



Omnis Energy  
earth driven

# Coal Waste Recovery Presentation

November 2023

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For more information, contact:

Charles L. Gassenheimer  
President

Omnis Energy Refineries, LLC  
30 Broad Street, 14th Floor  
New York, NY 10004  
Email: [cgassenheimer@omnisenergy.com](mailto:cgassenheimer@omnisenergy.com)

\*All figures expressed in metric units, unless otherwise specified.

# Today's Presenters

## Charles Gassenheimer Co-Founder, President and CEO



- Co-Founder and President of Omniss Energy
- Co-Founder and President of Carnegie Hudson Resources
- Former Chairman and CEO of Ener-T, a publicly listed lithium-ion battery company
- Former CEO of a family office with approximately \$5 billion under management
- Served on numerous boards including as Chairman of electric vehicle maker Think Global (Oslo, Norway) as well as a board member of the Electric Drive Transport Association (EDTA), the Electrification Coalition, and the Richard G. Lugar Center for Renewable Energy
- Former Partner and Managing Director of Satellite Asset Management, a \$9 billion hedge fund

## Chuck Shaynak COO

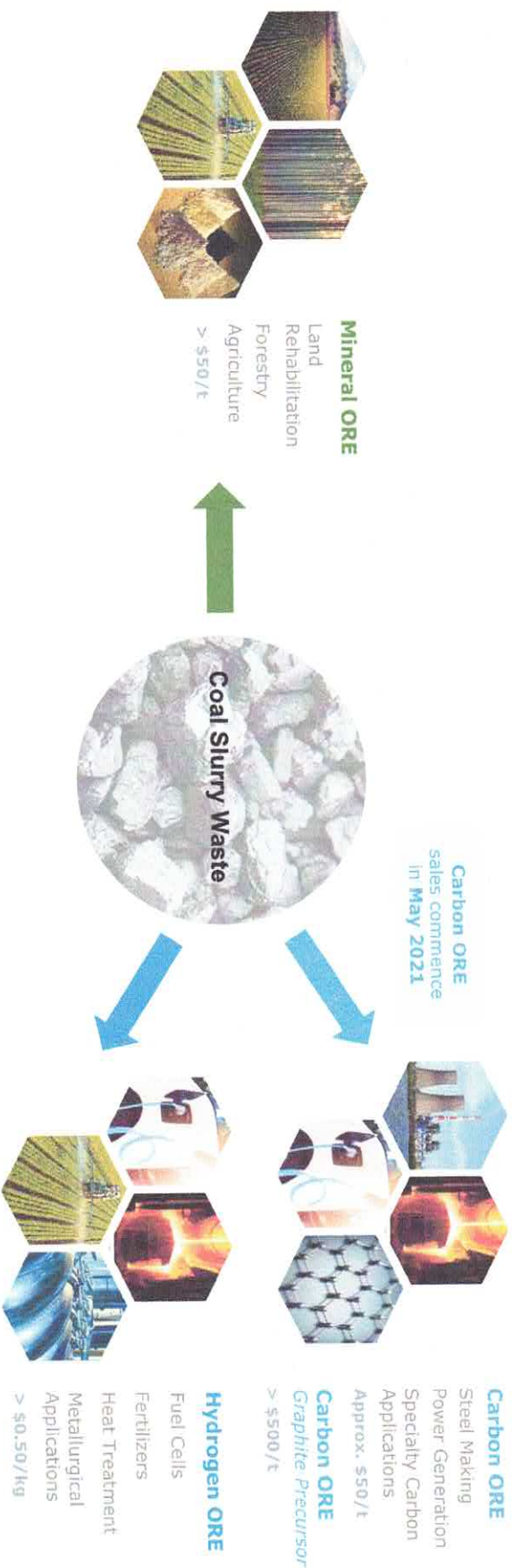


- Worked for CONSOL Energy for over forty years in numerous Operating and Executive Management roles, serving as Senior Vice President for his final ten years.
- Participated in or managed fourteen different coal operations with CONSOL
- Former member of the Pennsylvania Board of Coal Mine Safety
- BS graduate in Mining Engineering from Pennsylvania State University

