

December 2014 Public Communications Summary

1/27/15

The following is a summary of feedback received by Puget Sound Energy (PSE) between Dec. 1 and Dec. 31, 2014 regarding the Energize Eastside project. During this period the project received 33 communications from the public. The communications were submitted via the project email address, the project voicemail, paper comment forms or the project website. Communications address a range of topics and often discuss more than one topic, segment and/or route. Therefore, many communications are categorized and discussed under multiple topics.

Feedback frequency by topic

The following table indicates the frequency with which various topics were discussed (total) and where a specific segment(s) or route(s) was mentioned when discussing this topic.* In December 2014, 9 comments mentioned specific segments or route options.

Table and map colors increase in intensity from yellow to red based on the frequency of occurrence.

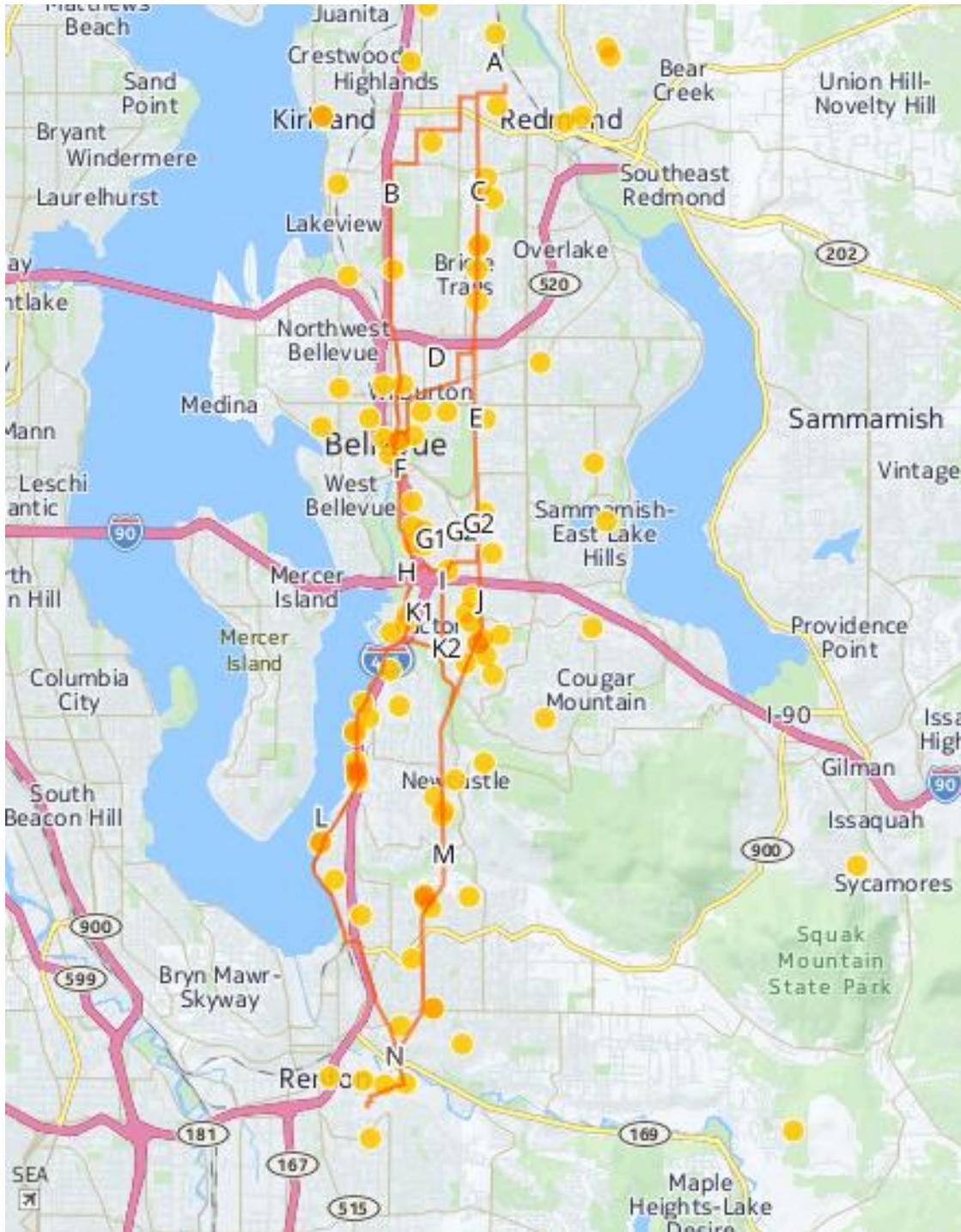


Topic	Total	Segments			Route options			
		D	F	M	Ash	Oak	Redwood	Willow
Total by route/segment	33	1	1	1	1	2	1	1
Project need	10					1		1
Route segments/options	9	1	1		1	2	1	1
Community character	7						1	
Alternative technology	7							
Cost	6	1			1		1	
Visual	4		1				1	
Underground	4							
Safety	3			1				
Property value effects	3							
Health	3			1				
Design structure location	3		1			1		
Design structure type/appearance	2		1					
Vegetation	1						1	
Schools	1			1				
Environmental concerns	1	1			1			

*Segments or routes that were not specifically mentioned in a communication are not included in this table. Please note that communications often reference more than one topic and/or segment. As a result, totaling columns or rows will produce results that exceed the total number of communications received.

Feedback frequency by address

The following map indicates the frequency of communications based on the addresses of individuals and organizations providing communications during this period.



Summary of most frequent topics from December

Below is a summary of the topics (in order from most to least common), with key examples provided of the comments or questions received and a response from PSE. Communication excerpts are verbatim (including typographical errors) and reflect feedback from individuals who have contacted PSE about the Energize Eastside project. Please note that many communications received are statements and not questions. PSE makes every effort to respond to questions individually and has included general responses below by topic; general statements of fact or opinion do not typically receive detailed responses.

Multiple communication topics may be referenced in a single communication. Where appropriate, those topics have been combined in the summaries below.

The inclusion of excerpts is to maintain a record of the information and feedback received by PSE and is not a reflection of PSE's concurrence or disagreement with any statements in whole or in part.

Project need

Comments and questions have been submitted questioning the need for the project.

Excerpts:

- *Based on comments from CAG and the audience at the 12/10 meeting there is more than ample reason to believe that these power lines serve the needs of PSE only, and not the residents of the Eastside.*
