

CHELAN AREA

Transmission Line Fire Protection

September 4, 2018



CHELAN COUNTY

Objective of this presentation:

We are not looking for a Board decision today.

The purpose of this presentation is to start the discussion of a potential fire protection project

Project aligns with the District Strategic Plan

GOAL: To achieve the greatest reliability for the Chelan area that the community supports

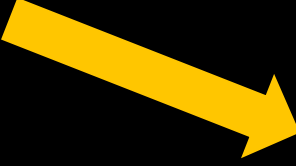
Why we are here...



**Chelan County PUD
Strategic Plan 2015 – 2019**



Shaping our **utility**
to do the **best**,
for the **most**,
for the **longest**



Reinvestment



Our customer-owners were most interested in replacing or rerouting some electric lines to protect against fire and weather risks. Other high-ranking items included partnering with some customers to underground electrical lines, consolidating Chelan PUD's industrial facilities, and creating partnerships or programs to develop the skills of local job applicants. The Board confirms their commitment to reinvesting in the core, value-creating assets of hydro projects, distribution systems, facilities and people as the top priority and will use the *Owner's Guide* (<http://www.ourpublicpower.org/guide>) feedback to help prioritize reinvestment options. Increased reinvestment projects and programs will be reflected in our

Chelan County PUD Strategic Plan 2015 – 2019



2018-2022 District-wide Business Plan

- w) Harden transmission system to protect against fire/weather

Fire Risk Assessment

Countywide Results – Highest Risk

1. Lake Wenatchee / Plain area
 - Working on solutions; very difficult area
2. Chelan – Wapato
3. York – Anderson Canyon Line 3
 - Being done in conjunction with Goodwin Bridge
4. Chelan – Manson



Fire Risk Assessment (2017)

Validated actual experience from the 2015 fire

Extensive damage in Area 2

Area 1: 18 miles of line; 210 structures

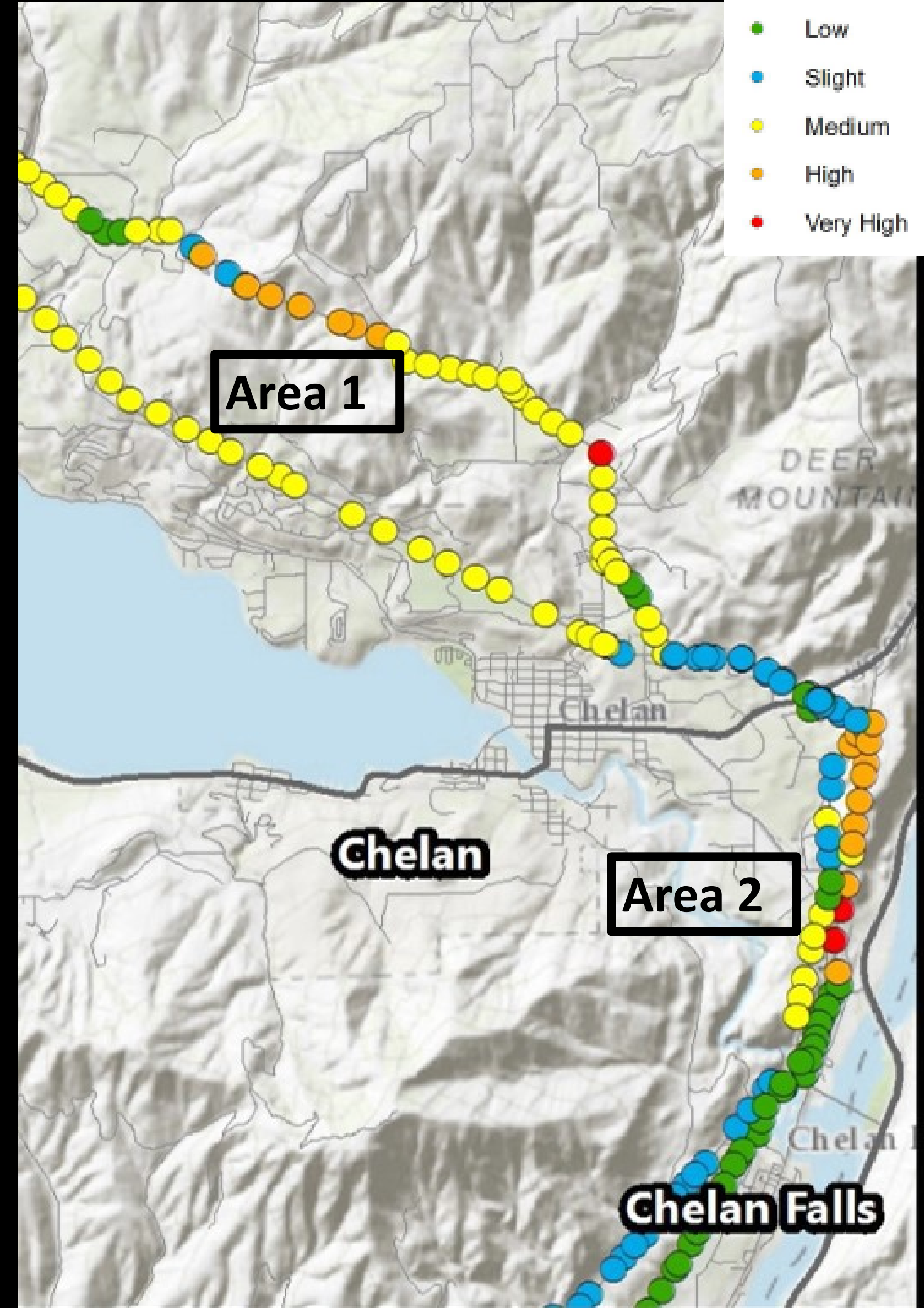
- Geographic diversity (lines farther apart)
- Configurability (able to sectionalize long sections of line for repair with minimal customer impact)

