

# Public Power Benefit Update

Hydro Research  
January 16, 2017

No Action Required. Input desired.

# Hydro Research Objective

- Fund a comprehensive study to determine if and how Chelan PUD can support the development of a Hydro Energy Research Institute in Chelan County focused on types of challenges generation utilities are facing.
  - Initial funding for Hydro research from 2015/2016 PPB = \$250K

# What we have been learning

Based on discussions with National Hydropower Association members, Department of Energy, Pacific Northwest National Laboratories, technology developers, and Sapere; and our development of a white paper, we have concluded:

- There is an opportunity to make a meaningful impact on hydro operations now!

# Two Areas of Focus

1. Data Analytics Platform
2. Sensor Technology development

# Approach

- Participate in body of knowledge to better understand what research is already happening and develop priorities for industry
- Develop a plan for increasing data analytics capability. Coordinate with Business Intelligence effort.
- Identify investment opportunities for technology development to help us improve our predictive capabilities
- Based on results of above bullets, reassess feasibility of a Hydro Research Institute in Chelan County (2018-2019 timeframe)

# Plan for 2017

- Develop a Project Plan for a data analytics platform (~\$200K)
- Invest in rotor sensor technology development (~\$50K)
- Recommend allocating additional funds for 2017 including up to \$250K this year. We would begin developing a proof of concept model for data analytics for Rocky Reach Units C1-7

# Rocky Reach Unit Model

## Goal:

To develop a hydro machine system computer model for the Rocky Reach units that will facilitate understanding of the machines, ageing functions, and allow predictive evaluations to maximize the value of the investments in sensors and equipment.

# Rocky Reach Unit Model 2017 Project

- Extract and transform operations data
- Develop contextual system model (on paper)
- Validate model (test assumptions, identify boundary conditions)
- Deliverable:
  - Initial model process validation report



# Rotor Mounted Sensor Platform

- Existing sensors are stationary – look from outside in
- Concept is a rotor mounted platform that looks inside out
- The sum of the two provides a complete view of the generator
- Benefit – better management of the units
- US Bureau of Reclamation has committed

# Rotor Sensor Platform

## 2017-18 Project

- 2017
  - Design hardware and software platform
  - Test concepts and viability
  - Consider additional investment as part of 2018 budget process (total = \$200K)
- 2018 (if viable)
  - Deploy prototype at Rocky Reach
  - Test and validate if good
  - Deploy a second sensor, 2018/2019

# PPB Hydro Research Funding

- 2015/2016 - \$250,000 (previously allocated)
- 2017 - \$250,000 (2017 PPB)
- 2018 – likely request for \$150,000 to continue rotor sensor development

# Questions

