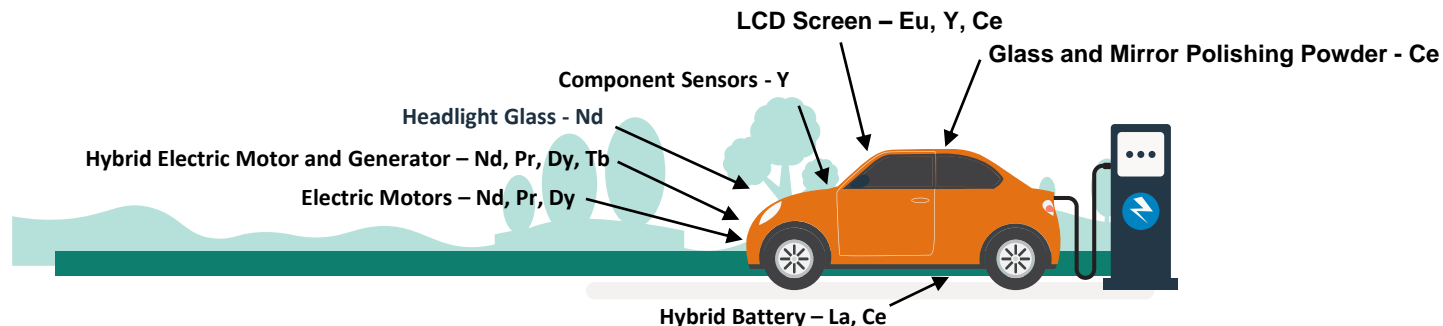
Tb – Terbium

Y – Yttrium

Pr – Praseodymium

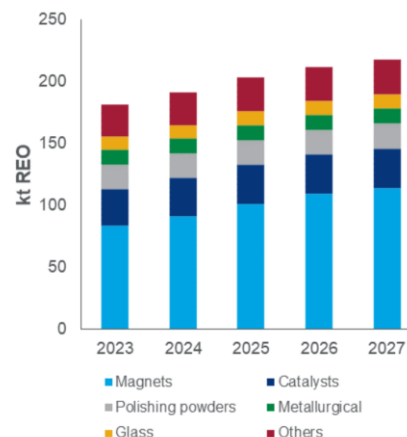
Ce – Cerium

La – Lanthanum



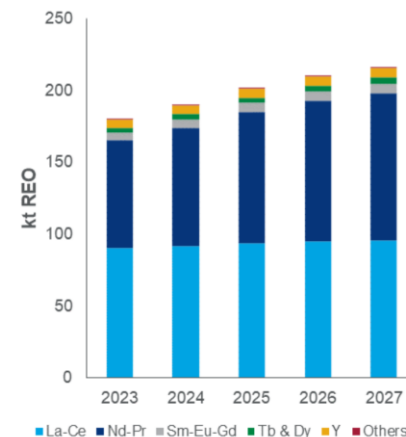
- ◆ Mandate for sustainability and energy efficiency will drive REE demand growth
- ◆ Environmental responsible sourcing will become key as sector grows
- ◆ REEs are recyclable and can be reused