# Coal Waste Is a Multi Billion-Dollar Environmental Liability; Omnis Energy Provides a Permanent Solution

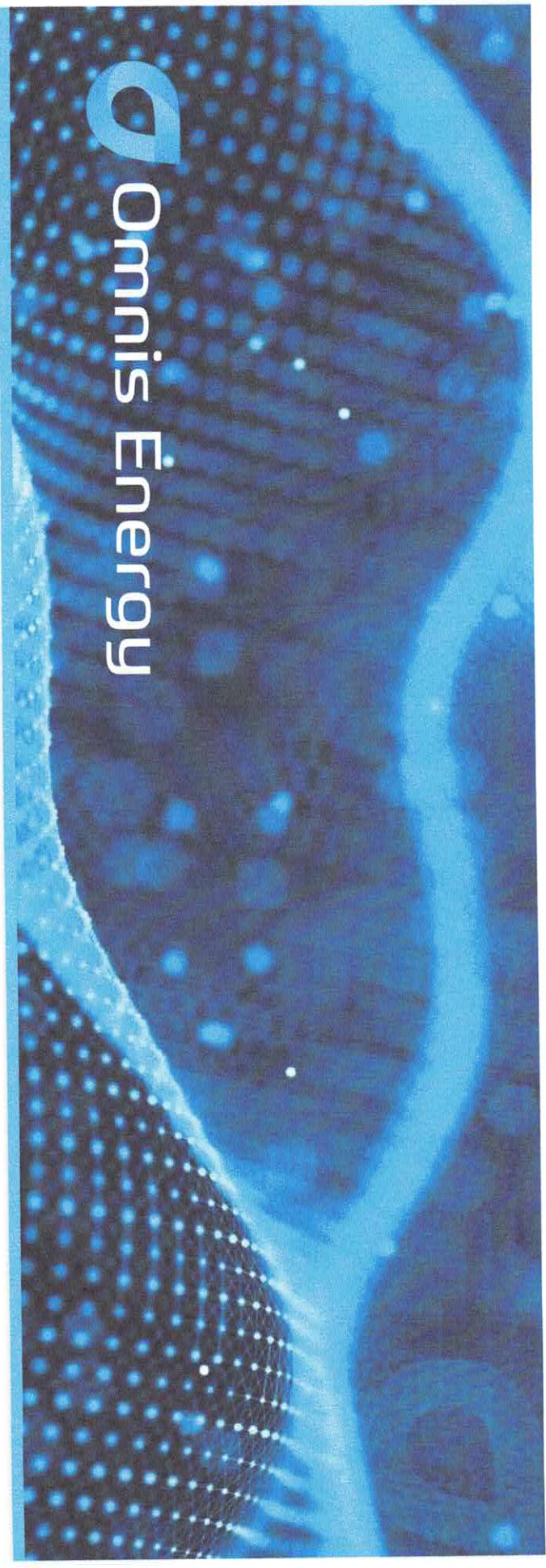
**The Problem:** There are billions of tonnes of historical waste from coal mining and 70-90 million tonnes of waste are added annually. It is an international environmental challenge that represents tens of billions of dollars of reclamation liabilities held by states and businesses.

**The Solution:** The Omnis Energy Technology Modules heal the environment by turning waste streams into a variety of value-added products.



3 Note: In this presentation we use "coal waste" to refer to a variety of inputs for our proprietary process. Coal waste includes coal slurry generated by operating mines (as at the Omnis Bailey project), as well as existing coal waste, dams, legacy mines and abandoned mines.





**O**mnis Energy

**A Revolutionary Technology that  
Refines Environmental Waste into  
High-Value Products**

# Remediating the Largest Environmental Liabilities in North America

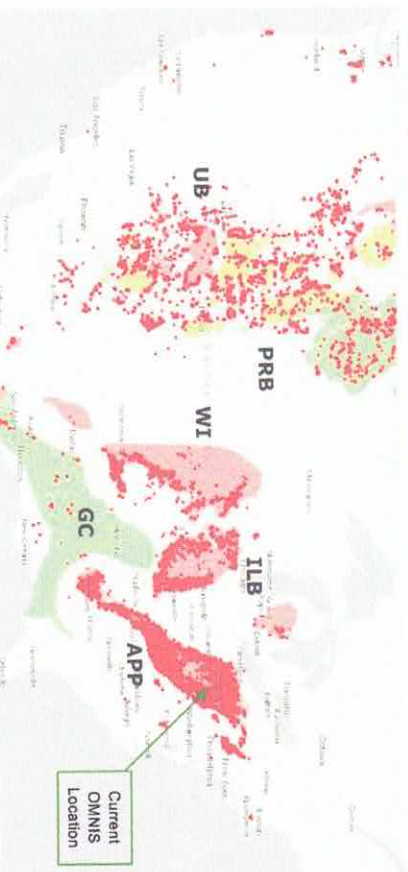
## Coal Waste Remediation

- In Pennsylvania alone, it is estimated that there are over **\$8 billion** in unfunded or underfunded mining-related environmental liabilities affecting over **287,000 acres**
  - Much of the liability consists of abandoned coal refuse from coal processing operations, some of which contain high levels of sulfur that can produce acid mine drainage for decades
- Untreated coal waste impoundments are environmental hazards that permanently eradicate natural habitats
- Omniss Energy's modules can completely remediate these environmental hazards, refining waste into high-value products to support the green economy and restoring sites to their natural habitats

