



Energize Eastside in Renton

January 7, 2020

Executive summary

The Coalition of Eastside Neighborhoods for Sensible Energy (CENSE) is a non-profit organization with over a thousand members throughout the Eastside, including dozens who currently reside in Renton. CENSE was created as a non-profit organization (501-c4) in 2014 to advocate for energy solutions that provide the Eastside with improved electrical reliability while respecting community values, reducing risks to public safety, preserving the environmental and aesthetic features of residential neighborhoods, and keeping rate increases reasonable.

Energize Eastside isn't the only energy project that CENSE has challenged during its five-year history, but this project inspired the formation of CENSE and continues to be a primary focus of the organization.

This document addresses three topics:

1. Energize Eastside's impacts on Renton
2. Assumptions used to justify Energize Eastside
3. Winners and losers created by the project

It's important to note that the project Renton is asked to permit is different from the original project that PSE proposed in late 2013. The original project would have upgraded 16 miles of transmission lines, connecting two large substations in Renton and Redmond. That project was intended to serve both a local and regional purpose. It was the project that was studied by PSE, considered by a Community Advisory Group, and evaluated in the Environmental Impact Study (EIS).

The current project is only the South Segment of the original project, about 8.8 miles long. Although it is shorter and probably cheaper, the South Segment poses the same threats to the safety, aesthetics, property values, and environment of Renton residents. It would provide little, if any, improvement in electrical reliability for the City of Renton. The EIS has significant flaws due to forecasts that have been disproved with the passage of time. EIS evaluations of feasible alternatives are biased or omitted. Furthermore, the hazards of building the project near 50-year-old Olympic pipelines are minimized.

However, PSE pursues the project to garner a generous 9.8% return on investment allowed by the Washington Utilities and Transportation Commission (WUTC). Because no third-party bidding is required for transmission projects, PSE can collect more revenue compared to less expensive alternatives that would be safer and less harmful to neighborhoods and thousands of urban trees.

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1. Energize Eastside's impacts on Renton

The Energize Eastside project would replace 115 kV transmission lines mounted on wooden poles with 230 kV lines mounted on taller steel monopoles. The existing poles range in height from 50 to 70 feet. In Renton Highlands, the proposed poles have an average height of 86 feet. The tallest proposed pole in Renton would be 115 feet high.

1.1 Two projects compared

Similar transmission projects have been proposed by utilities in other states. For good reason, most 230 kV transmission lines are not situated in densely populated urban areas. For example, contrast Energize Eastside with the "Independence Energy Connection West" project, a 29-mile 230 kV transmission line, connecting the towns of Rice, Pennsylvania and Ringgold, Maryland.¹ The following table shows Energize Eastside would be significantly more disruptive and harmful than the more rural Pennsylvania-Maryland project.²

| | Energize Eastside | Independence Energy Connection West |
|--------------------------------------|-----------------------------|---|
| Purpose | Avoids rare outage scenario | Saves \$800 million/year in congestion fees |
| Length | 16 miles | 28.8 miles |
| Cost | \$150-\$300 million | \$240 million |
| Closer than 600 feet: | | |
| • Homes | 3,970 | 30 |
| • Schools | 7 | 0 |
| • Religious institutions | 7 | 0 |
| • Trails | 7 | 0 |
| Trees to be removed | 3,600 | 0 |
| Length of co-located pipeline | 13 miles | 0 miles |
| Pole height | 50-115 ft. (ave. 86 ft.) | 135 ft. |

Two similar 230 kV transmission projects are compared

The last two rows of this table highlight safety concerns with Energize Eastside. PSE's project would share a narrow utility corridor with two 50-year-old petroleum pipelines that transport 13 million gallons of jet fuel and gasoline through the Eastside each day. In 1999 and 2004, these pipelines caused fires that killed three children in Bellingham and sent Renton emergency responders to a hospital. Although utility corridors sometimes contain more than one type of infrastructure, no comparable project locates two 230 kV transmission lines and two hazardous liquid pipelines within a 70- to 100-foot corridor with houses on both sides.

¹ https://www.heraldmillmedia.com/news/tri_state/pennsylvania/transource-power-line-foes-continue-opposition/article_96402eb0-49df-595b-889a-7202474b0d51.html

²

https://energizeeastside2.blob.core.windows.net/media/Default/CAG/Meeting4a/7_CAG_UpdatedDataTable_2014_0625.pdf (see data for "Willow" route)

The Phase 1 Energize Eastside Environmental Impact Study (EIS) notes the challenges of safely locating 230 kV transmission lines within the existing corridor:³

Clear zones. To ensure safe and reliable operation of overhead or underground transmission lines, the NESC [National Electric Safety Code] specifies minimum horizontal and vertical clearance requirements for overhead lines, where trees and overhanging branches must be removed, and **structures are generally prohibited** (the clear zone). ... The clear zone for an overhead 230 kV line could be approximately 120 to 150 feet wide. The transmission line could be located along existing 115 kV easements, which are typically 70 to 100 feet wide. Therefore, this analysis assumes that use of a 115 kV corridor could **require the corridor to be widened by up to 50 feet.**

Here is a summary of the NESC guidelines that the EIS refers to:⁴

The National Electric Safety Code (NESC) specifies minimum horizontal and vertical clearance requirements for overhead lines. These clearance requirements must be complied with. Specific easement agreements may require more clearance.

The following chart lists typical right of way widths for various electric line voltages and locations.

| Voltage | Urban | Typical Width (feet) | Rural |
|-------------------|---------|----------------------|-------|
| 34 kilovolts (kV) | 50-100 | | 100 |
| 46 kV | 50-100 | | 100 |
| 69 kV | 50-100 | | 100 |
| 115 kV | 70-100 | | 100 |
| 138 kV | 70-100 | | 100 |
| 161 kV | 100-120 | | 120 |
| 230 kV | 120-150 | | 150 |
| 345 kV | 150 | | 150 |
| 765 kV | 200 | | 200 |

National Electric Safety Code requires corridor width of 120-150 feet

NESC says “specific easement agreements might require more clearance.” The co-location of two 50-year-old petroleum pipelines would normally impose additional clearance requirements. The EIS says: “... if standard corridor widths were added to the 50-foot separation that BPA generally advised for locating transmission lines from any co-located pipeline, the corridor width would be greater than described in the Phase 1 Draft EIS, and numerous homes would need to be removed.”⁵ However, PSE has not announced any adjustments to the width of the corridor. If PSE were to condemn even a few

³ http://www.energizeeastsideeis.org/uploads/4/7/3/1/47314045/02_chapter_2_project_alternatives.pdf, p. 2-23

⁴ <https://www.aepohio.com/global/utilities/lib/docs/info/facts/aepohio-encroachment-ontransrow.pdf>

⁵ <https://fortress.wa.gov/ecy/separ/Main/SEPA/Document/DocumentOpenHandler.ashx?DocumentId=32163>, p.

homes, it would increase the appeal of alternatives with less impact to the community and less cost. In any case, safety assumptions in the EIS differ from what PSE plans to build.⁶

The difference in pole heights between Energize Eastside and the Pennsylvania-Maryland project projects is another concern. PSE has reduced pole heights in many neighborhoods to minimize aesthetic impacts. At the location where PSE's transmission lines pass under the Seattle City Light lines, PSE proposes using poles 50 feet high. This departs from industry recommendations of 95 to 145 feet for a 230 kV line.⁷ The average proposed pole height in Renton is 86 feet, while the Pennsylvania-Maryland project proposes 135-foot poles to ensure safe operation of its power line.



Double-Circuit Steel Monopole

The photograph depicts a typical double-circuit steel monopole.

Actual structure type and height may vary along the route.

While the structure type may vary, the typical right-of-way is 130 feet wide for safe construction, operation and maintenance of the facilities.

In Pennsylvania, the transmission lines are always at least 150 feet from homes, measured horizontally. In Renton, the transmission lines would be less than 10 horizontal feet from the home at 3224 NE Sunset Blvd.

Energize Eastside passes through dozens of densely populated Eastside neighborhoods. In Renton, PSE's lines are very close to:



- 4 neighborhoods (Shadow Hawk, Liberty Ridge, Sunset, Honey Creek Ridge)
- 67 homes
- 2 apartment buildings
- 2 schools (Renton Technical College, Highland Preschool)
- 2 churches (Renton Seventh-day Adventist Church, Church Evangelical Chinese SKC)
- 3 parks (Sierra Heights Park, May Creek Park, Cedar River Park)
- 9 businesses (Plum Delicious, Sunset Pet Hospital, La Fuente, Reyna Hair Salon, Little Peking, O'Reilly Auto Parts, Chevron, McDonald's, Renton Collision Center)

The following map shows some of these land uses in relation to PSE's and Seattle's transmission lines.


