

Strength in the Grid: Cardinal Plant's Performance Path

Bethany Schunn - Plant Manager

OEC Winter Conference

February 10, 2026

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- **Updates**
 - **Safety** – Human Performance Initiatives & Standard Work
 - **Environmental** – Current Major Projects Overview
 - **Energy Production** – Unit 3 Capability & Winter Operations
 - **Financial** – Byproduct Sales & Material Handling Savings



Human Performance Events

- **2024 = 11 Human Performance Events**
 - **8 = Lost Revenue Events**
 - **2 = Environmental Events**
 - **1 = Safety (DART) Injury**
- **2025 = 3 Human Performance Events**
 - **1 = Lost Revenue Event**
 - **1 = Safety (DART) Injury**
 - **1 = Potential Unit Trip**



- **Corrective Actions**
 - **Performed Root Cause Analysis on Each Event**
 - **Implemented Various Human Performance Tools**
 - **Updated/Created New Standard Work & Procedures**
 - **Updated Visual Management/Labeling**
 - **Improved Pre and Post Job Briefs**
 - **Alarm Management Initiative**
 - **Created/Communicated Human Performance Incident Briefs**
 - **Training/Workshops for Upper Management, Supervisory, and Non-Exempt Employees**
 - **HPI Tool Communication**
 - **Sought Feedback from Other Plants**

- Standard Work Initiative
 - Revamped in 2022
 - Standard Work Team Created
 - New Template for Procedures
- Standard Work Totals
 - 2022 - 2025 = 1155 Standard Work Procedures (SWP) Created
 - 2025
 - 180 SWP Created
 - 1017 SWP Used
 - 189 SWP Audited

CDP-xx-xxx
Respirator Cartridge Selection

Name: xx-xxx-xxx (Assigned by Document Controller) Page 2 of 6
Class: 3

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Date	12/22/2025	12/23/2025	1/5/2026
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SharePoint Upload			
Revision			

*Reviewed by PSL level and above
**Approved by Superintendent level and above

Respirator Cartridge Selection

Select all that apply Unit 0 Unit 1 Unit 2 Unit 3
Process: Safety System: 000 General Class: Class 3 - Low Risk/Low Complexity

List all equipment numbers below pertaining to this procedure (required):
1. N/A

PURPOSE: The purpose of this procedure is to properly select the cartridge filter for the environment you are exposed to.

MATERIALS/EQUIPMENT/TOOLING: Respirator with filter facepiece.

PREREQUISITES: N/A

POTENTIAL HAZARDS: Inhalation of airborne particles or gases may damage the respiratory system.

PPE/SAFETY EQUIPMENT PRECAUTIONS: Respirator with filter facepiece.

PROCEDURE:

1. Identify the area you will be working in and determine the hazards present for the respiratory system. (Are there gases, airborne particles, nuisance dust, particulates, vapors, etc.?)
2. Select appropriate filter face piece for the possible hazard.



Environmental Major Projects

ELG - Bioreactor

2020 Effluent Limitations Guidelines (ELG Rule)

- **Must Treat Effluent Leaving FGD Wastewater Treatment Plant before Discharging to the Ohio River**
- **Limits for Mercury, Arsenic, Selenium, and Nitrates/Nitrites**
- **\$35.6M Project**
- **Initial Start – 10/2023**
- **Commissioning – 2/2026**



Environmental Major Projects

ELG - Bioreactor



Filter Skid



Ion Exchange Vessels

Environmental Major Projects

316 (b) – Traveling Water Screens

316(b) Rule

- Federal Environmental Regulation Under the Clean Water Act
 - Intended to Prevent Aquatic Organisms from Entering the Condenser Circulating Water.
 - Ensures Industries do not Cause Unnecessary Ecological Harm
- \$22M Project
- Unit 1 & 2 Screens (12 Total):
Installation = 2026 – 2033
- Fish Trough:
Installation = 2032/2033



