REINHOLD ENVIRONMENTAL Ltd.

2014 APC Round Table & Expo Presentation

July 14-15, 2014, in Louisville, KY / Hosted by LG&E/KU

FirstEnergy Generation

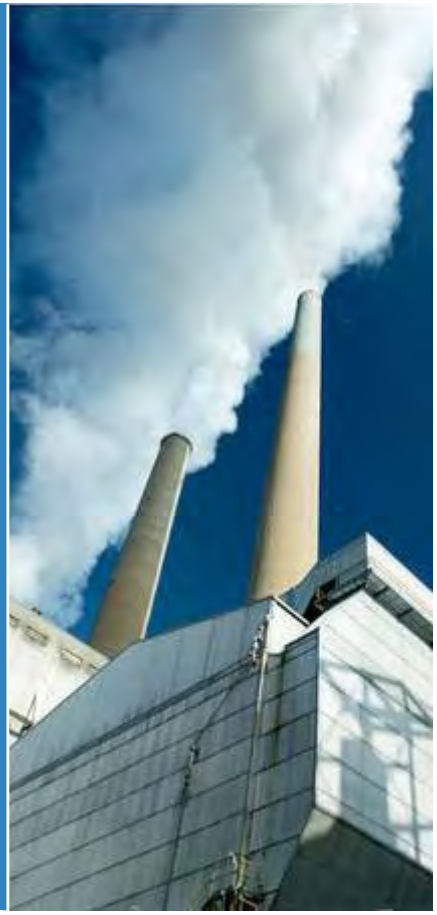
FirstEnergy Power Plant **Deactivations**

Lessons Learned and Best Practices

Douglas S. Hartman
Manager, Environmental Field Operations

Air Pollution Control Roundtable

July 14th & 15th, 2014

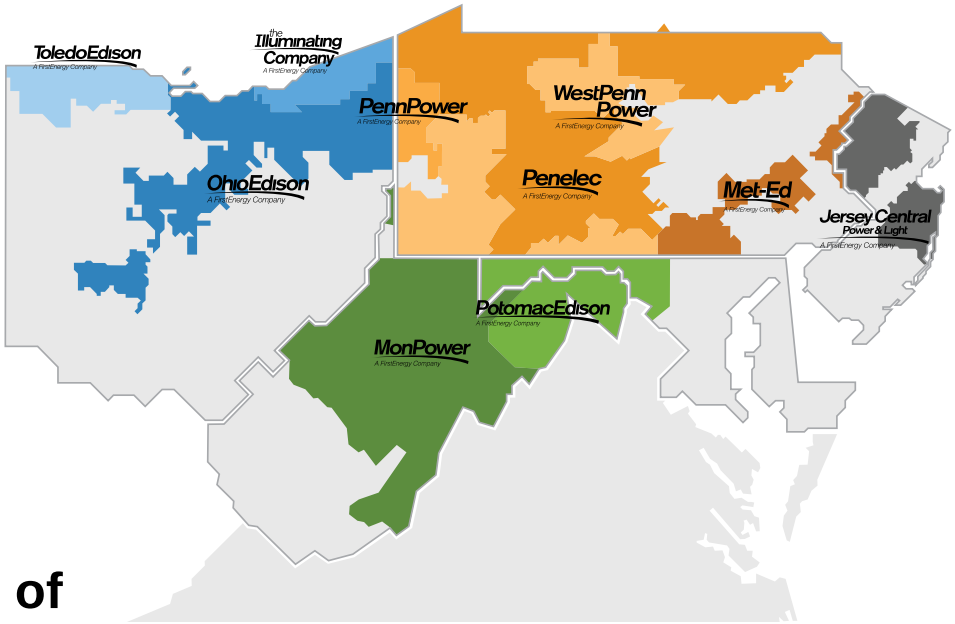


Agenda

- FirstEnergy Background
- Plant Deactivation Team
- Plant Deactivation Goals
- Schedule
- Staffing and People
- Going Forward
- Lessons Learned
- Q&A

About FirstEnergy (FE)

- **Headquartered in Akron, Ohio**
- **One of the largest investor-owned electric systems in the U.S. based on six million customers served**
- **Nearly $50 billion in assets**
- **$15 billion in annual revenues**
- **Approximately 18,000 megawatts of generating capacity**