- *In some cases, its my understanding that replacing existing lines with these more efficient ones can reduce the need for new transmission corridors and structures. Is that the case?*
- *The need and timing of EE is one of the public concerns about the project, and is the major issue that concerns me.*

Puget Sound Energy response:

PSE's existing Eastside electric system had its last major upgrade in the 1960s. Since the system's last upgrade, the Eastside population has grown from approximately 50,000 to nearly 400,000 people, and this growth trend is expected to continue. Puget Sound Regional Council projections indicate that the Eastside population will grow by more than a third between 2010 and 2040.¹ Not only have Eastside communities grown and prospered, but the way Eastside residents use electricity has changed. Home square footage has increased, requiring more energy for lighting, heating and air conditioning. Additionally, most devices and appliances plugged in today did not exist years ago. Despite improvements in energy efficiency and aggressive conservation efforts, demand for electricity has grown dramatically.

At the same time, this economic growth is straining our region's existing electric system. Growth studies project that demand for reliable power will exceed capacity as early as winter 2017/2018. PSE has essentially outgrown the electric system that serves its communities. Without substantial electric infrastructure upgrades, tens of thousands of residents and businesses will be at risk of more frequent and longer outages.

¹ Puget Sound Regional Council 2013 Land Use Baseline: Maintenance Release 1 (MR1), update April 2014.

PSE plans to have portions of Energize Eastside in service in 2017, with the project fully operational by 2018. Increased use of operating procedures (corrective action plans or CAPs) will be needed to deal with peak system conditions until construction is complete. However, this method of operations is temporary and not sustainable; it will not serve as a permanent solution as the Eastside demand continues to grow. If the project is delayed, then PSE would have to implement CAPs to meet demand on a more frequent basis; however, these actions mean up to 60,000 customers are at an increased risk of power outages. The number of customers at risk of a significant outage will increase as demand grows.

Planning to meet our customers' electric loads is a risk-averse venture. PSE is not just solving a peak-hour problem that could occur once every few years. The system is already stressed and operating at an elevated level of risk. The Energize Eastside project, combined with continued aggressive conservation, is the only way to alleviate that risk. The risk of building a project ahead of the unavoidable need pales in comparison to the risk of being too late. Electricity is a necessity that is at the foundation of the community's health and welfare, and delaying the project or relying on new, untested technology poses a health and safety risk to our communities.

For more information, please see the [Eastside Need](#) page of the Energize Eastside project website as well as the [Needs Assessment Report](#).

Community character

Comments were made about the effect of the project on residential areas and unique neighborhood characteristics.

