

Expert Report

Richard Lauckhart

My Qualifications are included in the Lauckhart-Schiffman report at its Appendix H

Alternatives to Energize Eastside

Executive Summary:

While all indications are that nothing is needed to be built on the Eastside now or in the near future in order to provide reliable service, it is important to keep in mind that there are several other likely better alternatives to Energize Eastside should a legitimate reliability problem be identified. The alternatives identified in this paper have not been appropriately analyzed by PSE. It is my opinion that a prudent utility would properly analyze all these alternatives in a load flow study before any decision would be made to build Energize Eastside. PSE has failed to properly analyze these alternatives to date. But they need not be analyzed until there is a legitimate finding of a reliability problem on the Eastside.

The PSE Application for a Conditional Use Permit for the Energize Eastside project should be rejected. PSE has not proven the need for the project and has not properly looked at alternatives to Energize Eastside.

I. Background and PSE failure to appropriately look at alternatives:

Puget Sound Energy (PSE) claims that the Energize Eastside project is needed in order to maintain reliability on the Eastside of Lake Washington. I have performed a load flow study (*the Lauckhart-Schiffman load flow study included in my "needs" report in this proceeding*) that demonstrates there is no need for Energize Eastside. This "alternatives" report explains that PSE has many alternatives to Energize Eastside that need to be properly analyzed if there is ever deemed to be a legitimate reliability problem on the Eastside of Lake Washington.

As I describe in my "needs" report, a reliability problem on the grid can only be identified with a load flow study. As I further describe in that report, if the load flow study points the utility to areas that need to be fixed on the transmission system, there can be many alternative approaches to fix any identified problems on the grid. The load flow modeling is then used to examine each of these alternatives that might be able to fix the problem. The best alternative solution will best balance the cost and environmental impact of any fixes that can solve the indicated reliability problem.

PSE not only failed to properly run its load flow studies in which they attempted to demonstrate the need for Energize Eastside, PSE also failed to properly identify and analyze alternatives to Energize Eastside if a legitimate reliability problem is identified.

The Energize Eastside Final Environmental Impact Statement also fails to properly discuss alternatives to Energize Eastside. The details on the many alternatives I describe in this paper are not reflected in the Final EIS in Appendix J (Section J-1) where alternatives in the EIS are discussed. The Final EIS is woefully inadequate in its discussion of alternatives.

I have previously written a paper on alternatives to Energize Eastside. That paper is attached to this document as *Attachment 1*.

II. The Redispatch Alternative:

The first and most rational alternative to solving an identified reliability problem is to check to see if generation re-dispatch can solve the problem. There is considerably more generation available to the grid than is needed to meet load on any hour. In part this excess supply of generation is caused by diversity in peak load times between utilities. Most utilities have a requirement to have a certain margin of more generation under their control than is needed to meet their own peak. This surplus margin is needed for reliability purposes. But some utilities are summer peaking utilities and others are winter peaking utilities. So there is always more generation available to the grid than is needed for any peak load season. In the case of PSE, they are a winter peaking utility. So during their winter peak, there are many surplus power supplies located in other areas of the Western Interconnected Systems that are summer peaking. So it is possible for PSE to attempt to meet its peak load by using the excess generation in the summer peaking areas rather than using their own resources. But if a load flow study finds a reliability problem when PSE attempts to use these non-PSE generating plants, then the first thing to check is to see if the reliability problem goes away if PSE uses its own generating resources rather than the surplus generating resources of others. PSE has failed to do this by not attempting to solve their identified reliability problem by simply running their own resources located in the Puget Sound Area.

There are other legitimate alternatives to Energize Eastside that PSE has not properly identified and studied with proper load flow studies. These alternatives can be categorized as “wired” alternatives and “non-wired alternatives.

III. “Wired” alternatives that PSE has not properly studied:

As discussed further in Attachment 1, there are several wired alternatives to Energize Eastside that would likely be better solutions to any identified reliability problem on the Eastside. These include:

- a. PSE should look at the alternative of building a 230/115 KV transformer at Lake Tradition. The plan to install a new 230/115 KV transformer at Lake Tradition has been on Puget's list for several years. The existing Lake Tradition substation does not have a 230/115 KV transformer, but it does have 115 KV line connections that serve the Eastside. The Bonneville Power Administration has a 230 KV line that passes very close to the Lake Tradition substation. It is common practice for PSE to connect to BPA lines to meet PSE reliability needs. PSE should have looked at connecting to the existing BPA 230 KV transmission line next to the Lake Tradition station and installing a new 230/115 KV transformer at Lake Tradition. PSE did not consider this alternative in their Eastside Needs Assessment.
- b. Another solution would be for PSE to simply add a third 230/115 KV transformer at Talbot Hill or replace the existing two 230/115 KV transformers with larger 230/115 KV transformers so that if one fails the other has more capacity to pick up the load. PSE did not consider these alternatives in their Eastside Needs Assessment.

