

# Overview

## Grimes Carbon Tech (GCT)

A net negative green technology company changing the world

May 2025

 **Net Zero Energy & Rare Earths from Coal**

-  **“The only problem with coal is burning it” – *Dr Patrick Grimes***  
**Coal generates more electricity and is worth more money without combustion**

### **GCT's REVOLUTION**

- 1. *Sourcing all US Rare Earths from US Coal Waste***
- 2. *Convert former coal plants sites into zero-emission power plants at twice the efficiency***
- 3. *Unlocking vast clean energy supply to meet explosive load growth***
- 4. *Converting environmental liabilities into assets with long-term employment & zero-carbon energy***

### **ADDITIONAL BENEFITS**

- 1. *Elimination of need to import rare earths - supply security***
- 2. *Reduction in costs of rare earths***
- 3. *Lowering energy costs and providing ‘always available energy’ where it is needed***
- 4. *Reduction & eventual elimination of coal fines and tailings as health & environmental hazards***
- 5. *Rejuvenation & revitalization of depleted soils using humic fertilizers***
- 6. *Increase in carbon uptake in soils along with crop yields***

## 🌱 Grimes Carbon Technologies (GCT): Developer, Owner, Operator Zero & Negative Carbon Electricity from Coal

**Providing cheap zero emission energy and satisfying 100% of US rare earths demand with local coal – creating US jobs.**

### Coal Pretreatment (Rare Earths)

### CAPER (Baseload Energy)

- \$54 million invested in R&D since 1987 - \$110k/month burn rate. IP owned by 3G&S and founding team. 3G&S investment closed.

### **GCT Investment Opportunity:**

- **\$2 million SAFE note** at 25% discount for initial US setup
- **\$12 million SAFE note** – Scale up to business beta testing, develop commercial field unit, and hire c-suite
- **\$40 million** to develop a 35,000 ton/year working pilot plant

## 🌱 GCT: Green Energy & Rare Earths from Coal

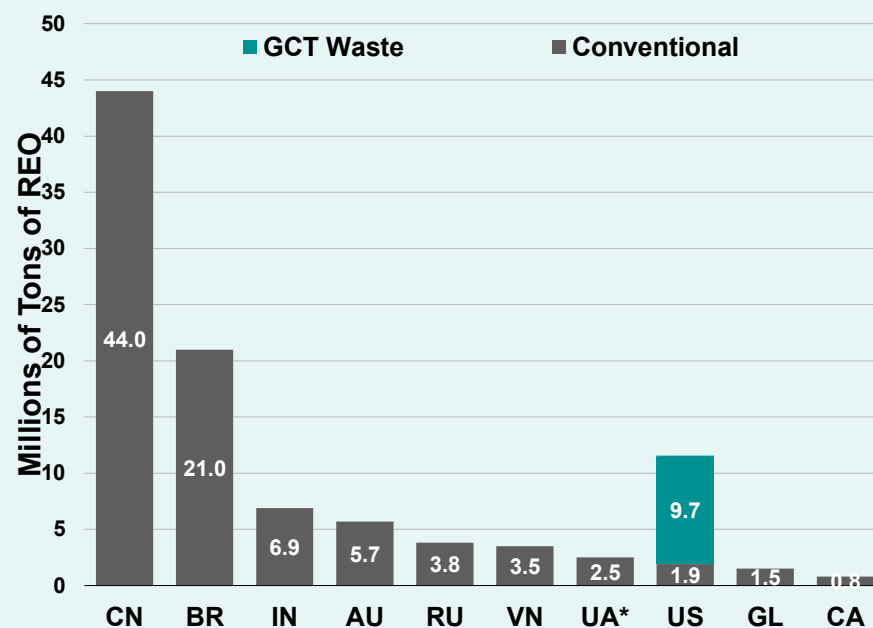
GCT provides secure, domestic supply of Rare Earths ('REs')

### Desperately need secure Rare Earths supply

- Critical in military, electric motors, servers, etc
- China produces >90% of REs (>95% of US)
- '23 US RE demand was 8,800 tons and growing++
- US produced 250 tons (3% of own) REs in '23
- Expensive new mines take 10+ years to develop
- Mines create environmental & safety concerns