Area 2: 7.5 miles of line; 70 structures

- Two lines are parallel for approximately 3.5 miles
- Both lines burned at the same time in 2015 fire
- Connection to the power source

Proposed Project Focus Area:

- Area 2 provides greatest benefit to customer reliability



Operational Experience – 2015 Chelan Fire

- Fire caused an outage of 4 of the 5 substations in Chelan area, 8537 customers
- Twelve transmission structures on two different lines
- Significant customer impacts:
 - Water, gasoline, internet, cell service, refrigeration, commerce, etc.
- **30 hours** to repair the first transmission line
- **13 days** to repair the second



Benefits of Steel Transmission Lines

- 2014 South Malaga fire, seven wood lines burn, one steel line maintains power to Alcoa
- 2018 fire near Rocky Reach, fire burns through steel line. The line remained in service the entire time

What if one of the Chelan transmission lines would have been constructed in steel?

- The line would have either remained in service the entire time, or
- Would have been de-energized for a short while to allow the fire to pass, then re-energized. Typically a matter of hours

Steel Pole Construction / Aesthetics

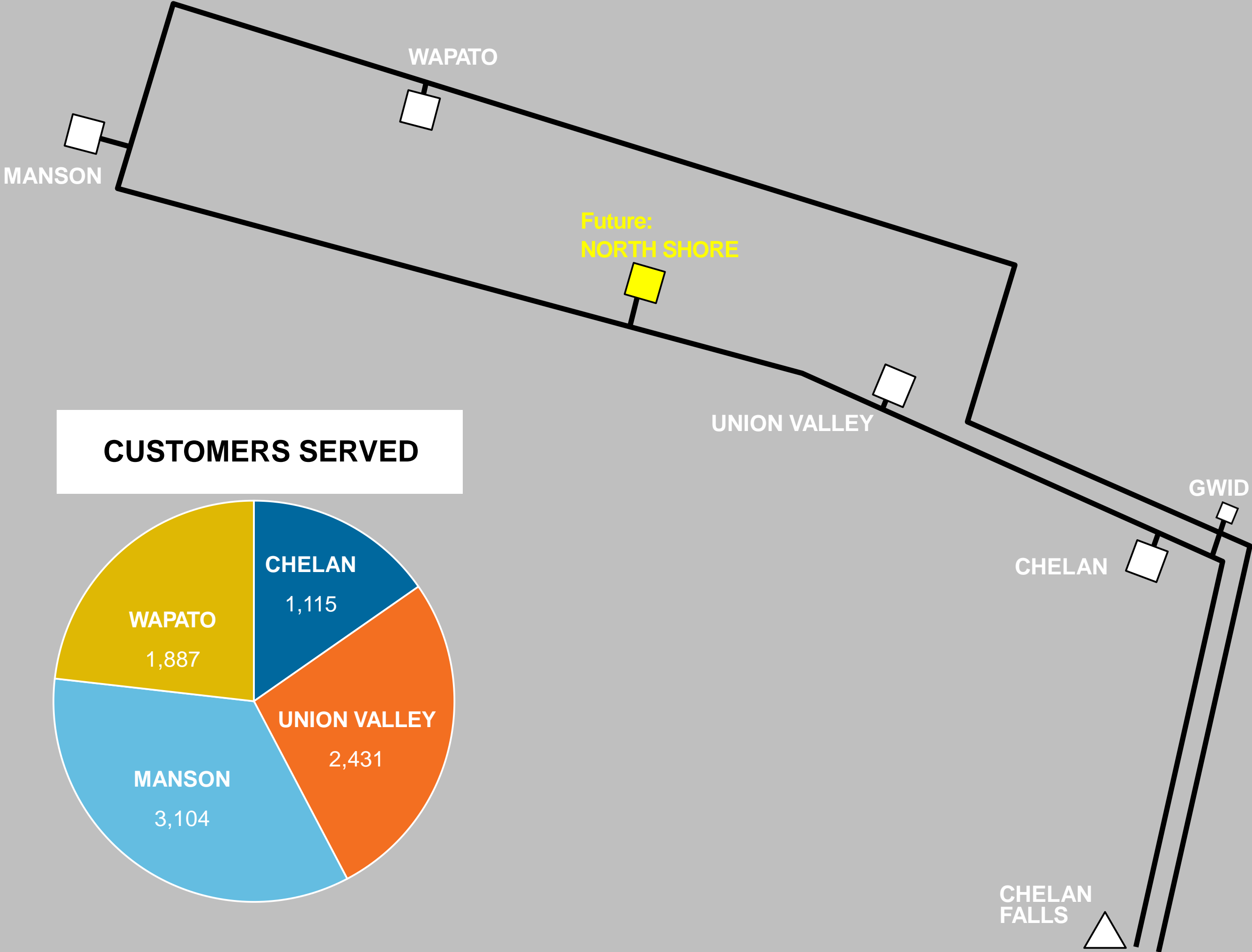
- Proposed projects replace wood poles with steel poles
- Same alignment as before
- Some poles may be taller
- Same general look and feel as original

(Center Structure below is steel)



The Chelan Loads

- Fed directly from Chelan Falls Switchyard near Chelan Hydro
- Four existing substations
- 8537 customers
- Future North Shore substation
- Large Irrigation Districts