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https://transourceenergyprojects.com/IndependenceEnergyConnection/docs/open_house/August/IECP_Proposed_Structure_Poster_August_FINAL.pdf

⁷ http://capx2020.com/Images/Transmission_Line_Factsheet_7-2008.pdf

 Energize Eastside
230 kV upgrade
 Seattle City Light
230 kV line (existing)



Scale:

 0 1/2 mile



- * Sierra Heights Park
- * May Creek Park
- * Plum Delicious
- * Sunset Pet Hospital
- * La Fuente
- * Reyna Hair Salon
- * Little Peking
- * O'Reilly Auto Parts
- * Church Evangelical Chinese SKC
- * Renton Seventh-day Adventist Church
- * Highlands Preschool
- * Renton Technical College
- * Chevron
- * McDonald's
- * Renton Collision Center
- * Cedar River Park

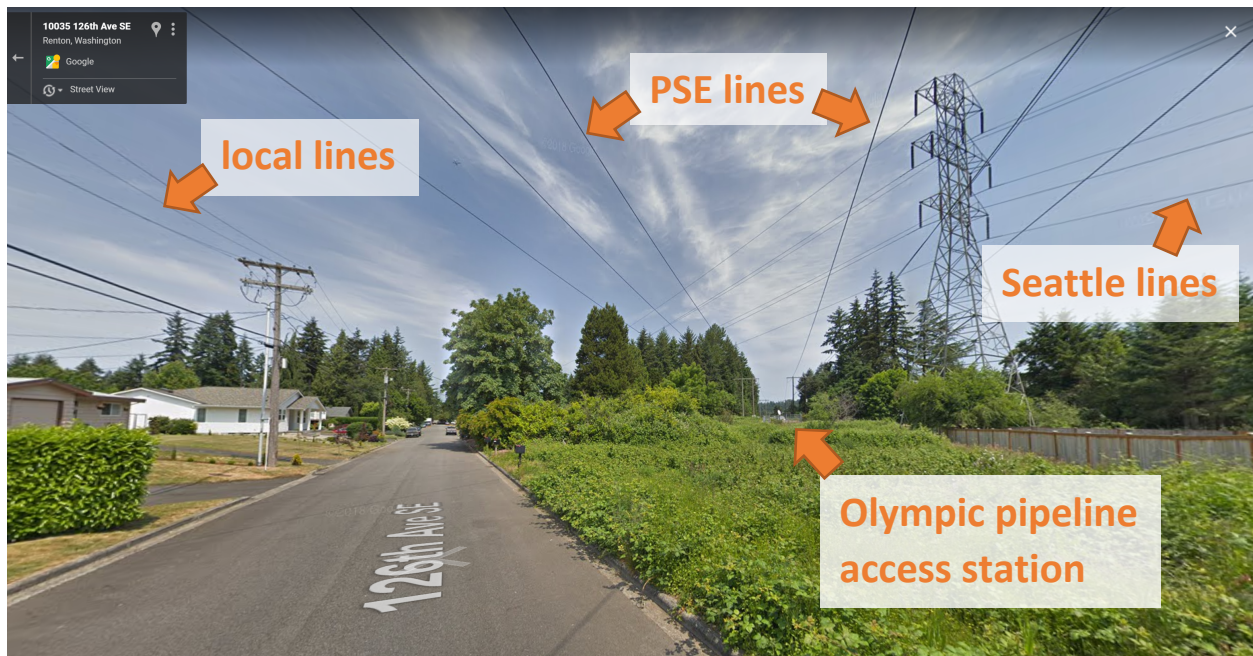
Renton map showing Energize Eastside, Seattle City Light power lines, neighborhoods, and community features nearby

1.2 Aesthetic impacts

Even though PSE has proposed unusually short poles to carry its 230 kV power lines, the new poles would be almost 50% taller than existing poles. The proposed poles would be more prominent in the landscape and visible from greater distances.

Renton already has one 230 kV line passing through the city, owned by Seattle City Light. A second 230 kV line running only blocks from Seattle's line (less than 600 yards in many parts of the city) will reinforce an impression of a city crisscrossed with industrial infrastructure. This is at odds with Renton's desire to be known as a 21st-century city.

The following photo from Google Maps was taken near the Renton location where PSE's transmission lines pass under Seattle City Light's lines (the ones supported by metal lattice towers). The number of wires won't change if Energize Eastside is built, but the crossing of four 230 kV lines (12 wires total) close to two petroleum pipelines is a concentration of critical infrastructure that should be treated with caution. An accident in this location would have major impacts on energy delivery throughout the Puget Sound.



A Renton neighborhood is burdened with excessive industrial infrastructure

1.3 Homeowner impacts

The economic impacts for some Renton homeowners could be substantial. For example, the home at 1078 Lynnwood Ave. NE will lose eight trees categorized as “significant” (marked with red crosses, not all are visible in this photo). The trees provide privacy and filter noise from the busy street behind the house. The proposed pole will be 86 feet tall, approximately 30 feet higher than the existing poles, but nearly 50 feet shorter than 135-foot poles in the Pennsylvania-Maryland project. Shorter poles put dangerous voltages and electromagnetic fields closer to people. PSE’s compromise harms both aesthetics and public safety.



There are many homes in Renton that would be impacted by proximity to higher voltages, taller power poles, and shorter trees. Such homes may face long-term declines in property value, and the City of Renton would collect less property tax revenue.

1.4 Economic costs

While individual homeowners who live near the power line would bear most of the aesthetic impacts, safety risks, and lower property values imposed by Energize Eastside, every customer who pays PSE a monthly electric bill will pay for the project through higher electricity bills. Every residential and business using electricity in Renton would be affected.

PSE estimates the initial cost of the project will be \$150 million to \$300 million. Divided among PSE’s 1.1 million customers that’s \$136 to \$272 per customer over the life of the project through higher electricity bills (just an extra buck or two per month, as PSE has said).

But there is another cost that is not well known. The State of Washington allows PSE to raise electric rates to collect a 9.8% annual rate of interest on PSE’s major infrastructure investments. For Energize Eastside, PSE will collect an additional \$15 million to \$30 million each year for the anticipated 50-year life of the physical assets. Each customer would pay an extra \$13 to \$26 every year. Over time, each customer would pay approximately \$1000 to cover the initial cost of the project plus yearly interest, for a total cost of over \$1 billion. That is a significant tax on the local economy.

At the Bellevue hearing for Energize Eastside, PSE dismissed these concerns. A company representative said the funds come from PSE’s capital improvement budget, so if Energize Eastside isn’t built, the money would just be spent on something else. But this deflects the main issue. Ratepayers don’t mind paying for projects that provide cleaner, safer, more reliable electricity. Instead of providing benefits to the community, Energize Eastside destroys things the community does value, like trees, neighborhood character, and a sense of safety in our homes.

PSE uses economic threats to scare business owners and increase support for Energize Eastside. In its September 2019 *Fact Sheet*, PSE states “PSE may have to utilize additional corrective action plans that

plan for intentional load shedding to meet federal requirements. This could affect more than 130,000 customers as early as the summer of 2018, at a cost of tens of millions of dollars to the local economy.”⁸

PSE’s statement is misleading in many ways. First, federal requirements published as NERC TPL-001-4 explicitly allow dropping of non-consequential loads in the unlikely circumstances PSE assumes (peak demand, two major grid components out of service, half a dozen generation plants offline, and huge amounts of electricity being transferred to Canada or California).⁹ In this case, curtailment of huge “non-firm” transfers to California and Canada would relieve stress on PSE’s equipment and eliminate the need for rolling blackouts.

Second, PSE’s claim that 130,000 customers could be affected is misleading. If rolling blackouts were needed, PSE would turn off power to approximately 10,000 customers at a time, for half an hour or less, and only during hours of peak power consumption (approximately three hours in the morning or three hours in the early evening). Again, this scenario is extremely unlikely to occur after transfers to California or Canada are curtailed, but it illustrates PSE’s tendency to use exaggerated consequences to build support through scare tactics.

Energize Eastside would impose real costs on the Eastside economy through many months of invasive construction. The Energize Eastside EIS describes a construction process that involves vegetation clearing, construction of temporary access roads, pole foundation excavation, concrete curing, pole erection, and wire stringing over a period of nine months (for the southern segment).¹⁰ There will be noise, heavy equipment, work crews, road closures, and even evacuations of homes and schools for safety purposes.



Pole construction from PSE’s fact sheet

These have economic costs that would drain millions of dollars from the local economy due to delays, detours, and disruption. **Renton will be especially impacted, because the 4-mile length of the Renton segment is longer than any segment in other cities.**

Surprisingly, the economic costs of construction were not tallied in the EIS.

