March 28, 2016

Bellevue City Council
450 110th Ave. NE
P.O. Box 90012
Bellevue, WA 98009

Dear Mayor Stokes and Councilmembers,

On March 23, PSE sent you a letter criticizing the Lauckhart-Schiffman Load Flow Study and making other inaccurate statements regarding needs and requirements for the company's Energize Eastside project. As the author of the Lauckhart-Schiffman report and a 22-year veteran of Puget Power, the citizen group CENSE asked me to respond.

There are three main areas of disagreement:

1. We disagree that PSE is required to support the export of 1,500 MW to Canada.
2. We disagree with the characterization of the project as upgrading the "backbone of the Eastside."
3. We disagree that other studies have sufficiently addressed the need for the project.

I will cover these points and some of the other lesser disagreements below. I have highlighted and numbered specific questions for PSE that we ask PSE to answer.

Where does the requirement to export 1,500 MW to Canada originate?

PSE's letter states, "Flows to and from Canada for planning purposes are set by the regional planning authority (ColumbiaGrid) in conjunction with other regional utilities."

This statement is incorrect for the following reasons:

- ColumbiaGrid does not have the authority to require exports of this magnitude at all times of year and under all operating conditions. While ColumbiaGrid has written that NERC Reliability Standards require 1,500 MW to flow to Canada, there is no evidence that such a requirement exists in the NERC Reliability Criteria. There is also no requirement in ColumbiaGrid's Planning and Expansion Functional Agreement.

> **1. We challenge PSE or ColumbiaGrid to cite a specific requirement to transmit 1,500 MW to Canada in the NERC Reliability Criteria or PEFA.**

- CENSE asked FERC to require ColumbiaGrid to run PSE's load flow studies in a transparent fashion with stakeholder input. FERC rejected this request, because PSE did not submit the project as a part of a Regional Transmission Plan, therefore FERC does not have jurisdiction over it. If FERC does not have jurisdiction, neither does ColumbiaGrid. Neither of these organizations can require PSE ratepayers to pay for a line that supports delivery of 1,500 MW to Canada, when smaller and less expensive solutions are possible without this export requirement.

- Any "Firm Commitment" to move 1,500 MW of power to Canada requires a written contract. PSE has refused to show any contract demonstrating such a requirement exists, but instead referred us to BPA. BPA is the only utility in Washington State that has power lines that can transmit power to Canada. In response to a Freedom of Information Act request, BPA has stated it has no such contract.

2. We challenge PSE, ColumbiaGrid, or BPA to produce a contract showing a Firm Commitment to deliver 1,500 MW to Canada.

- The Western Electricity Coordinating Council (WECC) provides Base Cases for utilities and stakeholders to use for load flow studies. The WECC Base Case for heavy winter consumption in 2018 specifies only 500 MW flowing to Canada. PSE does not dispute this fact. PSE has stated that it uses WECC Base Cases as the basis for its studies. If PSE ran a load flow study for the winter of 2018 that had 1,500 MW flowing to Canada, then engineers running the simulation must have increased the flow to Canada by 1,000 MW.

3. We challenge PSE to prove that they did not increase flow to Canada relative to the WECC Base Case.

- Lauckhart and Schiffman tried to duplicate PSE's work by starting with the WECC Base Case for heavy winter consumption in 2018. We modified the Base Case by increasing flow to Canada from 500 MW to 1,500 MW. The simulation identified a problem with lines that carry electricity across the Cascade mountain range from central Washington to the Puget Sound region. Unless PSE has a specific solution to this problem, it invalidates the assumptions that underlie the Energize Eastside project.

