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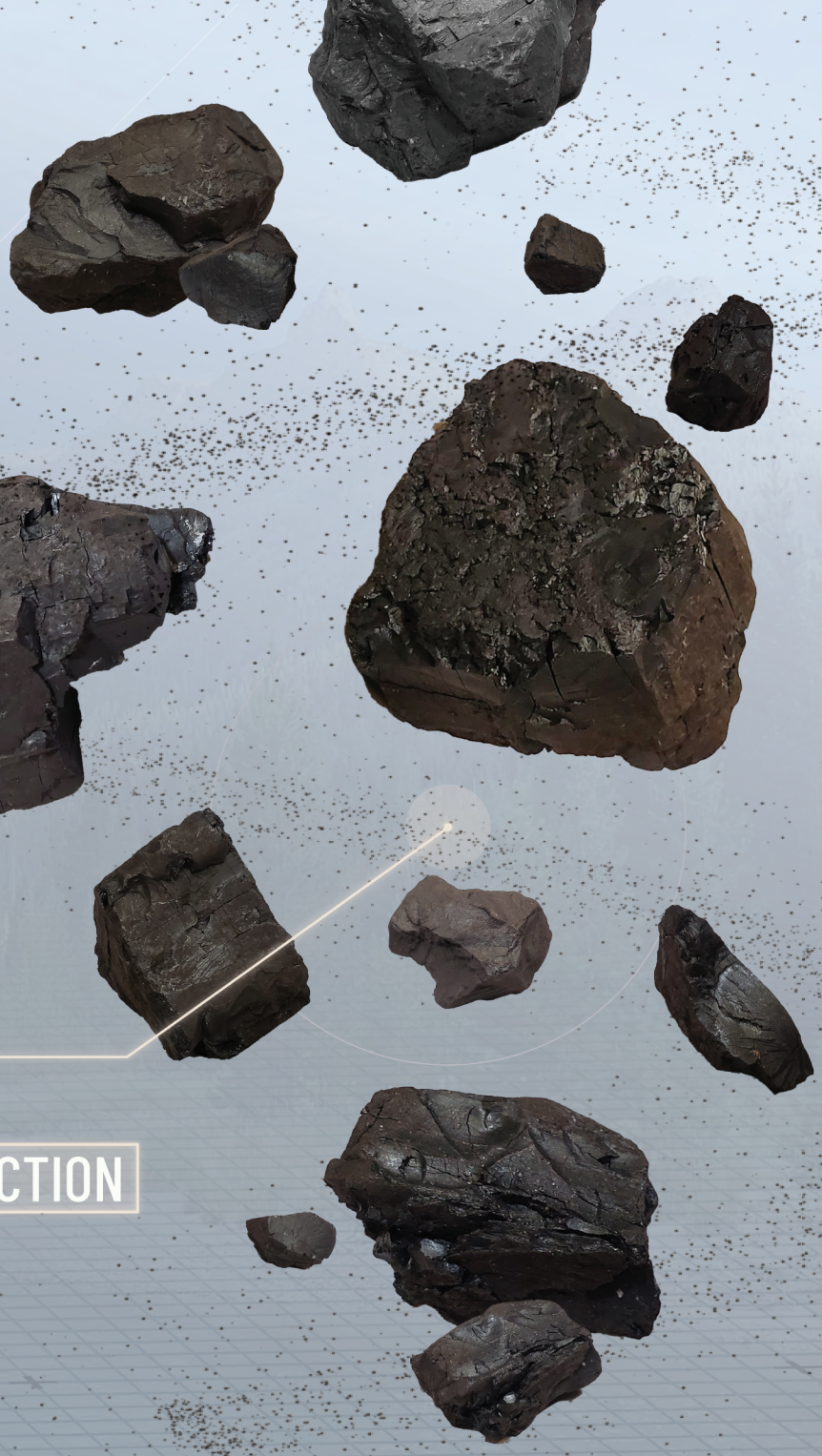

COAL ASH

Resources and Potential for RARE EARTH ELEMENT PRODUCTION

IN THE UNITED STATES

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WHAT THIS STUDY IS ABOUT

This study provides fundamental information on accessible coal ash resources in the US, linkages to coal sources, and preliminary estimates of rare earth element levels for future development within the US.

WHY IT WAS NEEDED

The renewable energy industry is heavily reliant on rare earth elements, underscoring the need to develop resources and production. About 70% of coal ash is potentially accessible for rare earth element extraction (1985–2021) and was disposed in landfills and ponds with the remaining coal ash used onsite or sold.

WHAT THE RESEARCH TEAM CONCLUDED

Using mean rare earth element concentrations in coal ash derived from major coal basins (Appalachian, Illinois, and Powder River Basin, 85% of US production 1950–2021), the potentially recoverable ash content (68% of total), varying extraction rates (30% for Appalachian and Illinois basins and 70% for Powder River Basin), and 2020 rare earth oxide market prices resulted in an estimated potential value of rare earth elements in ash of about $8.4 billion. Including yttrium and scandium increases the estimated value to $97 billion.

Read The Paper	Reedy, R.C., Scanlon, B.R., Bagdonas, D.A. et al. Coal ash resources and potential for rare earth element production in the United States. Int J Coal Sci Technol 11, 74 (2024). *https://doi.org/10.1007/s40789-024-00710-z*
bit.ly/CEGR-Publications	

Read About Wyoming's Rare Earth Resources	"Rare Earth Element Resource Evaluation of Coal Byproducts: A Case Study from the Powder River Basin, Wyoming"
sciencedirect.com/science/article/pii/S1364032122000764	