Implementing ideas to support resource flexibility

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PRESENTATION OVERVIEW

Changes in operations
Example 1 - Mossyrock low range operations
Example 2 - Cushman cavitation repair
Example 3 - Remote access
Closing thoughts
We're celebrating 125 years

On April 12, 1893, Tacoma residents learned they had enough votes to buy the electric and water utilities for $1.75 million - creating Tacoma Public Utilities.
Mossyrock low range operation
BACKGROUND

Originally built in 1968 – 2 units

Rebuilt in mid 2000s including new runners

No low MW operating range
PROCESS

Added instrumentation (Z axis vibration, draft tube pressure sensors, accelerometers)

Gathered data and conducted tests at various net head

Analyzed data

Implemented thresholds for alarms

Instilled an inspection program
RESULTS

U51 Machine Condition at 310 ft Net Head

U51 Turbine Guide Bearing X-Vibration (Average)
Cushman 1 runner repair
BACKGROUND

Originally built in 1926 – 2 units

Cavitation repairs every 5-7 years

Lasted ca 11 weeks

Removal of headcover, bearing, operating ring, gate levers

Awkward working clearances
PROCESS

Reviewed archived drawings and documents including original specification

Testing, design checks and pre-outage inspection

Developed procedures

Reviewed and mitigated risk

Comfortable reinstating an abandoned feature
RESULTS

Lowered telescopic draft tube
Reduced outage time to 7 weeks
Reduced risk – safety and disassembly
Remote access of plant control systems (PCS)
BACKGROUND

Access to plant control systems from TPU location

Potential delay in response time

Flexibility for staff
PROCESS

Reviewed potential solutions

Ensured security was not compromised

Built pilot, tested and eventually deployed across fleet
RESULTS

Ability to access PCS over the internet

Multifactor authentication

Reduced response time for staff – engineering & O&M

Reduced PCS vulnerability
Takeaways

Asking questions

Reviewing information and understanding data

Using experience

Leveraging technology

Can help us make informed decisions and adapt to the changing landscape