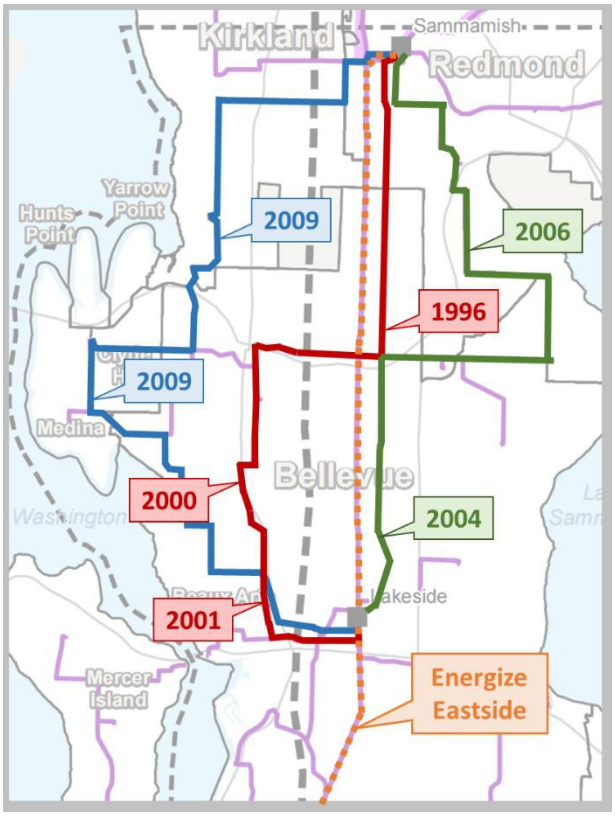
4. We challenge PSE to explain how they solved issues that arise from their scenario with the electrical limits of the "West of Cascades-North" transmission lines.

- We have asked for PSE's study data so we can determine whether PSE solved this problem or simply ignored it. PSE has refused to share the data. **Until PSE provides these files, PSE's load flow studies should not be considered adequately vetted for purposes of approving or permitting the Energize Eastside project.**

Is the project needed to upgrade the "backbone of the Eastside?"

PSE describes the Energize Eastside transmission lines as the "backbone of the Eastside" that hasn't been upgraded for 60 years. This is a marketing ploy that distorts the truth. These transmission lines might have been a backbone some decades ago when they were the only north-south transmission lines through Bellevue. However, it is my understanding that in the last 20 years, PSE has constructed numerous transmission line segments, completing three additional north-south transmission lines through Bellevue. These are shown with dates of completion in the map shown here that was included in the Draft EIS.

The red transmission line between the Lakeside and Sammamish substations was completed in 2001. The green line was completed in 2006, and the blue line was completed in 2009. This represents a 250% increase in north-south capacity during the last 15 years. PSE has not been sitting on its hands, as its public statements imply.



These new lines provide enough capacity and redundancy that PSE says the two Energize Eastside lines could be removed for 9 months of the year with no impact on system reliability. In fact, I believe they could be removed entirely if they weren't needed to transmit regional electricity during periods of high local demand.

The transmission of regional electricity is primarily an economic transaction, not a reliability requirement. These transactions benefit BPA, which receives income from such transfers. To the extent that this project benefits regional transmission capacity, BPA should be contributing funds to the project. The burden should not be placed solely on PSE's ratepayers.

Did Lauckhart-Schiffman study stresses correctly?

PSE faults Lauckhart-Schiffman for reviewing "only limited N-0 and N-1-1 contingencies" rather than "variations of N-0, N-1, N-1-1, and N-2." This statement is incorrect. Our analysis evaluated N-0, N-1 and N-1-1 contingencies. For this type of study an N-2 contingency is the same as an N-1-1 contingency. Further, these contingencies are irrelevant until we address the fundamental questions of whether 1,500 MW must be exported to Canada and whether the regional grid can handle that.

Did Lauckhart-Schiffman use correct growth projections?

PSE is vague about how they calculate a 2.4% annual rate of demand growth based on significantly lower rates of population and economic growth for the Eastside. PSE frequently makes the case they repeat in their letter, "Projections … show a 2.4% growth rate for the Eastside – growth you can see

when you look out your window or walk down the streets of Bellevue." PSE is using a qualitative argument, when we want quantitative confirmation. No independent consultant has independently verified the accuracy of PSE's projections.

Lauckhart and Schiffman calculated the rate of growth from data PSE provided to WECC. By comparing the numbers PSE provided for loads on Eastside substations in the 2014, 2018, and 2020 WECC Base Cases, we calculated a growth rate of 0.5%.