Unit 3 Capability

- **Air Heater Issues**
 - Restricted Gas Path Led to Derates Exceeding 50 MW
- **2022 = High Differential Pressure**
 - Issues with Direct Urea Injection, Hydrated Lime Injection, and Loss of Glycol Heating during Winter Storm Elliott
- **Spring 2025 Outage = Performed Acid Wash/ High-Pressure Wash**



Unit 3 Capability

- **Fall 2025 Outage = Air Heater Basket Change Out**
 - Returned from the outage 9 days earlier than anticipated
 - \$4.68M Project
 - Total of 1408 Baskets Replaced (704/Air Heater)
- Increased to 620 MW



Unit 3 Capability

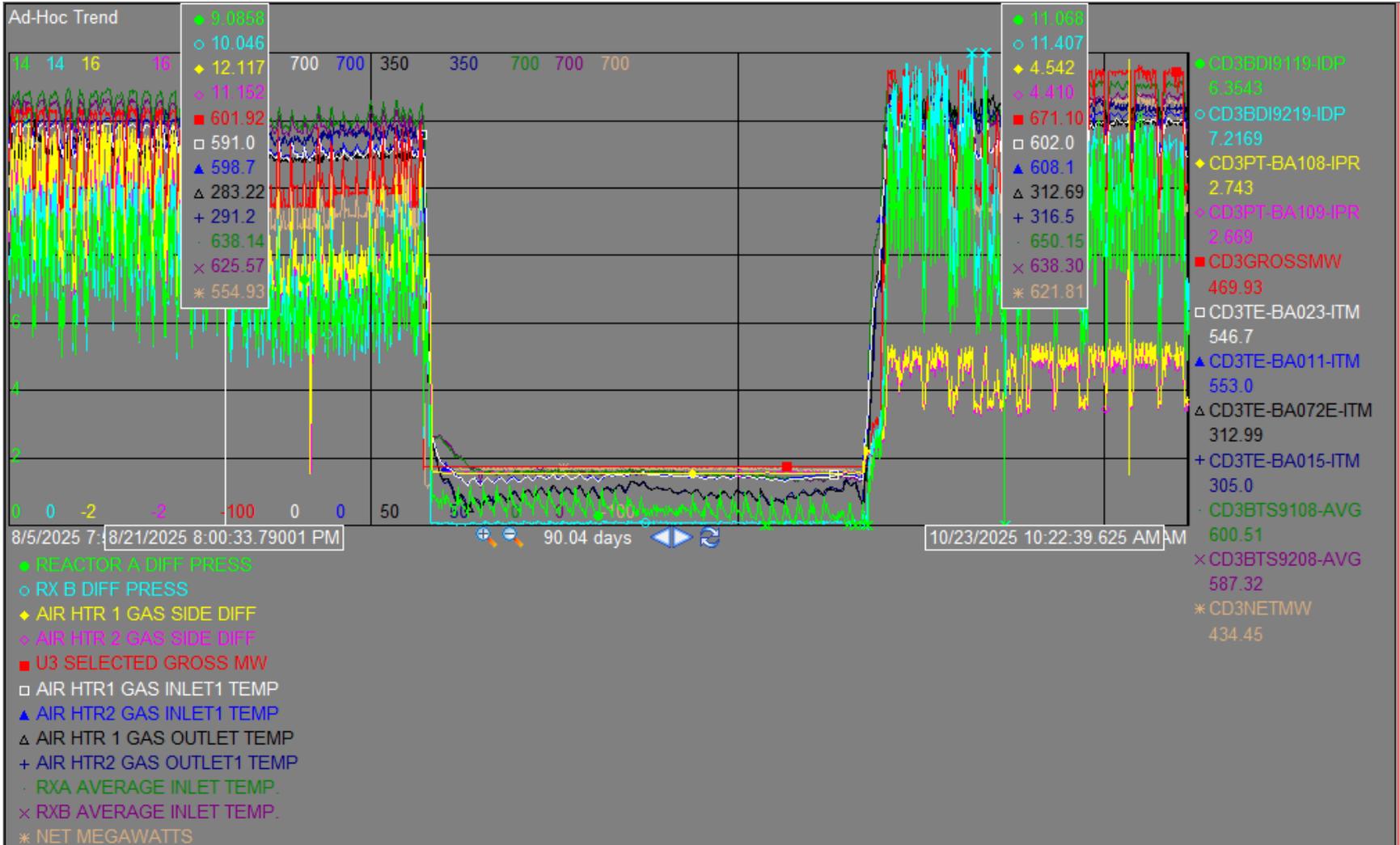


Old Baskets



New Baskets (Left)

Unit 3 Capability



Winter Operations

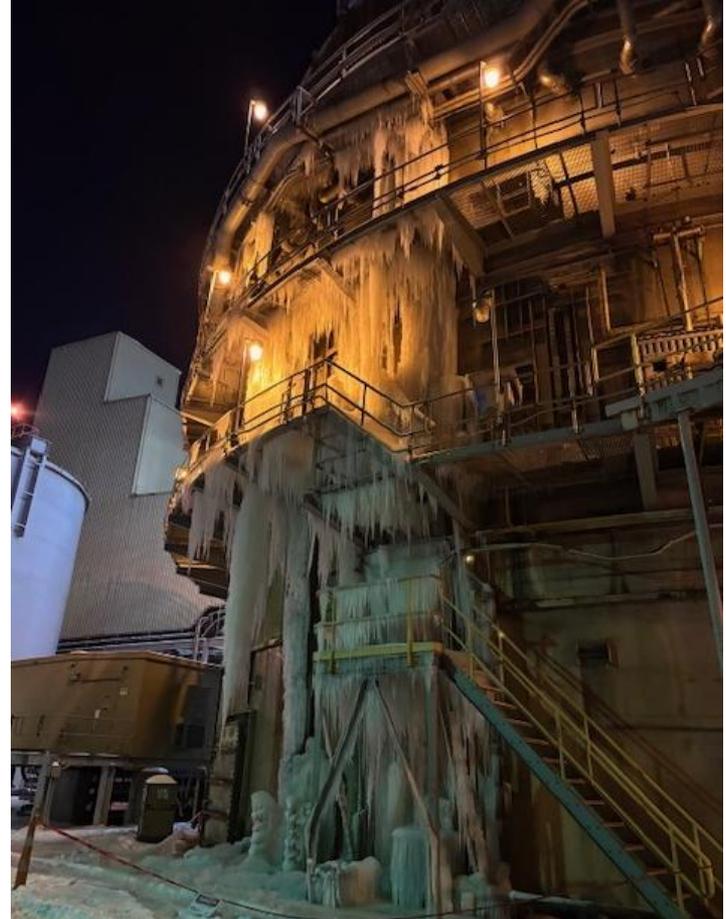
Winter Storm Fern 2026

• PJM Alerts

- Cold Weather Alert: January 24-February 1
- Conservative Operations Declaration: January 24 - February 1
- Maintenance Outage Recall: Outages End by January 24

• Unit Status

- Unit 1 – Derated to 425; Resumed to Full Load on 1/29
- Unit 2 – Full Load Capable
- Unit 3 – Full Load Capable



Winter Operations

Winter Storm Fern 2026

• River Conditions

- Temperatures
 - Dropped to -10F with Average Temperatures Ranging from 5-20 Degrees, with 8-12” Ice Growth Expected
- Coal Supplier Challenges
 - Only One Supplier Located Close to Cardinal Was Able to Barge Due to Open Channel
- No Gypsum Barges Were Moving
 - Trucks Were Needed to Move Gypsum (100 Trucks/Day) to Manage the Gypsum Dome and Avoid Landfilling Costs.