Approach 1: Replace only “Critical” Structures with Steel

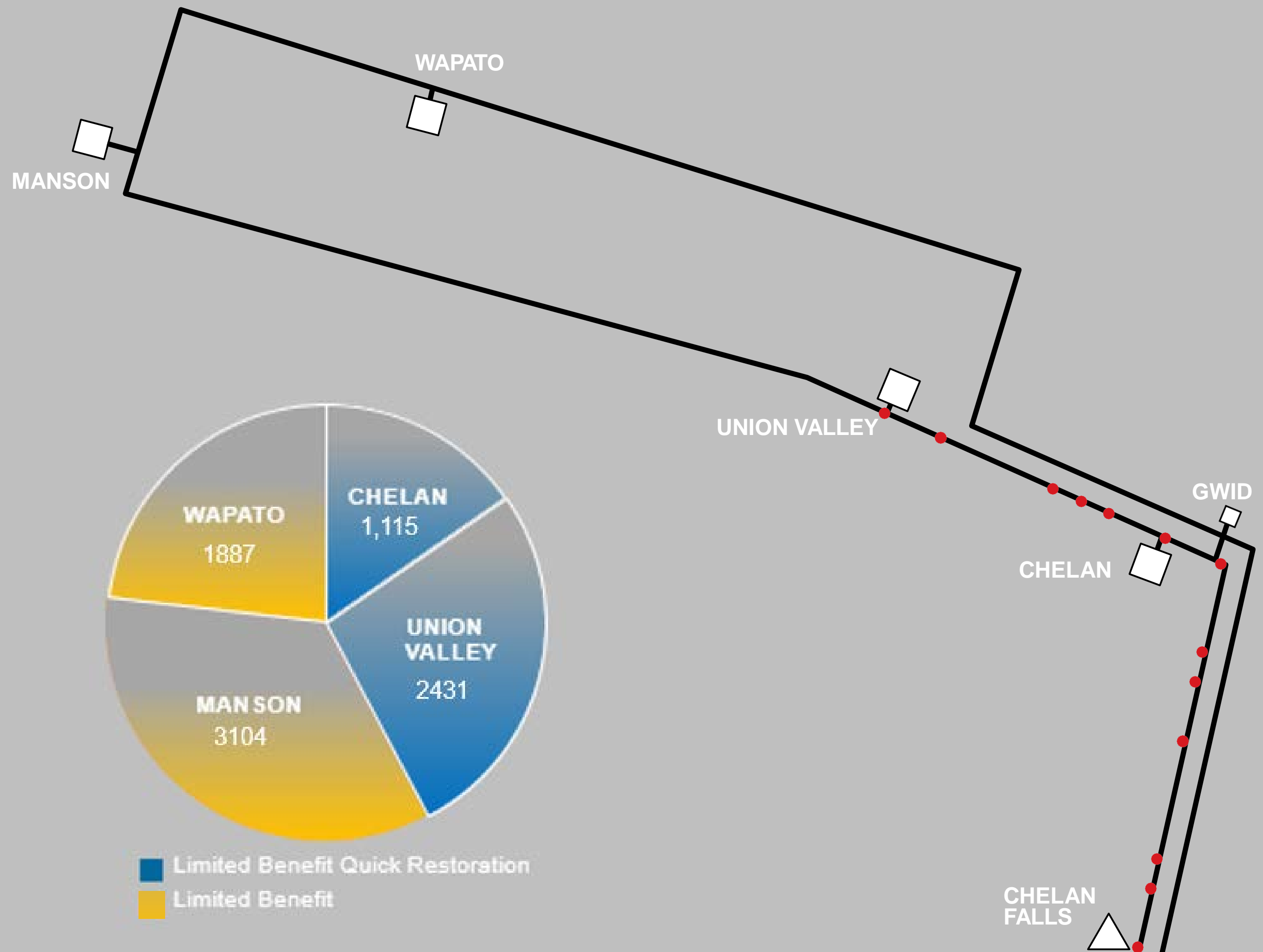
Direct benefit: 0

Indirect benefit: 8537 customers
(Chelan, Union Valley, Manson
and Wapato Substations)

21 structures replaced
Low cost (\$1.7 – 2.9 M)