**We have major energy & minerals security issues**

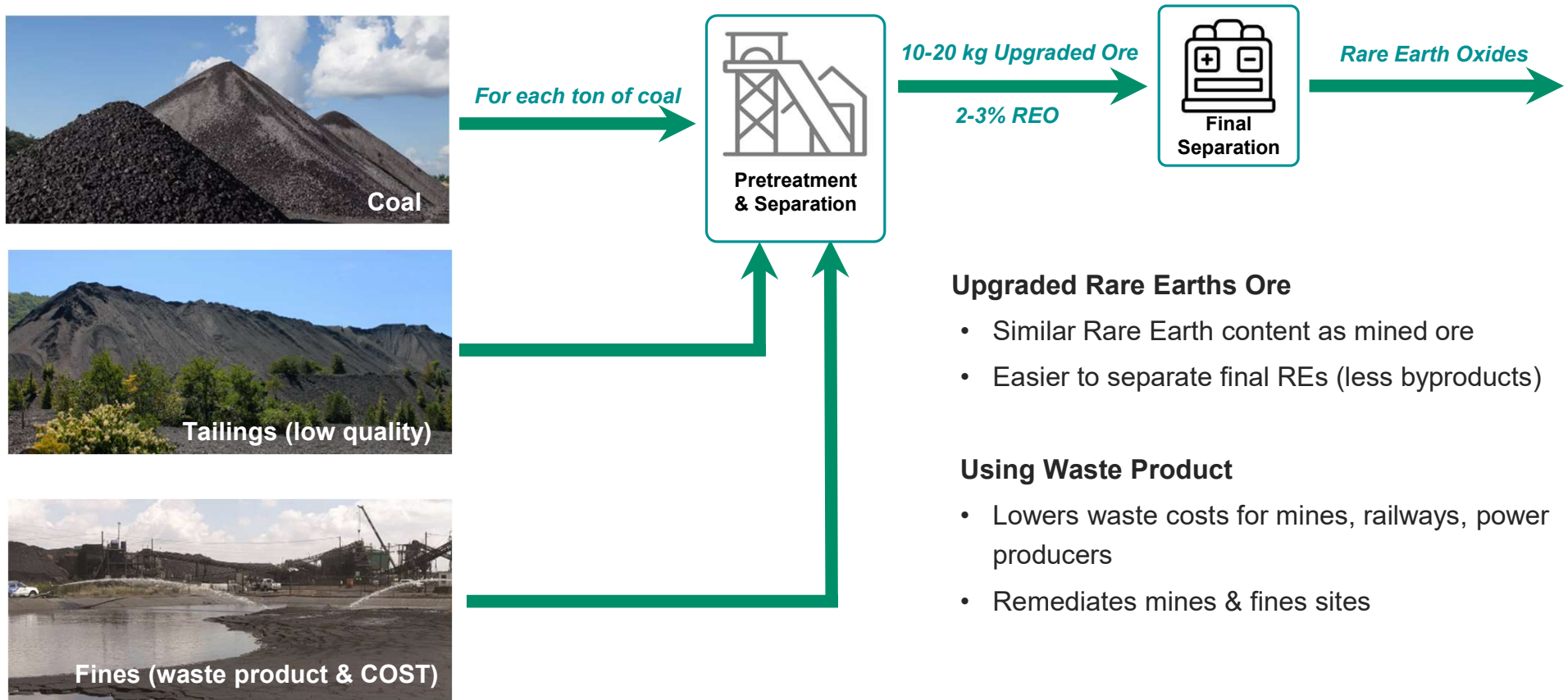
**Top 10 Countries with Rare Earth Reserves**  
GCT Increase US Reserves by > 500%



**GCT can satisfy 100% of US Rare Earths needs from coal waste for centuries**

## 🌱 GCT: Rare Earths from Coal

GCT pretreatment and separation produces 100% of US Rare Earths



## 🌱 GCT: Rare Earths from Coal

Coal contains 100% of our required Rare Earths

Mt = Million Metric Tons  
2023 US RE Consumption: 8,800 t



Annual Production: 305 Mt



Reqd for 100% of US REM	Years of US supply (2023)
26.5 Mt	11.5 years



Annual Production: 78 Mt



Stored/Stockpiled: 53,000 Mt

Reqd for 100% of US REM	Years of US supply (2023)
26.5 Mt	>977 years



Annual Production: 21 Mt



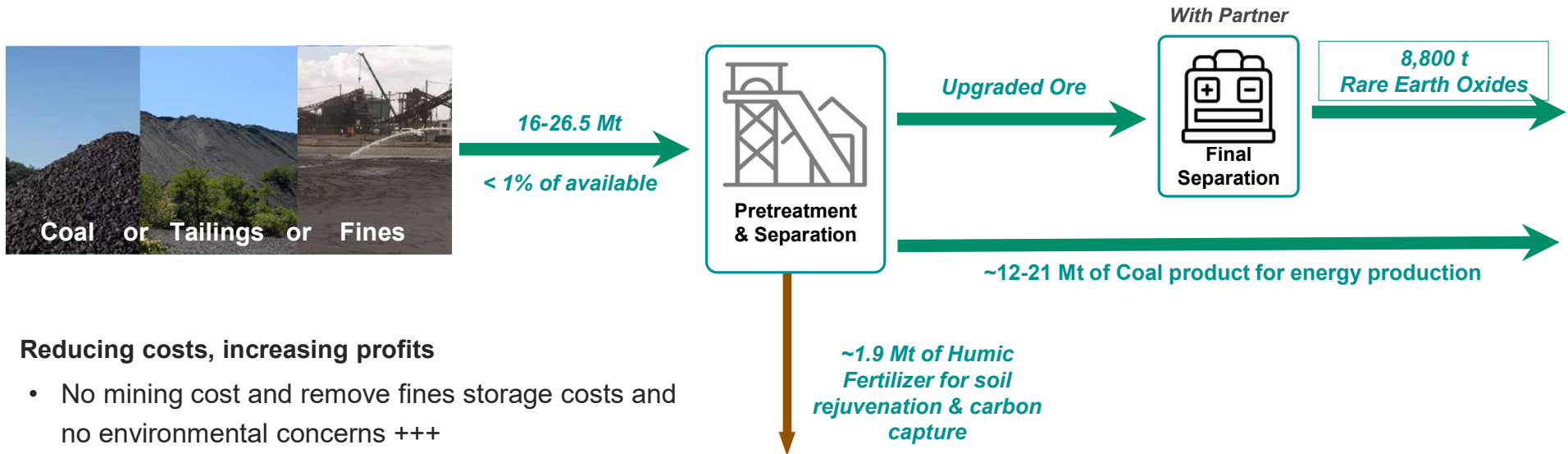
Stored/Stockpiled: 2,300 Mt

Reqd for 100% of US REM	Years of US supply (2023)
16 Mt	>128 years

## 🌱 GCT: Rare Earths from Coal

Mt = Million Metric Tons

### Multiple sources of coal to produce 100% of US Rare Earths



#### Reducing costs, increasing profits

- No mining cost and remove fines storage costs and no environmental concerns +++
- Humic Fertilizer generates ~\$760m revenue
- 'Green' Rare Earths
- Leftover coal used to produce energy (CAPER)
- Rare Earths a byproduct of energy and fertilizer
- Rare Earths (all US made) ~50% of Chinese costs

### GCT: centuries of US rare earths at 50% of Chinese costs

## 🌱 Problem: Energy Demand, Jobs, and Security

### Production of clean energy from coal

#### Energy Demand > Supply

- AI and EVs: Supply must double in 10 years
- 34GW → 30M homes / 100M people
- Need 'always available' energy that can be built fast (& green matters)