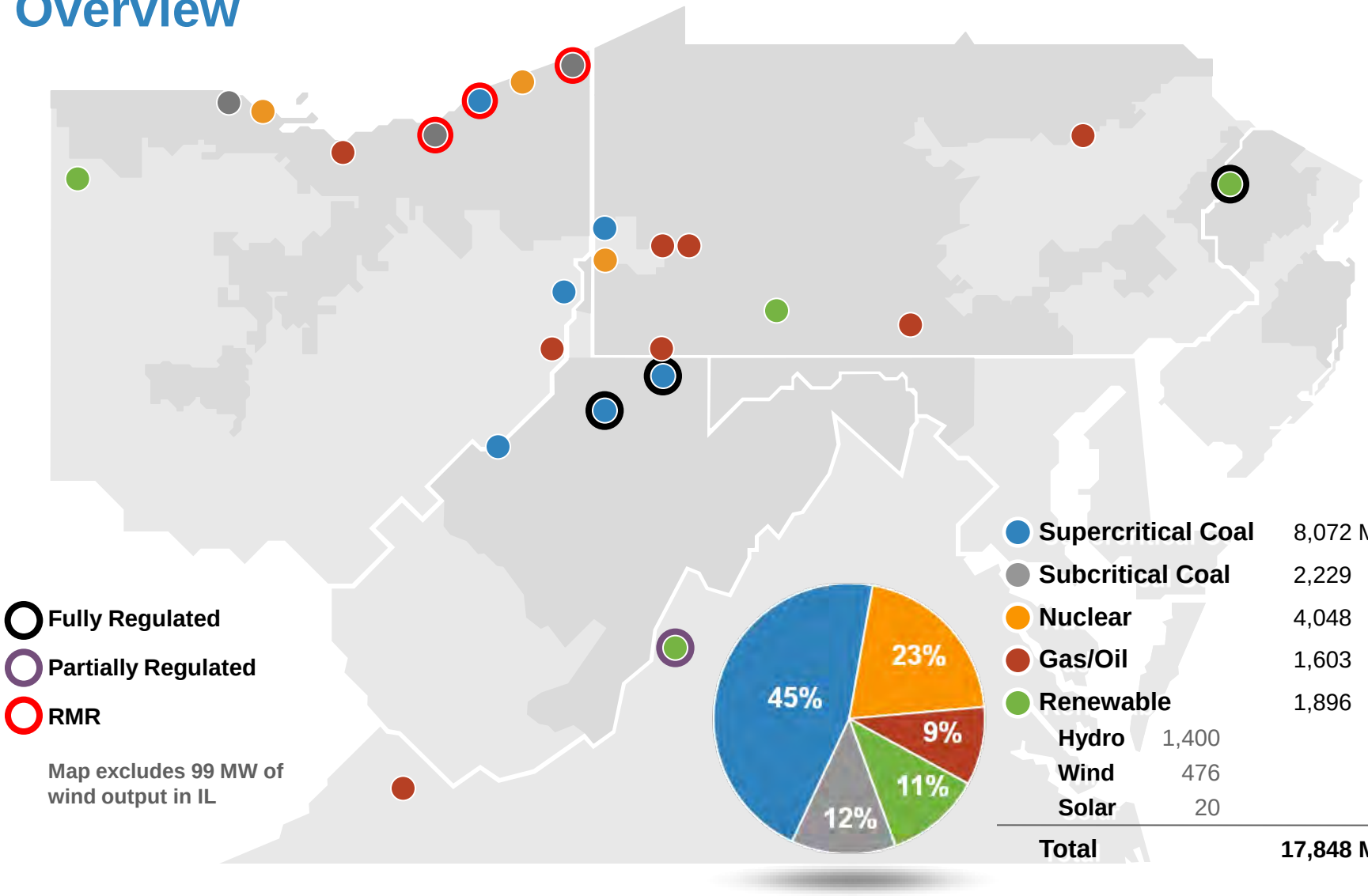


- **10 electric utility operating companies in six states**
- **65,000-square-mile service territory**
- **24,000 miles of transmission lines and approximately 267,000 miles of distribution lines**