2015 Fire Impacts if Steel

- Some wood structures may still need replacement
- Outage time 24+ hours



Approach 2: Rebuild to Chelan Substation

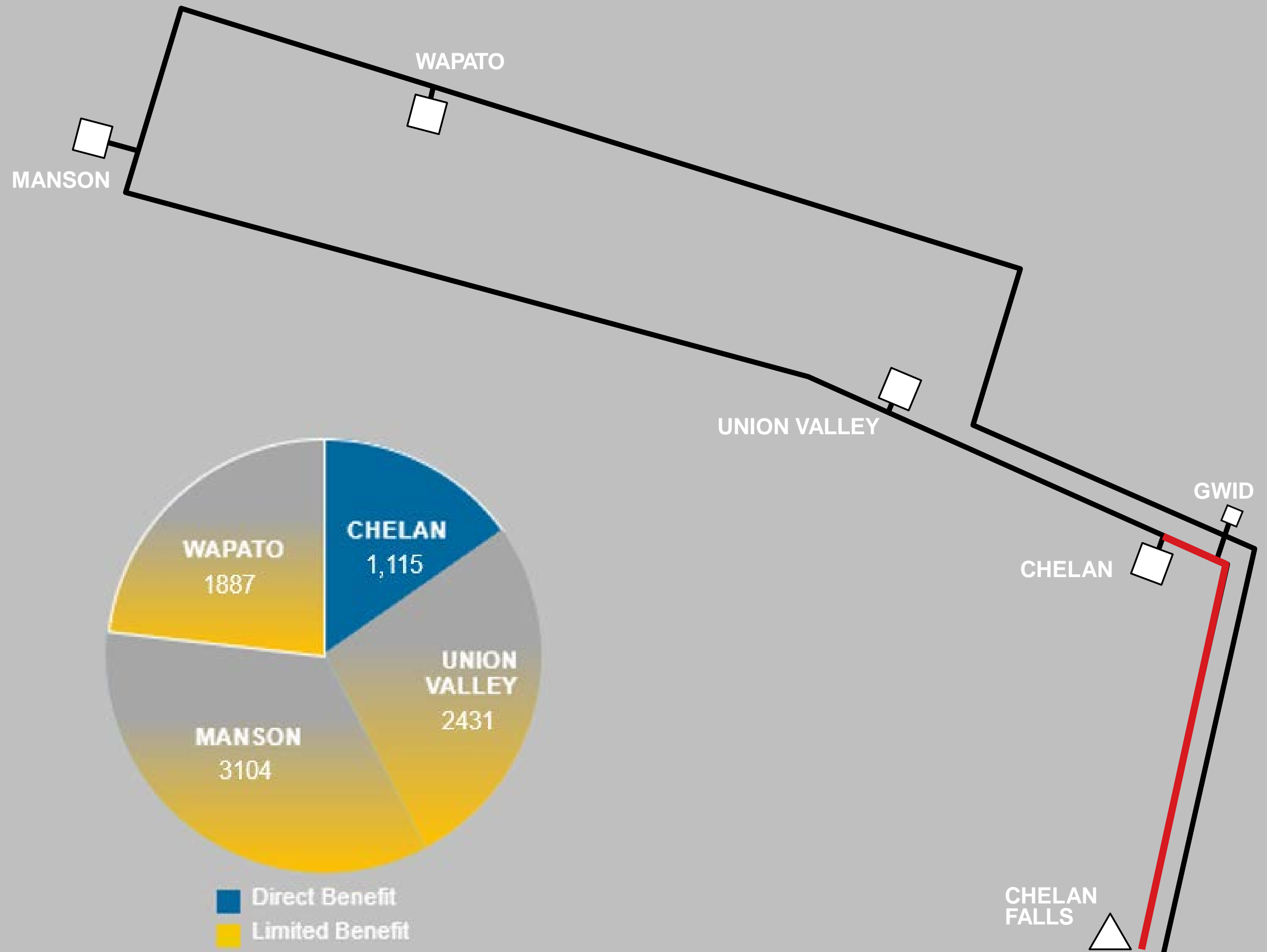
Direct benefit: 1115 customers
(Chelan Substation)

Indirect benefit: 7422 customers
(Chelan, Union Valley, Manson
and Wapato Substations)

2.7 miles and 22 structures
Expensive (\$2 – 3 M)

2015 Fire Impacts if Steel

- Outage time zero to a few hours
- If fire had been in the parallel section not constructed in steel, outage times would increase as structure replacement would be required



