

From: [Don Marsh](#)
To: [UTC DL Records Center](#)
Cc: david.danner@utc.wa.gov; [Rendahl, Ann \(UTC\)](#); [Balasbas, Jay \(UTC\)](#); [Nightingale, David \(UTC\)](#); [Johnson, Steven \(UTC\)](#)
Subject: CENSE comments for Docket No. UE-160918
Date: Wednesday, February 21, 2018 7:03:07 AM
Attachments: [CENSE comments on 2017 IRP.pdf](#)
[CENSE testimony for IRP hearing.pdf](#)

Dear Commissioners,

CENSE (Coalition of Eastside Neighborhoods for Sensible Energy) would like to enter the attached documents into the record for Docket No. UE-160918.

The first document addresses PSE's proposed "Energize Eastside" project as described in Chapter 8 of the company's 2017 Integrated Resource Plan.

The second document is a copy of the verbal testimony I will present at today's public hearing on behalf of CENSE. This testimony mentions Energize Eastside and a second transmission project, the Lake Hills Transmission Line. Both proposals fail to meet the standards of prudent analysis that is required by Washington Administrative Code.

Thank you for your timely consideration of our comments.

Sincerely,

Don Marsh, President
CENSE.org



Coalition of Eastside Neighborhoods
for Sensible Energy

Feb. 21, 2018

Dear Commissioners,

CENSE would like to comment on Chapter 8 of PSE's 2017 Integrated Resource Plan, specifically the section describing the "Energize Eastside" project, starting on page 8-30.¹ We agree with comments filed by the UTC staff for docket UE-160918 on Feb. 6, 2018.² The staff succinctly summarized our concerns as follows:

Staff concerns include a lack of narrative in the IRP regarding:

- *The effect of the power flows due to entitlement returns on the need for the Energize Eastside project.*
- *The reason for, and effect on the need for the Energize Eastside, of modeling zero output from five of PSE's Westside thermal generation facilities.*
- *PSE's choice not to provide modeling data to stakeholders with Critical Energy Infrastructure Information clearance from FERC.*
- *Resolution of the effect of PSE's load assumptions on the need for Energize Eastside Project.*

Energize Eastside was announced to the public over four years ago. It is remarkable that these significant questions have still not been adequately answered. We understand that the Commission does not judge prudence before a project is built. However, we believe there are actions the Commission could take to protect PSE's ratepayers and shareholders from an imprudent project:

1. In its comments on the IRP, we ask the Commission to provide feedback to PSE indicating that a project with unanswered technical questions and inadequate analysis of feasible alternatives risks being judged imprudent and might not be included in the rate base.
2. Because Energize Eastside was not included in the IRP until after the IRP Advisory Group had concluded its meetings, we ask the Commission to convene a special hearing devoted to technical analysis and discussion of Energize Eastside.
3. We ask the Commission to require PSE to abide by the Commission's Policy Statement requiring energy storage to be studied as an alternative to a transmission project.
4. We ask the Commission to consider new revenue stacking rules for battery storage, as the California Public Utility Commission has recently done.³ This would increase the cost benefits of a battery solution compared to a massively over-built transmission line.

¹ https://pse.com/aboutpse/EnergySupply/Documents/IRP17_Ch8.pdf

² https://www.utc.wa.gov/_layouts/15/CasesPublicWebsite/GetDocument.aspx?docID=513&year=2016&docketNumber=160918

³ <https://www.utilitydive.com/news/california-regulators-first-to-allow-multiple-revenue-streams-for-energy-st/516927/>

Inadequate evaluation and public participation

CENSE does not believe PSE's high-level description of its planning process in Chapter 8 meets the requirements of WAC 480-100-238 (3)(d)(e):

(d) An assessment of transmission system capability and reliability, to the extent such information can be provided consistent with applicable laws.

(e) A comparative evaluation of energy supply resources (including transmission and distribution) and improvements in conservation using the criteria specified in WAC 480-100-238 (2)(b), Lowest reasonable cost.

PSE added Chapter 8 to the IRP after the Advisory Group had concluded its deliberations, allowing no significant input or discussion by the group. This violates the spirit of WAC 480-100-238 (5):

*(5) Public participation. Consultations with commission staff and public participation are essential to the **development** of an effective plan. [emphasis added]*

The Advisory Group plays an essential role in the development of the IRP. If the public is only allowed to comment on the plan *after* it is published, as we must now do, the ability for the public to fully participate and make meaningful contributions to the plan is impoverished.

PSE has not fulfilled the "Lowest reasonable cost" requirement of WAC 400-100-238 (2)(b) because the company did not account for the "cost of risks associated with environmental effects including emissions of carbon dioxide." PSE did not adequately analyze reasonable and cost-effective technologies like energy storage, demand response, and enhanced efficiency. Each of these alternatives reduces demand growth or increases effectiveness of renewable resources, producing lower emissions of greenhouse gases compared to building more wires and more gas-fired power plants.

False advertising

The IRP says:

PSE has made many system improvements in the Eastside area over the years, but the primary 115 kV lines that connect the Sammamish and Talbot Hill substations (which are the backbone of the Eastside electrical system) have not been upgraded since the 1960s. (8-31)

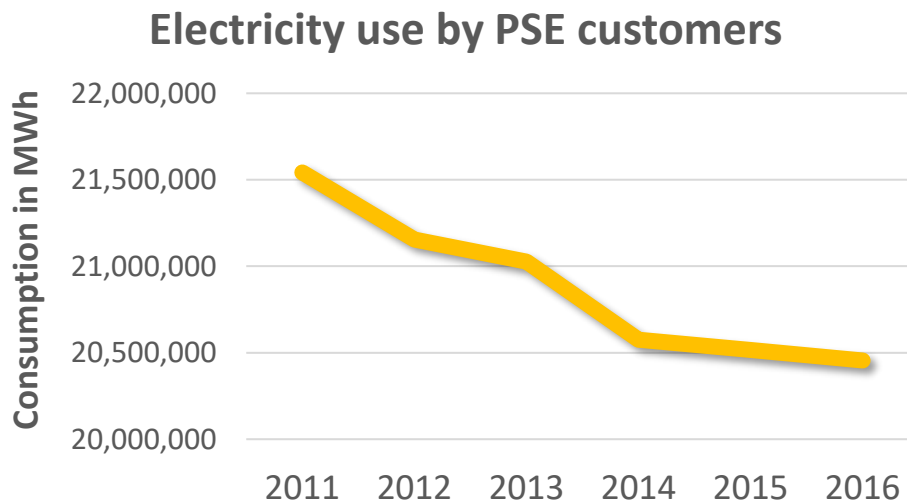
In its advertising, PSE often describes these two 115 kV lines as the "backbone of the Eastside electrical system." While this might have been a true statement when the lines were built in the 1960s, PSE has added three new 115 kV lines through Bellevue during the past 25 years. These and other additions form a network of transmission lines that can provide reliable electricity even if the "backbone" is de-energized, as it would be for months during construction of the proposed upgrade. CENSE is surprised to see PSE's marketing terminology presented as fact in the IRP.