Excerpts:

- *Above all: avoid residential routes.*
- *All routes will be in our neighborhood.*
- *Sounds like no place for a power line to avoid neighborhood equals NO POWER LINE at all!*

Puget Sound Energy response:

In an urban area like the Eastside, there are unfortunately no corridors running north/south that completely avoid effects to residential neighborhoods. There is no easy way to connect the substations in Redmond and Renton; there are challenges with each option. PSE knows that it will be bringing changes to any of the neighborhoods where lines are installed. For that reason, PSE and the Energize Eastside team are actively engaging the public to discuss routing, effects, and potential design considerations to reduce these effects while the company moves forward with this project that is vital to maintaining reliable power for all of the customers in the area.

PSE actively encourages all potentially affected community members to participate in ongoing community events and provide feedback on the various route options. In March and April, PSE hosted a series of sub-area workshops for neighborhoods to provide feedback on the proposed transmission line segments and to discuss the evaluation factors most important to their communities. In April and July the community shared their questions and comments at question and answer sessions. The public also participated in online and in-person open houses, as well as online surveys to provide feedback on the possible route options. Read more in the [Summer 2014 Open House and Survey Summary](#), [Fall 2014 Open House and Feedback Summary](#) and previous [Public Communications Summaries](#).

Opportunities for public involvement will continue through future phases of the project, including fieldwork, design, environmental review, permitting, pre-construction and construction.

Alternative technology

Suggestions have been made regarding ways to address the current need without building transmission lines.

Excerpts:

- *Please offer the cost to rate payers of alternatives to rewiring the Eastside or partial wiring the Eastside.*
- *Rather than having this Energize Eastside project, PSE should focus more on renewable energy.*
- *While battery storage might not be ready today, the emerging consensus is that batteries will become an attractive solution for addressing peak load needs in the next few years. If Eastside cities could work with PSE to identify ways to slow peak load growth just a little, batteries would become an important part of a comprehensive plan for the Eastside's energy future.*

Puget Sound Energy response:

Before launching this project, PSE studied several different solutions in addition to building the new overhead transmission lines. Those alternatives included reducing demand through conservation, increasing the capacity of PSE's existing electric transmission lines, generating energy locally, and building new infrastructure. However, these other solutions are not enough to solve the problem of transporting the energy we have to the fastest-growing places and the people who need it.

Through upgraded lighting, appliances and equipment, increased weatherization, and energy-efficient building technologies, PSE customers helped us save enough electricity to power 30,000 homes in 2012. Despite these aggressive conservation initiatives by PSE and its customers over the past few decades, studies show demand is dramatically outpacing supply.

PSE is closely monitoring battery storage technology, and is moving forward with a pilot project in Glacier, Wash. to test the viability of the technology on a small scale. [The Glacier battery pilot project](#) will install four batteries to provide 2 megawatts (MW) of capacity, enough energy to power 150 homes for one day. In contrast, to serve 350,000 customers on the Eastside, we need to add more than 100 MW of capacity just to meet the initial demand. This would require PSE to initially install up to 300 batteries, each the size of a semi-tractor trailer. It would also still require new power lines to distribute electricity from the battery site to our customers.

Furthermore, while battery storage may be a possible solution in certain situations, the technology is not yet mature enough to reliably and cost effectively solve the Eastside's capacity problems. To PSE's knowledge, no utility has used battery storage to replace a power delivery system (i.e. substations and transmission lines). Rather, battery systems primarily have been used as backup storage on the generation system, or to address system voltage or frequency stability issues, and even that technology is still emerging. PSE is unwilling to risk the 24/7 electric reliability of nearly 400,000 customers on unproven technology. To do so would be irresponsible, and result in an unacceptable risk to public health and safety.

PSE reviewed both the planned conservation as well as additional potential demand reduction to meet the growing need. This included programs such as gas conversions and increased incentives for insulation and efficiency improvements in existing residences and businesses. In addition, solar panels and other types of local renewable generation were considered. All of these potential measures combined were unable to meet the need for the projected growth in the Eastside region. After a detailed analysis, PSE determined that a combination of continued conservation and infrastructure upgrades – a new

substation and higher capacity transmission lines – is the best way to reliably meet the Eastside’s growing energy needs. Find more information in the [Eastside Solution Study](#) on the project website.

Many have asked if building the 230 kV transmission line can be avoided by upgrading the existing 115 kV transmission line. PSE has already made as many upgrades as possible to its existing infrastructure to postpone the need for the new 230 kV line. By increasing the voltage from 115 kV to 230 kV, the wires must be placed on taller, sturdier poles due to different clearance and design requirements.