Rare earth demand by application



Source: Wood Mackenzie

Rare earth demand by element



Source: Wood Mackenzie

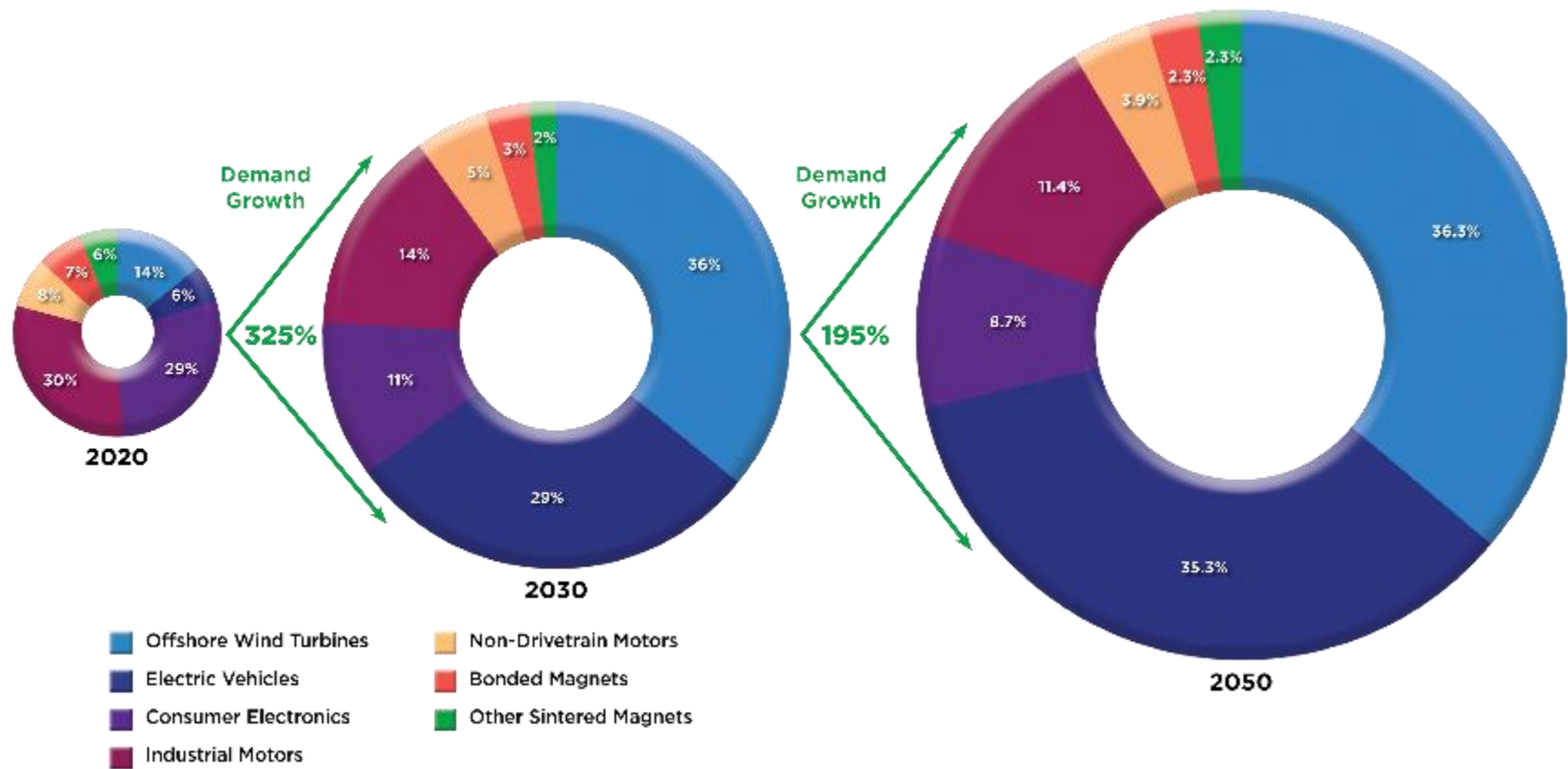


# 30-Year Growth Projections for REE Magnet Materials



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## Decarbonization Goals to Drive 500% Demand Growth\*



\* US DOE Report, "Rare Earth Permanent Magnets: Supply Chain Deep Dive Assessment," 2/24/22. Based on NdFeB demand