Questionable forecasts

The IRP says:

PSE has specifically used PSRC's Land Use Baseline growth projections, which model population and employment growth in the Puget Sound region. Projections by the PSRC show the Eastside population will likely grow by another third and employment will grow by more than three-quarters over the next 25 years. (8-31)

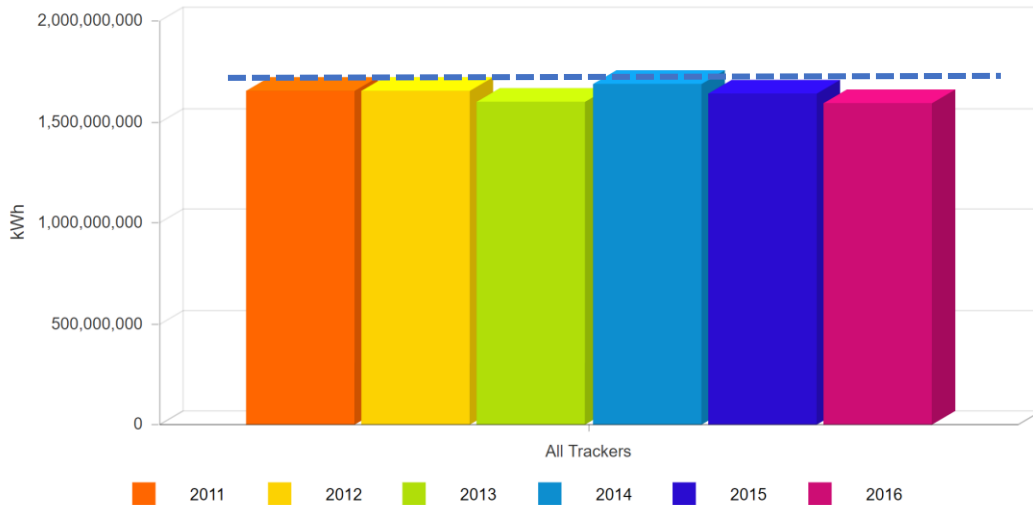
CENSE does not dispute these population growth projections, but the more relevant question is how rising population and employment are affecting electricity consumption. According to 10-K statements PSE provides to the Security and Exchange Commission, electricity consumption has been falling in PSE's service territory for at least seven years due to increasing efficiency and conservation:



PSE states that growth on the Eastside has been so vigorous that the declining consumption shown in its SEC reports do not apply locally. But PSE has not provided data to substantiate this claim. In Bellevue, the largest city on the Eastside, total electricity use has been flat or declining, according to data that PSE shares with the City's Environmental Stewardship initiative:⁴

⁴ <https://k4c.scope5.com/pages/61>

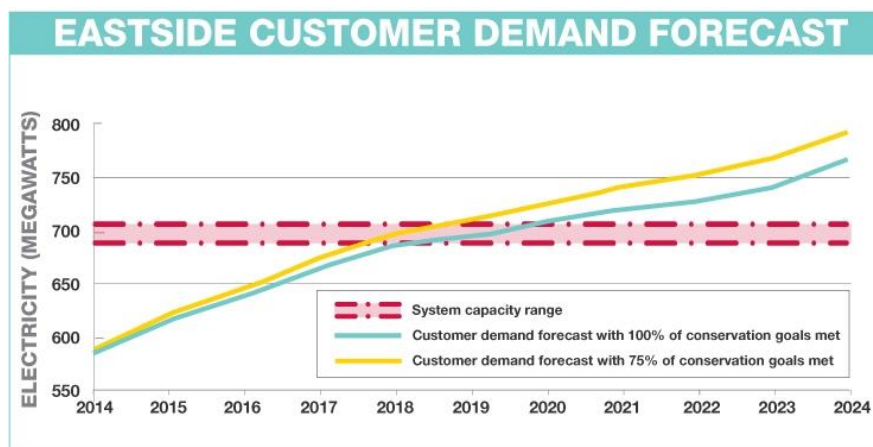
Total Electricity Use in Bellevue (kWh)



Bellevue’s population grew from 130,000 in 2011 to 141,000 in 2016, an increase of 8.5%. The number of jobs, an indicator of economic vitality, grew at least twice that rate. But electricity consumption barely budged due to increasing efficiency, new technology, and conservation efforts. The city’s explanation for the slight bump in overall usage in 2014 is included on the same web page:

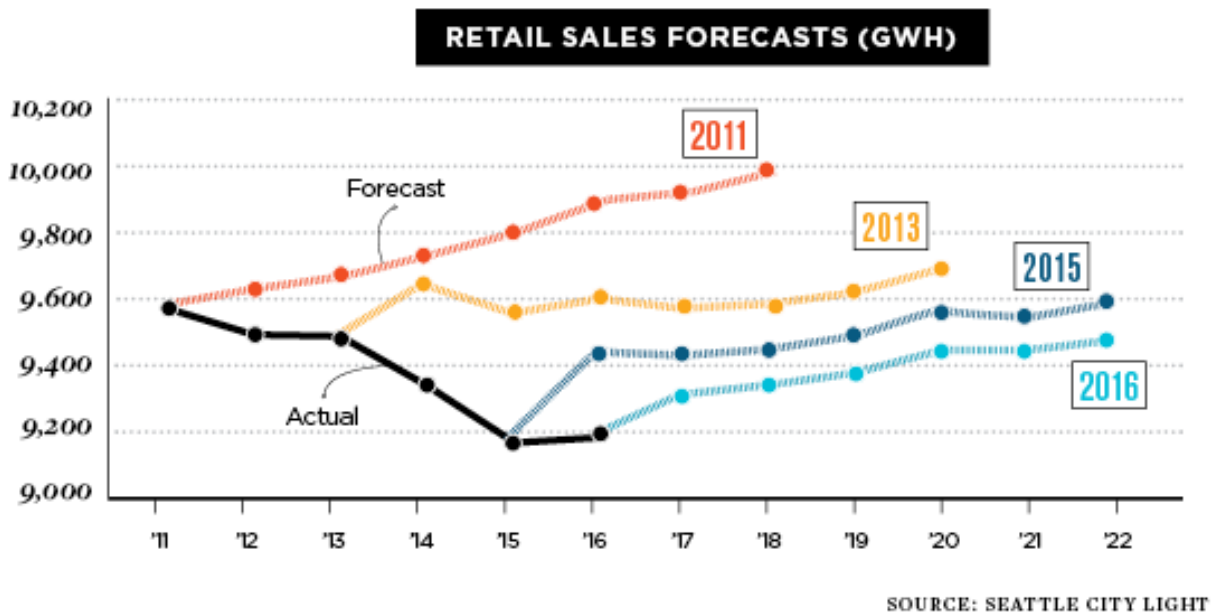
Conservation combined with increased population growth have tended to keep total community use fairly flat since 2011. However, 2014 was one of the hottest summers on record, with an average temperature of 77 degrees Fahrenheit. As most commercial buildings have air conditioning, the exceptionally long, hot summer likely contributed to the additional 1 million kWh of commercial electricity used in 2014.