Approach 3: Rebuild to Union Valley Substation

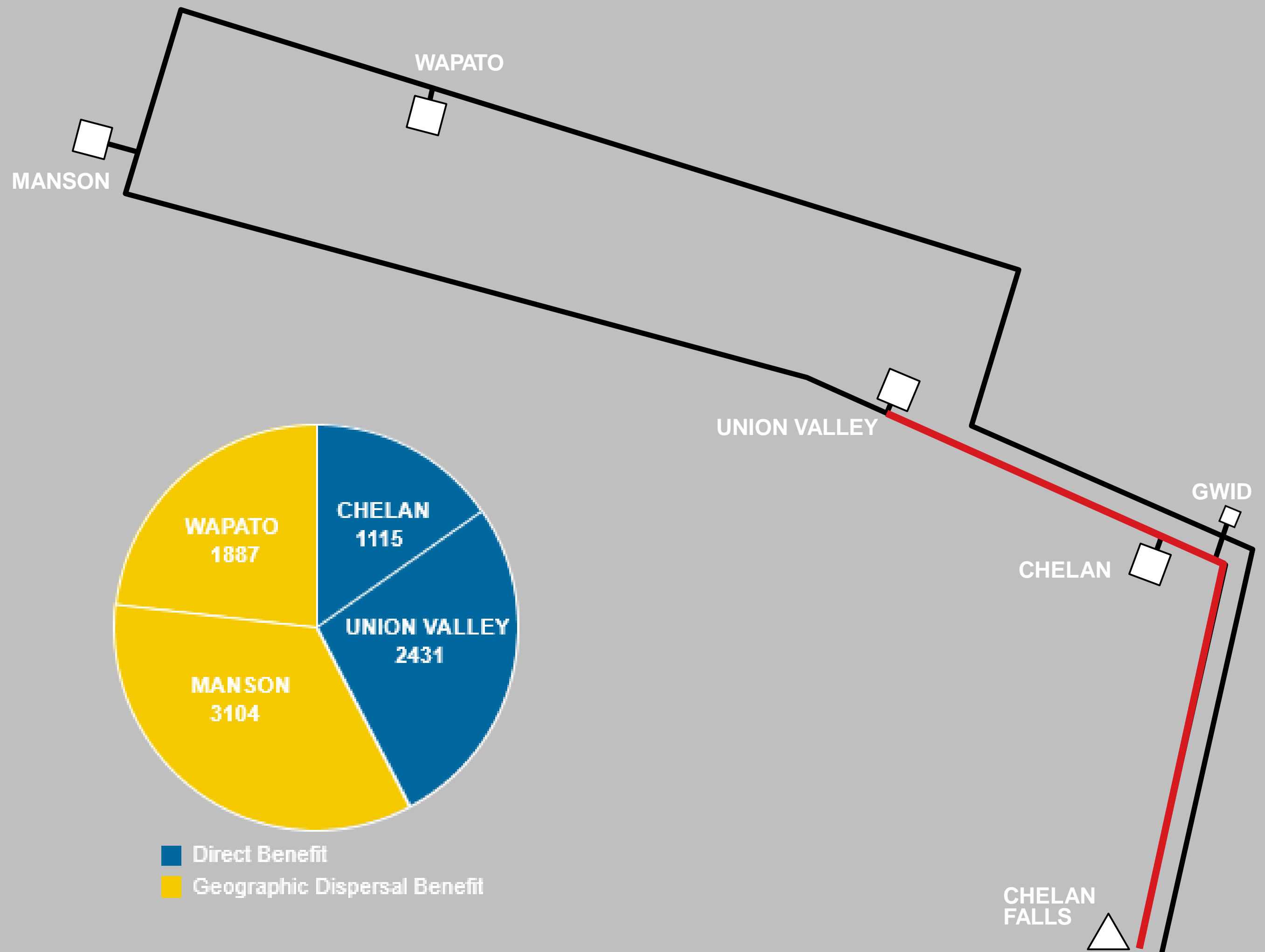
Direct benefit: 3546 customers
(Chelan and Union Valley
Substations)

Indirect benefit: to 4991 customers
(Manson & Wapato Substations)

4 miles and 35 structures
Most expensive (\$3 – 4.5 M)

2015 Fire Impacts if Steel

- Outage time zero to a few hours



Approach 4: **Do Nothing**

No project related costs (\$0)

Poles are not at end of life

Wood structures remain

No reliability improvements, both lines remain at existing fire risk

Underground transmission is not a viable option



Customer Commitment

The District is committed to the following:

- **Sharing detailed design information with the customer**
- **Collaborating - to the extent practical - to accommodate customer input**
- **Regular updates**
- **Ongoing discussions during design and construction**

- **GOAL: To achieve the greatest reliability for the Chelan area that the community supports**

Comparing Approaches

Approach	# of Customers Directly Benefited	# of Customers Indirectly Benefited	Potential Downtime Reduction due to Fires	Project Cost
1	0	8537	<ul style="list-style-type: none"> No substations served entirely from steel transmission No geographic diversity benefit Significant outage duration, dependent on fire severity. 24+ hours based on 2015 benchmark event 	\$1.7M - \$2.9M
2	1115	7422	<ul style="list-style-type: none"> 1 substation served directly from steel transmission Reduced geographic diversity benefit Outage duration none to several hours for fire safety 	\$2M - \$3M
3	3546	4991	<ul style="list-style-type: none"> 2 substations served directly from steel transmission Other 2 substations benefit from geographic diversity Outage duration none to several hours for fire safety 	\$3M - \$4.5M
4 (do nothing)	0	0	<ul style="list-style-type: none"> No reduction 	\$0

Next Steps:

2018

Development of Customer Outreach Plan

Continue infrastructure protection evaluation efforts



First look at
parcels which
might see visual
changes:

