Crater Lake Dam Storage may offset 25% Diesel consumption.

Orca Power Plant
10.8 MW Diesel Control Center, CEC

Humpback Creek Hydroelectric Plant
1250kW (2 x 500 kW + 1 x 250 kW)
17,000 foot UG and submarine transmission line

City of Cordova
1,566 customers, 18MW
One Substation
78mi UG distribution lines

Power Creek Hydroelectric
6278kW (2 x 3124 kW)
25 kV transmission ties to Eyak Substation, Inflatable dam

Orca Power Plant
10.8 MW Diesel Control Center, CEC

Crater Lake Dam Storage may offset 25% Diesel consumption.
Power Creek Hydroelectric Intake
Sometimes there is excess rain producing too much water, and sometimes we use the glacier melt for power.
CEC Controls System Frequency by Deflecting 500kW of water, a waste of energy (orange), and there is excess in summer (green), and not enough in winter (black/diesel).
TIMELINES

- 2007 – CEC System Loads Exceed Hydro Capacity and diesel peaking creates a “valley of death”
- 2012 – CEC partners with ACEP and recognizes the benefits of energy storage to CEC Grid
- 2015-16 ACEP Approaches Dr. Gyuk with CEC use case/opportunity and rich CEC data set
- 2016 Dr. Gyuk initiates phase 1 modelling of CEC energy storage via Sandia Laboratories
- 2017 Modelling and analysis indicates a right-sized, right-located Lithium Ion solution for CEC
- 2018 Dr. Gyuk sponsors phase 2 specification and procurement of BESS
- October 2018 CEC BESS Ordered
- May 2019 BESS arrives on site
- June 2019 BESS Installed
- July 2019 BESS Operational
- November 2019 Fully integrated and automated, saves $10,000 over 2-day Thanksgiving Holiday
- November CEC achieves 94% hydro crushing all previous records
- December 2019 CEC achieves 86% hydro crushing all previous records
- April 2020 CEC goes 100% hydro 3 weeks early and starts automated electric boiler heating
- 2021: Saved 50,000 gallons of diesel directly with BESS, 14,000 gallons indirectly with e-boiler
- 2022: Delivering more hydro, upgraded diesel heat loops to save 25,000 gallons with e-boiler
- 2022: New valves unleashed more hydro; extending heat loops and EV charging with excess hydro
Summary

- Energy Storage Systems are the Key to removing diesel from our generation scheme and moving it to Backup only status.
- As we continue to improve our understanding of the BESS, we are saving $150-$200,000+ per year in fuel and maintenance costs.
- A BESS is the best fit for Cordova Electric Cooperative for Energy Storage at this time.
- This project would not be possible without partners.
- Swiss Army Knife - frequency control, spinning reserve, and arbitrage all at the same time.
- Opens the door for solar and other renewables.
- Stored Hydro would be an excellent ESS option for Cordova to make it a self-sufficient energy system.
- Our Goal is to provide Safe, Reliable Power at the best price possible.
Thank You