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https://energizeeastside2.blob.core.windows.net/media/Default/AbouttheProject/2019_0903_PSE_EE_Factsheet_v1_WEB.pdf

⁹ <https://www.nerc.com/files/TPL-001-4.pdf>, p.9, scenario “P6”

¹⁰ http://www.energizeeastsideeis.org/uploads/4/7/3/1/47314045/chapter_2_project_alternatives.pdf, p. 2-37

1.5 Environmental impacts

Washington’s ground-breaking Clean Energy Transformation Act (CETA), enacted by the state in 2019, bears upon Energize Eastside because it requires PSE to invest in cleaner sources of electricity and smart technology to reduce demand peaks. Specifically, CETA allows PSE to raise electricity rates by 2 percent per year to divest itself of coal-generated electricity by 2025, achieve carbon neutrality by 2030, and use only 100% renewable electricity by 2045.¹¹ This will be a monumental effort for PSE, which currently relies on fossil fuels to generate 56% of its electricity.¹²

To comply with the CETA mandate, PSE must significantly increase the percentage of our electricity produced by renewable resources like solar and wind. To maintain reliability on calm, cloudy days, PSE will need energy storage technologies like pumped hydro (using electricity to pump water back up to a reservoir when electricity demand is low) and grid-sized batteries. Batteries are particularly effective when placed close to customers with large electrical loads. This would reduce the amount of electricity that needs to be transmitted through long transmission lines during peak hours – exactly the need that Energize Eastside is designed to serve.

In addition to requiring more renewable energy, CETA will strongly incentivize PSE to reduce peak consumption. To serve peak demand, PSE currently fires up natural gas “peaker plants.” These facilities only run for short periods but are expensive to operate and emit high levels of carbon dioxide, methane, and other pollutants per megawatt generated. Peak demand can be reduced in many ways, such as “demand response” programs that provide customers incentives to shift energy use away from peak hours. To achieve CETA goals, PSE will need to invest in batteries, demand response, energy efficiency, and other advanced technologies, further diminishing the perceived need for Energize Eastside.

Energize Eastside also harms the environment by cutting down valuable urban trees. In Renton, PSE would remove over half of the 641 trees within the project area (339 trees would be cut, and 238 are classified “significant.”) These trees provide storm water control, shade, carbon storage, noise mitigation, human health benefits, and wildlife habitat – benefits to society the EIS values at over \$700,000. PSE promises to replace the trees with shorter varieties that won’t grow dangerously close to the power lines, but these will take many years to mature. The replacement trees would have smaller root balls, and fewer leaves or needles. They would never provide the full benefits of the trees that would be removed.

¹¹ <https://www.vox.com/energy-and-environment/2019/4/18/18363292/washington-clean-energy-bill>

¹² <https://www.pse.com/pages/energy-supply/electric-supply>

1.6 Fire safety

The EIS acknowledges an increased risk of pipeline fires due to the proximity of the proposed poles and excavation of large holes next to the existing Olympic pipelines. Renton already survived a close call in an accident involving these same pipelines.

On the morning of May 23, 2004, an explosion occurred at a Renton facility owned by Olympic Pipeline.¹³ Approximately 50 firefighters arrived on the scene, where 20-foot flames erupted from a pinhole leak in the pipeline. Thousands of gallons of gasoline were released, and it took three hours to extinguish the fire.



Renton facility damaged by a pipeline explosion in 2004

Compared to the fatalities and 1.5-mile path of destruction that occurred in the Bellingham pipeline fire five years earlier, Renton was fortunate to escape with relatively minor injuries that sent three emergency responders to the hospital.

In Renton, the Sierra Heights Elementary School is located 225 yards from the Olympic pipelines, less than half the distance California safety codes require between schools and hazardous liquid pipelines.¹⁴ PSE proposes to install a new pole approximately 7 feet from one of the pipelines at this location. This is less than the minimum separation of 13 feet recommended by PSE's pipeline safety consultant, DNV-GL.

¹³ https://response.epa.gov/site/site_profile.aspx?site_id=864

¹⁴ <https://www.cde.ca.gov/ls/fa/sf/title5regs.asp>, Article 2, Section 14010(h)

The consultant says the risk might be mitigated by installing arc shielding protection.¹⁵ However, another consultant, Stantec, does not agree that this recommendation would ensure protection from arcing and accelerated corrosion of the pipeline that could lead to a breach.¹⁶

In Stantec's opinion, although the [DNV-GL] study and modeling performed is sufficient as a sensitivity analysis, it cannot be used to determine the mitigation requirements for the pipelines related to the final design of the powerlines. ...

As such, we recommend the following be performed in the detailed design stage of the project: ...

- *Reassess the safe separation distance to minimize arcing risk based on NACE SP0177 and considering the findings in CEA 239T817.*
- *Ensure that the separation distance between the pipelines and the powerline structures exceeds the safe distance required to avoid electrical arcing.*
- *Design monitoring systems to monitor the AC corrosion risks along the pipelines.*
- *Install and commission the AC mitigation and monitoring systems prior to energization of the 230 kV powerline.*

Neither PSE nor the Olympic Pipeline Company have responded to these recommendations with detailed proposals to reassure the community that Energize Eastside will operate safely near these pipelines for decades.

If an accident were to happen in this location, leaking fluid would likely flow downhill and potentially ignite nearby trees. An unbroken path of dense vegetation leads from the pipeline location to approximately 40 yards from the school.

The EIS analyzed a theoretical accident of more than 300,000 gallons of fuel spreading and burning on flat ground, as shown in the following diagram:¹⁷

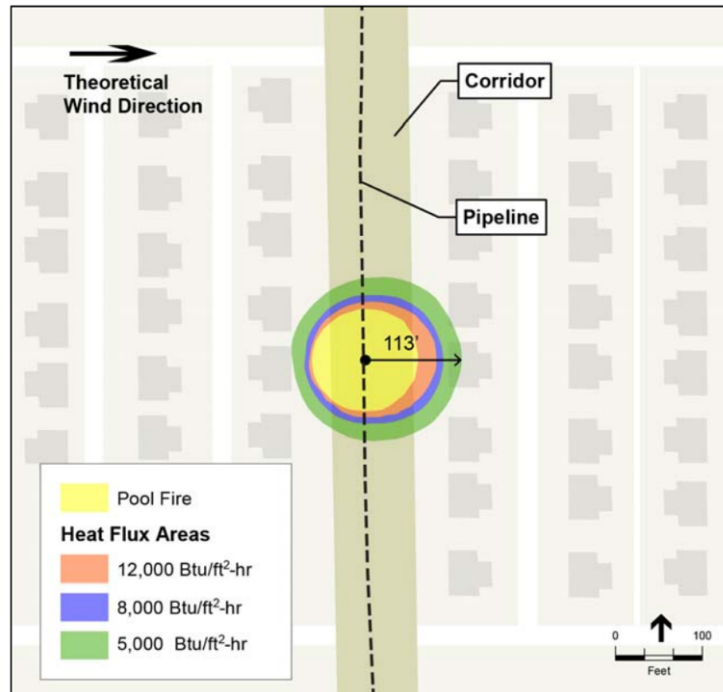
¹⁵

https://energizeeastside2.blob.core.windows.net/media/Default/Safety/PSE_AC_Analysis_Bellevue_WA_FINAL_P16591_12132016.pdf, p. 30

¹⁶

http://www.energizeeastsideeis.org/uploads/4/7/3/1/47314045/stantec_peer_review_of_corrosion_report_05_02_2017.pdf, p.2

¹⁷ http://www.energizeeastsideeis.org/uploads/4/7/3/1/47314045/chapter_4.9_pipeline_safety.pdf, p. 4.9-16



The EIS warns that the diagram is a “simplistic representation and does not show site-specific conditions.”

This insufficient analysis of pipeline fire risk in the EIS was noted by the City of Newcastle in its council agenda for June 20, 2017:¹⁸

While the DEIS characterizes the hypothetical pool fire as a “worst case” scenario, it also acknowledges that if “hilly conditions, waterbodies, or catch basins were present, the pipe contents could flow away from the site of the release ... The City’s elevation and topography are strikingly different from the “pool fire” scenario discussed in the DEIS (pages 3.9-28 – 3.9-29). The DEIS should evaluate the impacts of a potential release or rupture under scenarios where actual hilly conditions, waterbodies or catch basins are present to better understand the potential impacts in all of the partner cities.

A hill near the Sierra Heights Elementary School and abundant vegetation invalidate simplistic assumptions made in the EIS risk analysis.

¹⁸ https://newcastle.civicweb.net/filepro/document/14614/AB%2017-39_Energize%20Eastside.pdf

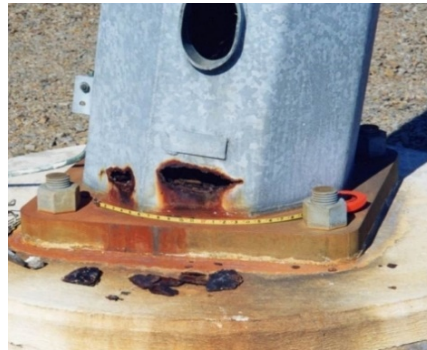
1.7 Pole safety

PSE suggests that steel poles will be safer for nearby homes than aging wooden poles. According to an industry website, “Whether made of wood, light-duty steel, concrete, fiberglass or composite materials like resins and glass, all utility poles and towers can bend, break and bob when Mother Nature kicks up her heels.”¹⁹

During the past decade, steel poles have failed due to accident, corrosion, weld failures, ice loading, and extreme winds.