# Designated Critical to Clean Energy Technologies

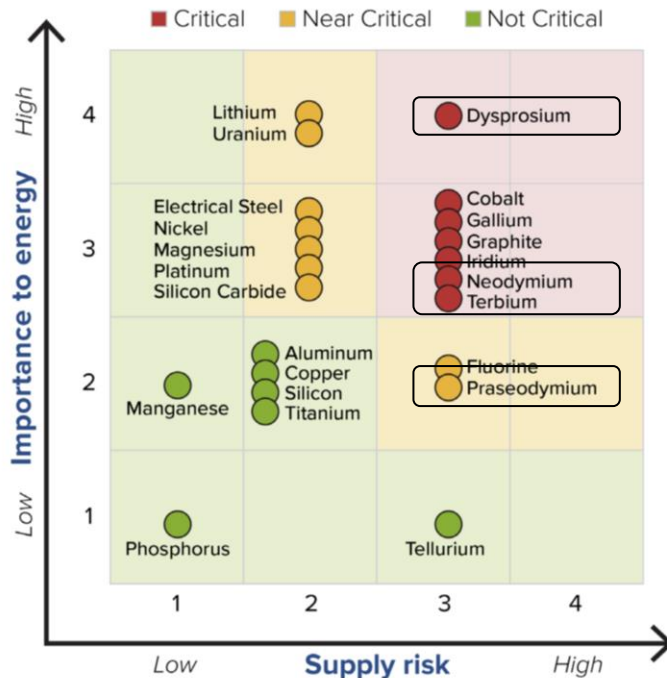


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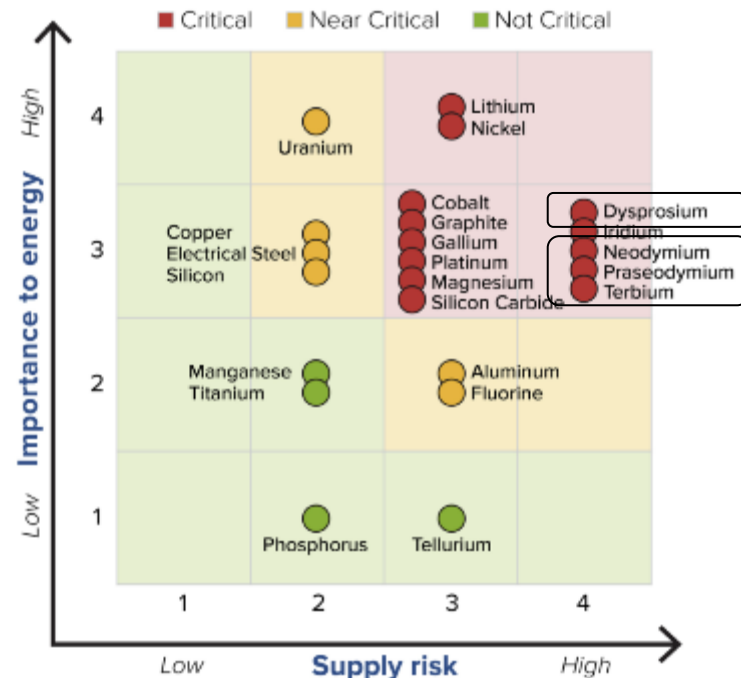
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## DOE Criticality Matrix\*

