

# **Rock Island Spillway Bays 17 & 25 Hoist Replacement**

## **Commission Presentation**

April 15, 2019



# Rock Island Spillway Bays 17 & 25 Hoist Replacement

## Presentation Purpose:

Review staff recommendation to revise scope and budget from repair to replace.



# Rock Island Spillway Bays 17 & 25 Hoist Replacement

Proposed Commission Action:

- 1) Approval of budget revision for revised scope.
- 2) Authorization to advertise bids.



# Rock Island Spillway Bays 17 & 25 Hoist Replacement

## Agenda

- Background
- Project Objectives
- Alternatives
- Recommendation
- Next steps



# Background

## Spill Bays 17 & 25

**100 Ton Hoist Original 1970**

**Rerated to 116 Ton in early 90's  
Relocated to spill bays 17 & 25.**



# Background

## Bay 17 & 25 Hoist Configurations



### Auto Hoist Purpose:

- Allows remote gate operation from RI Control Room or Dispatch
- Located at shallow spill bays - one 22-foot gate linked to one 11-foot gate.
- Flow Capacity approx. 16 to 20 kcfs per bay
- Critical to managing reservoir water elevations, especially during unexpected flow changes such as powerhouse unit load rejections.



# Background

## Bay 17 Hoist Failure



### Failure Event:

- March 29, 2017
- Gate initially opened to 8 feet
- Failure occurred in a hoist gear box
- Without knowing of failure, gate was lowered to closed position.
- Next operation to open gate caused gate racking and rope failure. (Hoist was trying to lift gate from one side only)

### Actions Taken

- Hoist removed and spill bay configured for manual gate operation (gantry cranes)
- Spill Bay 25 of similar design inspected
  - Gear shaft had cracks
  - Spill bay 25 equipment removed

# Background



## Damage Summary:

- Wire rope failed
- North guide rail damaged
- 22 foot gate to 11 foot gate linkage damaged
- Broken Shaft on North side gearbox
- Center worm gear teeth damaged



# Background

- Gear Box



- Broken Gear Shaft



Location of  
sheared shaft

# Project Objectives

- Determine if Auto Hoist function should be restored.
- If determined to be restored :
  - By when.
  - Confirm required design load (site load test).
  - Improve safety and access for operation and maintenance.
  - Design criteria consistent with spillway modernization study.
  - Minimize construction downtime and impacts to other projects.



# Alternatives

- Operate spill bays 17 and 25 with gantry cranes.
  - Short term; Long term; Until spillway modernization study completed.
- Replace failed components with like kind (repair).
- Replace with properly sized equipment.

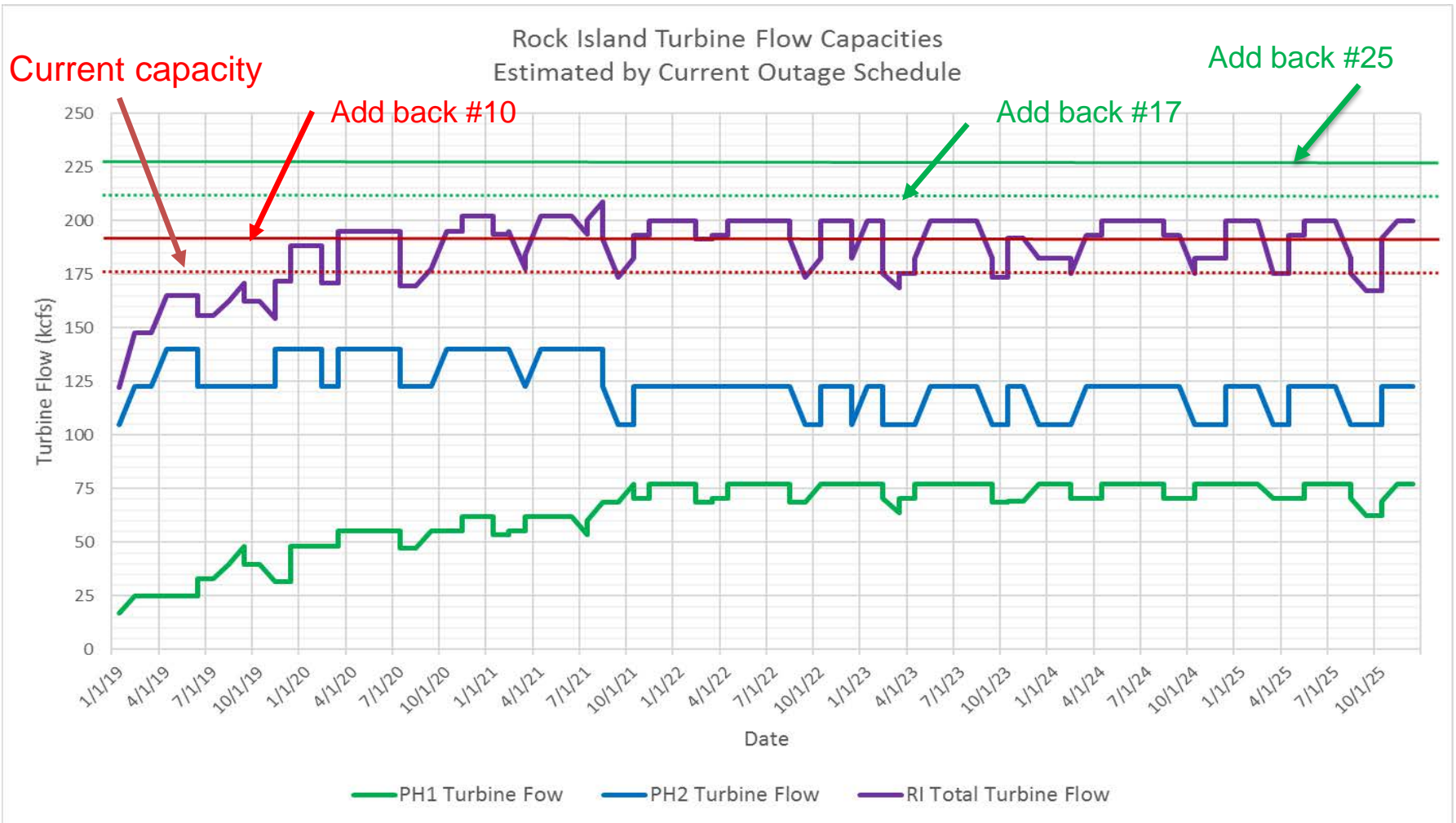
# Recommendation

Replace with properly sized equipment now.