Weld failure



Corrosion



Seventeen steel poles fell in Teton Village, Wyoming, 2/8/17²⁰

¹⁹ <https://www.power-grid.com/1999/01/01/wood-steel-concrete-mother-nature-can-bring-em-all-down/>

²⁰ https://www.wyomingnews.com/news/teton-village-without-power-after-storm-downs-power-lines/article_0aee7dce-ee57-11e6-8017-eb7fa13cd38b.html

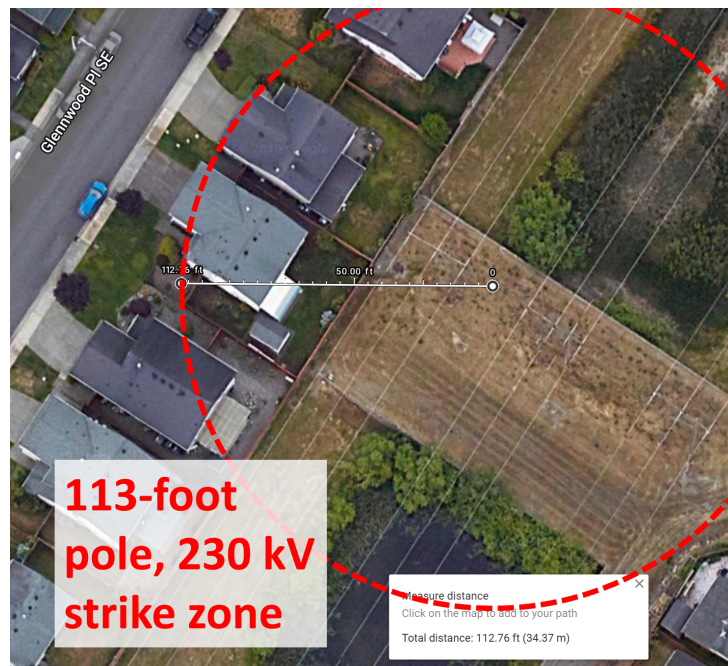
Contrary to PSE's implication that steel poles would be safer than aging wooden poles, H-frame wooden structures of the type that currently support the power lines are resilient and have remained standing in challenging circumstances.



At least ten Renton homes and other community buildings are located within the fall radius of PSE's proposed poles:

- 1074/1078 Lynnwood Ave. NE
- 859/863/867/1005 Monroe Ave. NE
- 154/160/166/174 Glenwood Pl. NE
- Renton Seventh-day Adventist Church
- Highlands Preschool
- Renton Technical College (Building A)

This photo shows the strike zone of a proposed 113-foot pole in Renton that could fall on any of four nearby homes:



Four homes are within the fall radius of a proposed 113-foot pole

2. Assumptions used to justify Energize Eastside

To justify building Energize Eastside, PSE commissioned Quanta to perform two studies in 2013 and 2015. The primary purpose of the project was to serve growth in downtown Bellevue and the developing Spring District in Bellevue. In Renton, growth has been less vigorous.

Quanta's assumptions have not stood the test of time:

1. Quanta assumed winter peak demand would increase rapidly. It has fallen.
2. When analyzing a peak demand scenario in summer, Quanta ignored critical details of where electricity is produced and consumed.
3. Quanta did not consider technology that can address summer demand.

2.1 Incorrect winter demand trends

The peak winter demand scenario studied by Quanta is not well understood by the public or the businesses that PSE scares with warnings of impending blackouts.

Here are all the conditions that must occur simultaneously to cause a blackout:

- An arctic weather system settles on the Puget Sound area, plunging temperatures below 23° F for more than a day.
- During peak hours on a weekday (6-9 AM or 5-9 PM), electricity consumption spikes.
- Two of the four 230 kV transformers that supply electricity to the Eastside fail.
- Half a dozen gas peaker plants whose main function is to serve peak demand in PSE's service territory are inexplicably offline.
- The Northwest is sending 1,500 MW to Canada, some of which flows through the Eastside and increases load on PSE's remaining transformers.
- Peak demand on the Eastside has increased at an annual rate of 2.4%, year over year, eventually straining the limits of the system to handle all these stresses.

Even under this extremely unlikely set of circumstances, there would be no blackouts. PSE claims it would have to change operational parameters for the Eastside grid, and the grid would become vulnerable to a blackout if an additional failure or emergency occurred.

PSE has admitted that this confluence of events is unlikely to occur, but the company claims federal NERC standards require Energize Eastside to be built anyway. CENSE agrees that federal standards require PSE to anticipate the first three events (cold, peak demand, and failure of two critical components). However, the subsequent items go well beyond what PSE is required to handle.

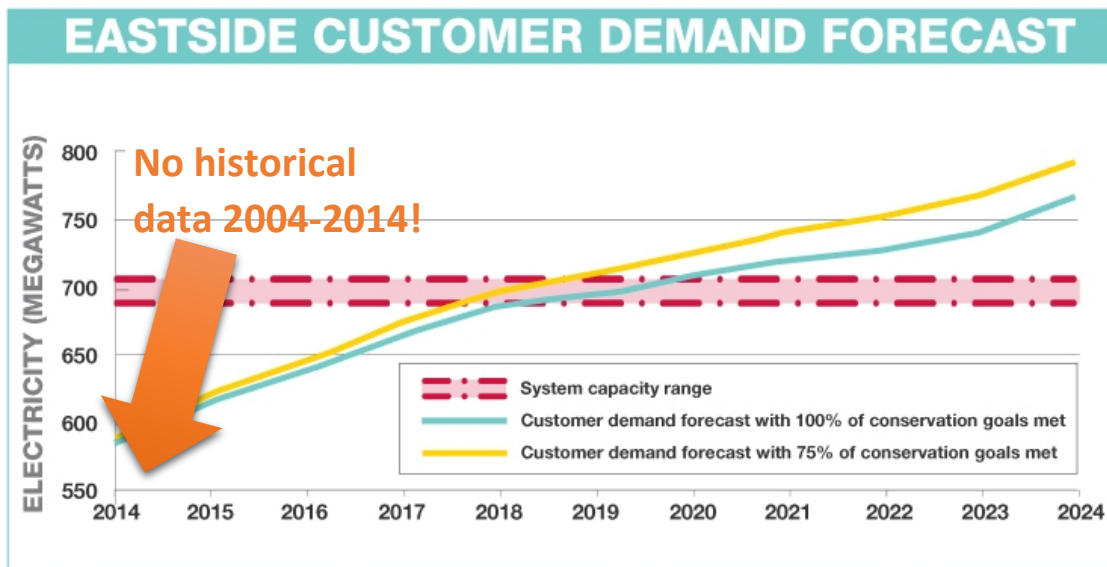
In a letter to PSE dated June 19, 2018, the Utilities and Transportation Commission (WUTC), expressed similar concerns about the offline peaker plants, impact of regional flows, and aggressive demand forecasts.²¹ PSE did not respond for over 16 months. On November 4, 2019, five members of PSE's

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<https://www.utc.wa.gov/layouts/15/CasesPublicWebsite/GetDocument.aspx?docID=1760&year=2016&docketNumber=160918>, p. 10

Technical Advisory Group sent PSE a letter, asking if the company would ever answer WUTC's four questions.²² PSE responded on November 27, 2019.²³ In short, the answer was "No."

Although each of these questions deserves a thorough answer, this document will focus on Quanta's 2015 winter demand forecast, which was simplified and published on PSE's website in June 2015.²⁴



PSE's 2015 forecast of Eastside omits historical data and increases 2.4% per year

The graph shows demand rising quickly (2.4% per year) and exceeding the "system capacity range" by the winter of 2018. CENSE added the orange arrow to call attention to the lack of historical data that might help the public understand how these trends have developed over time. Members of the public also wondered why the forecast rate of growth was more than double the rate of population growth. Where would all that electricity go?