In the IRP, PSE includes no Eastside-specific demand forecast to explain the need for Energize Eastside. This is surprising, since PSE previously used the graph shown below in its public education materials to illustrate the need for the project:⁵



⁵ <https://web.archive.org/web/20160716140225/http://www.energizeeastside.com:80/need>

The trend lines in PSE’s Eastside forecast rise at approximately 2.4% per year. By October 2016, PSE may have recognized the divergence of this forecast from actual use data, and the company removed the graph from its website. Despite repeated requests from the community, PSE has never published an updated forecast graph. It appears that PSE is experiencing the same falling demand for electricity that has been experienced by other Northwest utilities. In the November issue of Seattle Business Magazine, the following graph shows forecasts by Seattle City Light have also been inconsistent with actual declining consumption:⁶



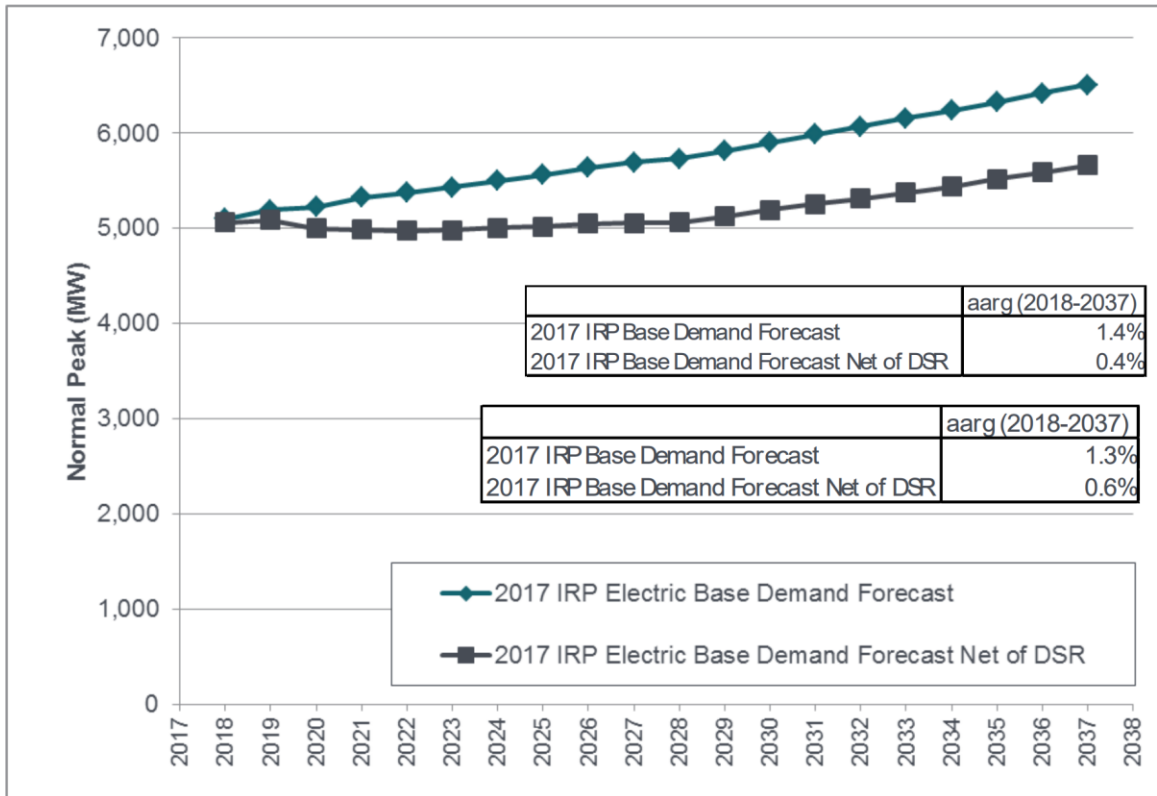
PSE’s expectation of 2.4% annual growth is at least **four times higher** than Seattle’s most aggressive (and incorrect) forecast of 0.6% annual growth in 2011. The difference between Seattle’s forecast and PSE’s cannot be explained by differences in population or economic growth, raising significant questions about the forecasting methodology used by PSE.

Comparing Seattle’s retail sales forecast to PSE’s peak demand forecast may not be an “apples to apples” comparison. It is difficult for the public to accurately assess PSE’s forecast because PSE does not publish peak demand data for the Eastside, despite our repeated requests to see such data.

⁶ <http://www.seattlebusinessmag.com/policy/how-climate-change-conservation-and-renewable-energy-are-changing-seattle-city-light>

Figure 5-7 of the IRP shows peak demand throughout PSE’s service area remaining flat (after DSR) until 2028:⁷

*Figure 5-7: Electric Peak Base Demand Forecast (MW),
before DSR and after applying DSR*



PSE implies that demand is growing on the Eastside, but simple math and common sense dispute that notion. The Eastside accounts for at least 14% of total consumption in PSE’s service territory. To produce overall flat growth from 2017 to 2028, offsetting declines would be required elsewhere. If demand is linked to population, as PSE implies on page 8-31, then population must decline to reduce demand. There is no evidence that population is falling in the state of Washington.