- **River Conditions**



Winter Operations

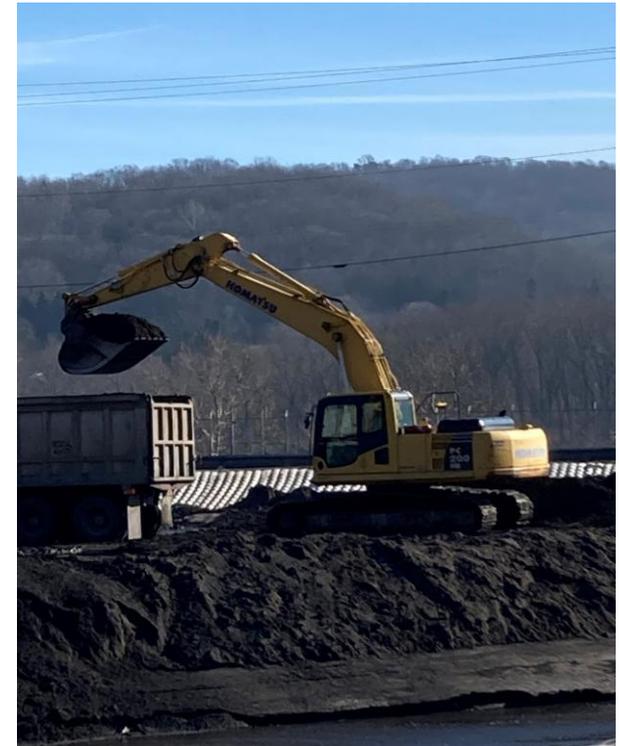
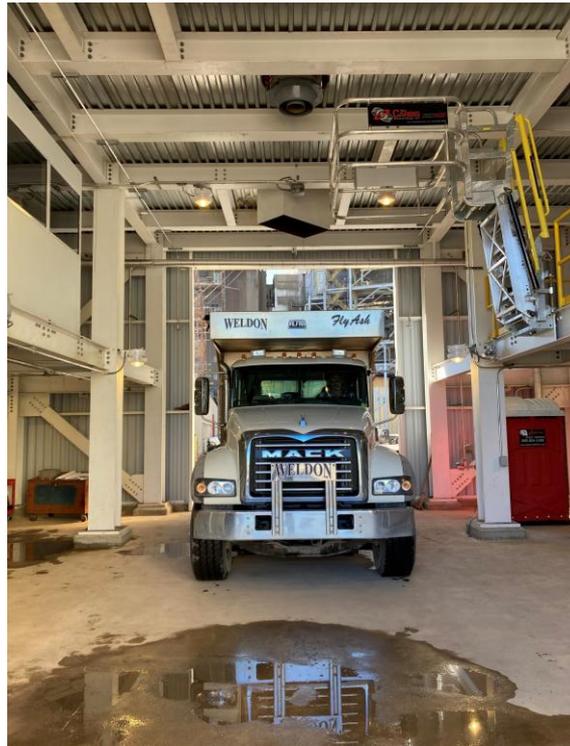