SHORT TERM 2020-2025



MEDIUM TERM 2025-2035



Report focused only on those materials critical to clean energy technologies

Department of Energy Participating on Recovery & Separation Demonstration Plant

# **Bear Lodge Project, Wyoming**

**Cornerstone of A  
Domestic Rare Earth Supply Chain**

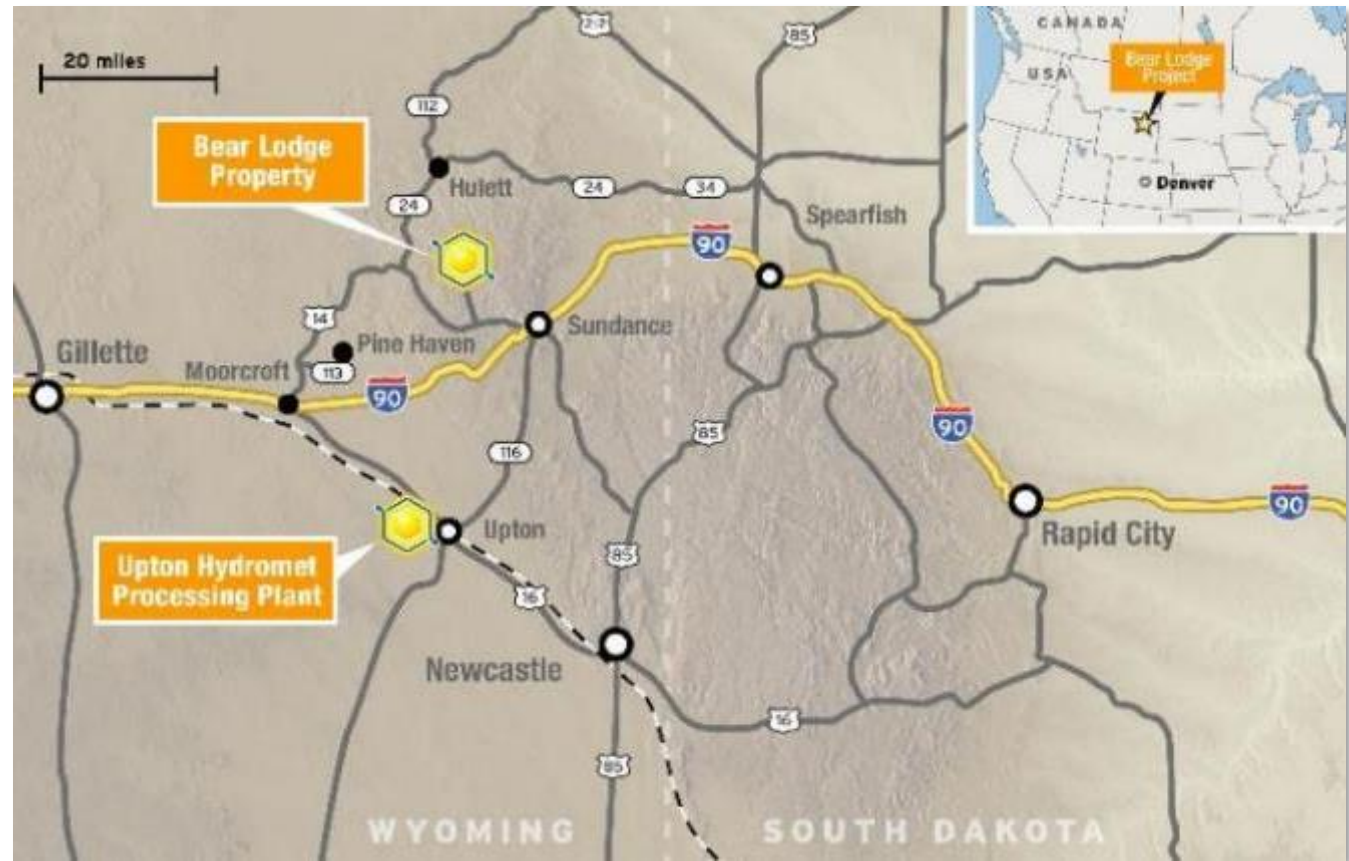
# Wyoming - An Exceptional Location



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## A Rich History of Responsible Resource Development

- ◆ Existing infrastructure
- ◆ Accessible power
- ◆ Ready and able workforce
- ◆ Pro-Business state
- ◆ State leadership actively supporting economic diversification