Bad assumptions

The PSE transmission planning studies performed in 2013 and 2015 determined that thermal violations on transmission line and transformer equipment might occur under foreseeable scenarios within the next few years. The thermal violations are a result of running scenarios for several component outage contingencies, as required by NERC, that take into consideration peak demand (which is heavily dependent on seasonal temperatures and daily demand profiles) and levels of conservation. (8-33)

⁷ https://pse.com/aboutpse/EnergySupply/Documents/8a_2017_PSE_IRP_Chapter_book_compressed_110717.pdf, p. 5-8

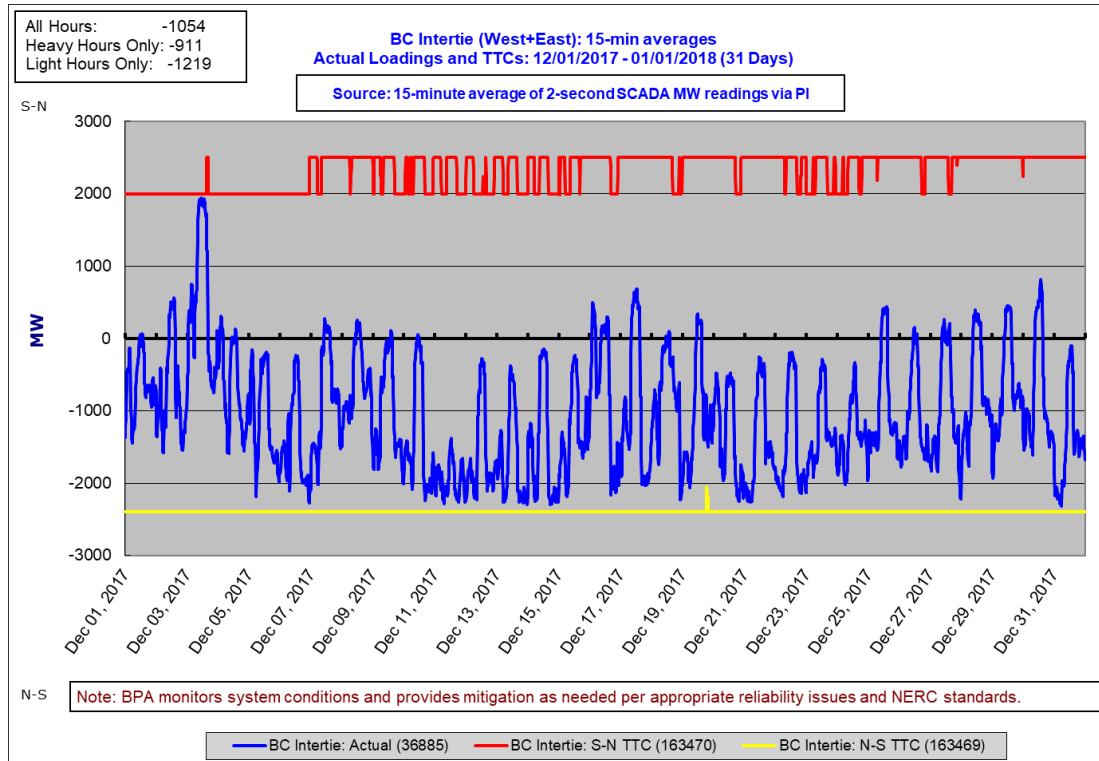
NERC standards require PSE to maintain service under an N-1-1 failure scenario while serving maximum load. CENSE supports this standard of reliability. However, PSE included two additional assumptions that are not mandated by federal requirements: the total shutdown of 11 local generation plants (five north of the Puget Sound), and exports of 1,500 MW to Canada. Most of these local generators would normally be turned on during the highest demand peak of the year. If PSE assumes they have failed, that would be 13 failures of critical components of the electrical grid, far exceeding federal requirements to maintain service after failure of two components. CENSE asserts that it is economically infeasible to maintain service during a failure of this magnitude, and PSE is not required to do so by federal standards.

The assumption that PSE must help export 1,500 MW to Canada is also questionable. British Columbia does not rely on electricity provided by the U.S., as the British Columbia Utility Commission explains in its November "Inquiry Respecting Site C":

The Clean Energy Act (CEA) requires that BC Hydro be self-sufficient for energy and capacity...⁸

Records from the Bonneville Power Administration show that the U.S. **imports** electricity from Canada when temperatures drop in the Puget Sound region, exactly the opposite of what PSE assumes. Last winter (2016-17), Canada provided an average of 986 MW during all hours in November, December, and January. This southward flow reduces stress on the transformers PSE says would overload during an N-1-1 failure and maximum load.

The graph showing electricity flowing on the BC Intertie for December 2017 is interesting:



⁸ <http://www.siteinquiry.com/wp-content/uploads/2017/11/11-01-2017-BCUC-Site-C-Inquiry-Final-Report.pdf>, Appendix B

This graph, which is available online from the Bonneville Power Administration, shows how much electricity flowed between the U.S. and British Columbia during every day in December 2017 with a granularity of 15 minutes.⁹ When the blue line dips below the 0 axis, electricity is flowing from Canada to the U.S. On average, Canada delivered 1054 MW to the U.S. during the month. The most interesting departure from this trend occurred on December 3, when the U.S. sent Canada almost 2000 MW from 8:00 AM to 4:00 PM. But this occurred on a Sunday when temperatures were about 45 degrees. The next two biggest transfers to Canada occurred on a Sunday and a Saturday. These conditions are much different than the scenario that PSE is worried about, when temperatures fall below 23 degrees during peak demand hours on a workday.

If the normal flow of electricity is from Canada to the U.S. during winter months, under what conditions would the U.S. be required to send 1,500 MW to Canada during extreme cold temperatures? Would PSE really be required to initiate rolling blackouts to maintain exports at that level, or would grid operators curtail these transfers to maintain service reliability on the Eastside? The Commission could help educate the public about what PSE is mandated to do in this scenario.

If the Commission verifies the need for large transfers of electricity during peak demand conditions, there are two alternatives that PSE has not studied: flow control and an existing transmission line owned by Seattle City Light.

In other parts of the country, utilities are using flow control technology to better control how and where electricity flows, especially when vulnerable grid components must be protected. A similar solution for the Eastside would keep large exports of electricity on BPA's transmission lines rather than allowing by-flow current to stress Eastside lines and transformers. EQL Energy submitted an economic study request asking PSE if this technology could alleviate the need for Energize Eastside, but PSE declined to perform the study.

To alleviate potential congestion of transmission lines in the Puget Sound area, ColumbiaGrid studied several options. The preferred solution proposed upgrading the wires on existing 230 kV lines owned by Seattle City Light. This solution was abandoned when PSE offered Energize Eastside as an alternative, funded by PSE's ratepayers. However, an upgrade of Seattle's lines would be better for the environment and less costly for ratepayers. Pressure on PSE's infrastructure would be alleviated for many years.

If increasing local demand eventually requires additional investments after upgrading these lines, the need could be served using energy storage or demand response, which will become even more economical alternatives in the next 5-10 years. If an additional 230 kV transformer becomes necessary, Seattle City Light has already verified that a short underground line (less than a mile) from their lines to the proposed Richards Creek substation could be built.

PSE acknowledged this alternative but dismissed it. Seattle City Light apparently "preferred" to keep these lines for their own future use. However, PSE never made a formal request under FERC Order 888. Accordingly, PSE's request and Seattle's refusal are not in accordance with federal standards for transmission planning. The CEO of Seattle City Light has stated that his utility would respond to a formal request appropriately.