**Solar / Wind** ~2-3 years  
development period



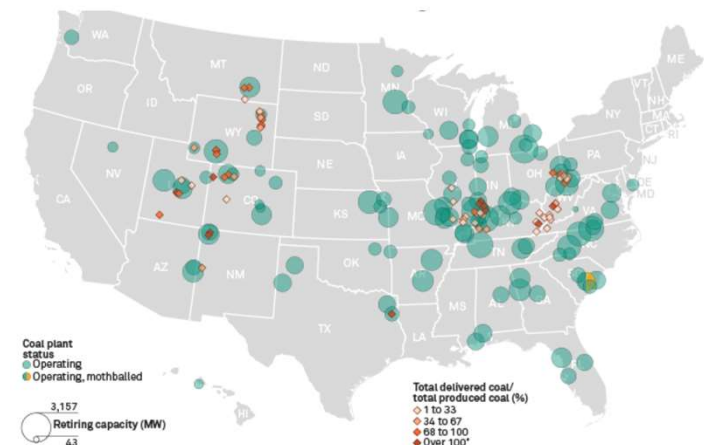
**Gas** ~5-7 years  
development period



**Transmission** ~2-3 years  
development period  
\$1 Trillion in cost

#### Coal Plant Closures

- 1/3<sup>rd</sup> of existing coal power plants shutting by 2035 due to cost, emissions, and lawsuits
- Thousands of jobs will be lost



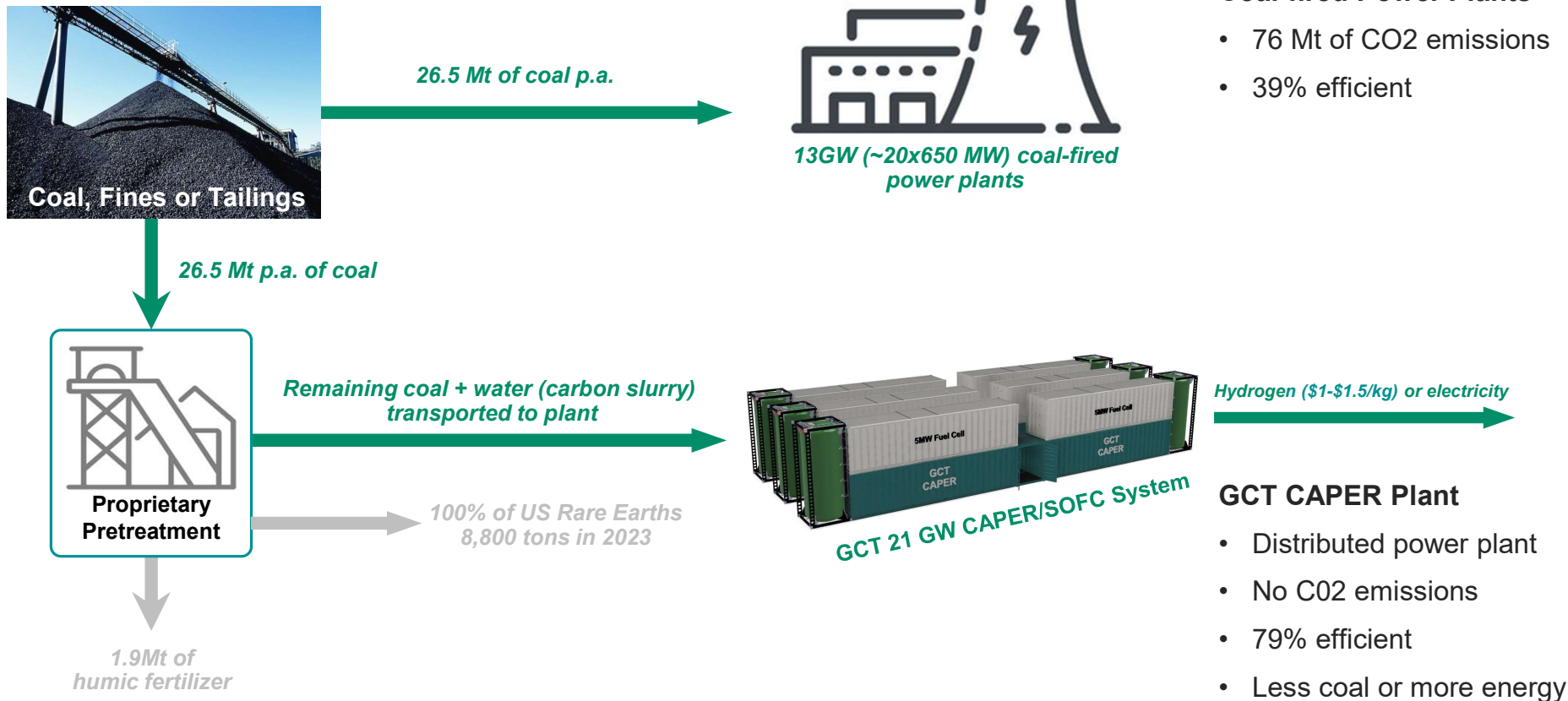
**GCT CAPER: Creating cheap, zero emission energy from US sourced coal – making coal communities more prosperous.**