Winter Operations



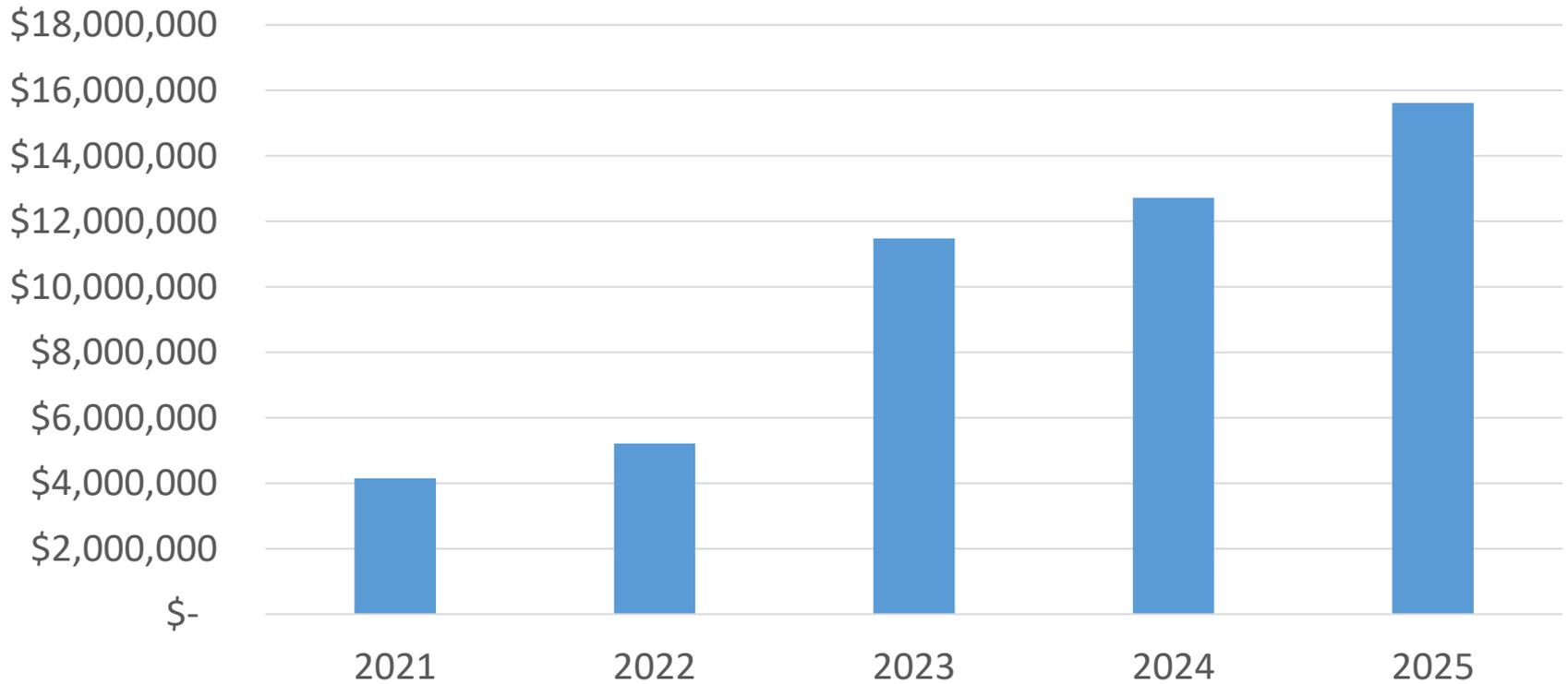
Byproduct Sales

- **Coal Combustion Product Sales**
 - **Gypsum** – Sharp Increase in Sales from 2022-2023 due to Contract Pricing
 - **Fly Ash** – Improved Quality (LOI) & Installed Truck Scales at Each Silo
 - **Bottom Ash** – Small Market