You can read more about the alternatives studied in PSE’s [Needs Assessment Report](#), [Solutions Report](#), [Non-Wires Solution Analysis](#), and much more on the [Energize Eastside project website](#).

Cost

Comments were made about the cost of the project and feedback was provided regarding which route options would be more or less expensive to build.

Excerpts:

- *For a little while, maybe Redwood looks a little more expensive. However, in a long run, the view will increase more value to the whole community.*
- *We respectfully urge you to not include Ash among those routes you recommend. According to PSE’s preliminary ranking analysis, Ash...ultimately is the most expensive, resulting in the largest rate impact on customers.*

Puget Sound Energy response:

PSE does not yet know the total cost of the project. Once the final design and alignment are determined, we will have a better idea of the total cost. PSE put together [data tables](#) containing cost estimates for the various route options considered by the Community Advisory Group, which range from \$150 million to \$300 million. The group made their final route recommendation in early December 2014, which consisted of routes Oak and Willow. The estimated cost for Oak is \$176 million and the estimated cost for Willow is \$154 million.

The cost for upgrades or additions to the electric infrastructure are shared by all of PSE’s 1.1 million electric customers and paid for over time (unless a more expensive upgrade or addition is made to benefit only a certain area or community, such as undergrounding a line for the purpose of preserving aesthetics). While there are many factors that go into determining the individual customers’ monthly bill increase, rough estimates are that it will range from \$1 to \$2 per month for typical residential customers.

Visual

Concerns have been raised about the visual effect of the transmission lines and poles.

Excerpts:

- *Even low income people want to buy homes in attractive areas - they will also consider the unattractive and unhealthy poles as detrimental in choosing these areas.*
- *How much will they [poles] affect my view?*
- *View damage will be permanent and forever changed if damaged.*

Puget Sound Energy response:

Delivering a project like Energize Eastside in a dense urban and suburban area is challenging, but PSE is committed to working with the communities involved to minimize effects to the maximum extent practicable.

Aesthetics and views could not be included in the initial route screening effort because there is no publically available data for these factors. However, visual effects will be considered during the environmental review process that will be conducted to comply with the State Environmental Policy Act (SEPA). Additionally, photo simulations have been developed as a part of the ongoing public outreach process. To view the photo simulations, please visit the [Energize Eastside Photo Simulations webpage](#). PSE will not build lattice towers for this project.

Underground

Comments and questions were submitted about undergrounding the lines, including questions about whether undergrounding decreases the risk for outages.

Excerpts:

- *If power lines are truly unavoidable, then put them underground to be paid for by all communities that benefit from the power.*
- *Why PSE isn't considering an underground alternative to the aerial power line system. Wouldn't an underground system provide even more of a benefit in the case of an outage in the existing system because then the new system wouldn't be susceptible to the weather hazards that an aerial system faces?*
- *Investigate underground wiring - Think differently.*

Puget Sound Energy response:

While PSE is able to build underground transmission lines, overhead transmission lines are the first option for standard service due to their reliability and affordability, both of which are important to our customers.

The biggest challenge to underground transmission lines is cost. The construction costs for an overhead transmission line will be about \$3 million to \$4 million per mile, versus \$20 million to \$28 million per mile to construct the line underground. These figures only take engineering and construction costs into consideration, and do not include additional costs such as land acquisition, traffic control, relocation of existing underground facilities that may conflict with an underground transmission line, future increased operation and maintenance costs, or taxes and overhead costs. These additional costs can be very significant – sometimes two to three times the construction costs.

When a transmission line is constructed overhead, project costs are distributed evenly between PSE's 1.1 million customers. If a transmission line were to be constructed underground, PSE can't justify asking customers across its entire service territory to pay the significant cost increases for a local aesthetic benefit. That is why, pursuant to state-approved tariff rules, the local jurisdiction or customer group requesting underground transmission lines must pay the difference between overhead and underground costs.

The tariff is in place to protect all of PSE's customers from substantial bill increases that would result from frequent requests to underground or relocate transmission lines (view the full tariff: [Schedule 80, Section 34](#)). PSE recognizes some of its customers are in the financial position to pay the substantial increase in

rates to underground this project and others, but there are also many low- and fixed-income customers who depend on affordable rates. It is PSE's responsibility to balance the needs of all customers and provide service that is both reliable and affordable. These regulations are founded in fundamental public policy, which hinges on fairness and reasonableness for all customers, regardless of income.

