

Lake Chelan Regional Area Planning

Electrical System Reliability



January 21, 2019

Presented by: Andy Wendell, Chelan PUD



Lake Chelan Area Planning

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



Lake Chelan Regional Planning



Energy Conservation Investments

Chelan Regional Area

Since 2010



Lake Chelan
Regional Planning

Area	PUD Conservation Incentives Paid	Energy Savings
Chelan	\$ 2,593,904	2.01 avg. MW
Manson	\$ 524,341	0.24 avg. MW
Combined	\$ 3,118,245	2.25 avg. MW



Lake Chelan Area Planning

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.

Current Electrical System Projection (2020)

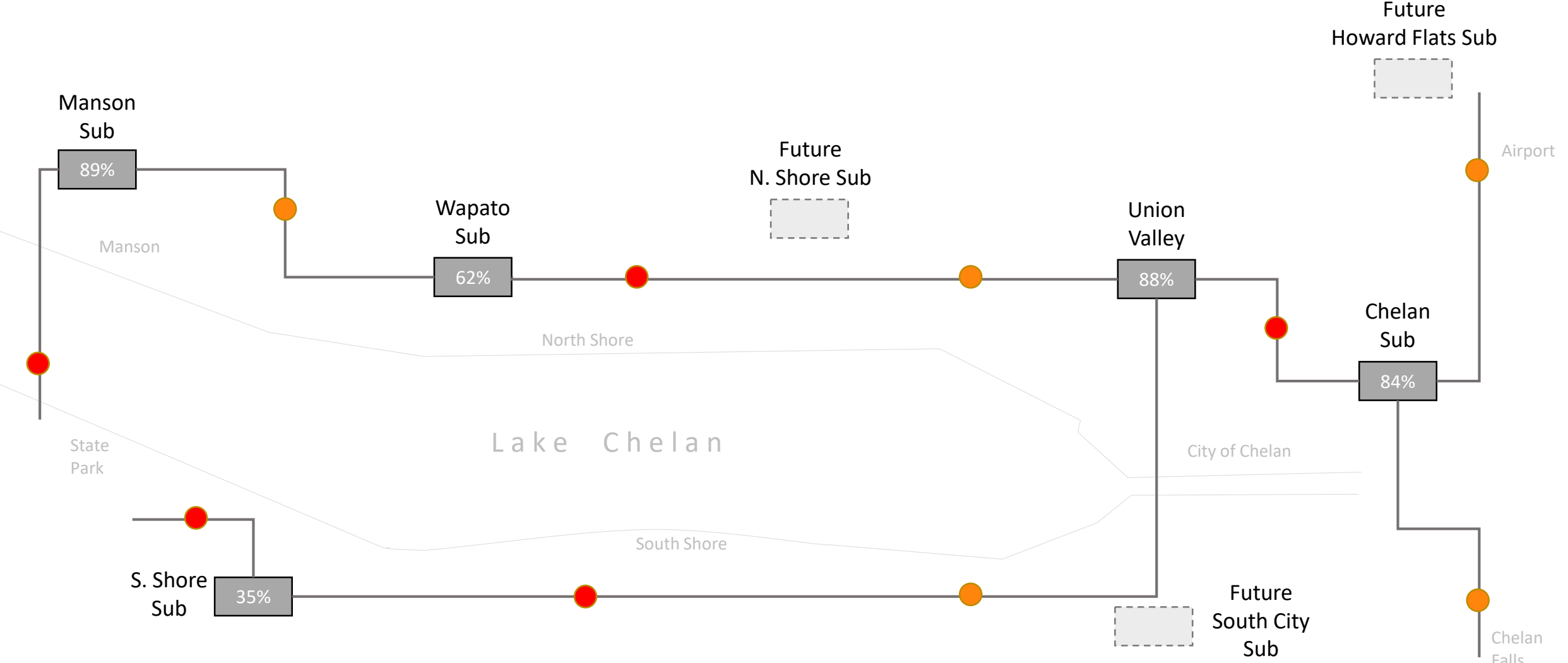
KEY

Sub Distribution Feeder

● Below 70% ● Above 70% ● Above 80%

Lake Chelan Area Planning

(Loading condition above 80% requires new planned construction)