PSE reports peak demand annually to the Federal Energy Regulatory Commission (FERC). During the past 15 years, peak demand has been declining throughout PSE's service territory:

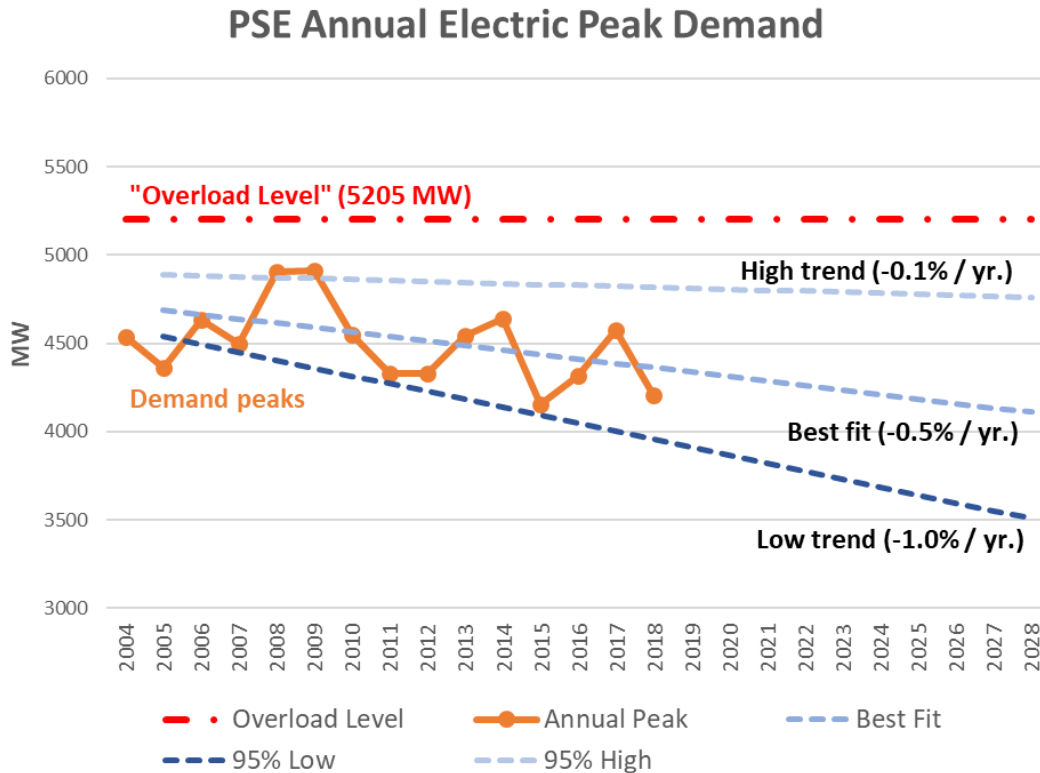
²²

https://oohpseirp.blob.core.windows.net/media/Default/Action_Items/2019_1104_CENSE_Vashon_CAG_Bridle_Trails_Energize_Eastside.pdf

²³

https://oohpseirp.blob.core.windows.net/media/Default/Comment_Reports/2019_November_IRP_CommentSummary_WEB.pdf, p. 10

²⁴ <https://web.archive.org/web/20150623080514/http://www.energizeeastside.com:80/need>



PSE's annual peak demand and extrapolated trends

The orange line shows peak demand as reported to FERC. The dashed blue lines show a range of trends that can be extrapolated from the peak demand data. Standard statistical analysis finds with 95% certainty that peak demand levels are falling in PSE's service area at a rate between 0.1% and 1.0% per year. The red dashed line shows the system-wide "Overload Level" of 5205 MW that Quanta identified in the *Eastside Needs Assessment*.²⁵ Exceeding this level might require a project like Energize Eastside. (Note that the previous graph showed Eastside "system capacity" at 700 MW, only part of the system-wide peak of 5205 MW shown here.)

For many people, declining demand comes as a surprise, especially because PSE's customer base grew at an annual rate of 0.8% during this same time period. There are several factors driving declines for utilities in the Puget Sound region and across the country. Technology like LED lighting, smart thermostats, and efficient heat pumps became widely available during the past decade. Growing concern for the climate has focused efforts to reduce energy consumption in homes and businesses. At the same time, winters are becoming warmer in the Pacific Northwest, requiring less use of electricity for heating.

Demand trends are falling progressively farther away from the "Overload Level." It is not apparent that Energize Eastside will ever be needed to serve winter peak demand on the Eastside.

²⁵

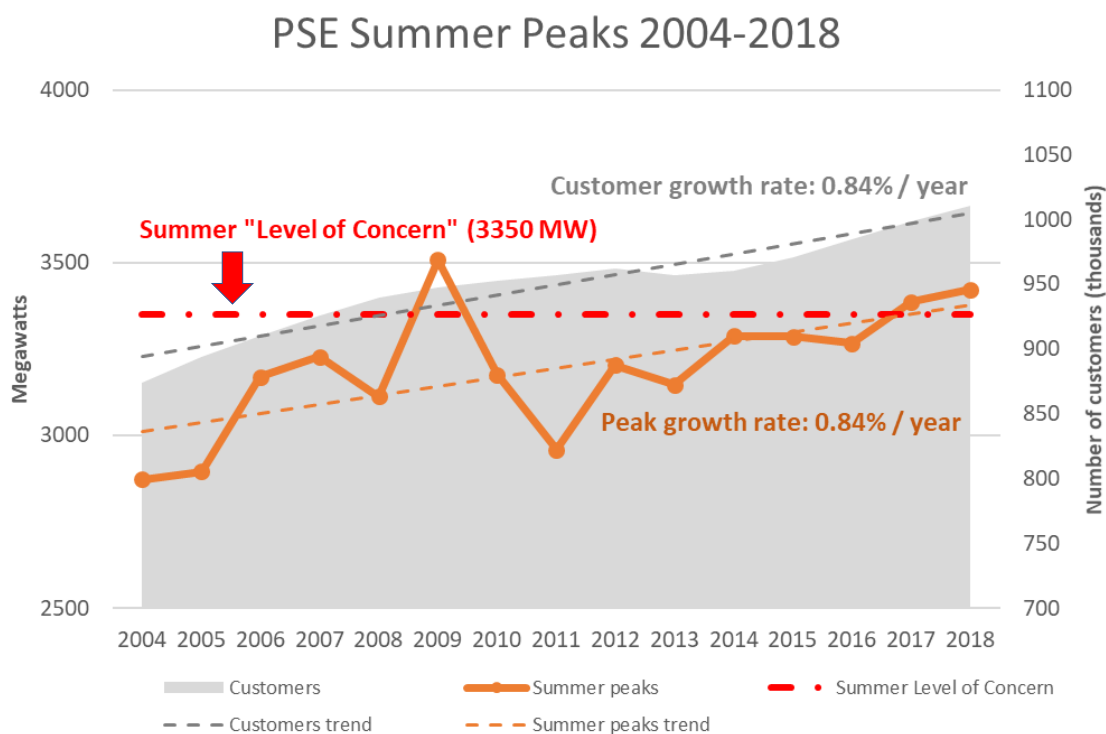
https://energizeeastside2.blob.core.windows.net/media/Default/Library/Reports/Eastside_Needs_Assessment_Final_Draft_10-31-2013v2REDACTEDR1.pdf, p. 9

2.2 Incomplete summer analysis

Quanta analyzed both winter and summer peak demand scenarios. The summer scenario is much like the winter scenario (two transformers failed, peaker plants offline), with a few key differences:

- The highest levels of summer demand occur when weather is hot and air conditioners are running continuously.
- The highest recorded summer peak (3508 MW in July 2009) was 29% lower than the highest winter peak (4911 MW in December 2009).
- Transformers and wires are less efficient in hot weather.
- Regional transfers reverse direction in summer, and 2,850 MW is sent to California (instead of Canada).

Unlike the winter scenario, peak demand data reported to FERC shows summer peak demand is gradually increasing:



Growth of summer demand appears to match customer growth

The solid orange line shows peak demand as reported to FERC. The orange dashed line shows a best-fit trend line increasing at 0.84% per year. The shaded area of the graph represents the number of customers reported by PSE. The gray dashed line shows the growth trend for customers, which also increases at 0.84% per year.

The rising trend for summer peaks exceeds PSE’s “Level of Concern” in 2009, 2017, and 2018. This may *appear* to justify PSE’s case in favor of building Energize Eastside. However, it is important to understand three mitigating factors before drawing conclusions:

1. The “Level of Concern” line is misleading.
2. The large regional flow of electricity to California is not apparent in this graph.
3. Sources of electricity are not identified.

At 3350 megawatts, the system-wide “Level of Concern” documented in the 2013 *Eastside Needs Assessment* is 36% lower than the winter “Overload Level” of 5205 megawatts. Although wires and transformers are somewhat less efficient in the summer heat, the difference is usually 20% at most. Why is the summer level so much lower?

The difference may be due to the amount of regional electricity flowing through Eastside power lines at the same time peak demand is being served. These regional transfers do not show up in the orange peak demand line, because the electricity is not consumed by PSE customers. Instead, the regional flow pushes the “Level of Concern” lower, raising the urgency of a summer solution.

The effect of the California flow is documented in a 2015 study by Bellevue’s independent analyst, Utility System Efficiencies.²⁶ The analyst predicted that regional flow of this magnitude would cause six different grid elements to overload in the summer of 2020. However, if the regional flow is reduced, all six overloads disappear, leaving the system in good working order for Eastside customers.

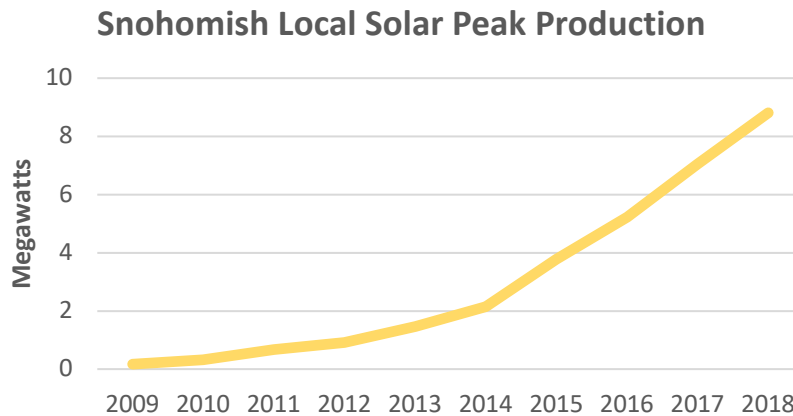
Regional grid operators can curtail large transfers to California within 15 minutes if equipment outages threaten service on the Eastside. To defend its project, PSE insists that large regional transfers must be maintained under all circumstances. In other words, PSE would require its customers to pay hundreds of millions of dollars to maintain these large transfers to California. No federal standard requires PSE’s customers to overbuild local infrastructure to guarantee California receives electricity during an unprecedented emergency on the Eastside. If Californians want *guaranteed* delivery of electricity from the Northwest, they should pay for the larger transmission lines needed to deliver it. Those lines do not need to run through Eastside neighborhoods.

2.3 Omitted analysis of alternatives

PSE did not ask Quanta to evaluate alternatives to PSE’s desired transmission line upgrade. The EIS should have considered realistic alternatives for both winter and summer scenarios, but it shortchanged the summer analysis. Now that the summer peak has become PSE’s main justification for Energize Eastside, no one knows if alternatives would be more effective than the transmission line.

For example, electricity produced by rooftop solar panels is increasing rapidly, as shown in the following graph from the public utility serving Snohomish county (PSE refused to provide equivalent data for its service territory, see Addendum B).

²⁶ http://www.energizeeastsideeis.org/uploads/4/7/3/1/47314045/cob_independent_technical_analysis_1-3.pdf, p. 67

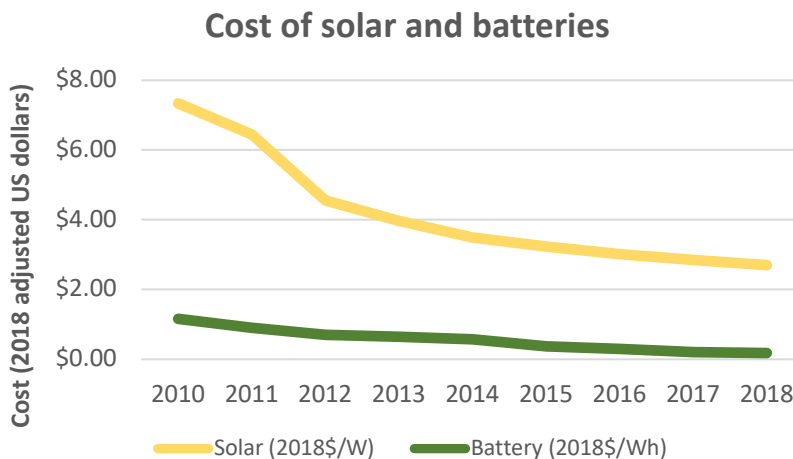


Local solar production is climbing rapidly

As rooftop solar energy becomes more prevalent, stress on electrical infrastructure could decline even if peak demand increases. Locally produced electricity does not run through the transformers and transmission lines that PSE has identified as a bottleneck in peak demand scenarios.

Although the above graph shows data from Snohomish, the overall trend is likely to be similar in PSE's service territory. The future promises broader use of solar panels because their cost is rapidly declining while PSE's electric rates are increasing. Also, greater use of solar energy is needed to meet the clean energy goals adopted by our state (CETA).

Skeptics may argue that midday peak solar production does not align with peak consumption occurring at 5-6 PM. However, recent solar panel installations are being paired with batteries, and batteries can store solar energy to help meet peak demand later in the day. Like solar panels, electricity provided by batteries adds no stress to transformers or transmission lines. Battery costs are declining as well.²⁷



Solar and battery prices continue to decline

²⁷ <https://www.nrel.gov/docs/fy19osti/72399.pdf>, p. viii, and <https://about.bnef.com/blog/behind-scenes-take-lithium-ion-battery-prices/>

The inadequate analysis of solar energy to meet summer need is demonstrated in this quote from the EIS: “Solar could help reduce summer peak loads but because additional capacity would continue to be needed for winter, the use of solar generation to address the transmission capacity deficiency would need to be matched by winter generation capacity and therefore would be redundant.”²⁸ Feasibility of batteries in the summer was also not considered in the EIS: “Summer requirements were not evaluated because the limitations identified during the winter study indicated that energy storage would not be a feasible stand-alone alternative.”²⁹ Now that the summer scenario has become the main justification for the project, solar and batteries should be carefully studied to see if they provide a less expensive, less damaging, and less risky solution to Eastside energy needs.

One other significant change has occurred since alternatives were last considered: **the scope of the project has been significantly reduced.**

In 2016, the Phase 1 Draft EIS stated the whole 16-mile project was necessary to meet the perceived need: “The area identified by PSE as having a transmission capacity deficiency is situated between the Sammamish substation on the north end (Redmond/Kirkland area) and the Talbot Hill substation on the south end (Renton area). **Transmission improvements would need to be tied to these two substations in order to address the need for the project.**”³⁰

In 2019, the Bellevue City Staff Report states: “The full buildout of the Energize Eastside project will include a similar connection from the Sammamish substation in the north to provide redundancy, but **the south portion of the Project ... can function independently.**”³¹

The only way these seemingly contradictory assessments can both be true is if new assumptions have been made in the intervening three years. However, PSE has not disclosed any changes in assumptions or parameters. If assumptions have changed, it is possible that alternatives would be feasible that were previously on the cusp of feasibility.

If a single segment is now sufficient to meet the need, the northern segment should also be studied. The northern segment would run through Bellevue and less than a mile in Redmond. Building the northern segment would leave existing lines in Renton and Newcastle undisturbed. Only through transparent studies can the public weigh the merits of each alternative.

2.4 Unforeseen alternatives

In addition to solar panels and batteries, new options have become available to serve the Eastside’s energy future.

A September 2019 report found that a “Waste-To-Energy” processing plant would be more economical to process waste from King County than exporting the waste to remote landfill locations by railroad. It would also become a local source of electricity that would not be dependent on wind or sunshine. The

²⁸ *Ibid.*, p. 2-39

²⁹ http://www.energizeeastsideeis.org/uploads/4/7/3/1/47314045/02_chapter_2_project_alternatives.pdf, p. 2-40

³⁰ http://www.energizeeastsideeis.org/uploads/4/7/3/1/47314045/00_cover_letter_fact_sheet_table_of_contents_glossary.pdf, p. FS-i

³¹ https://bellevuewa.gov/sites/default/files/media/pdf_document/Staff%20Report%20FINAL%201242019.pdf, p. 111

report concludes, “[A Waste-To-Energy plant] will provide a gross savings of approximately \$4.3 to \$7.2 billion ... when compared to [shipping waste by rail] over the 50-year planning period and [Waste-To-Energy] has a significant advantage on improving recycling rates and energy recovery.”³²

With these positive findings, the county appears poised to evaluate a plant sited at the Cedar Hills Regional Landfill located about six miles east of Renton. This is the same location PSE considered for a natural gas-powered plant to generate electricity as an alternative to Energize Eastside, but the company determined the plant could not resolve the original deficiencies. However, with altered assumptions and some help from solar panels and batteries, a Waste-To-Energy plant might solve both waste issues and electricity issues with one facility, saving customers even more money over several decades. CENSE believes this significant opportunity warrants a closer look requiring updated disclosures from PSE.

3. Winners and losers created by the project

Energize Eastside has been a divisive project because PSE has promoted the idea that businesses and developers in downtown Bellevue would benefit, while simultaneously minimizing the economic, safety, and aesthetic burdens that would be borne by families and neighborhoods located near the taller poles and higher voltages. The name itself, “Energize Eastside,” is a marketing term intended to unify support for the project in the impacted cities. “Energize Downtown Bellevue” might be a more accurate name.

