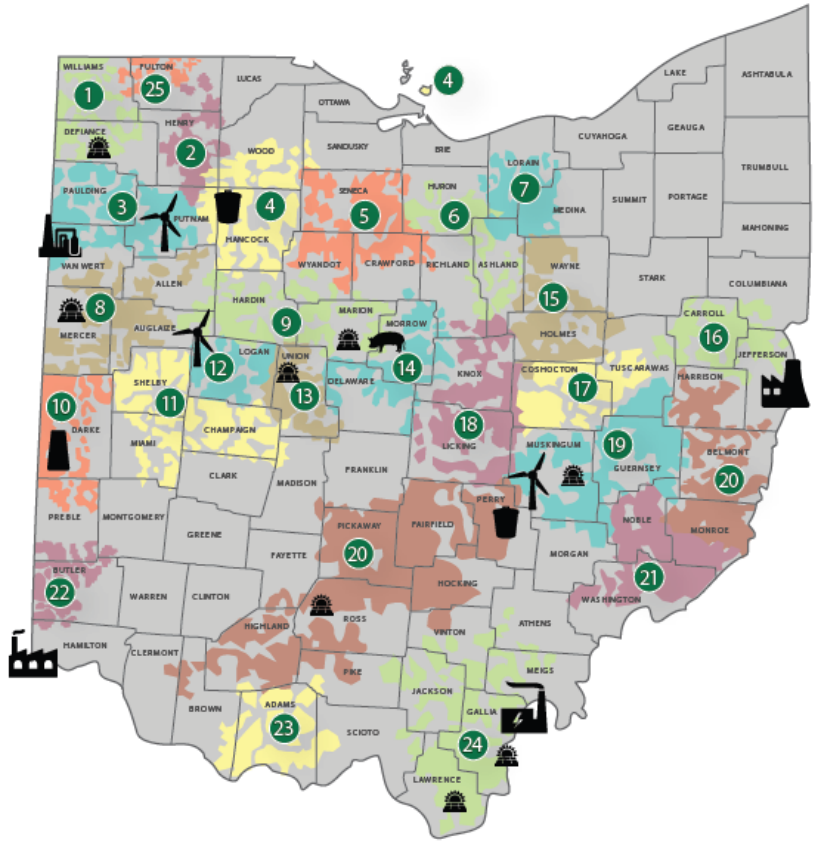
OHIO'S ELECTRIC COOPERATIVES | BUCKEYE POWER, INC.
OHIO RURAL ELECTRIC COOPERATIVES, INC.

Buckeye Power



GENERATION RESOURCES

- Solar
- Wind
- Biodigester
- Landfill
- Cardinal Plant
- Kyger Creek Generation Station
- Clifty Creek Generation Station
- Robert P. Mone Peaking Plant
- Greenville Peaking Plant

25 MEMBER-OWNER COOPERATIVES

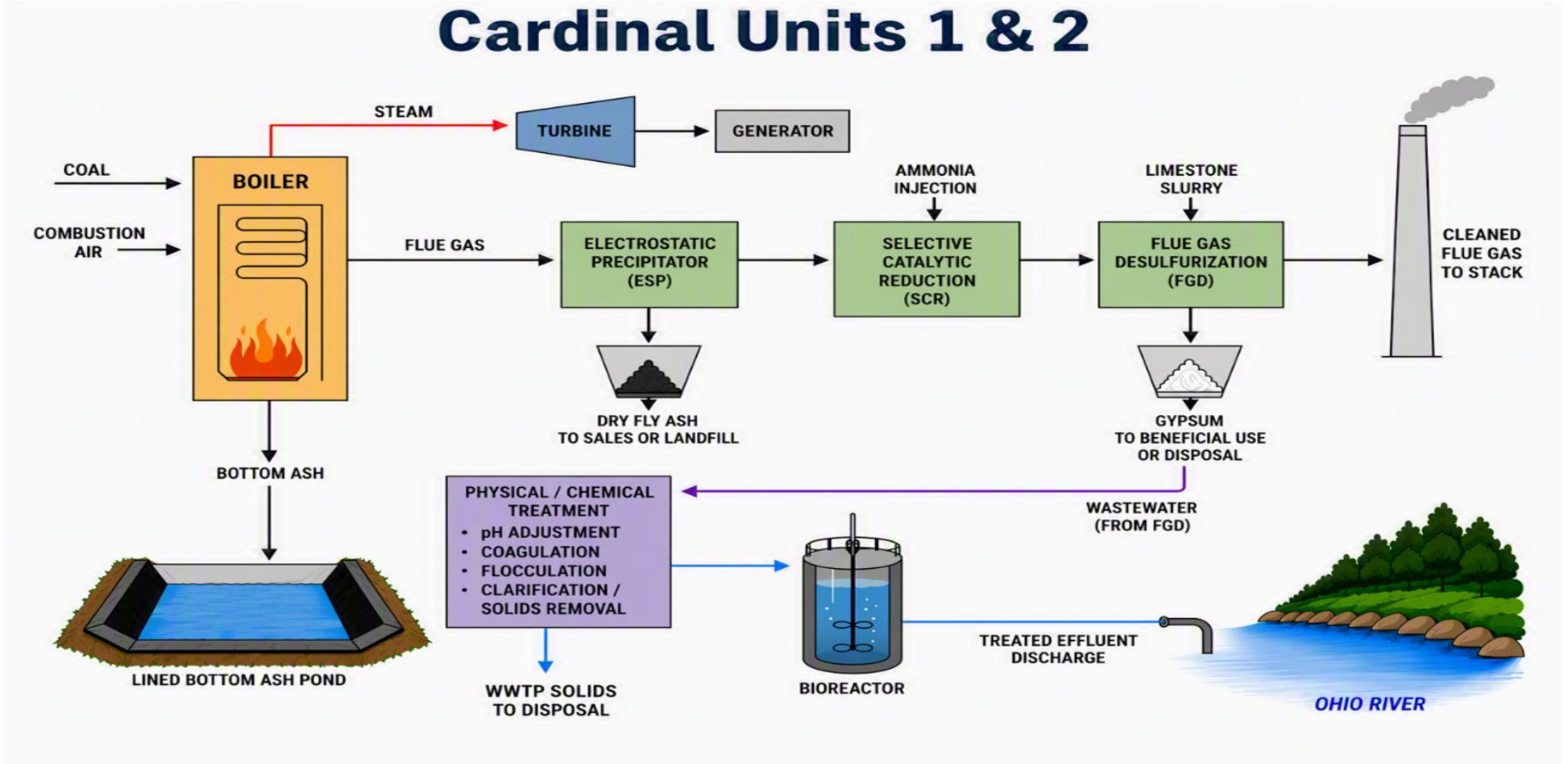
1. North Western
2. Tricounty
3. Paulding Putnam
4. Hancock-Wood
5. North Central
6. Firelands
7. Lorain-Medina
8. Midwest
9. Mid-Ohio
10. Darke
11. Pioneer
12. Logan
13. URE
14. Consolidated
15. Holmes-Wayne
16. Carroll
17. Frontier
18. The Energy Co-op (Licking)
19. Guernsey-Muskingum
20. South Central
21. Washington
22. Butler
23. Adams
24. Buckeye
25. Midwest Energy (MI)