## Uniqueness of Omniss Energy's Technology

- Omniss Energy uniquely converts **coal waste to non-coal products**
- **IRS letter ruled that Carbon ORE is physically and chemically different than coal** [OMNIS final product]
- As a result, Omniss Energy has the potential to be designated as a **special reclamation agent** for each state

## U.S. Abandoned Coal Mines and Refuse Impoundments



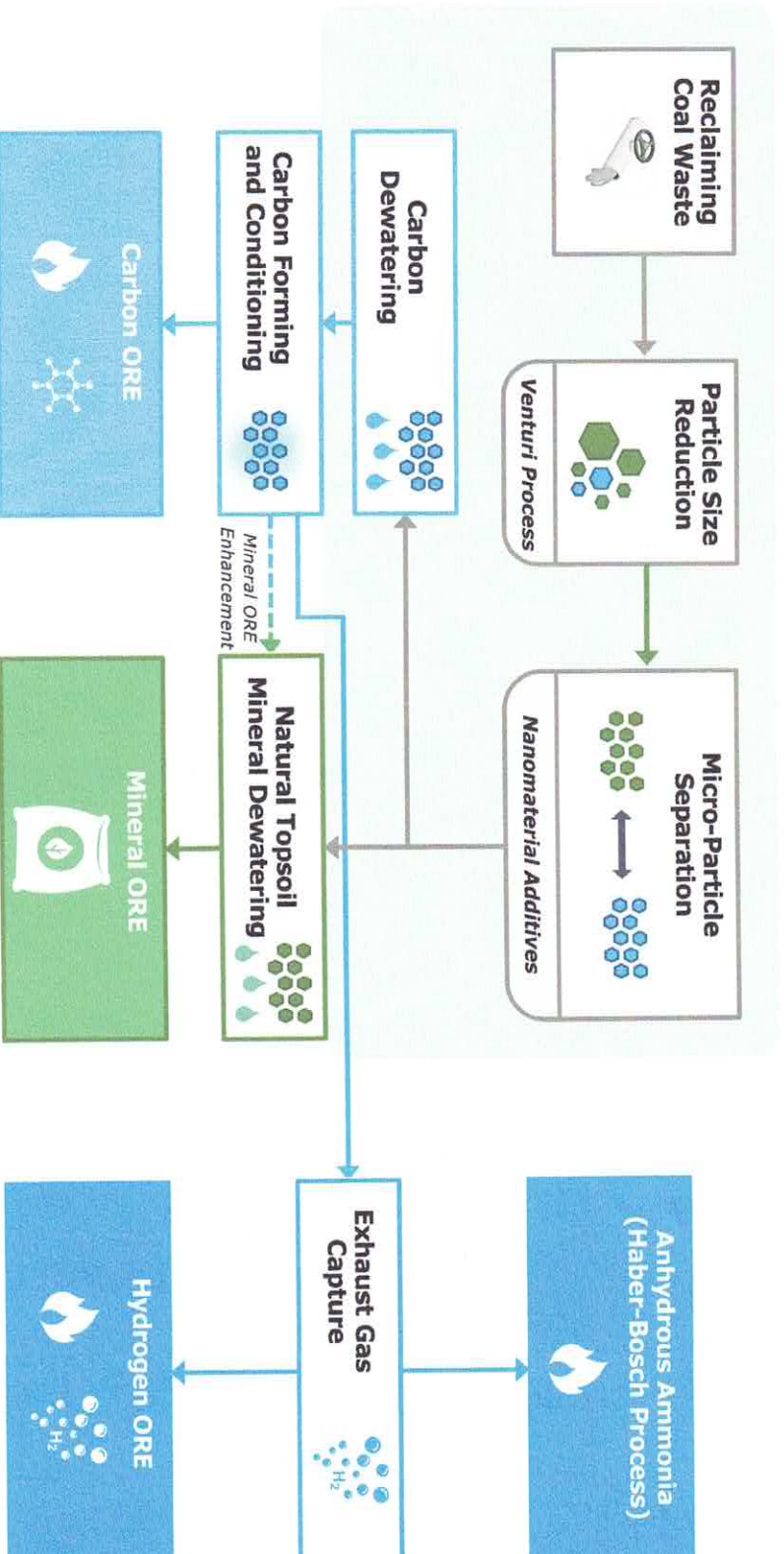
- Reclamation Sites
- Coal Basins (APP, GC, ILB, PRB, UB, WI)