Learn more by visiting www.firstenergycorp.com

FirstEnergy Diverse Generating Sources

Overview



Generation Portfolio

Nuclear	MW
Beaver Valley 1& 2	1,872
Perry	1,268
Davis-Besse	908
Total	**4,048**

Supercritical Coal	
Mansfield 1-3	2,490
Harrison 1-3 (R)	1,984
Pleasants 1-2	1,300
Sammis 6 & 7	1,200
Fort Martin 1 & 2 (R)	1,098
Total Supercritical Coal	**8,072**

Subcritical Coal	
Sammis 1-5	1,020
Eastlake 1-3 ⬢	396
Bay Shore 1	136
Lake Shore 18 ⬢	245
Ashtabula 5 ⬢	244
Subcritical Coal	**2,041**
OVEC (PR)	188
Regulated: 11 Competitive:177	
Total Subcritical Coal	**2,229**

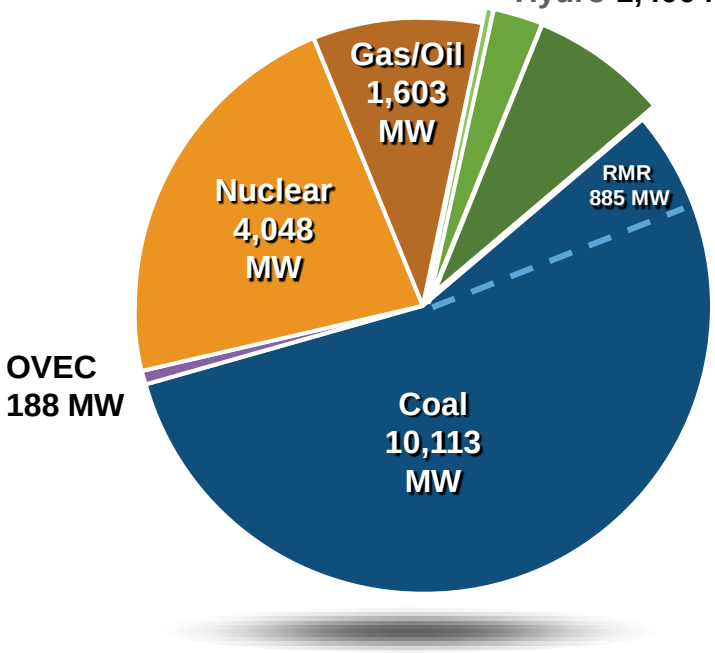
Updated as of February, 2014

Renewables 1,896 MW

Solar 20 MW

Wind 476 MW

Hydro 1,400 MW



Total Capacity	**17,848 MW**	
Competitive	**14,068 MW**	**(79%)**
Regulated	**3,780 MW**	**(21%)**

(R) Fully Regulated or (PR) Partially Regulated units

Long-term PPA

⬢ RMR Arrangements

Gas/Oil	MW
Springdale 1-5	638
West Lorain 1-6	545
Chambersburg 12 & 13	88
Gans 8 & 9	88
Forked River	86
Hunlock	45
Buchanan	43
Other	70
Total Gas/Oil	**1,603**

Hydro	
Bath County (PR)	1,200
Regulated: 487 Competitive: 713	
Yards Creek (R)	200
Total Hydro	**1,400**

Wind	
Blue Creek	100
High Trail	99
Allegheny Ridge	80
N. Allegheny Ridge	70
Highland	62
Casselman	35
Meyersdale	30
Total Wind	**476**

Solar	
Maryland Solar	20
Total Solar	**20**

Plant Deactivation Team

- **Executive Leadership**
- **Site Director/Shutdown Manager**
  - Site Shutdown Teams
    - Maintenance
    - Electrical
    - Yard
    - Operations
    - Document Control
  - Central Support
    - Environmental
    - Supply Chain
    - Security
    - Business Services

Plant Shutdown Organization

Rev 1 2/16//2012

SAFETY GOAL & INITATIVES

Goal: No OSHA recordable injuries for the balance of plant life.