- c. Seattle City Light has a double circuit 230 KV line that runs parallel and very close to the proposed 18 mile Energize Eastside line. Another solution would be to install the 230/115 KV transformer at the Lakeside substation, but rather than building 18 miles of new double circuit 230 KV alongside the Olympic pipeline, PSE would get Seattle City Light to loop their existing 230 KV line through the Lakeside substation. PSE says they did not pursue this alternative because SCL told them they preferred not to do this. The PSE website on Energize Eastside discusses this matter. See <https://energizeeastside.com/faqs>

One Q&A on that website is as follows:

Q. "Why can't PSE use the Seattle City Light corridor that runs from Redmond to Renton?"

A. "PSE looked into using the Seattle City Light corridor and yes, if rebuilt, the corridor could work to meet the Eastside's energy needs. However, PSE has been told by Seattle City Light that this corridor is a key component of their transmission system and is not available for our use."

But PSE never made a proper request to Seattle for use of the Seattle City Light line using the request procedures described in the FERC Open Access Transmission Tariff. Seattle City Light has recently provided a letter saying that if the appropriate request was made, they would proceed as required by the FERC Open Access Transmission Tariff. See *Attachment 2*. I have previously provided a written paper demonstrating this Seattle City Light option is a legitimate and better alternative to Energize Eastside if PSE would use the procedures of the FERC Open Access Transmission Tariff that are available to PSE. See *Attachment 3*. So PSE admits the Seattle City Light line option could work to meet the Eastside's energy needs, but that would only happen if PSE makes a proper formal request. PSE has wrongly chosen not to make that request.

IV. "Non-Wired" alternatives that PSE has not properly studied:

As discussed further in Attachment 1, there are several non-wired alternatives to Energize Eastside that would likely be better solutions to any identified reliability problem on the Eastside. These include:

- a. Implementation of targeted and enhanced Demand Side Management (DSM) programs. Such programs were identified by EQL Energy in their February 15, 2016 report titled "Alternatives to Energize Eastside."
- b. Installation of appropriately located battery banks of the type that Tesla is installing for many utilities. See <https://www.greentechmedia.com/articles/read/tesla-plans-to-triple-battery-deployments-in-2018#gs.KcNMVNw>
- c. Installation of a properly located small peaker plant. A small peaker plant is a type of generator that is sold by several vendors. These plants are generally located strategically

on the grid so they can inject power into the grid at that location. These generators come in different sizes and technology depending on the specific need and generally require little land. These generators would be expected to operate only a few hours during any year and only during years when there are low probability stresses occurring on the system. They would not be expected to operate at all in most years. The technology is a generator powered by either (1) a turbine engine similar to an airplane jet engine, or (2) an internal combustion reciprocating engine like those used in large trucks. They are generally fueled by either natural gas or oil. Their contribution to global warming and other emissions is very small because of their design and because of the fact that they almost never run. The appropriate design and location will be driven by the nature of the emergency that it will ultimately be determined needs to be protected against. This alternative would burn very little fuel because it would almost never run, so among other benefits it would not make any material contribution to global warming.

These three non-wired alternatives would not only likely be better solutions to meeting any future reliability need on the Eastside, but they would have the dual benefit of helping PSE meet its Total System Peak load.

PSE has not adequately studied any of these alternatives to Energize Eastside to see which alternative would be the best solution when balancing cost and environmental impact. But it seems likely that they would all be better than building Energize Eastside.

V. Conclusion:

While all indications are that nothing is needed to be built on the Eastside now or in the near future in order to provide reliable service, it is important to keep in mind that there are several other likely better alternatives to Energize Eastside should a legitimate reliability problem be identified. The alternatives identified in this paper have not been appropriately analyzed by PSE. It is my opinion that a prudent utility would properly analyze all these alternatives in a load flow study before any decision would be made to build Energize Eastside. PSE has failed to properly analyze these alternatives to date. But they need not be analyzed until there is a legitimate finding of a reliability problem on the Eastside.

The PSE Application for a Conditional Use Permit for the Energize Eastside project should be rejected. PSE has not proven the need for the project and has not properly looked at alternatives to Energize Eastside.

ATTACHMENT 1

Alternatives to Energize Eastside...

From: Richard Lauckhart (lauckjr@hotmail.com)

Mon 8/14/2017 8:47 AM

To:

records@utc.wa.gov

Attachment:

Comment on Phase 2 Draft EIS Section 2.2.1 Seattle City Light Transmission Line option.pdf66 KB

Dear Records-

Please file this email and its attachment as comments under PSE IRP Docket No. UE-160918.

I have previously filed the Lauckhart-Schiffman load flow study that demonstrates there is no need for Energize Eastside.

