



TACOMA POWER
TACOMA PUBLIC UTILITIES

Cushman 2 Unit 31, 32 Rebuild Project

Public Utility Board Study Session Presentation

November 16, 2022

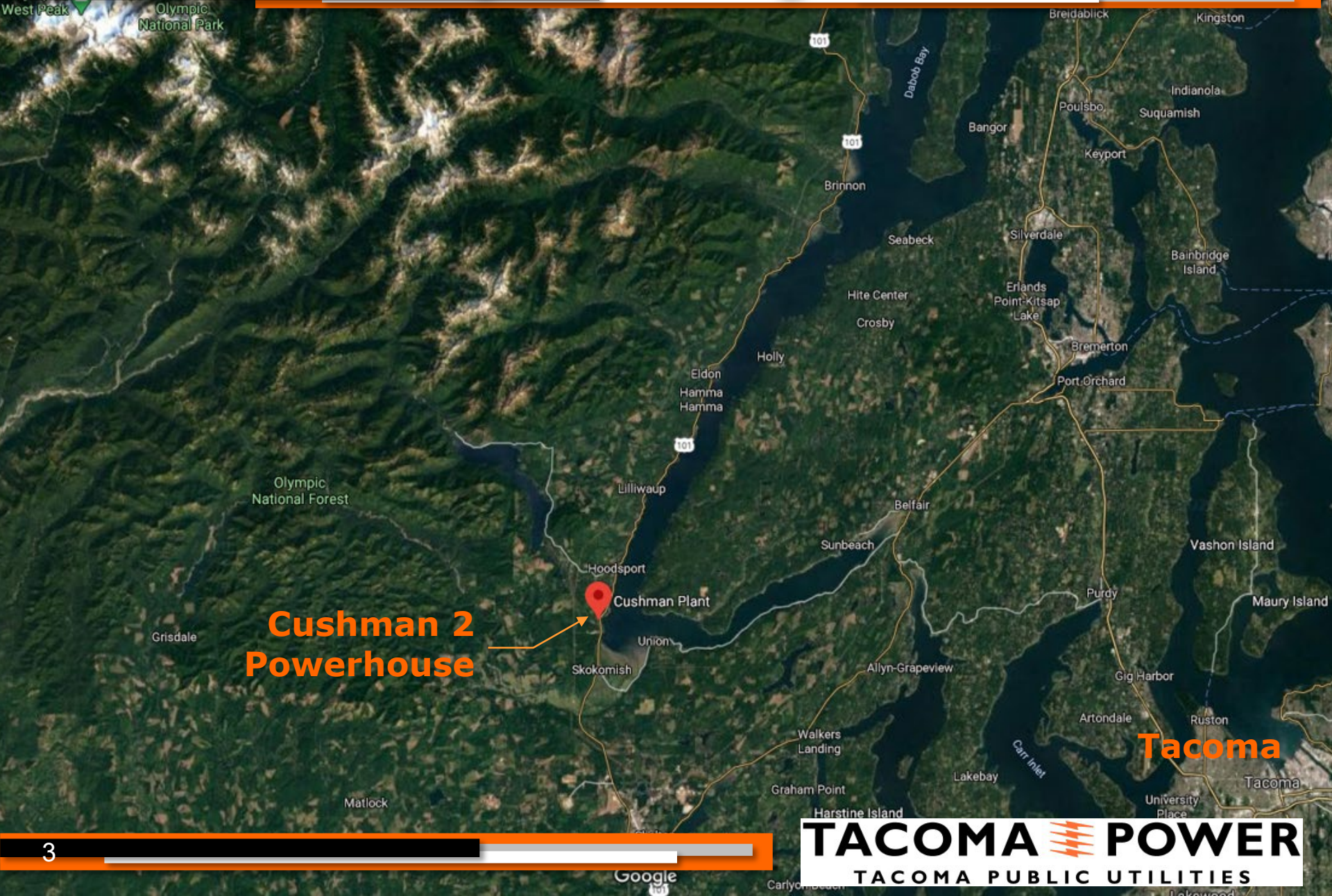
Ozan Ferrin, Generation Engineering Manager

David Wagner, Generation Electrical Engineering Manager

Tacoma Power's Generation Supply

- **100% Clean Energy**
- **46% Tacoma Power owned**
- **22 hydro units – 833 megawatts generation**

Cushman Hydro Project



**Cushman 2
Powerhouse**

Tacoma

Cushman 2 Powerhouse

- Built in 1930
- Three 27,000 kilowatt hydro units
- 233 million kilowatt-hours
- 18,500 NW homes