⁹ <https://transmission.bpa.gov/Business/Operations/Paths/> (select "History" next to "BC Intertie")

Unfounded summer concerns

Continuing population growth increases the risk of more severe overloading by summer 2018. (8-32)

As stated previously, population growth is only one factor influencing demand for electricity. Conservation, efficiency, and distributed resources (especially solar panels in the summer) mitigate demand. PSE has not provided Eastside data to help us understand what the actual growth trends are.

Even if summer loads are increasing, the risk of overloads is negligible. Here is a quote from Exponent's 2012 study of electrical reliability in Bellevue:

*PSE is a winter peaking utility. Therefore, transmission system outages have a larger impact in the winter than a similar outage during the summer period, since the **summer peak load is only about 65% of winter peak.**¹⁰*

Questionable studies

PSE often refers to studies that appear to support the need for Energize Eastside:

In total, five separate studies performed by four separate parties have confirmed the need to address Eastside transmission capacity... (8-34)

The 2013 and 2015 studies by Quanta were commissioned by PSE. Both include the previously mentioned assumptions about offline local generation plants and unlikely exports to Canada. These studies may have been influenced by PSE's desire to build the project and collect new revenue.

The independent study by Exponent in 2012 mentions "Upgrade of the existing 115 kV lines to 230 kV" in several places as a potential capacity addition to support growth. However, the analyst did not evaluate the need for the project nor state any tangible reliability benefit. The report simply mentions the project in a list of potential major projects that PSE might pursue in the future.

The "Independent Technical Analysis" by Utility Systems Efficiencies (USE) in 2015 concludes that the project is needed, but with a major caveat. Responding to a request from CENSE, USE studied PSE's scenario without 1,500 MW simultaneously transmitted to Canada. USE found that removing the export to Canada eliminated four of the five overloads in the 2019/2020 Normal Winter scenario (see page 65) and removed all overloads in the 2020 Summer scenario (see page 67).¹¹ The one overload remaining in the winter scenario was subsequently revealed to be minor (a few percentage points over its rated capacity). This could be solved by increasing the transformer size or placing a third transformer at Talbot Hill at a fraction of the cost of a new transmission line. PSE says these solutions would be inconvenient for the company. However, these are more prudent investments for ratepayers

¹⁰ http://www.energizeeastsideeis.org/uploads/4/7/3/1/47314045/final_electrical_reliability_study_phase_ii_report_2012.pdf, p. 49

¹¹ http://www.energizeeastsideeis.org/uploads/4/7/3/1/47314045/cob_independent_technical_analysis_1-3.pdf

than a very expensive project that provides much more capacity than the Eastside is likely to need for decades.

USE did not perform an independent review of load forecasts that CENSE specifically asked for.

The Review Memo by Stantec in 2015 did not run any load flow studies or independently confirm PSE's demand forecast. It simply reviewed previous documents to assure that PSE had followed its normal practice. Stantec didn't address our concerns about offline generators or large exports of electricity to Canada. It didn't address the feasibility of other alternatives such as batteries. For these reasons, the Stantec memo should not be used to determine the prudence of Energize Eastside for PSE's ratepayers.

Conservation too conservative

If 100 percent of conservation goals are not achieved, then the transmission system capacity will be surpassed sooner than expected. (8-35)

In October 2016, PSE sent its customers an "Electric energy efficiency report card" for 2014-15. It congratulated customers for saving 42 GWh, beating PSE's expectations by seven percent. PSE often says that "conservation alone is not enough" to eliminate the need for Energize Eastside, but higher than forecast levels of conservation may delay the need. Conservation doesn't have to address the entire need by itself. Conservation can be augmented with other smart technologies and policies to completely address the need. CENSE does not feel that PSE has sincerely studied alternative solutions that the community would like to understand.

CAPs dismissed

To prevent winter overloads on the Talbot Hill transformer banks, PSE is already using CAPs [Corrective Action Plans], which increases outage risk to customers. (8-35)

This is a carefully crafted statement. PSE does not say that the doomsday scenario will lead to actual power outages, but merely that it "increases outage risk." To better understand what that means, we refer to a discussion on page 10 of Quanta's 2013 Eastside Needs Assessment:¹²

Increasing Use and Expansion of Corrective Action Plans: An existing CAP in place to prevent overloads in the winter on either of the Talbot Hill transformer banks is increasing outage risk to customers. ... Taking this step reduces the inherent reliability of the network since the transmission system cannot handle as many contingencies without overloads, voltage issues or loss of customers' power.

As the PSE system load grows, the overload of either Talbot Hill transformer at winter peak may not be sufficiently reduced by this CAP. ... In addition to the reduction in reliability discussed above, opening these four 115 kV lines results in splitting northern King County

¹² https://energizeeastside2.blob.core.windows.net/media/Default/Library/Reports/Eastside_Needs_Assessment_Final_Draft_10-31-2013v2REDACTEDR1.pdf

from southern King County and puts approximately 32,400 customers at risk of outage, being served by just 1 transmission line without a backup line available (i.e., “radial supply”).

In other words, after experiencing an N-1-1 outage, PSE says that customers would be at risk of losing power *if a transmission line fails*. But NERC reliability standards do not require PSE to maintain service after three grid elements fail. PSE is significantly exceeding the federal standards that supposedly “require” the company to build Energize Eastside.

While PSE acts as though CAPs must be avoided under all circumstances, NERC standards allow CAPs to be used to address rare scenarios which would be prohibitively expensive to solve in other ways. If PSE is prepared to spend hundreds of millions on reliability improvements, there are more cost-effective ways to do it. For ratepayers, the ideal approach would be one that identifies the most pressing reliability issues affecting the electric grid and then invests dollars where they would deliver the most “bang for the buck.” It’s hard to imagine that Energize Eastside would qualify as a top-tier project under such a system.

By winter of 2019-20, at an Eastside load level of approximately 706 MW, additional CAPs are required that will put approximately 63,200 Eastside customers at risk of outages. (8-36)

As you can see from the previous quote in the Quanta report, there were originally 32,400 customers who were “at risk.” In the IRP, PSE says 63,200 customers are “at risk.” In a presentation to the Bellevue College Board of Trustees on January 10, 2018, PSE vice president Andy Wappler said that 130,000 customers were “at risk” over a large area of the Eastside. PSE creates the impression that hundreds of thousands of customers will go dark all at once. That is not the case. Without providing details, PSE seems to be anticipating different kinds of rolling blackouts and spreading the effects as far as possible to alarm the public and policymakers. However, none of these customers will lose power unless three or more major components fail at the same time. This may never happen in our lifetimes.