A. The best alternative for PSE to solve any possible future reliability problem on the east side is for PSE to run all of its Puget Sound Area generation. PSE did not consider this alternative in their Eastside Needs Assessment.

B. The next best alternative for PSE to solve any possible future reliability problem on the east side is for PSE to implement enhanced DSM programs including the possible installation of battery banks on the east side. These programs have been discussed in the Energize Eastside EIS. These programs have the added benefit of helping PSE meet its Total System Peak deficiency. PSE did not consider these alternatives in their Eastside Needs Assessment.

C. If any work **on the transmission grid** is needed to provide reliable service to the greater Bellevue area, then a clear alternative that should be studied is looping the Seattle City Light line through Lakeside substation. PSE has rejected this alternative because they claim SCL will not allow them to do that. But PSE never made a formal request to have SCL loop their line through Lakeside. If PSE would make that formal request, SCL is required under FERC Order 890 to respond in accordance with the FERC Proforma Open Access Transmission Tariff (OATT). See Attachment to this email. Only when PSE gets that response can they determine if the SCL line option is the best alternative for providing reliable service to the east side. PSE did not properly consider this alternative in their Eastside Needs Assessment.

D. Further, PSE should look at the alternative of building a 230/115 KV transformer at Lake Tradition. The plan to install a new 230/115 KV transformer at Lake Tradition has been on Puget's list for several years. PSE did not consider this alternative in their Eastside Needs Assessment.

E. There is another alternative to Energize Eastside that many utilities are using today. They are building small peaker plants in the vicinity of power constrained areas. This is a particularly good option if the constraint would be expected to come in to play only very rarely as is the case in the greater Bellevue area. That constraint only comes in to play when the temperature reaches 23 degrees or below during peak load hours and when at the same time two major 230/115 KV transformers on the east side fail. The small peaker plant is low cost and takes little space and likely could be located at the Lakeside substation. It would almost never run and if needed would run for only a short period of time. This alternative has the added benefit helping PSE meet its Total System Peak deficiency. PSE did not consider this alternative in their Eastside Needs Assessment.

In their draft IRP report coming out in a few months, PSE needs to describe these alternatives and why they are not being analyzed in the IRP as alternatives to Energize Eastside.

Rich Lauckhart
Energy Consultant
Davis, California

On behalf of a large number of citizens that are concerned about transmission matters in the greater Bellevue area.

ATTACHMENT 2

April 25, 2017 letter from Seattle City Light to Larry Johnson



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April 25, 2017

Mr. Larry Johnson
Attorney at Law
Citizens for Sane Eastside Energy (CSEE)
8505 129th AVE SE
NEWCASTLE, WA 98056

Re: PSE's Energize Eastside Project

Dear Mr. Johnson,

This letter responds to your letter dated March 20, 2017 to our General Manager, Larry Weis. We appreciate your interest in the regional energy issues and are aware of your concerns regarding Puget Sound Energy's ("PSE") Energize Eastside Project. As your letter mentions, although PSE and Seattle City Light have had limited discussions about PSE's Energize Eastside Project, PSE has never formally requested transmission service on Seattle City Light's Eastside transmission lines.

Obviously, if PSE would make a formal request for transmission service on Seattle City Light's Eastside lines, Seattle City Light would respond appropriately. Likewise, Seattle City Light remains willing to discuss options with PSE regarding the potential use of Seattle's Eastside lines. However, as PSE's project located entirely within its own service territory, PSE's project remains within PSE's discretion.

In addition, the Energize Eastside Project is not subject to the Order No. 1000 regional approval process because it is located completely within Puget Sound's service territory, it was included in Puget Sound's local transmission plan to meet Puget Sound's reliability needs, and neither Puget Sound, nor any other eligible party, requested to have the project selected in the regional transmission plan for purposes of cost allocation.

We trust that this resolves the concerns expressed in your March 20th letter with respect to Seattle City Light.

Sincerely,

A handwritten signature in blue ink, appearing to read 'S. Hamilton'.

Saphir Hamilton
Engineering and Technology Innovation Officer
Seattle City Light

cc: Larry Weis, General Manager, Seattle City Light

ATTACHMENT 3

May 10, 2017

Heidi Bedwell
City of Bellevue Development Services Department
450 110th Avenue NE
Bellevue, WA 98004

Re: Comment for Energize Eastside Phase 2 Draft EIS

Dear Ms. Bedwell:

I am writing to submit comment on the Energize Eastside Phase 2 Draft EIS.

This comment relates to page 2-52 of the Phase 2 Draft EIS. In particular section 2.2.1 "Seattle City Light Transmission Line" option.