In 2015, the City of Bellevue engaged Stantec, an energy consulting firm, to evaluate the need for Energize Eastside to support conclusions in the EIS. Stantec states, “For the Eastside the highest load densities are north of I-90 and west of Lake Sammamish.”³³ The identified area is mostly in Bellevue.

Here is a list of the winners and losers created by Energize Eastside.

Winner: Bellevue developers. PSE’s marketing machine has created an impression that the city is headed for frequent blackouts if Energize Eastside is not built. This is a marketing strategy and a scare tactic, not a fact. PSE’s technical studies show that “the peaks occur for just a few hours per year,”³⁴ and rolling blackouts would only be necessary if an extraordinarily unlikely set of circumstances occurs during those few hours (half of the 230 kV transformers serving the Eastside fail, half a dozen generation plants are offline, and large amounts of electricity are being transmitted to California or Canada).

But Bellevue likes to be known as a city “open for business.” By demonstrating its willingness to ignore the concerns of its residents in order to keep downtown businesses awash in electricity (even if no realistic threat exists), Bellevue confirms its commitment to commercial developers.

³² <https://mkcclegisearch.kingcounty.gov/View.ashx?M=F&ID=7759006&GUID=168AF89C-8137-4EE8-B95C-D4135F9FA486>, p. 6-1

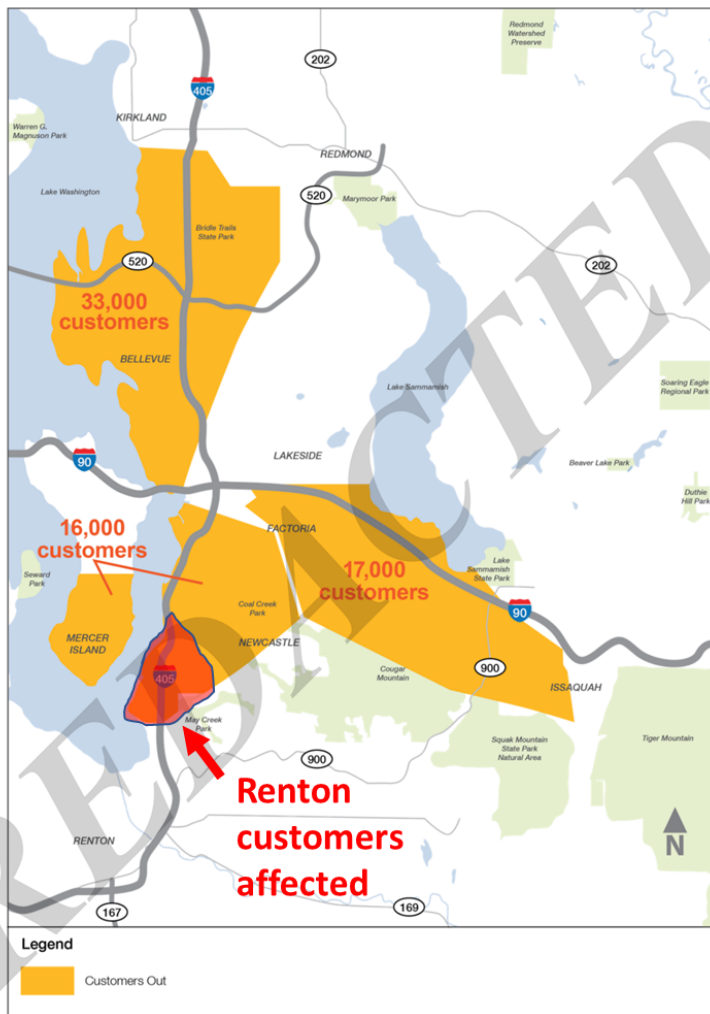
³³

http://www.energizeeastsideis.org/uploads/4/7/3/1/47314045/stantec_review_memo_eastside_needs_assessment_report.pdf, p.8

³⁴

https://energizeeastside2.blob.core.windows.net/media/Default/Library/Reports/SupplementalNeedsAssessmentReport_Redacted_April2015.pdf, p. 38

Loser: Renton. Not only will Renton have more miles of the new transmission line than any other city (4 miles vs. 3.3 miles in Bellevue), Renton will receive the least benefit. A map in the 2013 *Eastside Needs Assessment* shows shaded areas where PSE would enact rolling blackouts if the company's highly unlikely scenario were to occur.³⁵



A sliver of Renton customers is included in PSE's rolling blackout map

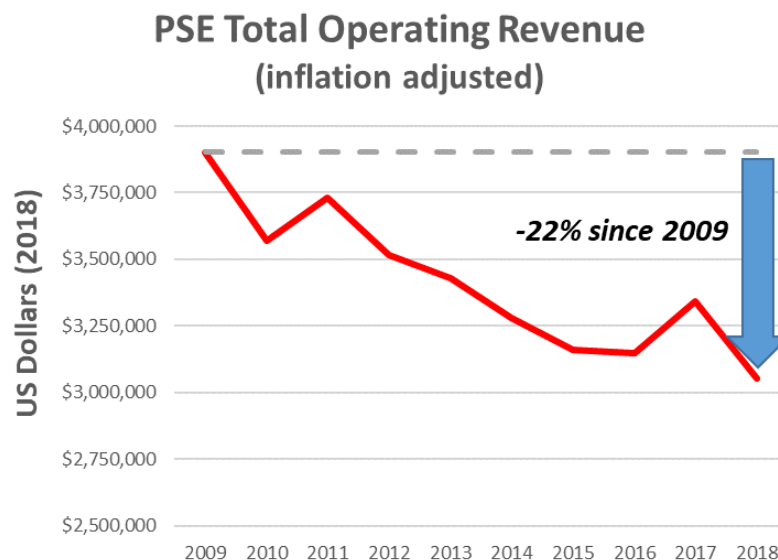
PSE's map shows 66,000 customers "at risk" of rolling blackouts. (Without explanation, PSE later inflated the number to 130,000 "at risk" customers.) PSE does not clarify that a blackout would not affect all these customers simultaneously. Perhaps less than 10,000 customers would lose power for half an hour before the rotation advances to the next group. In fact, only a small portion of North Renton bordering Lake Washington would be affected. However, these customers are much less likely to experience such a blackout as opposed to other outages that affect PSE's distribution system (such as tree limbs falling on neighborhood distribution lines, non-peak equipment failure in local substations, and animal incursions).

³⁵

https://energizeeastside2.blob.core.windows.net/media/Default/Library/Reports/Eastside_Needs_Assessment_Final_Draft_10-31-2013v2REDACTEDR1.pdf, p.35

Loser: Newcastle. The combination of pipelines and transmission lines passes closer to Newcastle’s downtown core than any other city. The utility corridor passes less than 75 feet from Newcastle’s City Hall. An economic analysis in the EIS considers what could happen if the project reduces assessed property values fall by \$10 million: “... the City would need to reduce its budget (for items covered by property tax) by approximately \$20,000.”³⁶ This would be a challenge for a city currently struggling with budget issues.

Winner: PSE’s investors. PSE is owned by Canadian and Dutch private equity funds, most of which participated in the acquisition of PSE in 2009. The investors are keen to reverse a dramatic decline in PSE’s operating revenues during the past decade:



While electricity consumption has been flat for the last 15 years, PSE’s gas business has suffered from low gas prices and decreasing gas consumption. Energize Eastside provides some relief for PSE’s bottom line. A transmission line is particularly profitable, because PSE doesn’t have to engage in competitive bidding to build the project. The cost is whatever the company says it is (within reason). The higher the cost, the higher future revenues will be due to the generous interest rate PSE collects over decades.

Loser: PSE’s customers. All 1.1 million of PSE’s customers will pay the initial cost of Energize Eastside, plus a 9.8% rate of interest for 50 years or more. The total could exceed \$1 billion. Less expensive alternatives were improperly dismissed by the company and the EIS, which failed to evaluate solar panels and batteries for the summer scenario that PSE says has become the main reason to build the project.

Winner: businesses in downtown Bellevue. By overbuilding transmission capacity, Bellevue businesses have an energy solution that requires little effort from them. No poles or wires will be installed in their section of the city, stricter building codes may be delayed, and increased energy efficiency becomes an optional element in Bellevue’s energy future.

³⁶ http://www.energizeeastsideeis.org/uploads/4/7/3/1/47314045/section_3.10_economics.pdf, p. 3.10-9

Loser: residential neighborhoods and the environment. Both neighborhoods and the environment would incur uncompensated costs. Residential neighborhoods would experience higher voltage, industrial infrastructure, negative aesthetic impacts, reduced property values, increased risk of fires and pipeline accidents, and loss of valuable trees. The environment would lose carbon storage, wildlife habitat, and financial resources to pursue smart energy programs.