PSE never mentions what the duration of the rolling blackouts would be. At the onset of an N-1-1 emergency, PSE would notify regional grid operators that the Eastside is under threat of blackouts. The grid operators would instruct operators in Canada to engage their own energy resources. Within fifteen minutes, large flows of electricity to Canada would be curtailed. It is likely that no customers would lose power during that interval. It is also likely that PSE would restart some of the local generation plants it assumes are turned off in its study. These plants would not remain offline during this emergency unless they have completely failed, in which case they must be counted as failures under NERC reliability standards. A power outage is allowed by federal standards if more than two critical components of the grid have failed, because maintaining reliability under multiple failures is usually too expensive for ratepayers.

Will 1.1 million ratepayers pay higher electricity bills for decades to avoid an extremely unlikely outage lasting 15 minutes for 3% of PSE’s customers?

Sketchy scenarios

in 2015 PSE commissioned Nexant to simulate three scenarios of rotating outages that could be needed if no action is taken to upgrade the Eastside's transmission system. (8-36)

Besides being extremely unlikely, PSE's outage scenario might be impossible. A 2016 study performed by Richard Lauckhart, former VP of Power Planning for Puget Power, and Roger Schiffman, a transmission analyst, concludes that PSE's scenario cannot occur due to capacity limitations of regional transmission lines.¹³ A similar conclusion appears in a 2013 study by ColumbiaGrid, which found that low local generation during peak Puget Sound demand exceeded NERC standards and didn't warrant further study.

The ITA concluded that "PSE used reasonable methods to develop its forecast showing the Eastside area growing at a higher level [faster pace] than the county or system level." (8-37)

Bellevue hired this ITA (Independent Technical Analyst) at the urging of CENSE. Our members wanted an independent review of PSE's Eastside Customer Demand Forecast, because we were skeptical about the projected 2.4% annual increases. When the City of Bellevue announced its selection of Utility System Efficiencies as the ITA, CENSE strongly objected, citing both lack of expertise in demand forecasting and apparent conflicts of interest. Our objections were ignored.

The ITA determined that PSE "used reasonable methods to develop its forecast." In the words of the ITA, "If the actions or data are consistent with industry practice, it is deemed reasonable." Neither PSE nor USE showed historical trends or high/low demand scenarios. There was no analysis of different growth scenarios, as is normally done for planning purposes in the IRP. As noted previously, none of the Energize Eastside studies were reviewed or discussed by the IRP Advisory Group. No assumptions were questioned or alternatives considered by the group.

If the load growth rate was reduced, would the project still be needed? The ITA determined, "YES." (8-38)

The ITA did not offer a compelling justification for PSE's estimated growth rate of 2.4% per year. To cover all bases, the ITA studied what would happen if the growth rate were instead 1.5% per year:

The OTA results showed that reducing the Eastside area growth from 2.4% to 1.5% per year in the period from winter 2013/14 to winter 2017/18 still resulted in project need.¹⁴

But is 1.5% a reasonable growth rate? How was that figure chosen? Was it based on a possible scenario? We don't know.

The Commission should insist upon a historically defensible rate of growth to be **independently** studied along with reasonable levels of local generation turned on and a well-documented level of

¹³ <http://cense.org/Lauckhart-Schiffman%20Load%20Flow%20Study.pdf>

¹⁴ http://www.energizeeastsideis.org/uploads/4/7/3/1/47314045/cob_independent_technical_analysis_1-3.pdf, p.6

electricity exported to Canada. We suspect this will show the need for a transmission line upgrade is not imminent. Alternative solutions (like batteries) may be more attractive for ratepayers.

"Based on the information that the needs assessment contains, I concur with the conclusion that there is a transmission capacity deficiency in PSE's system on the Eastside that requires attention in the near future." – DeClerck, Review Memo by Stantec Consulting Services Inc., July 31, 2015. (8-38)

The Needs Assessment that DeClerck studied does not contain reasonable assumptions about the energy future of the Eastside. DeClerck did not check any of the assumptions or justify them. His analysis does not delve deep enough to address the problems we have with demand projections, offline generators, and exports to Canada.

FERC FINDINGS AND CONCLUSION. In response to a complaint filed with the Federal Energy Regulatory Commission against PSE and others, specific to Energize Eastside, FERC dismissed the complaint... (8-39)

CENSE participated in this complaint to FERC. We thought that FERC would have something to say about a project that derives some of its justification from a large transfer of electricity to Canada, especially because PSE claims the transfer is required to fulfill the obligations of an international treaty (Columbia River Treaty). FERC dismissed the complaint because PSE never submitted Energize Eastside for regional cost allocation. Local projects contained entirely within a utility's service territory are not under FERC's control. FERC determined the Energize Eastside project serves intrastate needs, as opposed to interstate needs. As an intrastate/local project, transmission capacity needed to serve Canada is not relevant for this project.

PSE's criteria wish-list

ELECTRICAL PERFORMANCE CRITERIA

a. Must meet all performance criteria:

- *Applicable transmission planning standards and guidelines, including mandatory NERC and WECC standards (NERC TPL-001-4 and WECC TPL-001-WECC-CRT-2)*
- *Within study period (2015– 2024)*
- *Less than or equal to 95 percent of emergency limits for lines*
- *Less than or equal to 90 percent emergency limit for transformers*
- *Normal winter load forecast with [both] 100 percent and 75 percent conservation*
- *Normal summer load forecast with 100 percent conservation*
- *Adjust regional flows and generation to stress cases similar to annual transmission planning assessment*
- *Take into account future transmission system improvement projects that are expected to be in service within the study period*
- *Minimal or no re-dispatching of generation*
- *No load shedding*
- *No new Remedial Action Schemes*
- *No Corrective Action Plans (8-40)*

PSE has provided a long list of criteria for the project. Some of these are mandated by federal standards. Others are not. For example, why is a 75% conservation assumption applicable to winter loads but not summer loads? Is this mandated by federal standards, or is it PSE's choice?

Do federal standards require PSE to include heavy regional/international flows and severely stressed generation plants simultaneously with an N-1-1 failure?

Do federal standards mandate "no new Remedial Action Schemes" and "no Corrective Action Plans?"

Are 90% and 95% emergency limits reasonable when PSE is simulating an emergency scenario? In an emergency, wouldn't 100% limits be more reasonable for ratepayers?

Which "transmission system improvement projects" does PSE expect to be in service during the study period? For example, BPA recently canceled a billion-dollar transmission line in southwestern Washington. Was PSE expecting that line to be in service? Does that cancellation affect PSE's load flow study assumptions that demonstrate need for the project?