In order to understand how this option works, one needs to be familiar with FERC's ProForma Open Access Transmission Tariff that Seattle City Light needs to comply with. It is a very long document that utilities need to make available to folks who want to use their lines. That FERC ProForma Open Access Transmission Tariff (OATT) can be found at:
<https://www.ferc.gov/industries/electric/indus-act/oatt-reform/order-890-B/pro-forma-open-access.pdf>

Section 6 of the OATT discusses "Reciprocity". If SCL uses the lines of one or more FERC directly regulated utility, then SCL will have agreed to these terms when they use those lines. Meaning under reciprocity, SCL agrees to also deal with requests for use of their transmission grid under the FERC OATT approach.

Other sections of interest to this SCL Transmission Line option are:

Section 15. Service Availability

Section 16. Transmission Customer Responsibility

Section 17. Procedures for arranging for Firm Point to Point transmission service

[This section is particularly relevant to how PSE needs to ask SCL for use of its line to serve a new 230/115 KV transformer at Lakeside. There is a requirement to make a formal application in the format that is described in the OATT. PSE has never made such an application. An informal request does not meet the required format for making a request to use the SCL line. PSE needs to make this formal request to SCL].

Section 19. Additional studies procedures for Firm Transmission

With an understanding of how FERC's OATT works, it is clear that just about every sentence in the discussion of the SCL option is wrong...meaning these sentences are not consistent with the OATT.

First sentence:

"SCL has indicated to the City of Bellevue that they expect to need the corridor for their own purposes and are not interested in sharing the corridor with PSE (SCL, 2014)."

The EIS staff should already be aware that FERC does not allow a utility like SCL to "hoard" its transmission capability. Further, the FERC OATT requires a utility like SCL to increase the rating of its infrastructure (with needed construction) if that is what it takes to honor a request for transmission and the requesting utility agrees to pay what FERC requires them to pay. No one has performed a System Impact Study (as required by the OATT) to see what it would take to honor a PSE request to use the SCL line to serve a new 230/115 KV transformer at Lakeside.

Second sentence:

"The existing SCL line would have to be rebuilt to provide a feasible solution for the Energize Eastside project, because the current rating of the SCL line is insufficient to meet PSE's needs (Strauch, personal communication, 2015)."

If it can be shown that the existing SCL line would need to be rebuilt to provide a feasible solution for the Energize Eastside project, then that is what the FERC OATT would require be done as long as PSE agrees to pay what FERC would require them to pay for that construction. Until a study is done, one cannot tell for sure what the rebuild cost would be. But it certainly would be less than the cost of EE. Further, it should be clear that the request to use the SCL line is only for purposes of serving a new 230/115 KV transformer at Lakeside. **The study to determine what this cost must not include a requirement to deliver 1,500 MW to Canada** unless BPA makes that request and BPA would pay the bulk of the needed cost if the SCL line is also being used to increase the ability of BPA to deliver power to Canada.

Third Sentence:

"PSE has estimated that rebuilding the SCL line would provide sufficient capacity for a period of less than 10 years, which does not comply with PSE's electrical criteria (as described in Section 2.2.1 of the Phase 1 Draft EIS) to meet performance criteria for 10 years or more after construction."

Under the FERC OATT rules that SCL needs to comply with, SCL does not get to stop serving Lakeside after ten years even if SCL has a legitimate need for more use of its SCL line at that time. The FERC OATT has clear rules on how a utility like PSE can assure its transmission service from SCL can be retained even after SCL decides it needs the line for its own use. The FERC OATT protects a utility like PSE from SCL stopping to provide them transmission service.

Fourth Sentence:

"Neither the City nor PSE can compel SCL to allow the use of this corridor; therefore, this option is not feasible and was not carried forward."

This statement is wrong. PSE can compel SCL to use its line to serve a new 230/115 KV transformer by making a FERC Order 888 request (under the FERC OATT) for such transmission service. If SCL refuses, FERC will compel them to do so. FERC uses its "reciprocity" ruling to compel SCL. If SCL refuses, FERC will refuse to let SCL use any transmission lines that are under direct FERC jurisdiction. SCL could not meaningfully its service obligations to its own customers without using the transmission lines of FERC directly jurisdictional utilities.

Fifth Sentence:

"Even if compelled use of the corridor were allowed, the negotiations would likely prove lengthy, and would likely preclude completion of the project within the required timeline to meet project objectives."

The FERC OATT has tight timelines for dealing with requests for transmission service. FERC intentionally put in these tight timelines to prohibit a utility like SCL from denying service by delaying service. Further, PSE currently is not saying when it thinks it needs a new 230/115 KV transformer to be in service at Lakeside. Any needed construction on the existing SCL line will take considerably less time than permitting and building EE. Further, according to the only reasonable load flow study done regarding serving the east side (the Lauckhart-Schiffman Load Flow study), there is plenty of time before any new 230/115 KV transformer is needed at Lakeside.

Thank you for the opportunity to clarify how this SCL Transmission Line option would work.

Sincerely,

Richard Lauckhart
Energy Consultant
Davis, California
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