

Aesthetics Considerations

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Aesthetic Considerations

Who pays for aesthetic improvements for undergrounding power lines* when it can increase costs 2 – 10 times compared to above-ground facilities:

All customer-owners or just those who benefit?

**Power line refers to distribution voltage lines and does not include larger transmission lines*



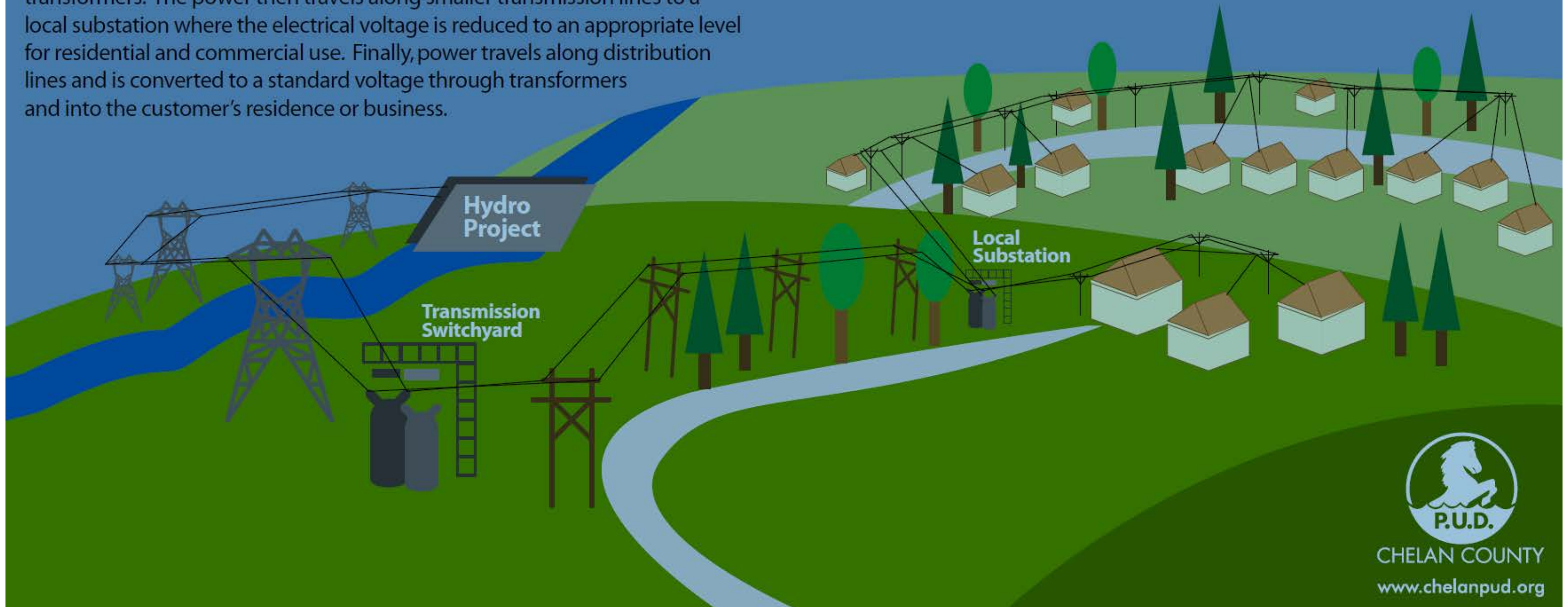
Overview

- Electric Distribution system background
- Current overhead conversion policy and usage
- PUD-funded conversion
- Why is the PUD performing a survey
- Overview of survey questions
- Next Steps



The Electric Power System

The Electric Power System is divided into generation, transmission, and distribution. In Chelan County, electrical power is generated at one of the PUD's three hydroelectric projects. Power moves across large transmission lines to a transmission switchyard where electrical voltage is reduced by transformers. The power then travels along smaller transmission lines to a local substation where the electrical voltage is reduced to an appropriate level for residential and commercial use. Finally, power travels along distribution lines and is converted to a standard voltage through transformers and into the customer's residence or business.



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Distribution System

881 miles OH distribution lines

843 miles UG distribution lines



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Underground vs. Overhead

Description	Underground	Overhead
Capital Construction	\$40 to \$200 per foot	\$20 to \$30 per foot
Tree Trimming	NA	\$500 to \$1000 per mile annual
General Maintenance	\$920 per mile	\$917 per mile ¹
Cable Locating	\$250 per mile annual	NA
Number of outages	0.3 per mile ¹	0.57 per mile ¹
Duration of outages	145 minutes ¹	92 minutes ¹
Life Expectancy	30 years (less reliable after 20)	70 years

¹ North Carolina Natural Disaster Preparedness Task Force. The Feasibility of Placing Distribution Facilities Underground. North Carolina Utility Commission, 2003



Current Policies and Practices

- Replace “like for like” in most situations (e.g. overhead lines are replaced with new/improved overhead lines)
- Construction of new distribution lines overhead or underground depends on the situation
 - Chelan County requires all new developments to place electrical infrastructure underground
 - New distribution lines to connect customers to a new substation is determined through engineering and community input



Facility Modification Policy - FMP

- In its simplest terms, we offer customers the option to pay the cost difference between an overhead rebuild and the underground conversion
- Customers also can request an underground conversion outside of a rebuild and pay for the entire cost of the conversion



Use of the Policy

Since the FMP was implemented in 2007:

- 152 customers have completed FMs
- Total cost of FMs is \$1.43M
- Average cost per FM is \$9,394
- Works well for smaller conversions