Batteries prematurely dismissed

ALTERNATIVE 1 – ADDITIONAL CONSERVATION. PSE retained Energy and Environmental Economics, Inc. (E3) in 2014 to conduct a Non-wires Alternatives Screening Study. E3 included energy efficiency, demand response and distributed generation measures in its evaluation of cost-effective non-wires potential in the Eastside area. The study concluded that the cost-effective non-wires potential for the Eastside is not large enough to provide sufficient load reduction to allow even a 4-year deferral of Eastside transmission upgrade needs. (8-42)

ALTERNATIVE 3 - ENERGY STORAGE. PSE contracted with Strategen in 2015 to perform an Eastside System Energy Storage Alternatives Screening Study, which concluded that an energy storage system with power and energy storage ratings comparable to PSE's identified need has not yet been installed anywhere in the world. In addition, Strategen determined that the existing Eastside transmission system does not have sufficient capacity to charge energy storage systems to a level sufficient to meet PSE's operating standards. (8-45)

CENSE disagrees with the conclusions that PSE has taken from the E3 and Strategen studies mentioned here. In the first study, performed by E3 in 2014, PSE asked whether non-wires alternatives could cover 70 MW of identified need by 2021. E3 found 56 MW of cost-effective savings, leaving a 14 MW shortfall. At the time, neither the consultant nor PSE thought to evaluate batteries as a technology that might be able to cover that shortfall.

In 2015, PSE decided that batteries should be studied. PSE engaged Strategen to perform the study. Strategen used the E3 study as a starting point, evaluating the viability of batteries to address the 14 MW shortfall. Strategen explained that one can't cover a one-megawatt (MW) need with a one MW battery. Due to various factors, the battery must be over-sized by a factor of five. That conclusion seems a bit mysterious, but let's do the math: $14 \text{ MW} \times 5 = 70 \text{ MW}$. A 70 MW battery isn't too big by 2017 standards. However, when Strategen did the math, the analyst found that a 328 MW battery was required (23 times the stated need). PSE says a battery of that size could not be fully charged between peaks.

The Strategen report does not explain why a battery must be 23 times bigger than the need. Experts tell us that such a bizarre conclusion indicates that the battery may have been located in the wrong place during the study. But PSE didn't question Strategen's inexplicable finding and dismissed batteries from further consideration.

CENSE believes that batteries have many advantages. First, they can be scaled to the size of the need and acquired incrementally as demand grows (*if demand grows*). Second, batteries can reduce carbon emissions by storing solar and wind power and then releasing it to the grid during daily peaks, instead of firing up a fossil fuel plant. Third, batteries provide stacked reliability benefits that a transmission line does not (such as voltage/frequency regulation). Fourth, batteries would preserve trees and other natural resources that a transmission line threatens with significant impacts. Fifth, batteries can save ratepayers money.

Based on the interconnection, permitting, procurement and construction timelines provided by PSE, project development for any energy storage configuration would take approximately four years, resulting in a mid-2019 online date. (8-45)

This estimate stands in stark contrast to battery projects installed in Southern California and Australia. Both projects were operating within about 3 months of the signing of the contract. PSE VP Andy Wappler told Bellevue College trustees that Energize Eastside wouldn't be completed until 2020. Ironically, a battery project is the only alternative that could prevent Eastside blackouts in the time frame that PSE has identified as problematic (although we do not believe that rolling blackouts are imminent any time soon).

Strategen estimated that the Baseline Configuration to defer the Eastside transmission system upgrade through 2021 would cost ratepayers approximately \$1.44 billion in net present value (NPV) terms, based on PSE's revenue requirement; however, the Baseline configuration is not technically feasible. (8-46)

Battery costs have fallen sharply since Strategen arrived at this conclusion. In a development that stunned the energy industry, Xcel Energy in Colorado received bids that included battery costs 80% lower than the previous year:¹⁵

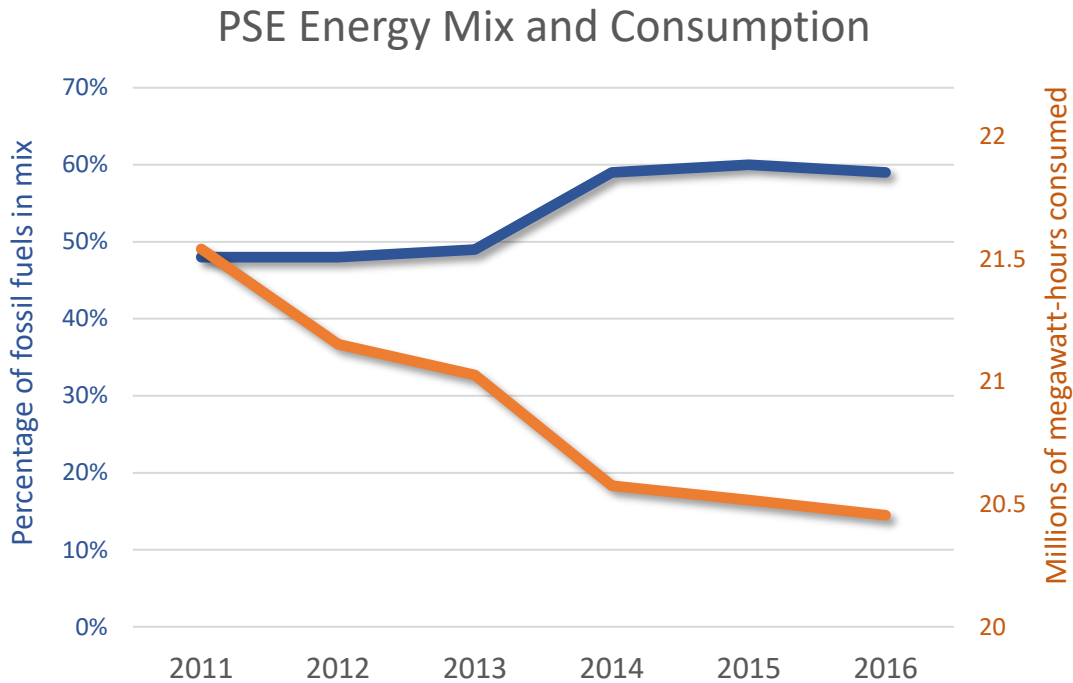
... the addition of storage did not appear to raise bid prices as much as in the past. Wind energy with battery storage was bid at \$21/MWh, just \$3 higher than wind-only. In the Arizona deal last year, the addition of storage added about \$15/MWh to the power purchase agreement bid.

Given these rapid declines in battery cost and installation times, it seems prudent to reexamine batteries as a solution to Eastside needs that also delivers desirable environmental benefits.