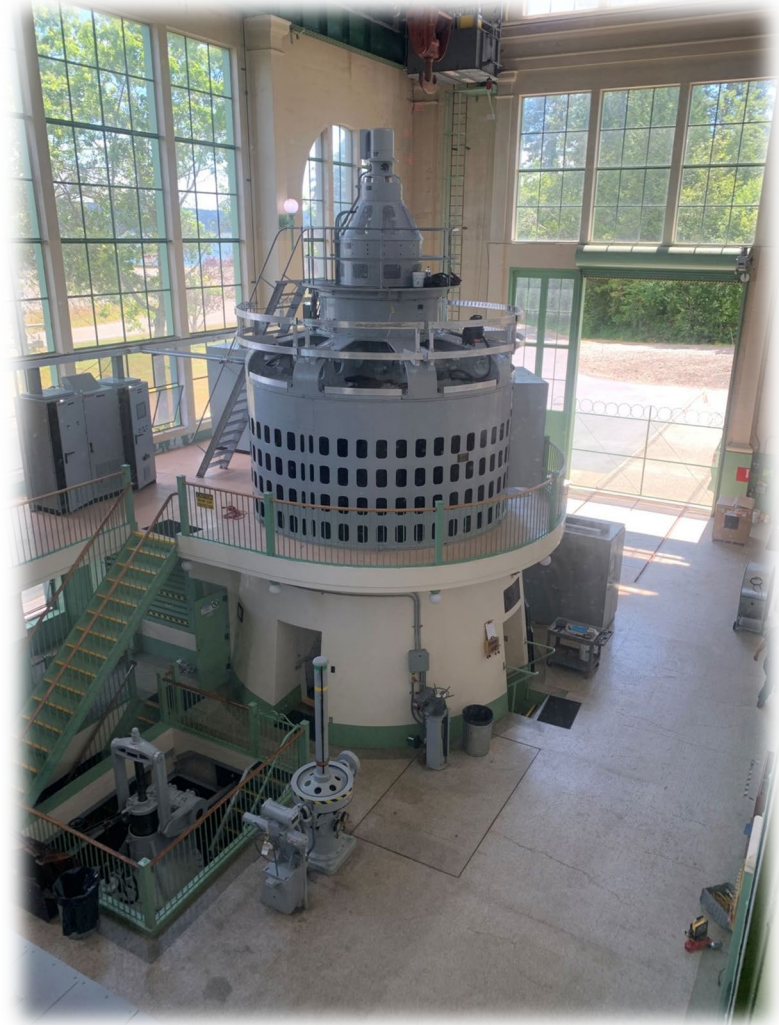
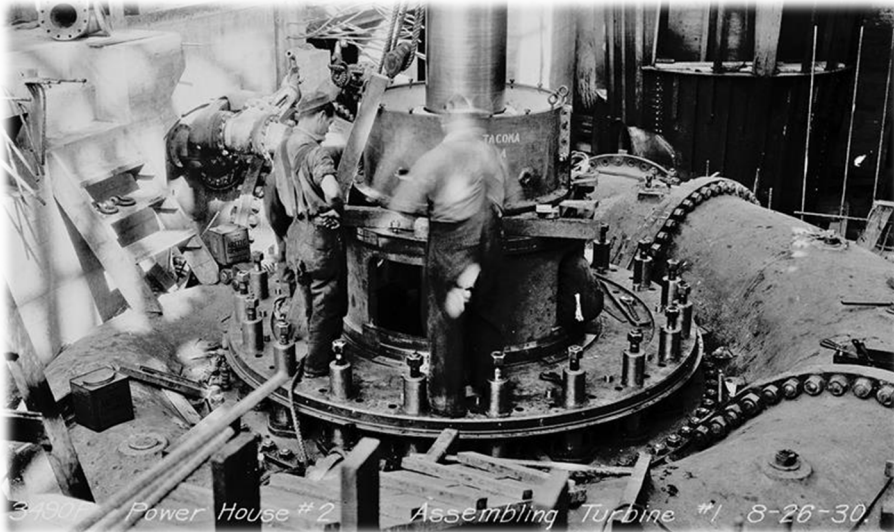
Project Background

- 1975 - Last major generator work
- 1995 - Turbine runners replaced
- 2017 - Condition assessment completed
- 2019 - Business case for project approved
- 2020 - Approved for Design-Build contracting
- 2021/22 - Procurement
- Next step - Board approval of contract



Project Scope (Overview)

- Design and manufacture new components
- Construction Process:
 - Disassemble Unit
 - Assess components
 - Replace, repair, and re-machine parts
 - Reassemble Unit
 - Test and commission



Project Scope - Generator

- New stator frame
- New stator core
- New stator windings
- Refurbish rotor poles



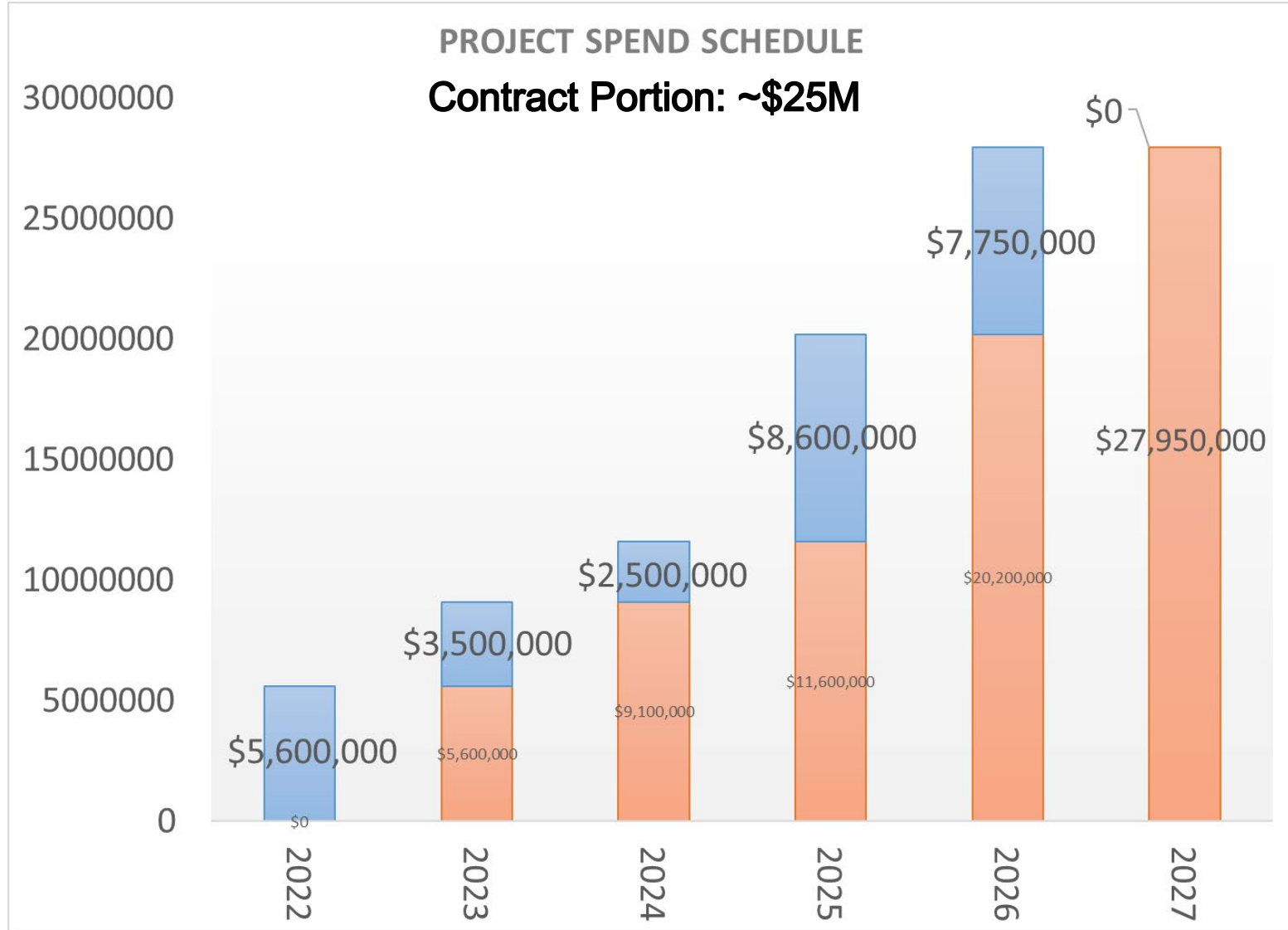
Project Scope - Turbine

- New wicket gates
- New head cover
- New bottom ring
- Refurbish worn parts



O-F P.H. No 2- Runner & Shaft-Unit No 2 2-20-31

Capital Spend Plan / Per Year



Annual Benefit / Per Unit

CURRENT ANNUAL BENEFIT

ENERGY	CAPACITY	TOTAL
\$1.69M	\$3.35M	\$5.04M

INCREMENTAL ADDED BENEFIT (10% INCREASE IN UNIT RATING)

ENERGY	CAPACITY	TOTAL
\$169,000	\$335,000	\$504,000

NOTE: “Synchronous Condense Mode Operation” will be added as part of the Rebuild Project which will have benefits in the \$200,000-750,000 annually

Synchronous Condense Mode allows the ability to run every hour for full range and take advantage of extreme prices (50x normal prices) instantly

An aerial photograph of a large, light-colored industrial building with a flat roof and multiple arched windows. The building is situated on a hillside. In the foreground, there is a bridge with a road crossing it, and a parking lot with several vehicles. The word "Questions" is overlaid in the center of the image.

Questions

Project Schedule

Activity	Timeline
Planning and PRC Approval	October 2020 - December 2020
Procurement	January 2021 - June 2022
Design-Build Contract Negotiation and Award	July 2022 - November 2022
Design & Manufacturing	December 2022 - February 2025
Construction (Unit 32)	March 2025 - October 2025
Construction (Unit 31)	March 2026 - October 2026
Final Completion and Closeout	October 2026 - December 2026

Tacoma Power - Generation

Cushman Hydro Project

