

# Critical Mineral Recovery from Harvested Coal Ash



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## **Southern Company**



- Electric utilities in 3 states

## **Ash Pond Closure Program**







### **Ash Pond Closure**

- ~200M tons of ash in the ground across the system
- 36 ash ponds at 17 coal burning sites (5 active)
- All sites to be closed in the next 10 15 years
- 20 Closure by removal
- 16 closure in place

### Georgia Power, Plant Bowen Coal Ash Beneficial Use Facility



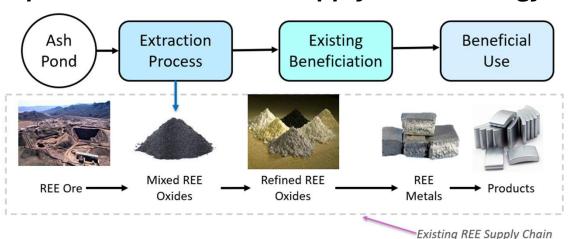


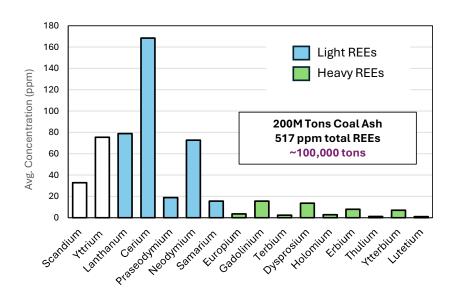
### **Harvesting for Beneficial Use**

- Harvesting and processing ash for use in concrete at 3 sites
- Up to 600k tons/year at each site
- >500ppm total REE content in ash at many sites
- Investigating adding REE extraction process up stream of current beneficial use processing

### **Critical Minerals from Harvested Coal Ash**

# Coal ash is a leading potential REE source as part of a US domestic supply chain strategy





### Cerium (Ce)

~33.7 KT



Catalysts

Catalytic converters for automobiles to reduce harmful emissions

### **Neodymium (Nd)**

~14.5 KT



**Permanent Magnets** 

Powerful permanent magnets for electric motors in wind turbines and EV motors

### Yttrium (Y)

~15.1 KT



**High-Performance Alloys** 

High-performance alloys used in manufacturing of jet engine components

#### Lanthanum (La) ~15.8 KT



**EV Batteries** 

Nickel-metal hydride (NiMH) batteries, commonly used in electric vehicles