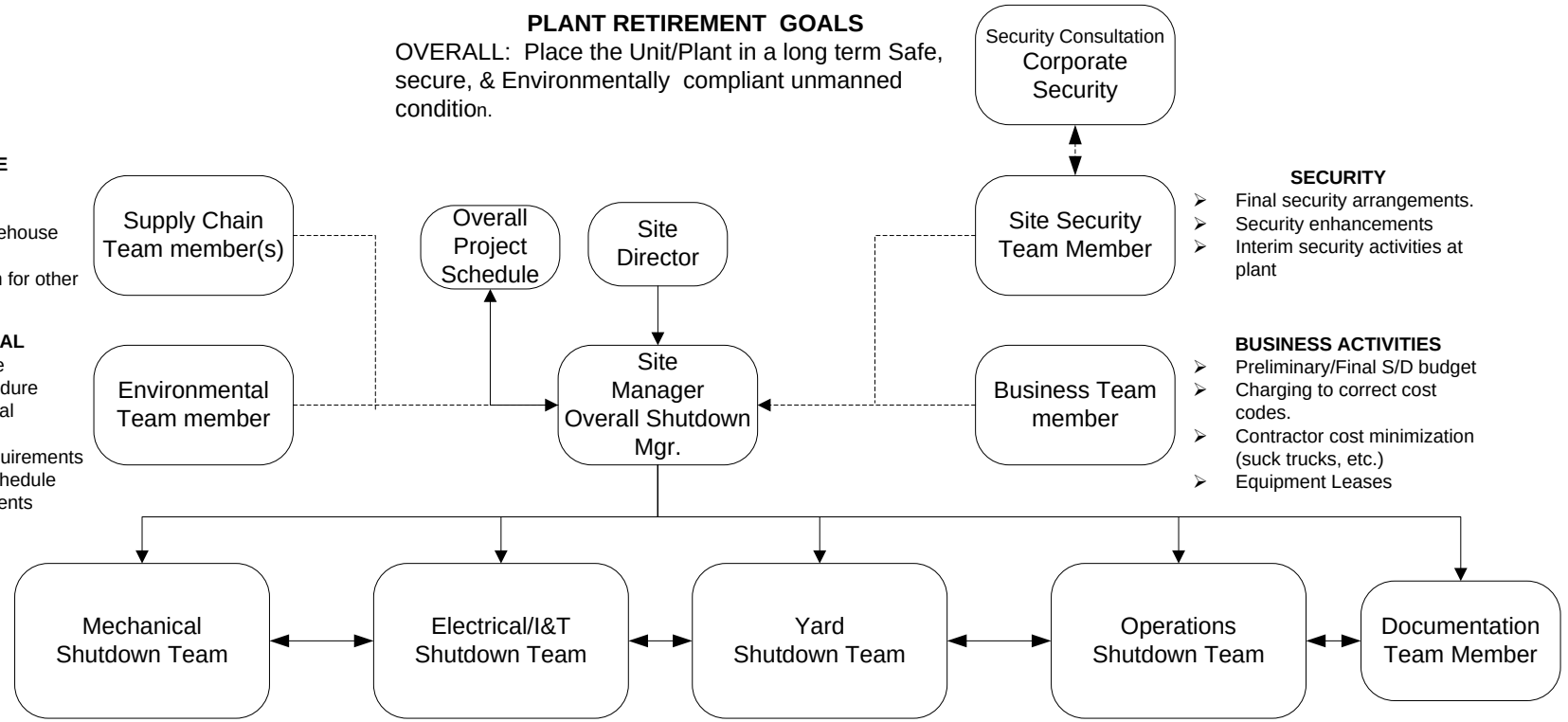
- Keep Safety first in light of the tremendous distractions on employees.
- Increased observations of activities focused on safety practices.
- Weeky all hands meetings stressing Safety.

30 DAY OBJECTIVES

- *Obtain PJM feedback on Unit by Unit basis.*
- *Union negotiations started and in process.*
- *Benefits Packages developed & presented.*
- *Plant Shutdown plans developed & in execution.*

PLANT RETIREMENT GOALS

OVERALL: Place the Unit/Plant in a long term Safe, secure, & Environmentally compliant unmanned condition.



WAREHOUSE

- Scrap/Sell/Spares
- Procurement
- Disposition of Warehouse inventory
- Interface with team for other plant spares.

ENVIRONMENTAL

- Site Representative
- Reviews S/D procedure
- Owns Environmental requirements
- Involved in Site requirements
- Final Inspection Schedule
- Ash Site Requirements

SECURITY

- Final security arrangements.
- Security enhancements
- Interim security activities at plant

BUSINESS ACTIVITIES

- Preliminary/Final S/D budget
- Charging to correct cost codes.
- Contractor cost minimization (suck trucks, etc.)
- Equipment Leases

MECHANICAL EQUIPMENT

- Safe
- Environmentally compliant
- Layed up for re use/non use
- Flooding concerns allayed
- Double valves where needed
- CT/EMD Disposition
- Interface w/ warehouse to remove spares.