5. **We challenge PSE to explain their methodology leading to a 2.4% growth rate. We further challenge PSE to dispute the methodology used by Lauckhart-Schiffman to estimate future growth. Both methods should be reviewed by qualified experts.**

Did Lauckhart-Schiffman study local generation plants correctly?

PSE's letter says, "It doesn't matter which generators are turned on or off when analyzing problems with the Eastside transmission delivery system." We disagree. These generators might not directly serve Eastside load, but turning them off forces more power to flow through the transformers that PSE says are overloading in its scenario. If the generators don't matter, PSE shouldn't object that we turned them on in the Lauckhart-Schiffman study (just like was done in the WECC Base Case).

One fact is beyond dispute. Turning off 1,400 MW of generation in the Puget Sound area would require that amount of electricity to be imported from central Washington (since PSE insists that it can't come from Canada). We believe that the transmission lines carrying electricity from central Washington do not have sufficient capacity to deliver that additional power along with 1,500 MW to Canada. Once again, this is an unrealistic scenario.

6. **We challenge PSE to cite standards that require them to turn off 6 local generation plants at the same time they are serving peak demand with an N-1-1 contingency.**

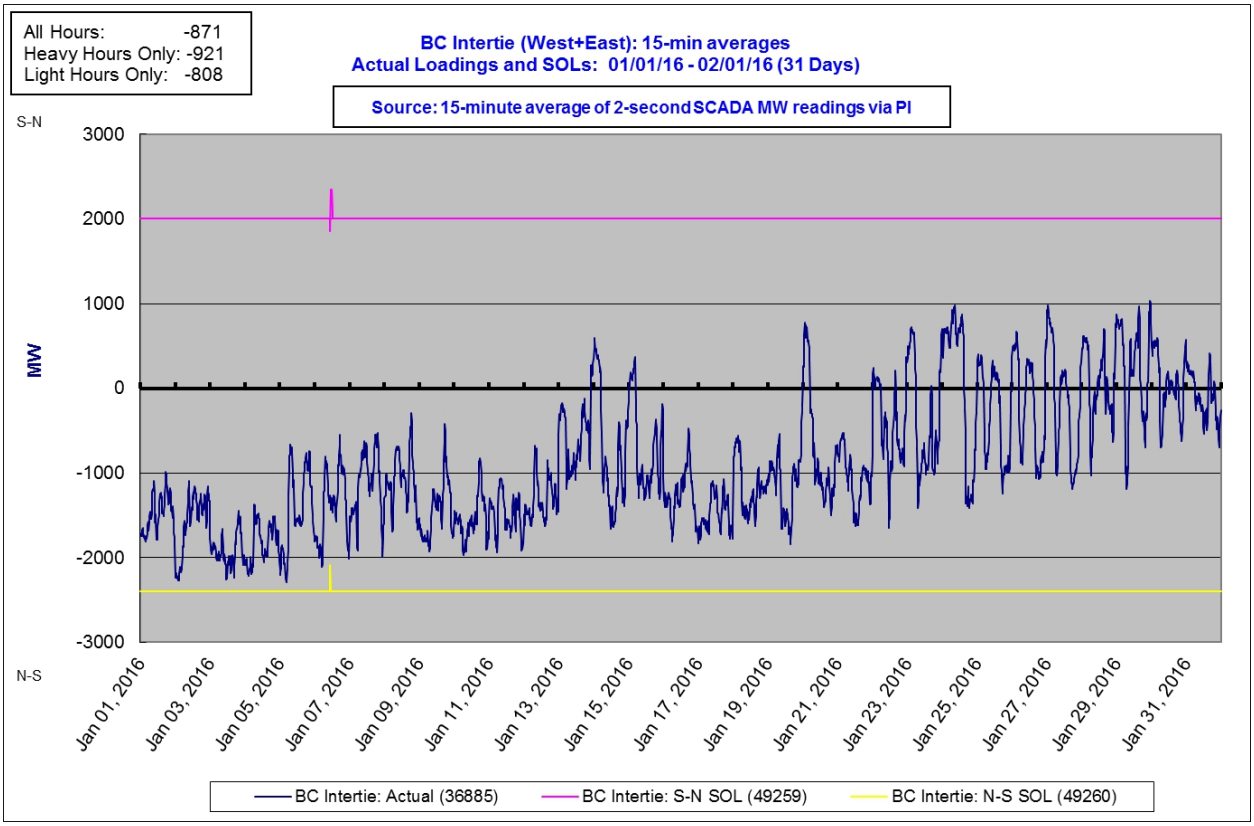
What criteria should be used in planning?