- Buckeye Power - 1959
- 25 cooperative members
- Serving ~ 400,000 member-consumers in OH/IN
  - 1 million Ohio residents
  - 1,905 MW peak demand (12/23/22)
- Generation Sources
  - Coal (1,600 MW)
    - Cardinal – Jefferson County
    - (OVEC) Kyger Creek – Gallia County
    - (OVEC) Clifty Creek – Madison, IN
  - Natural Gas (650 MW)
    - Mone – Van Wert County
    - Greenville – Darke County
  - Renewables (71 MW)
    - Hydro – Niagara Falls / St Lawrence River
    - Renewable PPA's:
      - Landfill methane (2), Biodigester (1)
      - Several small solar and wind projects
  - 365 employees at 5 sites

Cardinal Power Plant

Cardinal Plant Overview

- Units 1 and 2 are each 600 MW net, 640 MW gross
- Commercial operation began in 1967
  - Operated by Cardinal Operating Company which is 100% owned by Buckeye Power.
- Burns northern Appalachian bituminous coal that is local to Cardinal Plant.
- Fully controlled units with SCR, ESP, FGD, physical-chemical-biological water treatment.


Cardinal Units 1 & 2
STEAM
TURBINE
GENERATOR
COAL
BOILER
COMBUSTION AIR
FLUE GAS
ELECTROSTATIC PRECIPITATOR (ESP)
AMMONIA INJECTION
SELECTIVE CATALYTIC REDUCTION (SCR)
LIMESTONE SLURRY
FLUE GAS DESULFURIZATION (FGD)
CLEANED FLUE GAS TO STACK
DRY FLY ASH TO SALES OR LANDFILL
GYPSUM TO BENEFICIAL USE OR DISPOSAL
BOTTOM ASH
WASTEWATER (FROM FGD)
PHYSICAL / CHEMICAL TREATMENT
• pH ADJUSTMENT
• COAGULATION
• FLOCCULATION
• CLARIFICATION / SOLIDS REMOVAL
LINED BOTTOM ASH POND
WWTP SOLIDS TO DISPOSAL
BIOREACTOR
TREATED EFFLUENT DISCHARGE
OHIO RIVER

- Cardinal Power Plant, Units 1&2, Brilliant, Ohio
- Project goal is to improve reliability and return equipment to their original design basis.
  - Work runs from 2027-2030, consists of 27 separate projects broken out over 15 milestones.
  - Impact is to recover heat rate losses due to equipment degradation, lost catalyst activity, and other metrics that have degraded through equipment life.
  - The projects will also replace aging components with like-kind equipment to improve unit reliability.
- Total Project Costs $92,987,055, Federal Share $34,000,000, Buckeye Share $58,987,055

Project Scope and Sequencing

- The 27 projects are divided across several plant processes: Steam and Turbine, Environmental Controls, Air and Gas Path, Balance of Plant, and Boiler and Combustion
- A common theme across the projects is to use like-kind replacements to return the equipment as close to its design basis as possible.
  - Ie. Rotor fan hub replacement, catalyst layer replacements, air compressor replacement
- Work will take place during schedule outages in the spring and fall, beginning in Spring 2027 and culminating in 2030.
  - Work to be performed by local unions and Cardinal plant personnel.

Performance Metrics and Risk Assessment

- Performance metrics will consist of completion checklists for equipment return to service, plant historian data showing successful operations (return to service, NOx emission rates), invoices, construction photos, and DOE personnel visits for verification.
- Risks:
  - All of these projects have been completed previously at Cardinal, plant has familiarity with suppliers, contractors, schedule, and scoping.
  - Supply chain and labor concerns are being addressed by advanced planning and being proactive in contracting early, early engagement with Unions to ensure trades are available.

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