

A Better Solution for Lake Hills Reliability

What's the problem?

PSE proposes to improve reliability in the Lake Hills area of East Bellevue by building a new 115,000-volt transmission line for approximately three miles along 148th Avenue and NE 8th Street. In the process, about 300 trees would be removed. To compensate the City of Bellevue for the loss of these trees, PSE would pay the city about \$900,000.¹ This money would be used to provide new landscaping.

It's about reliability.

PSE does not say this project is needed to serve growth or increasing demand for electricity. In fact, consumption of electricity has been declining in Bellevue for almost a decade, like many communities in the United States.² Instead, PSE wants to connect the Lake Hills substation to a second transmission line, so that electricity will keep flowing even if one transmission line fails.

How much will reliability improve?

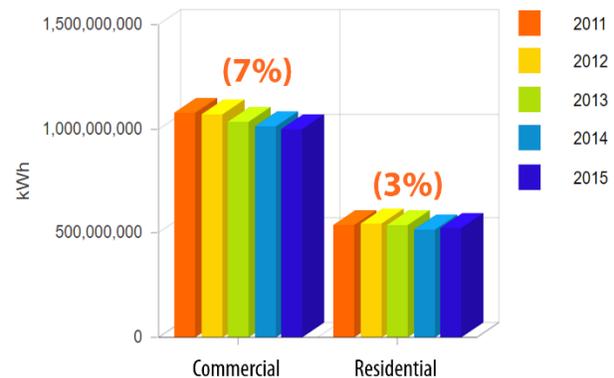
CENSE members analyzed reliability reports that PSE provided to the City of Bellevue for 2014 and 2015.³ All power outages that affected more than 100 customers in Lake Hills during these years were identified. Customers experienced between 7½ hours and 50 hours of power interruption, depending on where they lived in the Lake Hills area. If the new transmission line had already been built, only 13 minutes of those outages would have been eliminated. The rest of the outages were due to issues that were not related to the transmission line.

Is there a better way?

For many residents, thirteen minutes of avoided power outage over a two-year period doesn't justify the permanent removal of 300 trees and months of snarled traffic on 148th during construction of the transmission line. Is there a smarter way to avoid power outages?

Yes, there is. According to Exponent, the independent consultant hired by Bellevue to analyze the city's electrical reliability in 2012, a "looped 12.5 kV distribution circuit" would provide better reliability than the proposed transmission line.⁴

Bellevue Community Electricity Use (kWh)



¹ <http://www.bellevuereporter.com/news/pse-adding-redundancy-between-substations-additional-transmission-line-to-connect-lake-hills-phantom-lake/>

² See "Bellevue Community Electricity Use" at https://city-of-bellevue.scope5.com/public_dashboard

³ http://www.bellevuewa.gov/pdf/PCD/Bellevue_Reliability_Report_for_2014_update_150609.pdf,
http://www.bellevuewa.gov/pdf/PCD/Bellevue_Reliability_Report_for_2015_final_160729.pdf

⁴ See pages 49-51 at https://www.bellevuewa.gov/pdf/Manager/Final_Electrical_Reliability_Study_Phase_II_Report_2012.pdf

What's a looped distribution circuit?

A "looped distribution circuit" is a way to connect substations together using existing lower-voltage distribution lines instead of a high-voltage transmission line. CENSE consulted an expert in these matters who engineered this solution at another utility. He told CENSE that this is standard industry practice. In most cases, it can be implemented using existing distribution lines. At most, it would require the installation of some smart switches for fast response to avoid any power interruption.

Surviving transformer outages

Two things can happen to a substation to cause a power outage. The transmission line can fail, or the transformer in the substation can fail. In June 2011, a transformer in a Redmond substation caught fire, causing outages for 25,000 customers.⁵ In 2014, birds, squirrels, and tree limbs caused transformers in Bellevue to fail. The solution proposed by Exponent would avoid power outages due to most transformer failures. PSE's proposal would not.

How does it work?

Exponent's solution would connect the Lake Hills substation to two nearby substations through the low-voltage distribution grid. If the Lake Hills transformer fails, the other substations could provide electricity at the right voltage to the Lake Hills neighborhood.

PSE may already use this strategy at other substations that are served by one transmission line. For example, the Overlake substation in Medina is served by one transmission line. So is the Somerset substation. The Mercer Island and Mercerwood substations are also in this category. If PSE has used this solution for any of these substations, we would like to understand the benefits and tradeoffs. If PSE isn't using it for any substation, why not?



Fire at the Puget Sound Energy substation along Willows Road in Redmond on Thursday.

Why does PSE keep pursuing the transmission line?

PSE has been pursuing this project for at least 10 years.⁶ PSE responded to community objections by taking the case to court on two occasions. Why go to so much trouble?

This project will generate a 9.8% rate of return for the lifetime of the line. That's a guarantee provided by the state of Washington. For a company with falling energy revenues owned by Australian and Canadian investors, transmission line projects are the closest thing to a sure financial bet, no matter how they upset members of the community. Cities feel obligated to approve these projects to avoid legal challenges. No state agency, including the Utilities and Transportation Commission which regulates PSE, reviews transmission projects before they are built.

Why wasn't Exponent's solution mentioned until now?

If Exponent's solution is good, why wasn't it evaluated by PSE and the city? Partly because most residents of Bellevue were not notified of a crucial hearing that was held by the city on a Thursday evening close to Thanksgiving in 2014. By the time

⁵ <http://www.kirklandreporter.com/news/electrical-substation-fire-causes-25000-power-outages-across-eastside-9000-still-without-power/>

⁶ <https://pse.com/inyourcommunity/pse-projects/system-improvements/Pages/Lake-Hills-Phantom-Lake.aspx>

residents found out about the hearing, it was too late to object to its conclusion or introduce new evidence. Although CENSE prepared a report on Exponent's solution for the court case, it was inadmissible because the record was closed.

What's at stake?

Residents want to know what the project will look like. Photo simulations of the project are available on the PSE's website, if you know where to look.⁷ The photo simulations do not show the stated plan to leave the stumps of the trees in the ground, surrounded by shrubs to create a "natural look."

KING 5 recently did a news story on the opposition to the project, which included some of the photo simulations.⁸

What's next?

We ask the Bellevue City Council to engage an independent expert to analyze the feasibility of Exponent's solution. If the expert agrees that it is feasible, we ask the council to pass a resolution stating that a better solution is possible that does not destroy so many trees.

Who is in control of planning our energy future? Is it PSE, or is it city officials who we elected to represent the public interest?

Who determines the legacy of the "City in a Park" we leave for our children?

⁷ https://pse.com/inyourcommunity/pse-projects/system-improvements/Documents/LkHills-PhantomLake_photosims.pdf

⁸ <http://www.king5.com/news/local/east-bellevue-council-fights-pse-power-line-plan/409805872>