In addition to cost, there are other factors to consider. For example:

- Putting power lines underground can have bigger environmental and neighborhood effects. Undergrounding transmission lines requires extensive vegetation removal, trenching and installation of large (20 feet x 30 feet) access vaults every quarter mile and can be very disruptive to neighborhoods and the environment.
- Because they need additional cooling and insulation, underground transmission lines are typically installed in concrete duct banks, which can extend 5 or more feet below the surface. These require an easement 30 feet to 50 feet wide, which, unlike with overhead lines, must be completely free of trees.
- Underground lines typically take longer to repair, and repairs are more difficult. When an overhead line fails, crews can often repair it within hours. Repair of underground transmission lines can take days and even weeks, depending on the repairs that need to be made.

Furthermore, although underground transmission lines have some incremental reliability advantages, overhead transmission lines at a voltage of 230 kV (the voltage proposed for the Energize Eastside project) are reliable themselves. While trees are the primary cause of outages on overhead lines, the tree clearing requirements for 230 kV lines are stricter than the clearing requirements for lower voltage transmission lines. As a result, tree-related power outages are rare for overhead 230 kV lines.

All of these factors are why PSE is proposing to construct the Energize Eastside project overhead.

Read more in PSE's [undergrounding](#) fact sheet.

Safety, Health and Schools

General concerns have been noted about the health and safety effects of overhead transmission lines, including the safety of placing lines near schools.

Excerpts:

- *Please search for a viable alternative for the safety of my family.*
- *Very concerned about cancer and health issues in all residential areas.*
- *Why does your selection reflect a lack of concern about the the health and safety of students.*

Puget Sound Energy response:

At PSE, safety is always the top priority. Many customers have questions about electric and magnetic fields (EMF) and the team works to provide access to information on EMF in a few different ways. Specifically, PSE:

- Follow all applicable federal, state, county and city rules, regulations and standards when constructing power facilities for the safe and reliable delivery of electric service;
- Remain informed about important developments in EMF research from reputable, international and national scientific and public health organizations and agencies that have reviewed the research on EMF; and
- Share accurate and objective information about EMF with PSE's customers.

Over the past 45 years, there have been many scientific studies conducted to determine if EMF from transmission lines (called “power frequency EMF”) has any effect on human health. To date, this large body of research does not show that exposure to power frequency EMF causes adverse health effects. For more information, including links to independent reports, please visit the [EMF webpage](#) on [PSE.com](#).

Additionally, PSE understands that you, and other local residents, may have more questions about electric and magnetic fields. PSE has hired Drew Thatcher – an independent, board-certified health physicist – to address more specific EMF questions. If you or your neighbors would like to ask questions of Drew, the Energize Eastside team would be happy to connect you with him for more information.

Design structure location and Design structure type/appearance

Comments and questions have been noted about the design and location of the poles and wires.

Excerpts:

- *How tall will those towers be?*
- *I still have some questions, as do others, about what happens to the existing 115 kV system if EE is built.*
- *Is PSE retrofitting existing lines and corridors with these more efficient transmission lines?*

The placement or “spotting” of pole structures will be dependent upon factors such as available right of way width, location of access routes, and obstacle avoidance. PSE typically has some flexibility when it comes to where poles are placed on a property. Whenever possible, PSE will work with property owners to identify the option for pole placement with fewer potential effects. In some cases, strategic planting of vegetation, such as trees with larger spreading crowns, can be used to diffuse and mitigate view effects. In turn, the height, loading and overall size of each structure will be greatly affected by location. Additionally, recognized areas of environmental significance will be identified and avoided where practicable.

While PSE has not yet made a routing selection or completed final design, the use of steel monopoles made of galvanized or weathering steel is anticipated. The exact measurements of poles and foundations will not be known until after a final route is selected and detailed design has been completed. The poles are generally estimated to be between 85 feet and 130 feet, with diameters between 3 feet and 7 feet, but they could be taller or shorter depending on specific circumstances. Note that the pole diameter estimate refers to the diameter of the pole itself; if poles require a foundation, the overall footprint of the pole would increase. Pole height will depend on several factors such as topography and obstacles, wire tension, and the distance between poles, which could range from 200 feet to 1,000 feet. In general, taller poles allow for longer distances between them.

Under many contingencies (equipment and system issues) there is insufficient transformation capacity to reliably provide power to serve the anticipated growth of Eastside customer demands. The Eastside need problem cannot be met by simply re-conductoring existing 115 kV lines with higher-capacity conductors. Instead, new transformation capacity is needed on the Eastside in the form of a new substation. This capacity must be powered by a new 230kV transmission line.