Agenda Today:

- Past infrastructure investments Chelan region
- Electrical system condition & forecasted infrastructure needs
- System planning timeline
- Outreach approach

- Seeking concurrence on approach & timeline
Historical Chelan Regional Capital Infrastructure Investments:

- Chelan Falls Manson 115KV Rbld - 1984
- Submarine Cable lake crossing - 1984
- Expanded Manson Sub - 1991
- Chelan Falls to Rocky Reach II - 1998
- Rebuilt Wapato Sub - 2001
- Knapps Coulee 115KV Line - 2003
- Second circuit to Howard Flats - 2003
- New South Shore Sub - 2004
- 2nd Submarine cable - 2008
- Expanded Chelan Substation - 2009
- South Shore Feeder Capacity - 2013
- McNeil Canyon Transfer Douglas - 2015
- North Shore Substation property - 2017
- Union Valley Sub rehabilitation - 2018

Since 1984 investments > $ 30 Million
## Energy Conservation Investments

**Chelan Regional Area**

**Since 2010**

<table>
<thead>
<tr>
<th>Area</th>
<th>PUD Conservation Incentives Paid</th>
<th>Energy Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chelan</td>
<td>$2,593,904</td>
<td>2.01 avg. MW</td>
</tr>
<tr>
<td>Manson</td>
<td>$524,341</td>
<td>0.24 avg. MW</td>
</tr>
<tr>
<td>Combined</td>
<td>$3,118,245</td>
<td>2.25 avg. MW</td>
</tr>
</tbody>
</table>
Current planning condition:

The Lake Chelan regional area continues to see steady growth in electrical consumption necessary to meet the rapidly growing demands of new residential, commercial and industrial commerce. Growth in energy usage in the Lake Chelan area over the last three years is 3 to 5 times higher than other areas within the County.

Recent planning efforts have identified the need to build additional electrical infrastructure in order to maintain reliable and available electrical service to new and existing customers. Specifically, a new 28 MVA substation in the vicinity of the Lake Chelan Dam and south of the City limits has been identified as the optimum investment level to meet the demand and provide future growth capacity.
Lake Chelan Area Planning

Current Electrical System Projection (2020)

- Wapato Sub: 62%
- South Shore Sub: 35%
- Manson Sub: 89%
- Union Valley Sub: 88%
- Chelan Sub: 84%
- State Park: Below 70%
- South City Sub: Below 70%

KEY
- Sub
- Distribution Feeder
  - Below 70%
  - Above 70%
  - Above 80%

(Loading condition above 80% requires new planned construction)
Future State Electrical System

Lake Chelan Area Planning

Future Howard Flats Sub

Airport

Manson Sub

89%

Wapato Sub

62%

Future N. Shore Sub

50%

Union Valley

60%

Chelan Sub

60%

Future South City Sub

50%

State Park

Manson

North Shore

South Shore

Lake Chelan

S. Shore Sub

35%

(Loading condition above 80% requires new planned construction)
New substation South of Chelan city relieves pressure on Chelan Sub, Union valley & South Shore substations.

Note: specific sub location not determined at this time
Potential Routes

A. Chelan Falls Switchyard following Gorge Road, PUD property, traversing to new substation location south of Dam.

B. Tapping Chelan- Wapato 115 KV line near Hwy 150 traversing private property crossing the Chelan Gorge River before reaching the new substation location south of Dam.

C. Tapping Chelan- Wapato 115 KV line near Union Valley Substation behind the existing hospital, traversing private property and using public right of way through the City of Chelan following Robinson Street crossing the Chelan Gorge River before reaching the new substation location south of Dam.
Applying **Lessons Learning** When Planning For New Infrastructure:

- Inform early and often
- Identify & weigh options in partnerships with community stakeholders
- Proactively plan for immediate and long term needs
- Incorporate community values
Current load projections show new substation energization no later than Jan, 2024.

Lake Chelan Planning Timeline

Proposed South City Sub Planning Schedule

System Modeling
Planning & Community Outreach
Property Acquisition & Permitting
Design
Construction
In Service

We are here now

2018 - 2019
2020
2021
2022 - 2024

Major Milestone *

* Note: Assumes North Shore Sub is on-line

Current load projections show new substation energization no later than Jan, 2024.
External Influences That Could Impact Timeline:

• Excessive growth and expansion beyond planned
  
  (High Density loads – Unforeseen large loads)

• Inability to attain permitting and community support

• Insufficient financial resources
Chelan County PUD Staff Activities to Date:

• Evaluating electrical system models identifying need for new substation – south of dam, gorge area

• Evaluating alternatives for transmission sources to new substation

• High level feasibility analysis for substation and transmission location alternatives
Feasibility Categories
transmission & substation locations

- Functional
- Safe
- Reliable
- Cost effective
- Accessible
- Standardized components
- Maintainable
- Expandable
- Compatible to environment
- Community supported
- Minimized aesthetic impacts
- Coexistent with other land use
- Resilient to Fire
- Permissible
- Future redundant capable
- Constructible
- Clear Zone, Right-of-way impacts
## Initial Stakeholders List:

<table>
<thead>
<tr>
<th>City of Chelan</th>
<th>Community Center Lk. Chelan</th>
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</thead>
<tbody>
<tr>
<td>Chamber of Commerce</td>
<td>Trout Blue Chelan</td>
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<tr>
<td>Lk. Chelan Reclamation District</td>
<td>Lake Chelan AVA Viticultural Area</td>
</tr>
<tr>
<td>Lake Chelan Rotary</td>
<td>Chelan Community Hospital</td>
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<tr>
<td>Chelan Schools</td>
<td>Trail Alliance</td>
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<tr>
<td>Greater Wen Irrig Distr. (GWID)</td>
<td>PUD Line Operations &amp; Fish/Wildlife</td>
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<tr>
<td>Slidewaters</td>
<td>Chelan County Planning</td>
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<tr>
<td>Chelan Airport</td>
<td>Others as identified</td>
</tr>
<tr>
<td>Campbell’s Resort</td>
<td></td>
</tr>
<tr>
<td>Chelan County Fire</td>
<td></td>
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</tbody>
</table>
Planned Activities in 2019:

• Optimize feasibility analysis for alternative substation areas  Q1

• Optimize a set of alternatives for transmission sources to new substation  Q1

• Bring community stakeholders together to:  Q1-Q2
  • Identify with the system challenge and options
  • Solicit input from community and interest groups
  • Seek alignment on a selection process
  • Seek alignment on fire hardening recommendation

• Refine a plan & report back to Board of Commission:  Q2