¹⁵ <https://www.utilitydive.com/news/xcel-solicitation-returns-incredible-renewable-energy-storage-bids/514287/>

Important trends

The following graph shows declining total electricity consumption in orange (from PSE's SEC filings, as we showed on page 1), compared to the percentage of PSE's electricity that was generated from fossil fuels.¹⁶



The public is distressed to learn that the environmental benefits of declining electricity usage are being undermined by a rising percentage of fossil fuel generation. This is especially disconcerting to ratepayers who have paid a premium for many years to participate in PSE's Green Power program.¹⁷ Customers assumed their efforts would help reduce greenhouse gas emissions. Progress towards that goal will be further hampered if PSE follows its plan, described in this IRP, of replacing coal plants with natural gas plants.

Batteries can deliver lower emissions and more predictable future energy costs by more effectively using clean renewable energy. PSE could easily discover the best possible prices for a battery solution by issuing an RFP to battery manufacturers such as Tesla, Fluence and UniEnergy Technologies. It is surprising to ratepayers that PSE can define a problem with little regulatory oversight, and then solve the problem in whatever way maximizes profits for the company. We would prefer a competitive bidding process like Xcel Energy used recently to get the best deal for its customers.¹⁸ Multiple vendors offering many different technologies (including batteries) responded to Xcel's request. We would like to see a similar process in our state for transmission projects.

¹⁶ <http://pse.com/aboutpse/EnergySupply/Pages/Electric-Supply.aspx> (we used the Internet Archive Wayback Machine to obtain energy mix values for previous years)

¹⁷ <https://pse.com/savingsandenergycenter/GreenPower/Pages/default.aspx>

¹⁸ <https://www.nytimes.com/2018/02/06/opinion/utility-embracing-wind-solar.html>

Future grid

In November 2017, PSE purchased a flow battery from Primus Power and issued a press release:

“Our customers value the environment and so do we, so PSE is investing in clean energy and new technologies to provide a sustainable future for everyone,” said PSE Director of Strategic Initiatives Roger Garratt. “Energy storage systems, like the one installed by Primus, increases our understanding of clean energy. They will also allow us to evaluate cost savings that battery systems offer to our customers.”¹⁹

Ratepayers who care about affordable, environmentally sustainable energy were encouraged by this forward step. The public is interested in how energy storage can increase the efficiency and resilience of our energy grid, an idea supported by FERC Order 841 on energy storage in regional markets:

This order will enhance competition and promote greater efficiency in the nation’s electric wholesale markets, and will help support the resilience of the bulk power system.²⁰

As we visualize the future of energy in the Puget Sound, CENSE members are inspired by Stanford educator Tony Seba, who describes a rapidly approaching future where solar energy, batteries, and autonomous electric vehicles become dominant due to cost and durability advantages.²¹ Another interesting possibility would be to leverage our existing natural gas distribution network by injecting hydrogen produced by renewable energy resources.²² Innovations like these would render Energize Eastside obsolete.

The Puget Sound area is known for its innovative companies and commitment to the environment. The utility that bears our name should be at the forefront of the industry.

Sadly, there is very little in PSE’s 2017 IRP that demonstrates technological leadership or inspires hope. This IRP relies heavily on old technology and old business models to maximize revenues for the company’s distant investors. When the UTC approved PSE’s acquisition by these investors in 2009, some worried that the pressure to deliver profits to remote owners might lead to outcomes like this. Defenders of the acquisition said the UTC could defend ratepayers from the excesses of a profit-driven enterprise through its regulatory authority. However, we now find the UTC may lack the power to prevent questionable infrastructure projects from being built.

¹⁹ <https://globenewswire.com/news-release/2017/11/13/1185524/0/en/Puget-Sound-Energy-Adopts-Primus-Power-Battery-Storage-System.html>

²⁰ <https://www.ferc.gov/media/news-releases/2018/2018-1/02-15-18-E-1.asp#.WockMOqb0H8>

²¹ <https://youtu.be/2b3ttqYDwFO>

²² <https://medium.com/@ch2ange/graham-cooley-we-need-long-term-large-scale-energy-storage-solutions-b30f79f11f54>

Conclusion

CENSE is concerned that PSE has exaggerated the reliability scenario it uses to justify Energize Eastside. PSE scares residents and businesses with warnings of impending “rolling blackouts” that are extremely unlikely. PSE ignores evidence of flat demand and dismisses viable alternatives like batteries, demand response, and greater efficiency. These alternatives offer a more prudent incremental plan for reducing peak demand and adding capacity as needed.

CENSE has hired experts with appropriate experience and security clearance to examine PSE’s studies. For years, PSE has refused to provide data for critical review. Can the UTC judge the prudence of this project without seeing this important data?

Washington State law may not give the UTC the regulatory authority to approve or disapprove a project, but the Commission exists to ensure that customers receive reliable service at a reasonable rate while allowing regulated companies to receive a fair return on their investments. CENSE asks the Commission to state that the IRP must include accurate and up-to-date evaluation of batteries and distributed resources to demonstrate that Energize Eastside is the most prudent solution to serve the Eastside's electricity needs in coming years.

CENSE and numerous environmental organizations support the UTC’s Energy Storage Policy Statement that requires analysis of energy storage as a potential alternative to local transmission projects.²³ Energy storage will help Washington meet carbon reduction targets that are difficult to achieve under PSE’s stated plan to build natural gas plants to meet future demand peaks.

Sincerely,



Don Marsh, President
CENSE.org

²³ https://www.utc.wa.gov/_layouts/15/CasesPublicWebsite/GetDocument.aspx?docID=237&year=2016&docketNumber=161024

CENSE testimony for UTC hearing, Feb. 21

I'm Don Marsh, president of CENSE, the Coalition of Eastside Neighborhoods for Sensible Energy. Since 2014, CENSE has questioned the wisdom of two transmission projects PSE has proposed on the Eastside.

The first project is the **Lake Hills Transmission Line**, which PSE wants to build on a beautiful, park-like urban boulevard that was intentionally designed to be free of poles and wires. Citizens donated over \$15,000 to hire an industry expert to show how automated switches and sensors could provide better year-round reliability and less environmental damage than the proposed transmission line. But PSE blocked the study by refusing to share circuit data with our expert. PSE never studied any alternative to improve reliability, failing to meet expected IRP standards.

The second project is **Energize Eastside**, an 18-mile transmission line through four Eastside cities. CENSE believes grid storage batteries could provide better reliability at a fraction of the cost, and reduce greenhouse gases. PSE defends a feasibility study of batteries it did some years ago. But that study is obsolete, using data from 2014, when batteries were immature and expensive. For example, the study didn't analyze flow batteries. PSE recently found the long service life of flow batteries makes them economically attractive compared to other kinds of batteries.

The only way we can understand the true potential of a battery solution for Energize Eastside is for PSE to solicit competitive bids from battery manufacturers.

Ratepayers ask the Commission to require transmission projects to include credible studies of smart alternatives. Otherwise these projects risk being found imprudent in future rate case hearings.