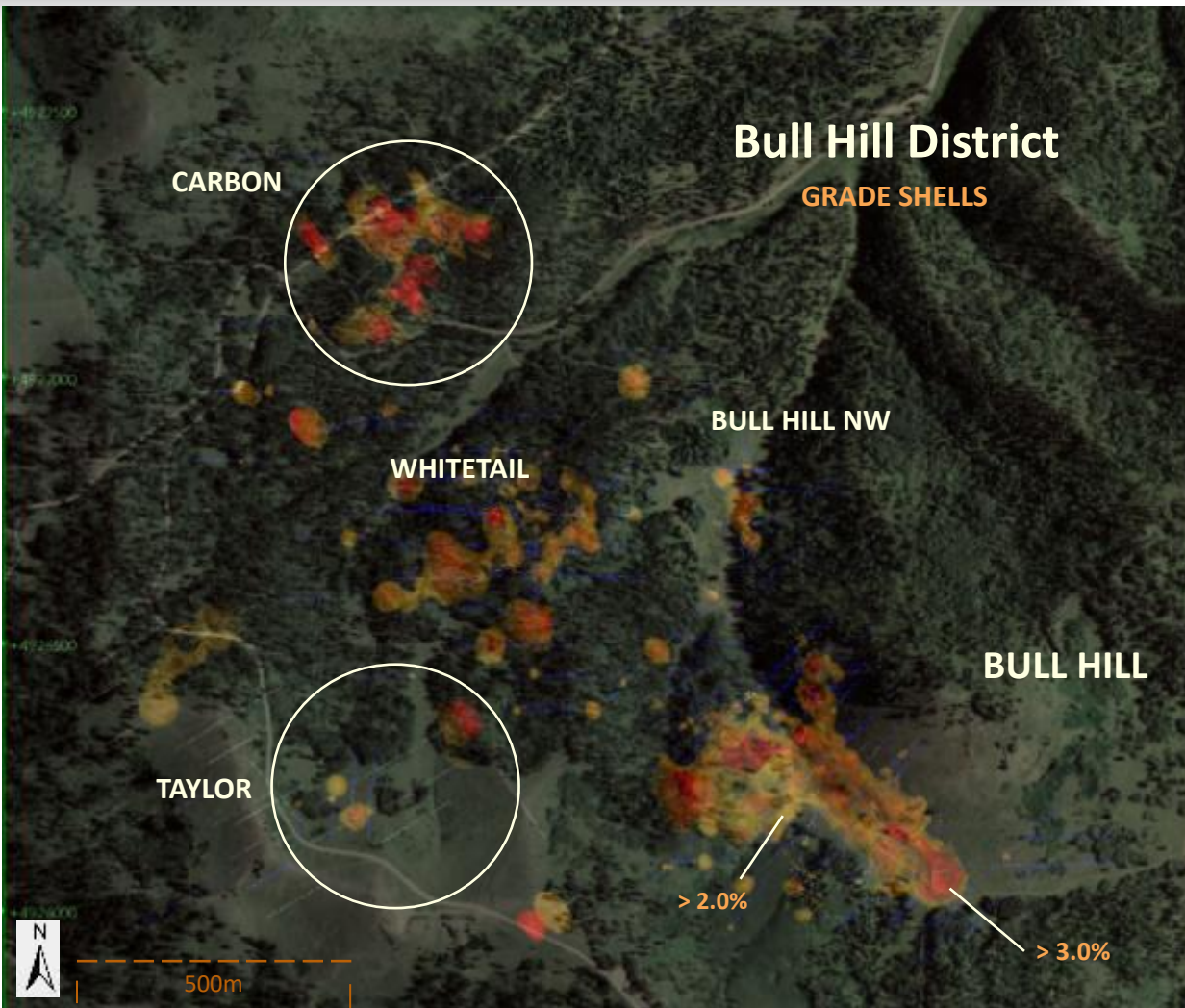


# Well-Known, World-Class Resource



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- ◆ Well-outlined resource with identified targets for potential expansion
- ◆ Royalty-free mineral rights
- ◆ 1,000-ton bulk sample, with 10% REE oxide content, ready for demo plant
- ◆ High-grade zone to be mined in early years
- ◆ One of the highest-grade Nd/Pr oxide deposits in the world



LeapFrog image showing the distribution of the +2.0% (orange) and +3.0% Total Rare Earth Oxides (TREO) (red) grade shells at the Bear Lodge Project. White circles indicate targets.