# Producing Cheap, Clean, Electro-chemical Energy from Coal

Can be grid connected or independent

Mt = Million Metric Tons



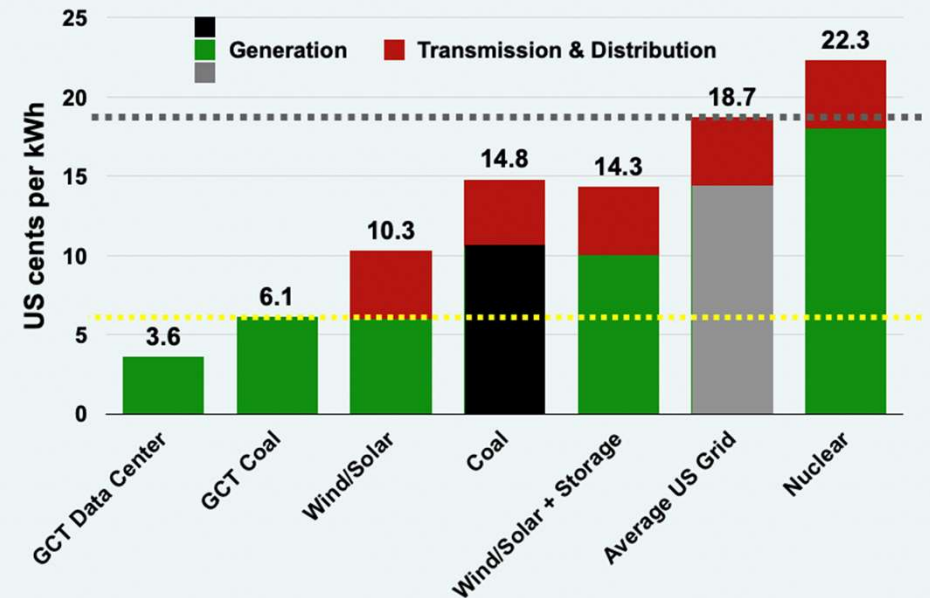
## 🌱 GCT: Zero Emission Energy from Coal

Distributed energy where required

### GCT's Cheap, Distributed Power

- Cheap, on demand (reliable) green energy
- Energy produced directly on-site - no need for transmission or distribution systems
- Scales quickly (add containers), easy to install
- 2 MW per container / 150 MW per acre
- Double output per ton of coal
- Creates jobs & revalues coal plant sites
- Provides grid stability if connected

**GCT Electricity Cost Comparison**  
US \$ cents per kWh



**Notes:**

- GCT energy is **dispatchable** (always available), unlike intermittent renewables
- GCT costs reflect the reduction in demand enable by waste heat recovery
- GCT costs **DO NOT INCLUDE** any tax credits

## **GCT: Cheap, Reliable, Clean Energy & Rare Earths**

Locally produced, creating jobs

**GCT: Creating cheap, zero emission distributed electricity and Hydrogen from US sourced coal**

### **Coal Mining Communities**

- Increase your coal value from \$45 --> \$400/t
- Offer zero emission power
- Valuable new products – fertilizer & Rare Earths
- Create new jobs

**GCT: 100% of US rare earths demand produced from local waste coal alone**

### **Coal Power Producers**

- Produce double the power for same coal input
- Low cost, base-load energy with zero emissions
- Create, zero-carbon data center sites
- Create new jobs

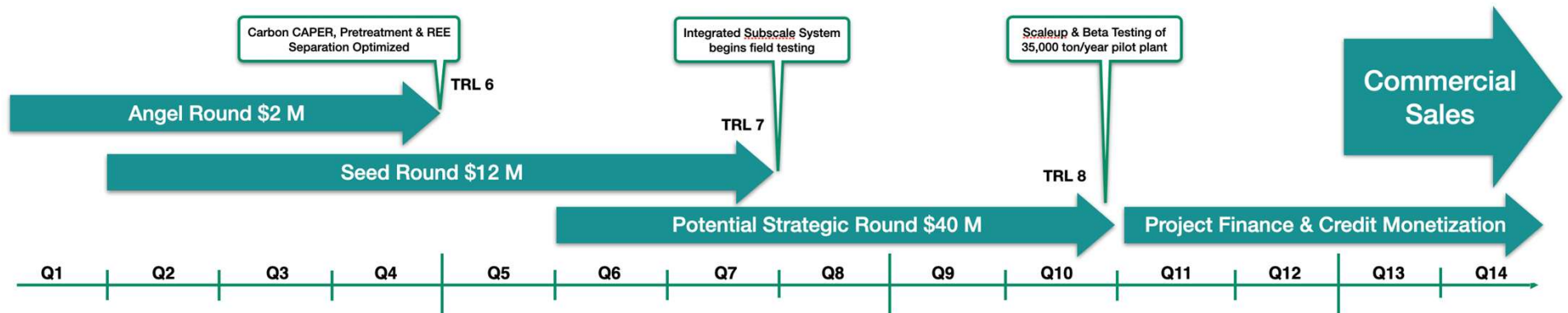
### **GCT to become a producer of Energy, Rare Earths, Fertilizers**

- Develop, construct, own and operate units to sell products
- GCT has secured legal IP rights for all potential products and businesses
- Founders own majority equity - raising capital to make this a business reality

# 🌱 GCT: Improving How We Energize Everything

## Carbon emissions reduction to zero or negative

### Funding Needs



### Financials and next steps

- Historical spend of \$54m over 30 years with \$110,000/month burn rate
- **\$2M SAFE note at 25% discount:** to establish office, lab and team, business development, and to move 1-2kg/day demos to the US, follow clients / industry to secure offtake
- **\$12M SAFE note:** to scale up to 250 kg/day, move technology from TRL 6 to TRL 7, develop commercial field unit, and hire c-suite
- **\$40M investment** to scale from TRL 7 to TRL 8 for 35,000 tons/year pilot plant

## The Current Operating Team: Search & Recruitment starts Immediately

### Builds on decades of relevant industry experience and innovation

Deep and diverse experience across **carbon recycling, hydrogen, electrochemistry, chemicals, fuel synthesis, biorefining & feedstocks**



**Joseph Maceda**   
**Founder**

- Successful serial entrepreneur
- 35 years of experience in carbon recycling & hydrogen



**Robert Zhao, PhD**  
**Chief Scientist**

- Co-founder of liquid & solid composite hydrogen fuels business
- 35 years of experience in electrochemistry



**Frank Nadimi**   
**Commercial Director**

- Biofuel Consultant at S&P Global
- 15 years of experience in biomass, renewables, & chemicals



**Gary Noland**   
**Project Manager**

- Lockheed thermal energy conversion technology expert
- 40 years of experience in aerospace, fuel cells, hydrogen & renewables