- Justification:

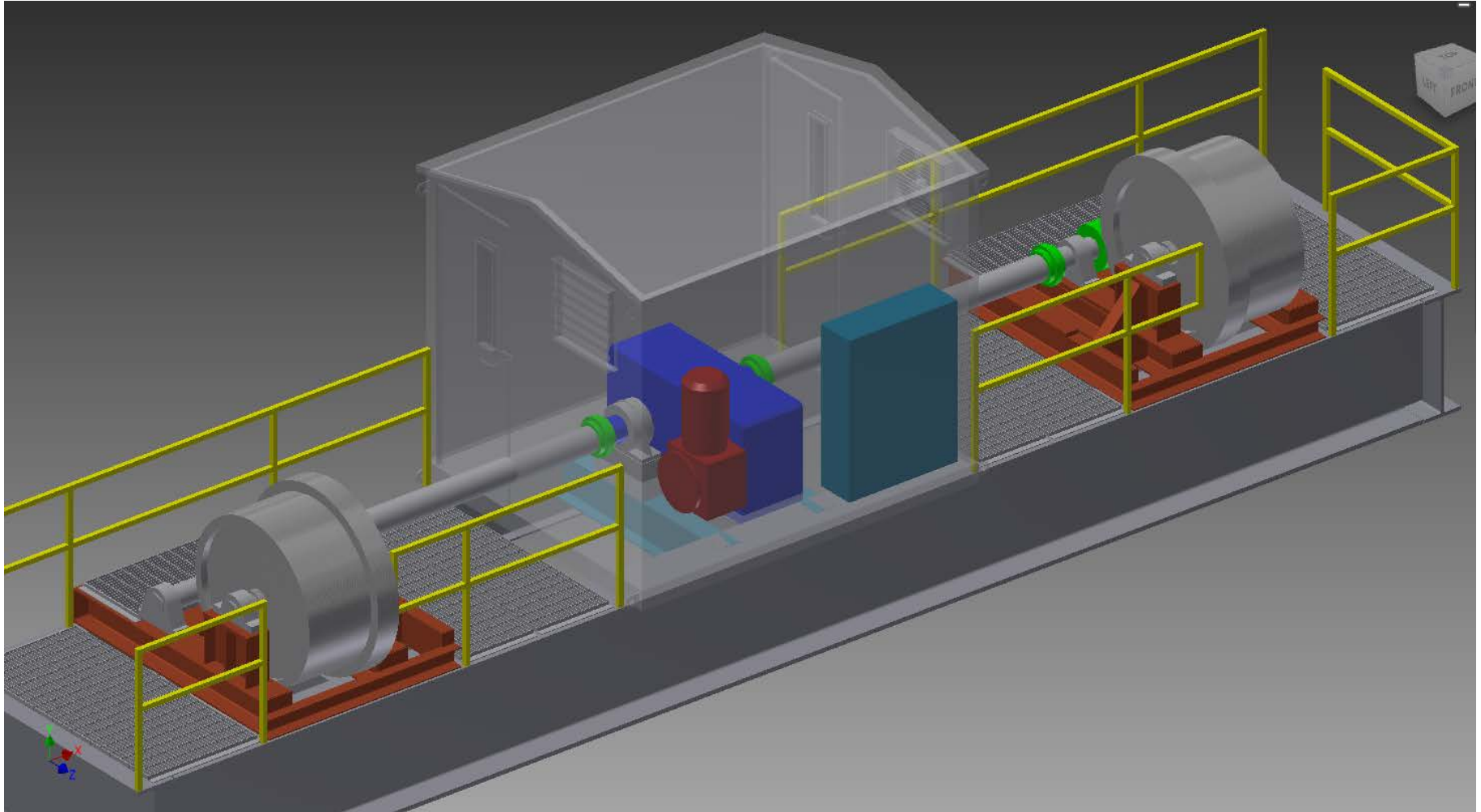
- Auto spill capacity should be equal or greater to turbine capacity to mitigate risk and damage of overtopping.
- Provide redundancy for potential other hoist downtime (maintenance, failures).
- Improve safety by decreasing dependency on crews to operate cranes to hoist gates.
- Improved flexibility for unexpected flow changes due to changing Mid-Columbia River coordination.
- Spillway Modernization implementation 2022+

# Justification





# Recommended Alternative



# Next Steps

- Revision to 2019 Budget
  - New \$3.2M Capital Project for purchase of two gate hoists. Expenditures: 2019 \$1.4M; 2020 \$1.8M.
  - 2019 District Capital Budget to remain the same.
  - Need original \$500k O&M budget for steel structure and concrete repairs, and gate modifications. 2019 - \$200k; 2020 - \$300k.
- Approve resolution to advertise Bids
- Load test – April
- Solicit bids May-June 2019
- Manufacture, test and deliver by Feb. 2020
- Install March 2020



Questions?