# Magnet Material Rich Resource



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## Mineralized Material Projected Distribution by Weight

In 2023, the U.S. DOE, using a global perspective, identified magnet materials as critical to clean energy technologies\*

The report assessed current sources, risks and anticipated demand growth\*

Rare Earth Elements	Distribution by Wt
Neodymium (Nd)*	17.9%
Praseodymium (Pr)*	4.9%
Dysprosium (Dy)*	0.5%
Terbium (Tb)*	0.1%
Samarium (Sm)	<u>3.0%</u>
<b>Magnet Materials</b>	<b>26.4%</b>
Europium (Eu)	0.7%
Yttrium (Y)	1.3%
Cerium (Ce)	43.0%
Lanthanum (La)	26.8%
Gadolinium (Gd)	1.6%
Other REEs***	0.2%
<b>Total Rare Earth Oxides</b>	<b>100.0%</b>

\*U.S. DOE, Critical Materials Assessment 2023, July 2023. Sm included because of its use in samarium/cobalt magnets.

\*\*Allocation based on RER's historical technical report prepared and filed pursuant to National Instrument 43-101 - Standards for Disclosure of Mineral Properties ("NI 43-101") and other publicly available information regarding the Company, including the Company's technical report entitled, "Pre-Feasibility Study Report on the Reserves and Development of the Bull Hill Mine, Wyoming," filed on October 10, 2014, available on the Company's website and under its profile at [www.sedar.com](http://www.sedar.com) ("SEDAR"). The historical technical information must be updated and should not be deemed current or reliable.

\*Other REEs include Holmium, Erbium, Thulium, Lutetium, Scandium and Ytterbium



# **Mining and Technology Company**

**Advancing Innovative  
Processing and Separation Technology  
Through Demonstration-Scale Plant Testing**

# World-Class Technology Team



A leading global defense and diversified technologies company operating on five continents; affiliate of GA is Company's majority shareholder



Aircraft Launch & Recovery



Space Systems & Technology



Missile Defense



Mission is to ensure America's security and prosperity by addressing its energy, environmental and nuclear challenges through transformative science and technology solutions



A part of GA's global network who brings innovation, experience and creativity to projects worldwide



A multi-discipline team of experts, engineers, and design professionals dedicated to delivering a unique balance of experience and innovation



## Provide a Basis for Scale-up to, and Economic Assessment of, a Commercial Capacity Plant

- ◆ Demonstrate the separation of Nd/Pr and other REEs at high purity
- ◆ Reduce environment impacts of REE recovery thru closed system
- ◆ Produce up to 15 tons of Nd/Pr at >99.5% purity as well as La, SEG & heavy rare earth element concentrates, which would be subject to further refining
- ◆ Provide clear pathways for the separation of other rare earths, including Sm, Dy, and Tb
- ◆ Demonstrate a process capable of treating REO concentrate from other sources, either in the US or obtained as a result of initiatives from allied countries

# Process Advantages

#1

92 – 97% recovery of  
from run-of-mine  
material

#2

High-efficiency solvent  
extraction producing  
>99.5% pure Nd/Pr and  
other rare earth oxides