Future State Electrical System

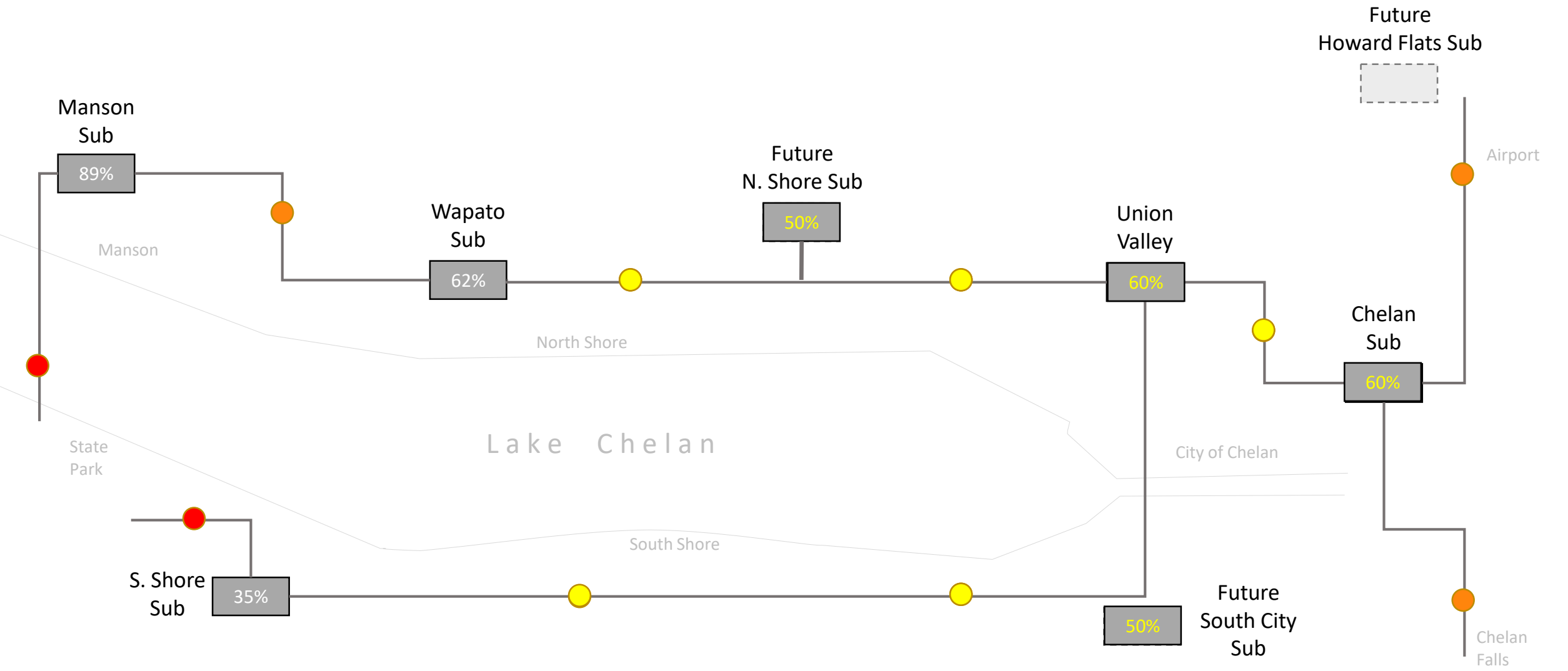
KEY

Sub Distribution Feeder

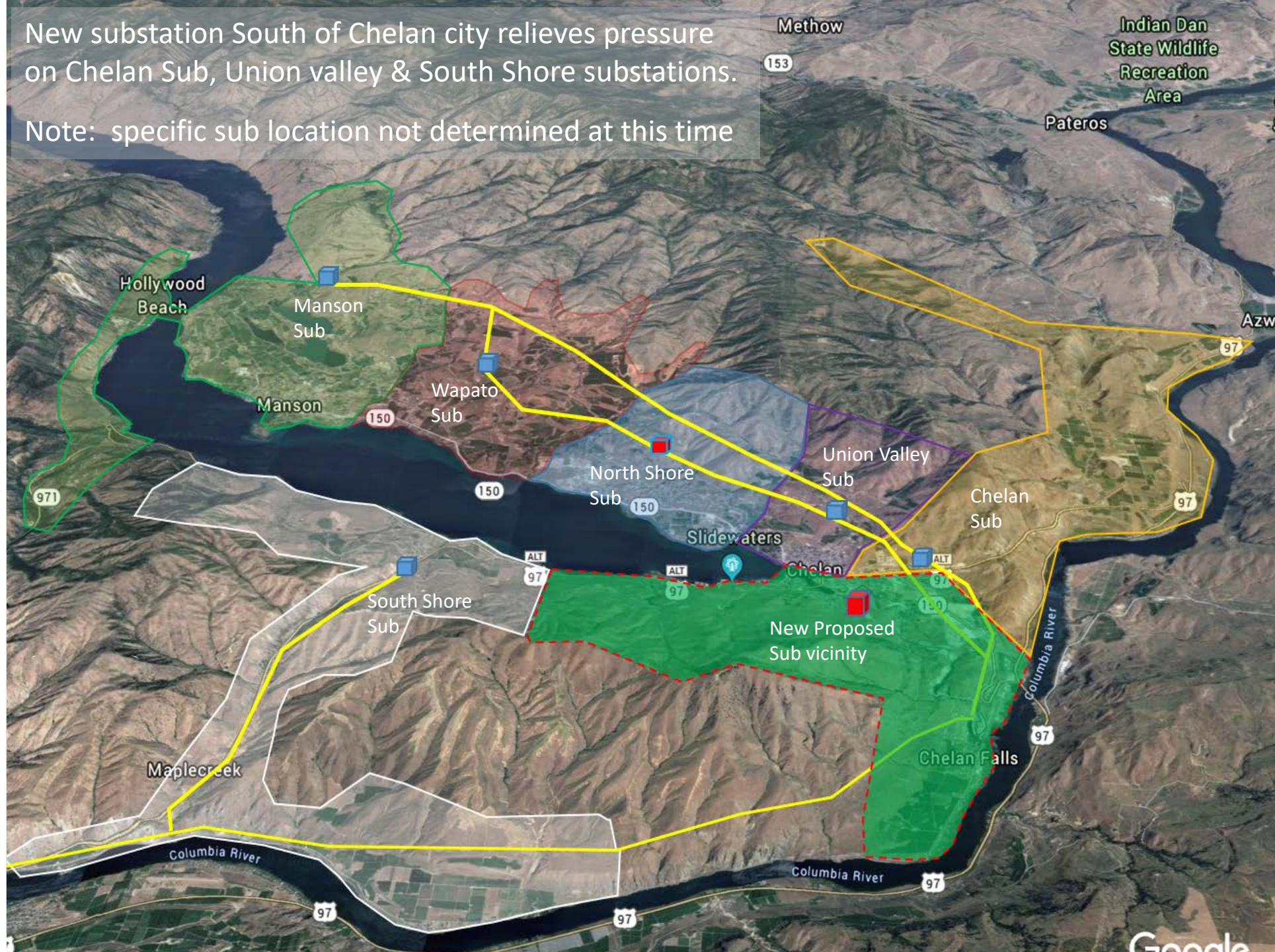