Remediates a significant environmental burden while developing high-potential clean energy products



# The Omnis Regenerative Energy (ORE) Process



Note: Processes in green shaded area represent current commercial processes.

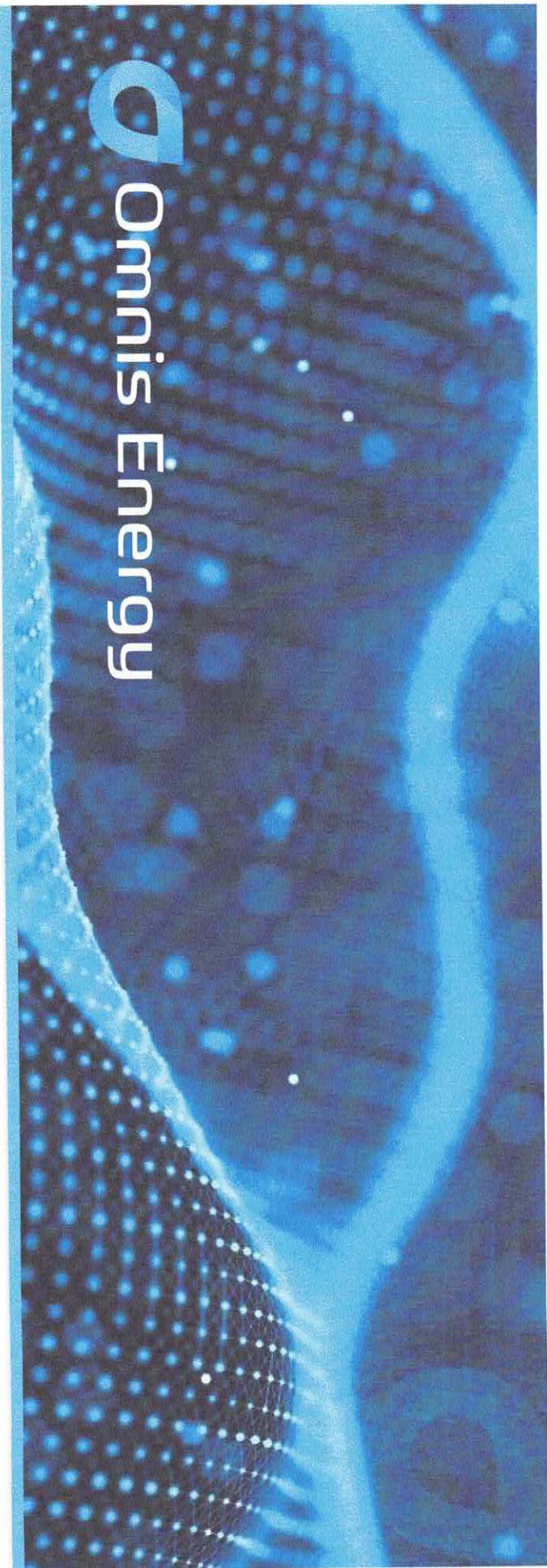
# The Omnis Regenerative Energy (ORE) Process



Note: Processes in green shaded area represent current commercial process.







**O** Omnis Energy

**Clean High-Value Energy and Agricultural  
Products**

# Carbon ORE – Lab Tested & Proven

Coal does not float...



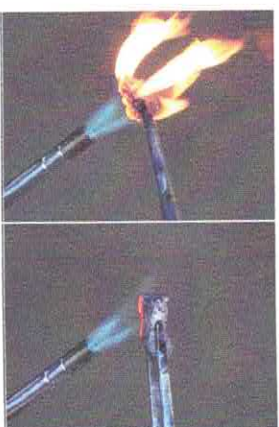
... Carbon ORE does

Coal does not conduct electricity...



... Carbon ORE does

Coal does not burn clean...