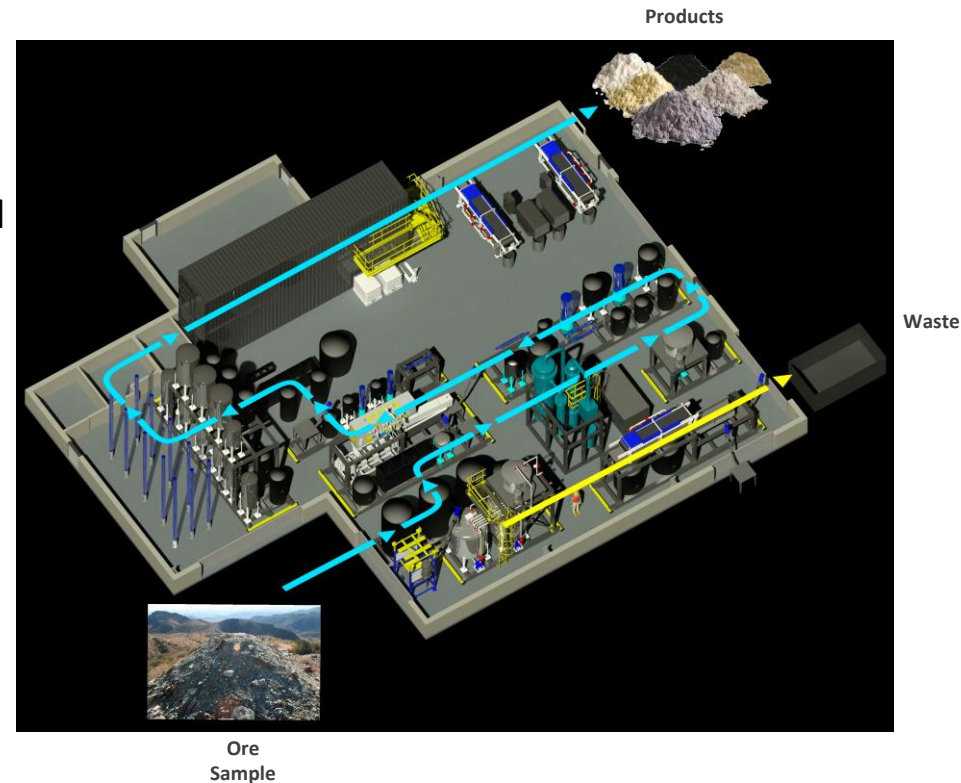
#3

First-of-a-kind, real-  
time control software  
for process  
optimization

#4

100% separation of  
radionuclides for  
disposal at licensed  
facility

## Production of High-Purity, Critical Rare Earth Minerals





# Project Status



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- ◆ Design completed
- ◆ Process modeling and economic assessment completed
- ◆ Delivery and assembly of long-lead time equipment underway off site
- ◆ Site clean up completed
- ◆ Key NRC license secured
- ◆ Road access upgrades completed and sample delivered
- ◆ DOE NEPA review expected shortly
- ◆ Next stage construction and operating budget approval from DOE expected in Oct/Nov

Oxalic Acid Reactor



Chemical Holding Tanks



Centrifuge, Primary Process Reactors



# Project Timeline



Task	2021	2022				2023				2024				2025		
REE Demonstration Plant	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Design & Engineering																
Procurement																
Construction																
Operations																
Decommissioning																

- ◆ Offsite integrator fabricating skids with equipment
- ◆ Plant construction expected to take ~7 months
- ◆ Equipment on site by end of March
- ◆ Operations anticipated to start in mid-2024 and planned for 8 to 10 months



## Building the Cornerstone for a Secure, Domestic REE Supply Chain

- ◆ Advanced innovative REE recovery technology being further refined through demo plant operations
- ◆ Strong technology partners advancing technology while providing access to federal agency participation
- ◆ Premier North American deposit, high in the REEs critical to addressing growing demand for magnet materials
- ◆ Exceptional location with existing infrastructure, low-cost power and available skilled workforce
- ◆ Demonstrated support from state and local officials with long-term vision of a diversified economic base for Wyoming

# Bear Lodge Project's Value Proposition

**A rich mineral  
deposit with  
abundant  
magnet material**



**Proprietary  
rare earth  
processing  
and  
separation  
technology**



**Separated high-purity  
elements for the  
manufacture of products  
to meet our national  
security and carbon  
reduction goals**



**99.5% Pure  
Nd/Pr Oxide**