● Below 70% ● Above 70% ● Above 80%

Lake Chelan Area Planning

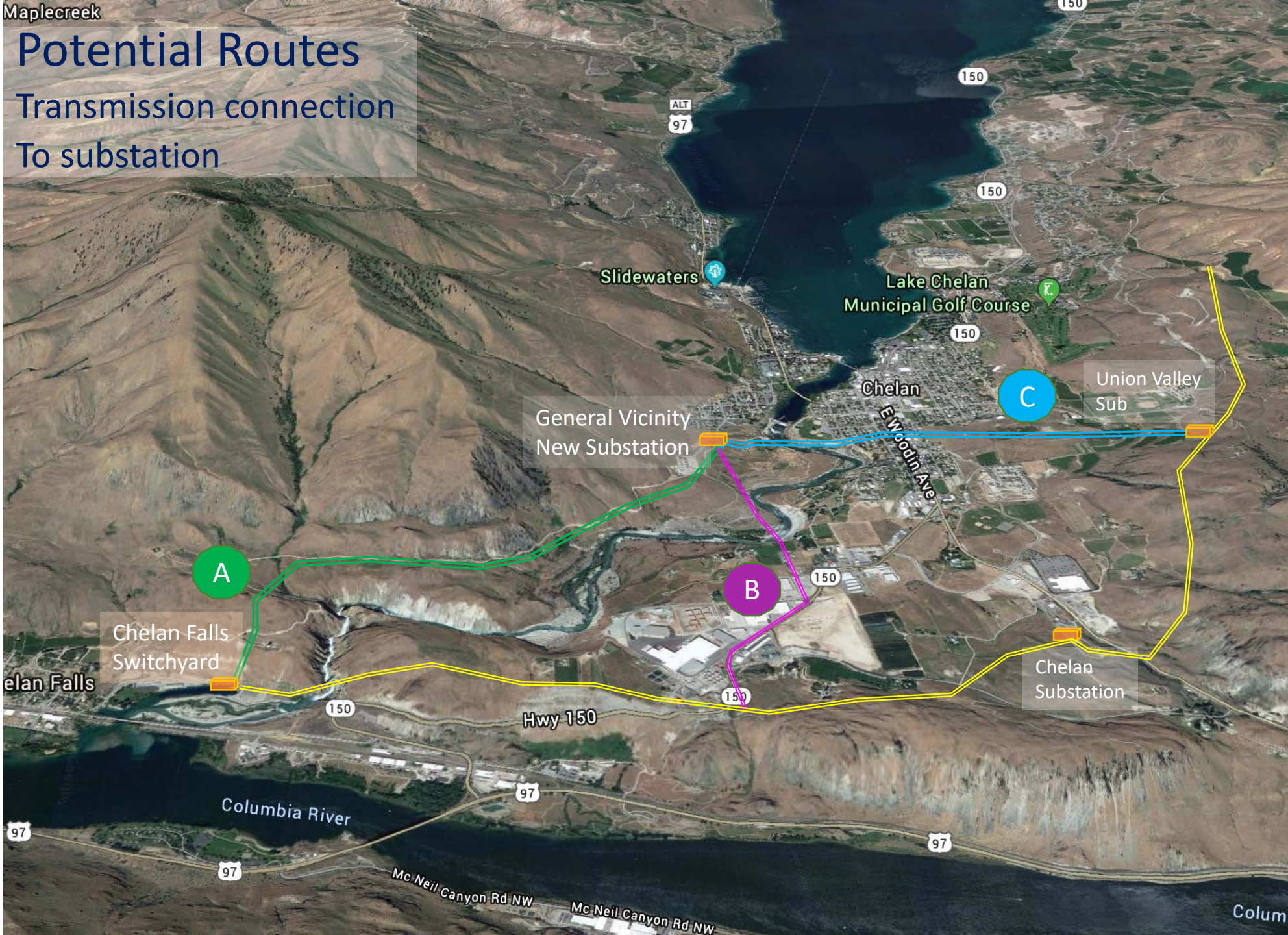
(Loading condition above 80% requires new planned construction)