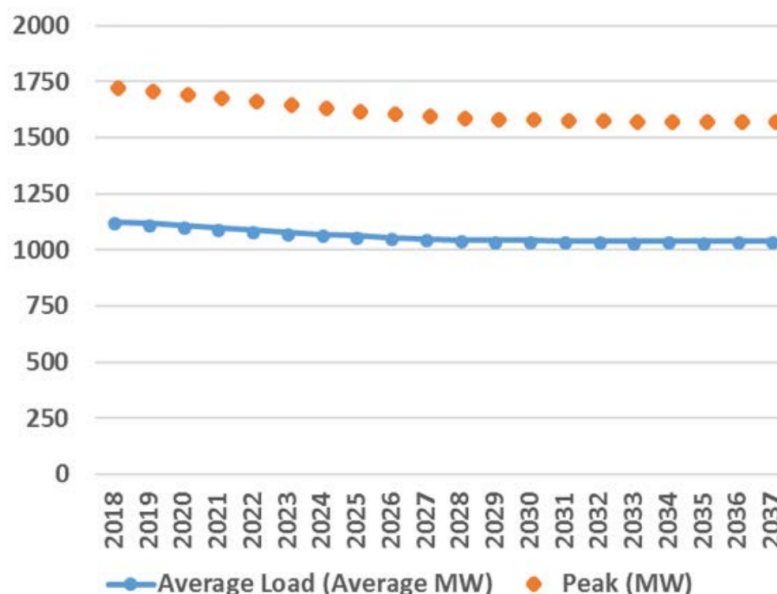
Loser: transparency and local accountability. If PSE is permitted to build this project without providing evidence that electric demand is increasing on the Eastside, an unfortunate precedent will be set. PSE has refused to answer reasonable questions about Energize Eastside from ratepayers, the Utilities and Transportation Commission, and the company's self-selected Technical Advisory Group. It is alarming that a profit-oriented corporation can thwart inquiries from regulators, advisors, and the public.

Questions and Answers

Q: What about electric cars? Won't they increase consumption of electricity?

A: Yes, increasing electrification of our economy is likely to increase total consumption. But for Energize Eastside, the main question is *when* the electricity is consumed, not *how much*. Like most utilities, PSE serves varying demand throughout the day. Demand is low from 10 pm to 6 am. If customers are educated and financially incentivized to charge their cars during these hours, peak demand will not increase. There are many benefits to customers, PSE, and the environment if we use smart technologies and policies to keep peak demand from growing.

Seattle is anticipating lots of electric cars and buses, but Seattle City Light is forecasting falling peak demand for at least two decades:³⁷



Seattle City Light's 2018 forecast of average load and peak demand

³⁷ https://www.seattle.gov/light/IRP/docs/2018_Integrated_Resource_Plan_Progress_Report.pdf, p. 10

Q: You are worried about the large fall zone of tall poles, but high-voltage wires on short poles raise different safety concerns. Which do you prefer?

A: The problem is the voltage. Residents have lived with 115 kV lines for decades, and we understand the risks. Doubling the voltage should be the last solution considered from a safety standpoint.

Q: The current poles are so old. Wouldn't new poles be safer?

A: We support robust maintenance and replacement of any old poles that are becoming unsafe. PSE hasn't proven that it's necessary or desirable to double the voltage in the corridor. We support investments that make our service more reliable, safer, and better for the environment.

Q: Maybe there isn't a need for Energize Eastside now, but isn't it a good idea to build it, just in case?

A: It's true that transmission lines take a long time to build. However, there are many new technologies, like batteries, that can be installed within a few months if the need arises. Elon Musk bet he could install a utility-scale battery in Australia in less than 100 days, and he did it.³⁸ There are lots of smart things we can do if a problem develops, but it is very unlikely that we will face this kind of peak demand reliability issue any time in the next decade.

Conclusion

Here are nine facts we would like you to remember:

1. Energize Eastside would impact safety, aesthetics, property values, and environment in Renton.
2. The winter scenario that PSE initially warned about has not materialized.
3. PSE has shifted focus to a summer scenario, but the EIS did not evaluate rooftop solar panels and batteries to serve summer demand.
4. New alternatives like a King County Waste-To-Energy plant can save customers money.
5. If a transmission line is proven to still be the best solution, a northern segment affecting only Bellevue and less than a mile in Redmond would leave lines undisturbed in Renton and Newcastle. This option has not been studied.
6. The EIS assumes the utility corridor would be widened to maintain safety as 230 kV transmission lines and two petroleum pipelines pass by homes, schools, churches, businesses, and parks. PSE is not planning to widen the corridor.
7. The EIS did not properly evaluate the site-specific risk of a pipeline fire on a hill surrounded by vegetation (a concern for Sierra Heights Elementary School).
8. Energize Eastside would soon become redundant with efforts PSE must take to comply with Washington's new Clean Energy Transformation Act (CETA), but ratepayers will continue to pay 9.8% interest on the cost of the project for decades.
9. PSE has significant financial incentives to pursue a no-bid transmission project at the expense of its customers and the environment.

³⁸ <https://www.engadget.com/2017/11/23/tesla-australia-powerpack-100-day-bet/>

Addendum A: PSE refuses to provide Eastside peak demand data

(Donald Marsh is a member of PSE's Technical Advisory Group and has security clearance from FERC)

Via Electronic Mail

May 13, 2016

Mr. Donald Marsh
4411 137th Avenue SE
Bellevue, WA 98006
Re: CEII Information Request

Dear Mr. Marsh:

By way of a recap, you submitted a CEII request to Puget Sound Energy, Inc. (PSE) that we received on March 14, 2016. Your request asked for, among other things, historical loading, peak load information and load flow information related to the Energize Eastside Project.

We responded to your request on April 15, 2016 and provided some of the information you requested. Additionally, we asked you to provide additional information to support your request so that we could evaluate your eligibility to receive CEII, a legitimate need for CEII and ability to protect the confidentiality of CEII.

You responded to our request for additional information in your letter dated April 27, 2016. This letter was very informative in helping us better understand what information you were looking for and we appreciate your clarity. By our count, you asked for four things in your letter: (1) historical loading on each of the 230/115 kV substations you consider to be on the Eastside as well as each of the 115/12 kV substations you consider to be on the Eastside; (2) the amount of electricity being transmitted to Canada; (3) the ratings of the transformers that are overloading in the simulation; and (4) whether the simulation was run in DC mode.

Historical loading on individual substations is confidential in order to protect customer sensitive information so this request is denied. The remaining requests are not considered CEII and our responses are as follows. Power flows between the Northwest and Canada can be found to be 1500 MW in the south to north direction for winter scenarios and 2850 MW in the north to south direction for summer scenarios. Ratings on transformers that are overloading in the winter simulation are 484 MV A for both Talbot Hill transformer banks and ratings on transformers that are overloading in the summer simulation are 429 MVA for Sammamish Transformer #1 and 410 MV A for Sammamish Transformer #2. Finally, the simulation was not run in DC mode.

Your letter also mentions the CEII clearance you received from FERC, as well as that received by Mr. Lauckhart. Please note that FERC approval does not constitute PSE approval. FERC jurisdictional entities such as PSE have their own CEII processes and procedures that are meant to function and be applied for separately and independently from those of FERC.

Lastly, you state in your letter that you are not planning to run a simulation. Based on that acknowledgment, the technical data you asked for in your original request that we received on March 14, 2016 does not fulfill a legitimate need and that request is therefore denied.

Sincerely,

Puget Sound Energy, Inc.

By George Marshall

Its: Manager Transmission Policy and Contracts

Addendum B: PSE refuses to provide solar peak data

(Donald Marsh requested solar peak data as a member of PSE's Technical Advisory Group)

From: Netik, Irena <irena.netik@pse.com>
Sent: Monday, December 23, 2019 10:27 AM
To: Don Marsh <don.m.marsh@hotmail.com>
Cc: Kvam, Michele <michele.kvam@pse.com>
Subject: RE: Solar output for PSE customers

Don

Unfortunately, I have not been able to track down the information you requested. The solar capacity installed on our system is about 60 MW currently.

Thank you,

Irena Netik

D: 425.462.3671 M: 206.434.2336

From: Don Marsh <don.m.marsh@hotmail.com>
Sent: Saturday, December 14, 2019 4:14 PM
To: Netik, Irena <irena.netik@pse.com>
Cc: Kvam, Michele <michele.kvam@pse.com>
Subject: Solar output for PSE customers

CAUTION: This email originated from outside of the organization. Exercise extra caution when responding, opening attachments, and clicking links.

Hi, Irena.

As a member of PSE's Technical Advisory Group, I am trying to understand how photo-voltaic solar panels are contributing to our energy supply in the Puget Sound. If possible, I would like to know the peak energy generated in megawatts for each year 2009-2018 in PSE's service area. It would also be helpful to know how many solar panel systems were operating for each of those years.

Can PSE provide this information, or put me in touch with someone who can?

Sincerely,

Don Marsh