# The Advisory Team

## Significant deal track record and industry expertise

Deep and diverse experience across **operations, finance, strategy, risk, law, and technology**



**Jonathan Ball**  
IP & Legal



- Partner/ Shareholder at Greenberg Traurig, LLP
- 20+ years of experience in Intellectual Property law



**Beth Browde**  
Strategic Communication



- Senior Principal Mercers Change Management
- Business Strategy & Leadership



**Haydn Palliser**  
Finance



- Principal of Pivotal180
- Professor at Columbia/Yale
- 20+ years of experience in renewable energy finance



**Su Ha**  
Professor, Science



- Director of School of Chemical & Bioengineering at WA State University
- PhD in Chemical Engineering specializing in catalysis and electrochemistry



**Steve Johnson**  
CFO, Finance



- CFO at Marpai & HillCour
- 25+ years of total corporate finance experience, including 7 years in c-suite



**Holger Koehler**  
Strategy



- Head of Strategy at Electra
- Former Managing Director at Accenture
- 25+ years of experience in consulting & strategy



**Candace Quinn**  
Legal & Tax



- Partner/Shareholder of Buchanan Ingersoll PC
- Former Partner in international law & accounting firms
- 35+ years of experience in tax & energy law



**Maneesh Sagar**  
Technology



- CEO of RS Metrics, MD Thynk Ventures
- 25 years of experience as a founder & investor with 10 successful exits



**Tifphani White-King**  
Tax & Legal



- Partner Forvis Mazars
- Global Tax Committee Member
- US Tax Committee Member

## Current Partners

Leading industry players and investors attracted to GCT

### Government

Awarded a contract for development of ethanol CAPER systems for off-grid charging but announcement must be made by the awarding agency



### Academic / Research



### Corporate / Financial

Asian Sovereign Wealth Fund disclosed upon signing of NDA



Auto manufacturing partner disclosed upon signing of NDA

Utility partner disclosed upon signing of NDA

EV charging partner disclosed upon signing of NDA



 **For More Information About the Company or Offering Documents Contact:**

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## **Grimes Carbon Tech (GCT): Net Zero Rare Earths and Coal**

### **Appendix Slides**

## 🌱 Rare Earths and Net Zero Energy from Coal

### 10 positive effects of the GCT approach



#### **GCT's REVOLUTION**

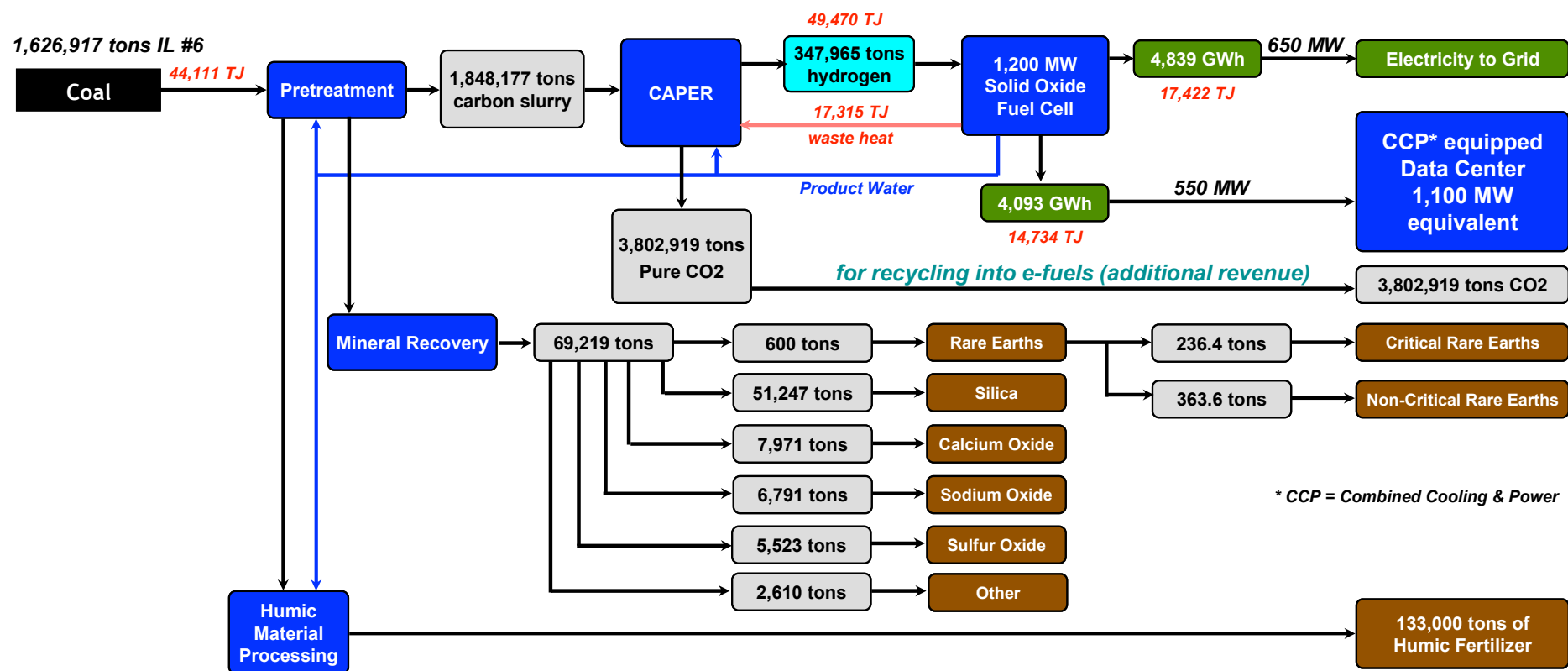
1. *Sourcing all required US Rare Earths from US Coal Waste (as a by-product)*
2. *Converting former coal plants sites into zero-emission power plants at twice current efficiency*
3. *Unlocking vast new sources of the clean energy required to meet explosive demand*
4. *Converting huge environmental liabilities into assets with long-term employment & zero-carbon energy*