Byproduct Sales

Cardinal Plant 5-Year Combustion Product Sales

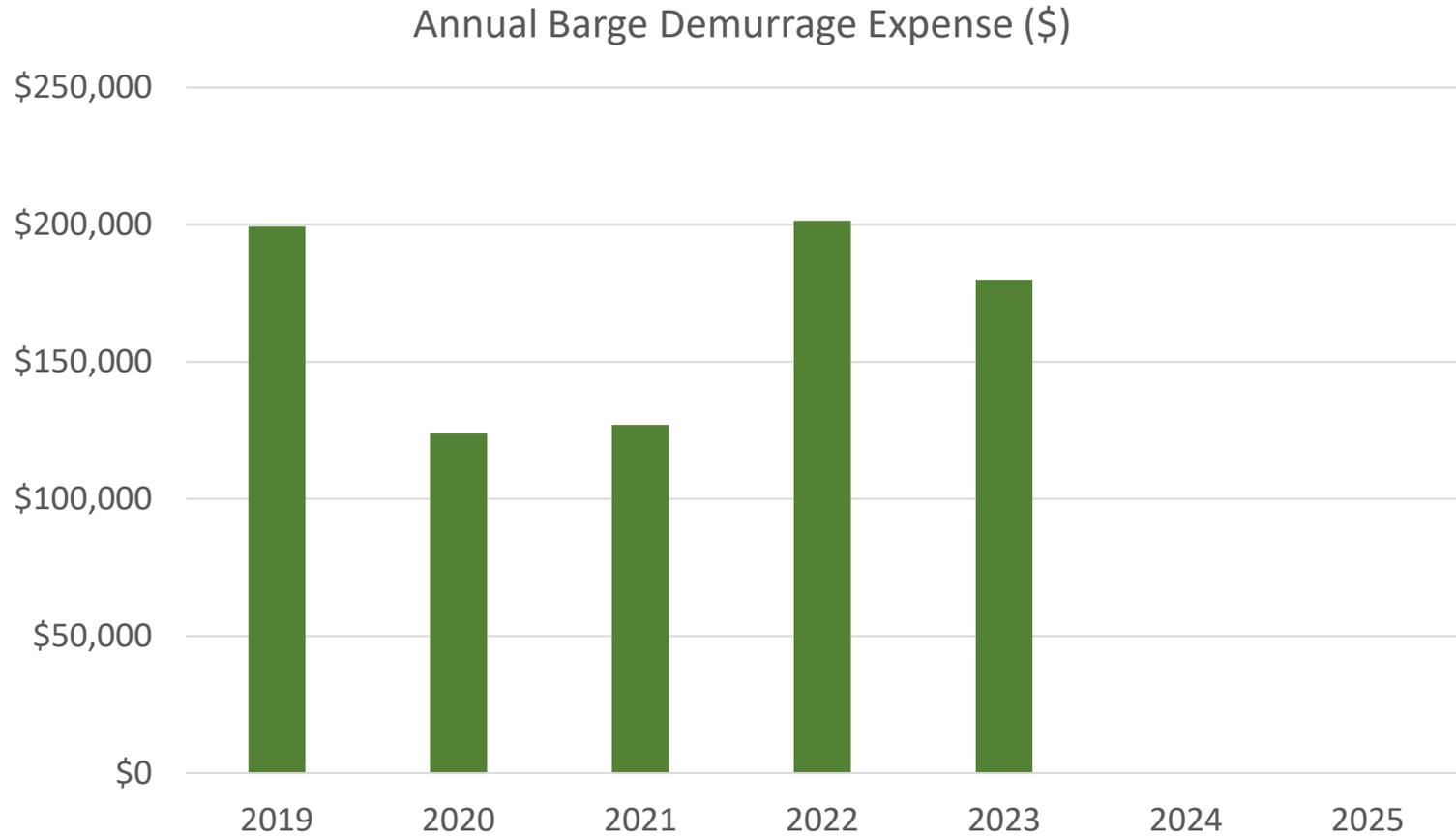


Barge Demurrage

- The total amount of money spent in penalties for exceeding the allotted amount of time spent loading/unloading a barge.
- Zero demurrage made possible by barge unloader reliability & maintenance planning, good harbor management, and good communication and scheduling with the barge carrier and coal suppliers.



Demurrage



- **Ensure Leaders are Coaching and Modeling the Behavior - Utilizing Human Performance Tools and Practices**
- **Meet Upcoming Environmental Requirements**
- **Plan and Adapt to 2-Unit Operation**
- **Check/Adjust Processes to Ensure Reliability and Efficiency**
- **Continue to Forecast Long Term Budgets by Evaluating Upcoming Needs**