ELECTRICAL EQUIPMENT

- Safe
- Environmentally compliant
- De energized where possible – minimize energized equipment. .
- Well documented status.
- Interface w/ warehouse to remove spares as applicable.
- Substation monitoring
- SCADA, RTU, GMS
- Other Energy Delivery (ED) Interface points

YARD EQUIPMENT

- Safe
- Environmentally compliant
- Yard Equipment disposition
- Fuel Disposition (burn or move) – Coordinate w/ Fuels
- Other Fuel related interfaces
- Bulk Materials Communication

OPERATIONS

- Safe
- Environmentally compliant
- Tag outs
- Assist with Mechanical & Electrical, & yard Teams

DOCUMENTATION

- Documentation retention
- Required records kept
  - Technical
  - Legal
  - HR & Personnel
- Required documentation stored.
- Equipment tagouts dispositioned for long term unmanned facility.
- Insurance Requirements.

OTHER CONSIDERATIONS

- Shut off re order processs in SAP for all fossil.
- Fencing along waterfront
- Contractor interfaces Bulk materials communication.

ADMINISTRATIVE REQUIREMENTS

- Weekly meetings for Status/Schedule update
- Weekly budget updates
- Communication to employees on Monday Meetings.
- Monthly Face to Face with N V.

Goals

- **Safety and environmental goals**
  - No OSHA recordable injuries or environmental events for the balance of plant life
  - Keep safety first to overcome distractions
    - Increased observations of activities focused on safety practices
    - Two man rule
    - Weekly all hands meetings stressing safety
- **Plant goal**
  - Place unit/plant in a long-term safe, secure, environmentally compliant, de-energized, unmanned condition

Overall Schedule

- **Deactivations announced Jan. 2012, July 2013, Feb 2014**
  - Plants operated relatively reliably throughout Summer
- **Reliability Must Run (RMR) facilities announced in May 2012**
  - Ashtabula 5, Eastlake1, 2, 3 and Lake Shore 18
  - LS18 and EL 1, 2 and 3 released from RMR Sept 15, 2014
- **Conversions to synchronous condenser**
  - Eastlake Unit 5-June 2013
  - Eastlake Unit 4-Mid 2014
- **Team effort with Energy Delivery and Environmental**

Schedule: Operation and Deactivation

- **2012: 2,464 nMW**
  - Units ceased operation on 9/1/2012 (16)
  - Deactivation activities 9/1/2012 to 12/31/2012
  - Armstrong 1 and 2 (356 nMW), Bay Shore 2, 3 and 4 (495 nMW), R.P. Smith 1 and 2 (116nMW)
  - Albright 1, 2 and 3 (292 nMW), Rivesville 5 and 6 (126 nMW), Willow Island 1 and 2 (242 nMW)
  - Eastlake 5 (597 nMW) Synchronous Condenser (June 2013), Eastlake 4 (240 nMW) Synchronous Condenser (Mid 2014)
- **2013: 2,080 nMW**
  - Units ceased operation early October 2013
  - Deactivation activities 10/11/2013 to 1/17/2014
    - Hatfield 1, 2 and 3 (1,710 nMW)
    - Mitchell 2 and 3 (370 nMW)
- **2015: 641 nMW**
  - Reliability Must Run (RMR) units (5)
  - RMR unit (5) deactivations: April 2015
    - Eastlake 1, 2 and 3 (396 nMW)
    - Lakeshore 18 (245 nMW)
    - Ashtabula 5 (244 nMW)

Staffing and People

- **Voluntary Separation Program (VSP) 2012**
- **Staffing at RMR and operating plants**
  - Ashtabula, Lake Shore, Eastlake and Bay Shore (Unit 1)
- **Positions for personnel from deactivated plants**
  - 2012
    - Armstrong to Mitchell, Mobile Maintenance and Hatfield's Ferry
    - Albright and Rivesville to Ft. Martin/Harrison/Hatfield's Ferry
    - R.P. Smith to other positions in Md. Area
    - Transition to Energy Delivery
  - 2013
    - Transition to Energy Delivery
    - Remaining Generation openings

Going Forward

- **Shut down activities and challenges**
  - Storm response impact at Rivesville
  - Additional coal pile remediation
  - Ash pond/lagoon cleaning
  - Some extension where plants remained manned (EL/BS)
  - Plant size
- **Turn plant over to Environmental for final disposition**
  - Turnover walkdowns conducted by Environmental
- **ED to move relaying to the switchyard**
- **Repurpose sites some time in future**
- **In general, maintaining property options for potential reuse**

Lessons Learned and Best Practices

- **Material removal**
  - Utilize miscellaneous equipment spares at operating stations
  - Draft active plant teams to conduct site visits for spare equipment
  - Remove all remaining portable material
  - Maintain select GSU and auxiliary transformers as spares (SPCC)
- **Alarming**
  - Alarm response
  - Loss of power alarm response
- **Winter operation**
  - Freezing issues
  - Impact of a heavy thaw
- **Security procedure for unmanned plants**

Challenge #1: Security

Challenge #2: Documentation

The Rest of the Challenges….

Albright

- **CPRO**
- **WWT**
- **SUMPS**

Albright (Continued)

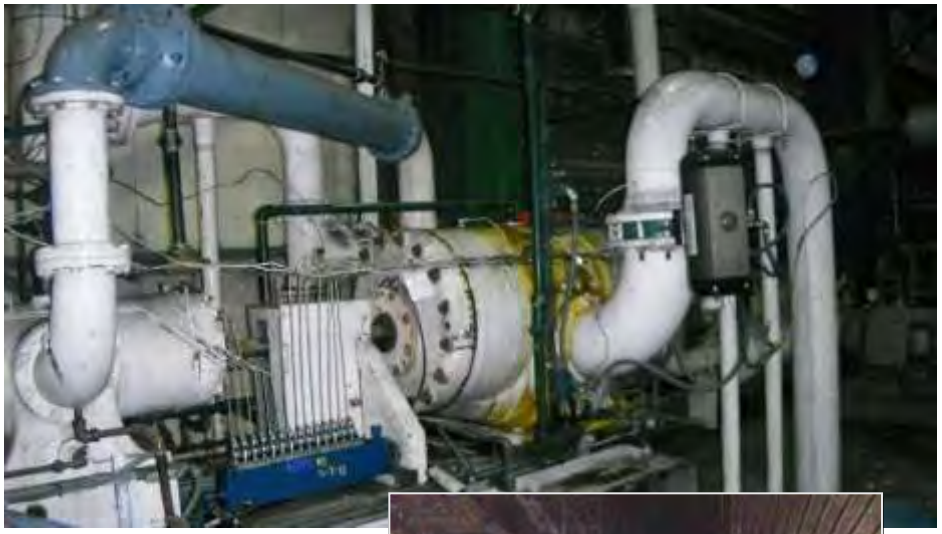
- **Line failures**
- **Freezing issues**
- **Plow service**

Armstrong

- **CPRO**
- **Batch WWT**
- **ED Project**

Hatfield's Ferry

- **Freezing**
- **Personnel challenges**
- **Reportable events**



Mitchell

- **Coal yard**
- **Lagoons**

Mitchell (Continued)

Rivesville

- **Loss of power procedure**
- **Environmental risk**
- **Security access**

R.P. Smith

- **CP remediation**
- **History**

R.P. Smith (Continued)

- **Internal audits**
- **Security risk**

RP Smith: Break-ins

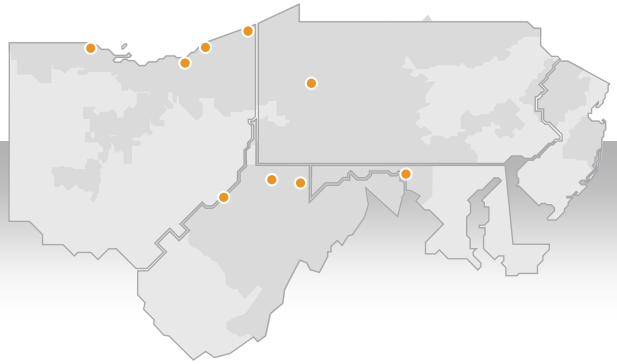
Willow Island

- **Residual oil**
- **TDF**

Willow Island (Continued)

- **Agency inspections**
- **Alarming**

Thank You



Questions & Answers