... Carbon ORE does

The U.S. Government has defined Omniscience's Carbon ORE as "not coal" (1)

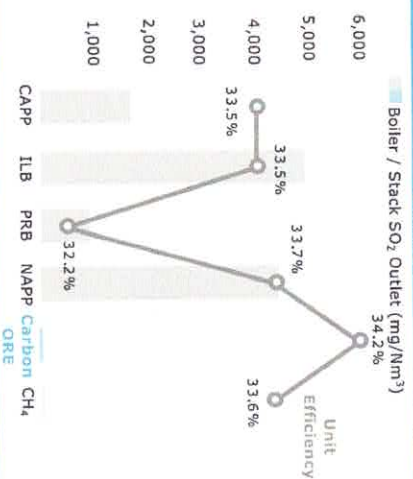
- Carbon ORE is a cleaner substitute for coal in power generation and other industrial applications
- The purity of Carbon ORE makes it an ideal feedstock for high-purity carbon production<sup>(2)</sup>
- A pure source of energy derived from material that would otherwise be wasted
- Lower emissions with the best environmental footprint of any comparative energy sources
- Energy dense – greater efficiency and less energy required

## Comparison Between Carbon ORE and Coal

Parameter	Basis	ORE	Coal
Total Moisture	% AR	<2%	6-30%
Ash	% DB	<5%	5-9%
Volatile Matter	% DB	<10%	31-37%
Fixed Carbon	% DB	>85%	34-52%
Sulfur	% DB	<0.5%	0.3-2.4%
Heating Value	Btu/lb GAR	>13,500	6,600-11,500

AR = As Received; DB = Dry Basis; GAR = Gross As Received.

## Theoretical Emissions Reductions and Higher Efficiency in Sub-Critical Power Plants



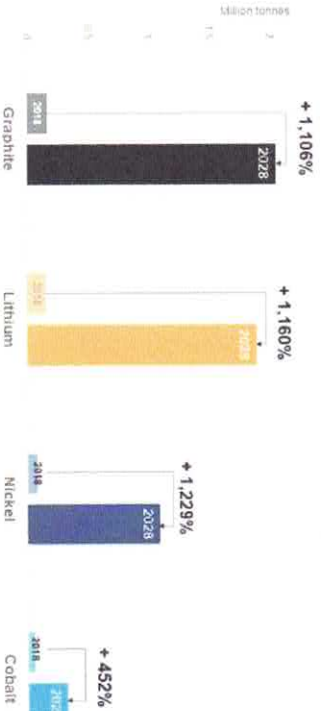


# Carbon ORE – Graphite Precursor Opportunities

## Graphite Market

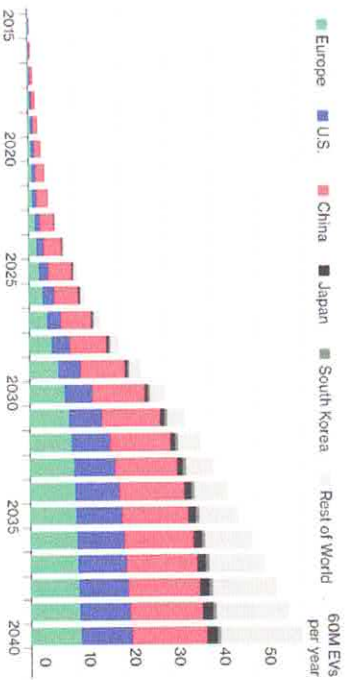
- Graphite is used in lithium-ion battery production, lubricants, solar panels and electrodes
- Graphite market size in 2019 was \$19 billion, forecasted to grow to \$37 billion by 2030
- A key market demand driver for graphite is electric vehicles (lithium-ion batteries)
- The U.S. Government has defined graphite as “Critical to the nation’s security and prosperity” and Presidential Executive Orders ask U.S. Government Agencies to act with alacrity

## Projected Market Demand by 2028

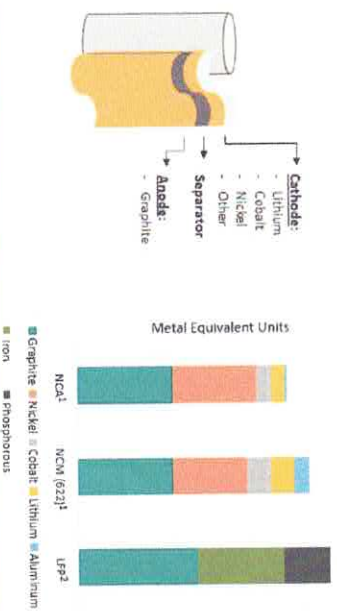


## Strong Market Demand Amid the Growth of EV & Batteries

### Electric Vehicle Sales Forecasts



## Graphite is an Indispensable Component for Lithium Batteries



# Mineral ORE – A Driver of Natural Land Regeneration

## Carbon Credit Monetization

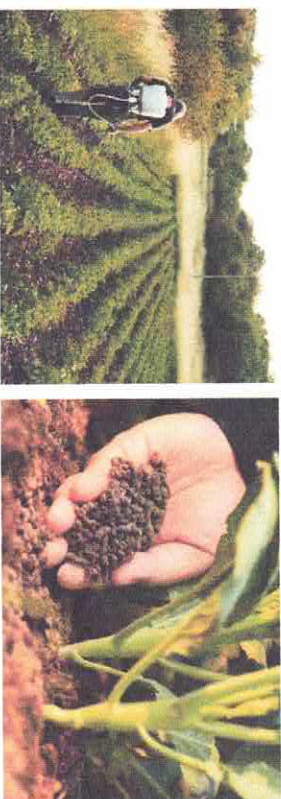
Mineral ORE has the potential to improve the carbon dioxide sequestration potential of soils. Farmers receive increased carbon credits as a result.



- **What is Mineral ORE?**  
Mineral ORE is the residual material produced after separating the Carbon ORE from coal waste.

- **How it Works**  
When applied to soil, Mineral ORE rebalances the texture and mineral composition. As a result, degraded land is returned to a productive state

- **Result**  
The biosphere is regenerated for sustainable benefits with reduced need for fertilizers and chemicals





## November 2022: West Virginia Governor announces Omnis Sublimation Recovery Technologies (OSRT) to invest \$60m to extract rare earth metals from coal impoundments

A strategic asset to help grow West Virginia's economy.



West Virginia Governor James C. Justice II

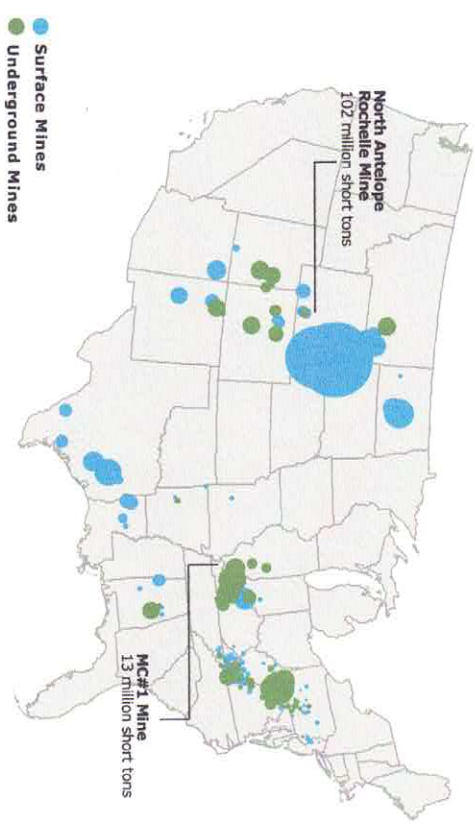
OSRT's technology can extract pure metals from coal impoundment mineral waste using Ultra-High Heat without acids or harmful chemicals. The technology recovers 100% of the metals, including all critical, strategic, and rare earth metals.

*"Coal is such a big part of our state's livelihood, and it's amazing that we can now take the coal waste and turn it into something the world desperately needs, all while providing jobs to our hard-working people and investment to our great state."*

# How Can NAS Help?

## Large Coal Waste Cleansing Market

- Coal waste is an inevitable by-product of mining and is a large environmental liability in North America.
  - If OMNIS's technology is commercially deployed, this would eliminate the need for future impoundments
    - There are over 900 coal mines in the U.S., creating multi-billion-dollar liabilities to both companies and states
- Surface and Underground Coal Mines in the United States**



- Identify highest priority sites for remediation
- OMNIS has demonstrated that they can recover waste coal fines that would otherwise be disposed of
- We are in the process of scaling up the production at Bailey to achieve positive economics
- More work/funding is needed to realized this broader vision/potential
- Provide additional funding through the Department of Interior's Abandoned Mine Land Reclamation Fund (AML)
  - Implement mobile treatment facility concept that would allow for smaller site clean-ups
  - Mobile capabilities allow for greater geographic reach