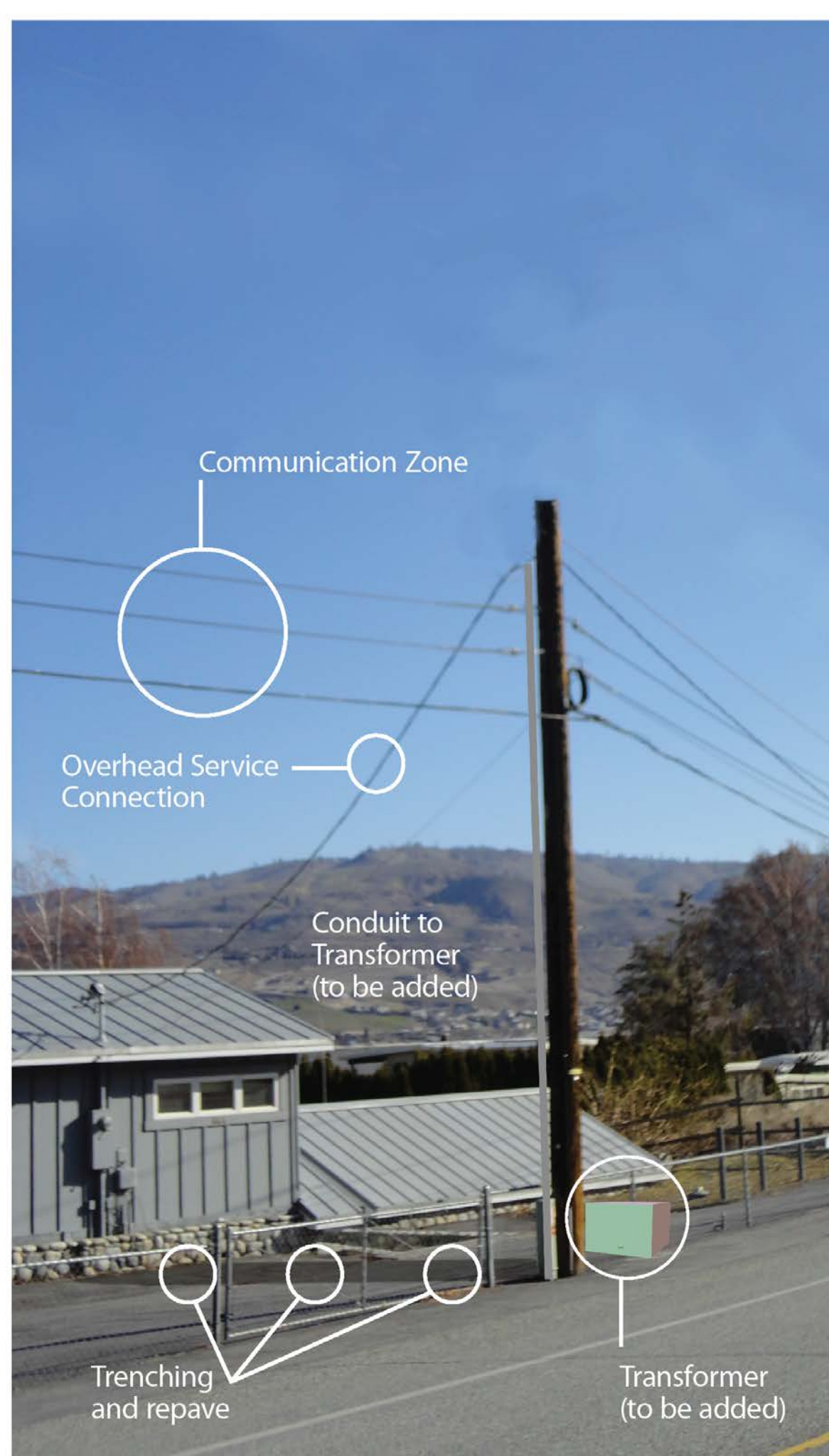


Potential Constraints

- Right-of-way
- Private property
- Pole attachments
- Feasibility

Conversions in the right-of-way have unique and costly challenges to underground





Considerations for PUD-funded underground conversions

Undergrounding must include direct benefits to the PUD such as:

- Operational efficiency
- Access
- Tree cover
- Reliability



Why are we asking customer-owners to weigh in on underground conversions?

We have received input by some customers that the PUD should change the policy and actively convert overhead lines to underground for improvement to area views and the costs should be paid for by all PUD customers.

A policy change of this magnitude would have the potential to significantly impact customer-owner electric rates, we need your input and the following survey questions are designed to gather that input.



Draft Survey Questions

*Subject to final edits prior to launch later
in February*



Survey Questions

Q1

Would you be in favor of paying higher electrical rates to convert overhead to underground for the purpose of improving area views?

- a. Yes, but only if my rate increase was going to pay for conversions in my area or impact my direct view
- b. Yes, regardless of my area, I would want my rate increase to pay for conversions county-wide
- c. No, only those who directly benefit of converting power lines to underground should pay



Survey Questions

Q2

If you are in favor of paying some amount to convert lines to underground - how much?

(For purpose of this example we will say that the average bill is \$50 per month)

On a scale between \$ 0 to \$10 per month

How much?



Survey Questions

Q3

Cities can create special tax districts to fund converting utilities from overhead to underground

Should the PUD partner with cities and add the tax to the respective cities customer's PUD bill to aid in the collection of the tax?



Next Steps

- Conduct survey during February
- Analyze results
- Present to the Board of Commissioners in late March