#### **ADDITIONAL BENEFITS**

1. *Elimination of need to import rare earths - supply security*
2. *Reduction in costs of rare earths*
3. *Lowering energy costs and providing 'always available energy' where it is needed*
4. *Reduction & eventual elimination of coal fines and tailings as health & environmental hazards*
5. *Rejuvenation & revitalization of depleted soils using humic fertilizers*
6. *Increase in carbon uptake in soils along with crop yields*

## Annual Flows for a Repowered 650 MW Coal-fired Power Plant

*72.9% efficiency without CCP\* included*



*CI# = 118 g-CO<sub>2</sub>/MJ - prior to sequestration & effect of Humic Materials*

## 🌱 GCT: Green Energy & Rare Earths from Coal

GCT provides secure, domestic supply of critical minerals



### Rare Earths Produced

#### Light Rare Earth Elements (LREEs)

1.	Lanthanum	(La)	AW 138.91
2.	Cerium	(Ce)	AW 140.12
3.	Praseodymium	(Pr)	AW 140.91
4.	Neodymium	(Nd)	AW 144.24
5.	Promethium	(Pm)	AW 145.00
6.	Samarium	(Sm)	AW 150.36

#### Heavy Rare Earth Elements (HREEs)

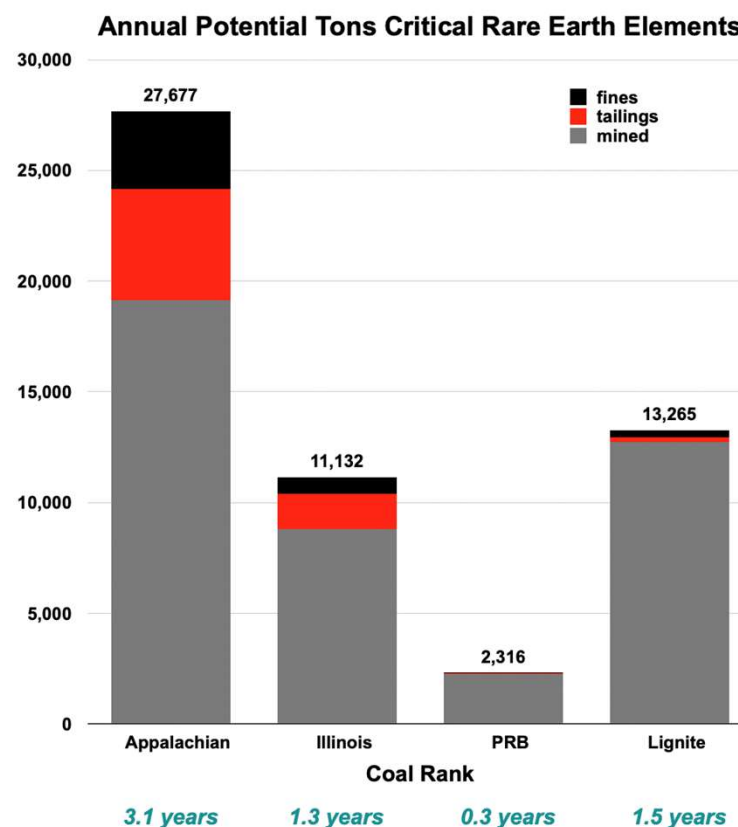
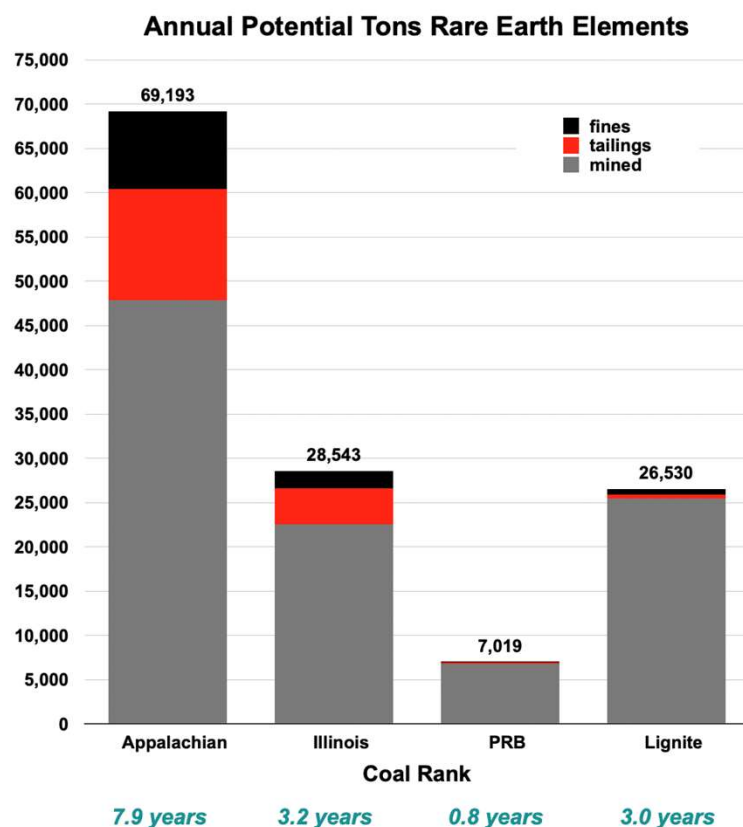
7.	Europium	(Eu)	AW 151.96
8.	Gadolinium	(Gd)	AW 157.25
9.	Terbium	(Tb)	AW 158.93
10.	Dysprosium	(Dy)	AW 162.50
11.	Holmium	(Ho)	AW 164.93
12.	Erbium	(Er)	AW 167.26
13.	Thulium	(Tm)	AW 166.93
14.	Ytterbium	(Yb)	AW 173.41
15.	Lutetium	(Lu)	AW 174.97



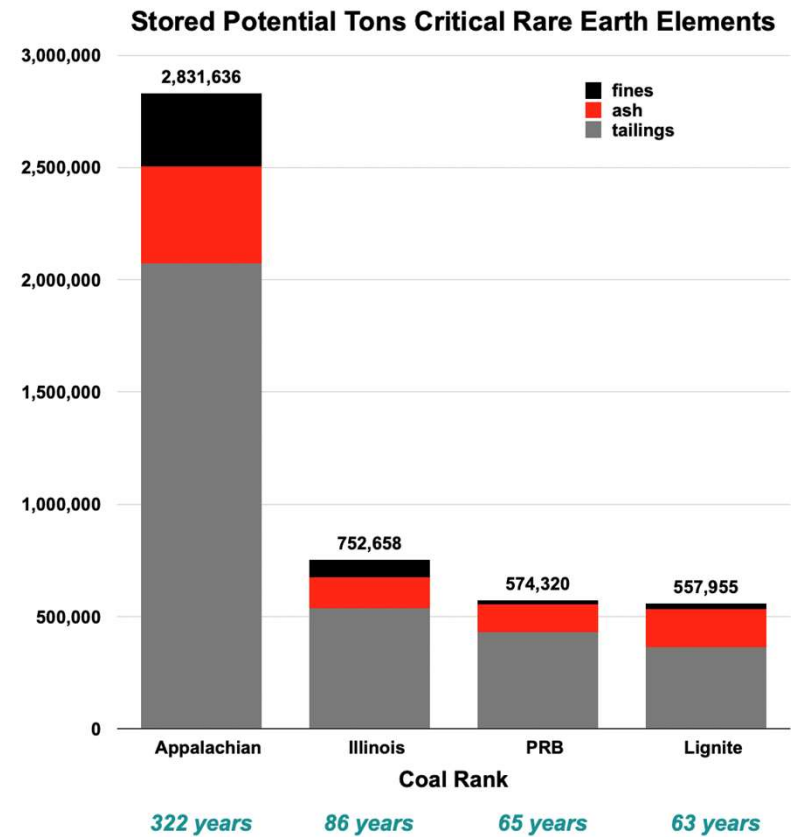
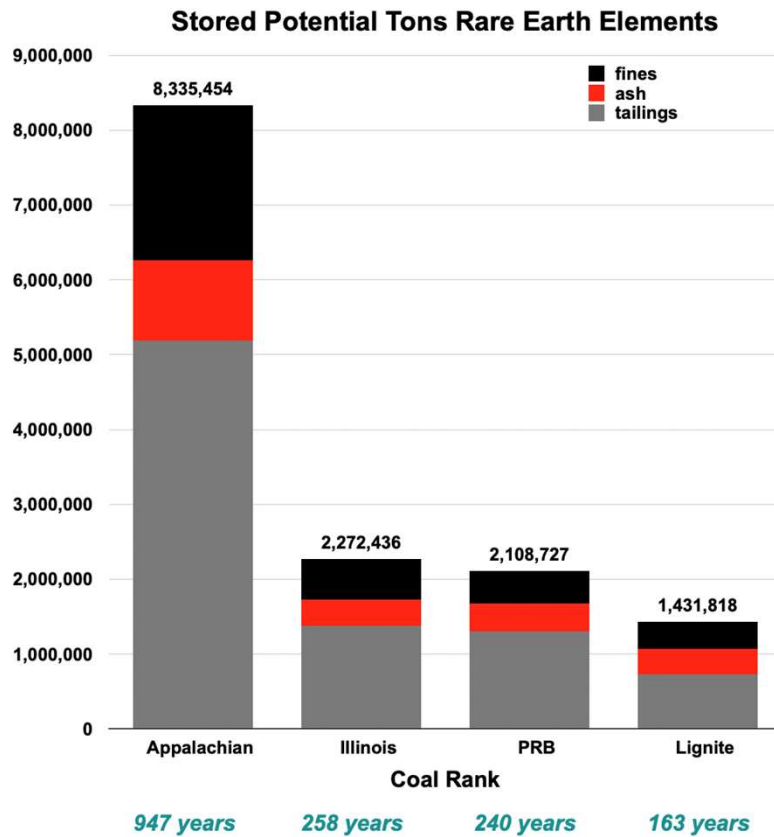
#### Critical Uses

- Military Systems
- Electric Motors
- Aircraft Engines
- Hard Drives
- Safety Glass
- LED Displays
- Catalytic Converters
- Sonar & Radar Systems
- Batteries
- Medical Imaging
- Nuclear Reactors
- etc

## Potential Annual Rare Earth Production from Coal, Fines & Waste Tailings

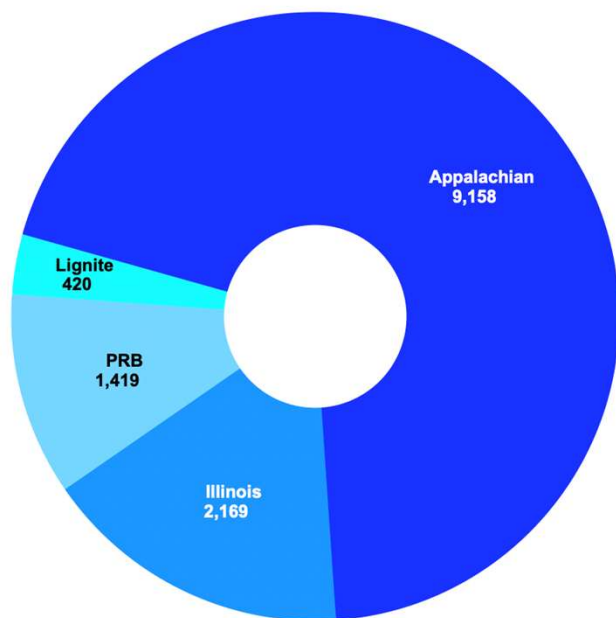


## Potential Rare Earth Production from Stored Coal Tailings, Fines & Ash

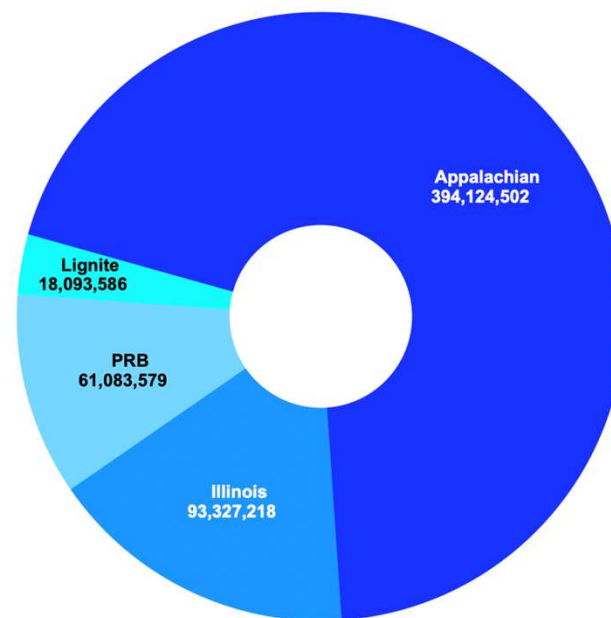


## Stored Fines Potential Blue or Green Hydrogen

Total Potential Blue H2 = 13.17 Billion BOE

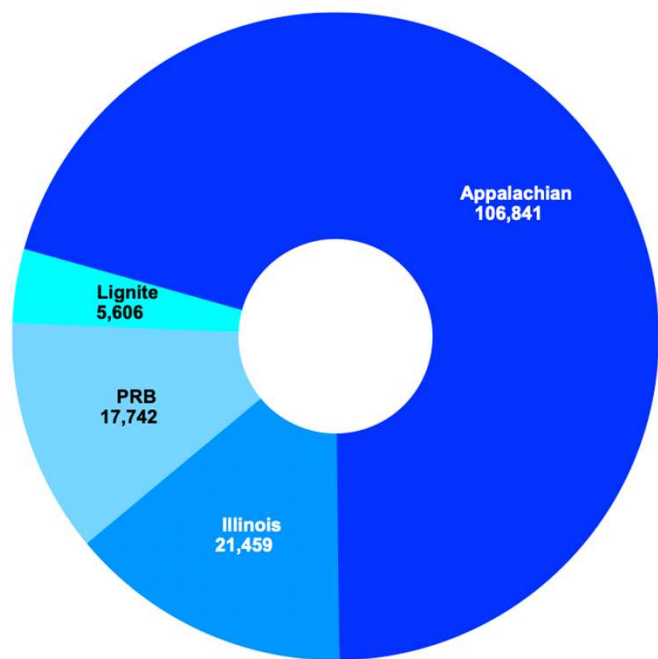


Total Potential Blue H2 = 567 Million tons

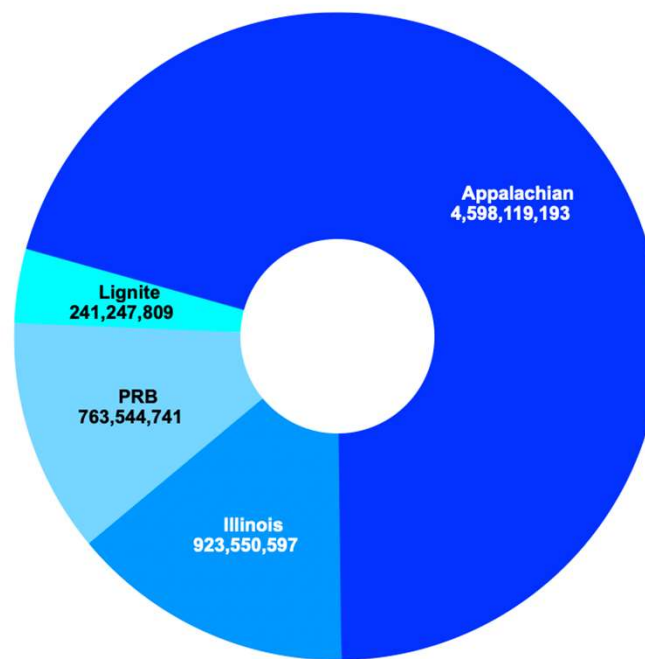


## Stored Tailings Potential Blue or Green Hydrogen

Total Potential Blue H2 = 151.65 Billion BOE



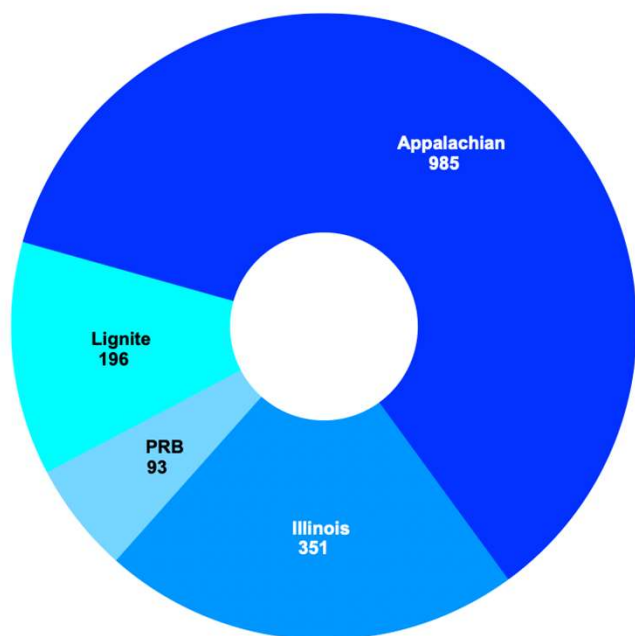
Total Potential Blue H2 = 6.53 Billion tons





## Annual Coal Production Potential Blue or Green Hydrogen

Total Potential Blue H2 = 1.63 Billion BOE



Total Potential Blue H2 = 69.93 Million tons

