

Coal ash in storage in the Chesapeake Bay Watershed

Source: Maryland DNR GIS Project

Legend

Chesapeake Bay Watershed



Operating Power Stations



Decommissioned Power Stations



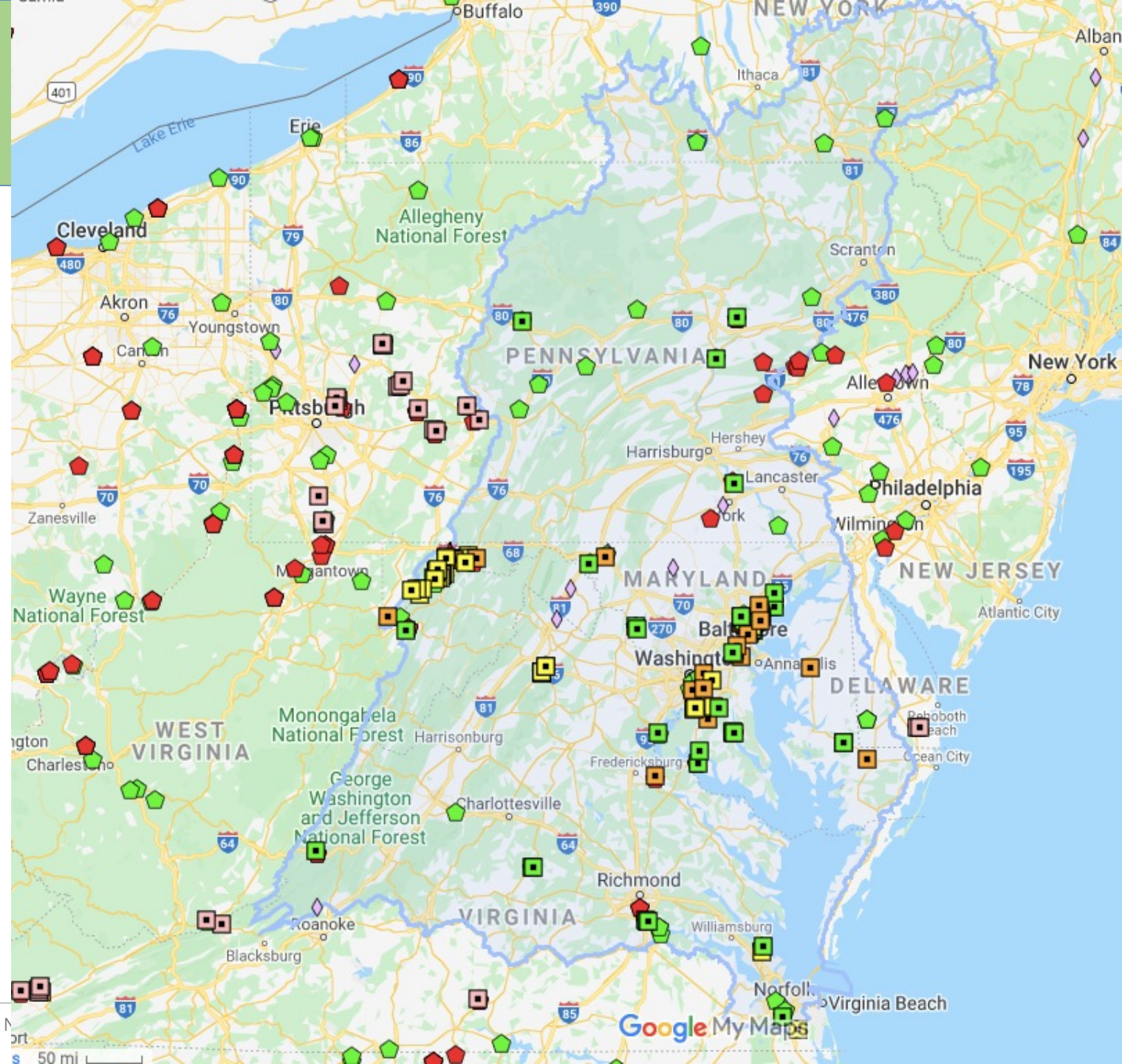
Coal Ash Storage Sites



Cement Plants



RURAL INNOVATION



Estimated Mid Atlantic Seawall programs to 2040

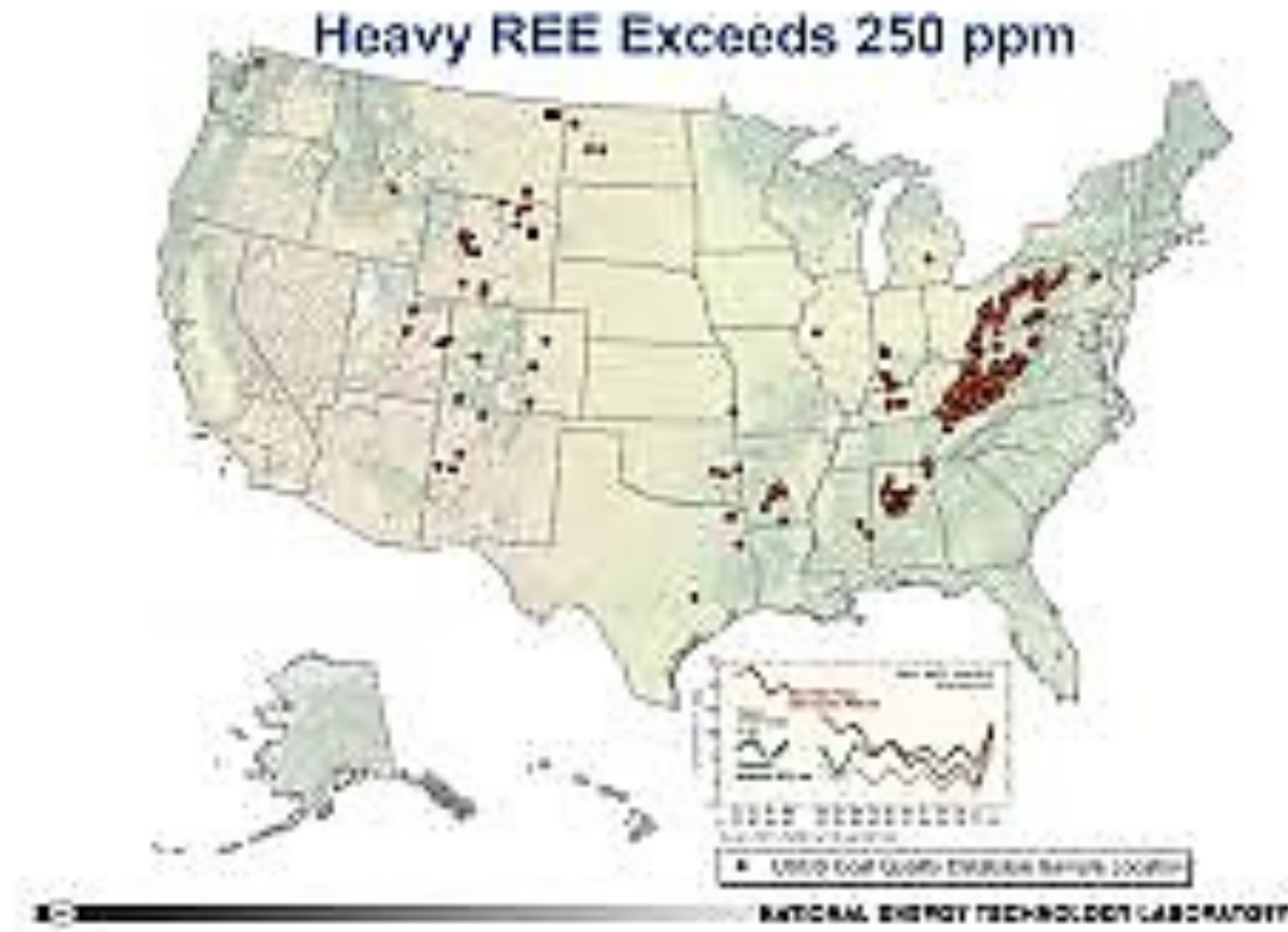


U.S. Expected To Pay Over \$400bn On Seawalls Up To 2040

Estimated expected cost of seawall construction in U.S. states up to 2040



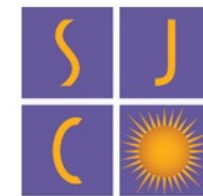
Why Western Maryland: Appalachian Coal & Coal Ash is rich in Rare Earth Elements



SonoAsh has made good progress with key achievements and a growing partner network

Achievements

- ✓ Performance benchmarks validated by 3rd party industry participants
- ✓ DoE Rare Earths grant participation secured in New Mexico & Wyoming
- ✓ Developed key partnerships in industry and government agencies
- ✓ Robust patents around key process technology (acoustic energy application)
- ✓ Solar Impulse Award (2020, United Nations) validated as an efficient solution
- ✓ Up & down stream commitments with major industry participants
- ✓ Positive engagement with Sierra Club
- ✓ **Maryland Industrial Partnership (MIP)** award winner, project underway Q1, 2022



SAN JUAN COLLEGE

High value, ultra-low carbon alternative cementitious material has been verified by Lafarge lab tests



Untreated Fly Ash
12% LOI 250 ppb Mercury



SonoAsh Product
<1% LOI <20 ppb Mercury¹

- ❖ Modified Physical and Chemical properties
 - ❖ Reduced carbon to LOI <1%
 - ❖ Modify the chemistry by reducing the Calcium, Sulfur and Ammonia
 - ❖ Ability to tune particle size
 - ❖ Nuisance metals removal - Mercury, Chromium, Selenium, Lead & Arsenic
- ❖ Industry verification
 - ❖ SonoAsh product surpassed test objectives established by, and tested at, the Lafarge concrete lab in Seattle, WA