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 Transmission connection To substation



Existing Transmission Line

Optional Transmission 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.



Lake Chelan Area Planning

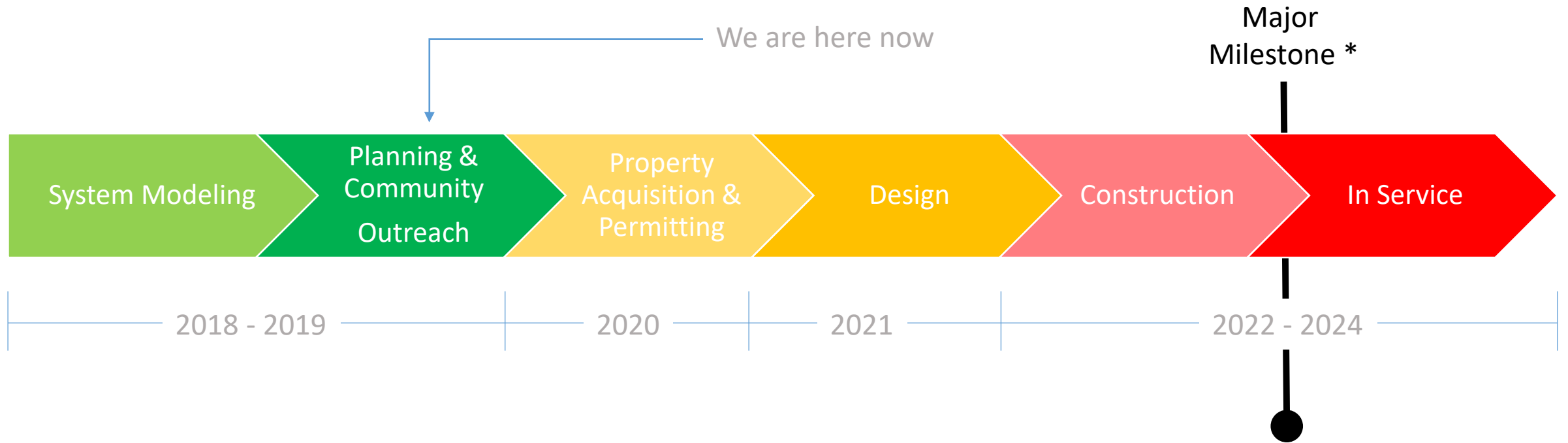
Applying **Lessons Learning** When Planning For New Infrastructure:

- Inform early and often
- Identify & weigh options in partnerships with community stakeholders
- Proactively plan for immediate and long term needs
- Incorporate community values



Lake Chelan Planning Timeline

Proposed South City Sub Planning Schedule



* Note: Assumes North Shore Sub is on-line

Current load projections show new substation energization no later than Jan, 2024



Lake Chelan Planning

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



Lake Chelan Planning

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:

- City of Chelan
- Chamber of Commerce
- Lk. Chelan Reclamation District
- Lake Chelan Rotary
- Chelan Schools
- Greater Wen Irrig Distr. (GWID)
- Slidewaters
- Chelan Airport
- Campbell's Resort
- Chelan County Fire
- Community Center Lk. Chelan
- Trout Blue Chelan
- Lake Chelan AVA Viticultural Area
- Chelan Community Hospital
- Trail Alliance
- PUD Line Operations & Fish/Wildlife
- Chelan County Planning
- Others as identified



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