PSE says, "Lauckhart and Schiffman are making an observation regarding how an electric system operator may potentially operate the system in an emergency situation, which is irrelevant to planning." This misstates our objection. We say that the system cannot be operated in the scenario PSE is proposing without causing blackouts in the Puget Sound Region. It is reasonable and prudent to consider how grid operators would respond in that scenario. PSE argues that it is acceptable to justify their plan for the Eastside using a scenario that would cause blackouts elsewhere in the region.

Do other studies prove the need for Energize Eastside?

PSE likes to quote the conclusion of the study performed by Utility System Efficiencies, while ignoring the most stunning finding of the USE report. On page 65 of that report, USE found that 4 of the 5 overloads on PSE's system disappear if electricity exports to Canada are reduced. The remaining overload is so minor that it could easily be remedied with a relatively inexpensive upgrade to a single transformer or simply by turning on more Puget Sound Area generation.

PSE will argue that reducing power flow to Canada is not an option. Let's test that theory. In January 2016, the Puget Sound region had a couple of weeks of very cold weather. Was BPA transmitting 1,500 MW to Canada during this time? We can check a publicly available website maintained by BPA to find out:



The dark blue line shows energy transfers between the Puget Sound and British Columbia updated every 15 minutes during the month of January 2016. When the line is below the axis, electricity is flowing from Canada to the US, as it did for most of the first three weeks in January. As temperatures warmed, electricity began flowing back and forth between the two countries (but still mostly southward).

This graph is significant, because energy flowing from Canada reduces stress on the transformers that PSE says are vulnerable to overloads during heavy winter peak demand. There is no evidence during the past decade that large amounts of electricity flow northward during very cold winter weather. If PSE says there is a contractual obligation to transmit large amounts of electricity to Canada at all times and under all conditions, why wasn't this done in January 2016?

7. **We challenge PSE or BPA to provide examples of when 1,500 MW was transferred to Canada when temperatures in the Puget Sound region were lower than 23° F, as stipulated in PSE's *Energize Eastside Needs Assessment*.**

Summary

We repeat our questions and challenges here to provide a clear record of what we're asking:

1. We challenge PSE or ColumbiaGrid to cite a specific requirement to transmit 1,500 MW to Canada in the NERC Reliability Criteria or PEFA.
2. We challenge PSE, ColumbiaGrid, or BPA to produce a contract showing a Firm Commitment to deliver 1,500 MW to Canada.
3. We challenge PSE to prove that they did not increase flow to Canada relative to the WECC Base Case.
4. We challenge PSE to explain how they solved issues that arise from their scenario with the electrical limits of the "West of Cascades-North" transmission lines.
5. We challenge PSE to explain their methodology leading to a 2.4% growth rate. We further challenge PSE to dispute the methodology used by Lauckhart-Schiffman to estimate future growth. Both methods should be reviewed by qualified experts.
6. We challenge PSE to cite standards that require them to turn off 6 local generation plants at the same time they are serving peak demand with an N-1-1 contingency.
7. We challenge PSE or BPA to provide examples of when 1,500 MW was transferred to Canada when temperatures in the Puget Sound region were lower than 23° F, as stipulated in PSE's *Energize Eastside Needs Assessment*.

Sincerely,

Richard Lauckhart
CENSE consultant

Cc: Booga Gilbertson, PSE
Brad Miyake
Kate Berens