City of Bellevue

DATE: 07/10/2015

TO: Energize Eastside EIS File – 14-139122-LE

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SUBJECT: PSE response to questions

In response to questions and comments presented to the partner cities and the Energize Eastside EIS consultant team, PSE was presented with three questions related to the size and capacity of their proposed electrical transmission facility. The questions and PSE's response are attached. The response represents PSE's perspective. The questions and response will be included with the Energize Eastside Phase I Draft EIS.

The greater the distance that power needs to be moved from its point of generation to the point of distribution for local use, the higher the voltage needed. Higher voltage transmission lines (e.g., 500, 345, or 230 kV) are more efficient at moving electricity than lower voltage transmission lines. Transmission lines, when interconnected with each other, become transmission networks.

The voltage levels that comprise the electric transmission delivery system are specific for a given region. In the Puget Sound geographical area, those voltages include 500 kV, 345 kV, 230 kV, and 115 kV. The Eastside area uses transmission voltage levels of 230 kV and 115 kV. The 230 kV level is used to deliver the power from distant generation sources outside of King County into the Eastside area (Sammamish and Talbot Hill) and the 115 kV level is used to deliver the power to local substations such as Bridle Trails, Factoria, and Hazelwood.

PSE is required by NERC regulations to "demonstrate through a valid assessment that its portion of the interconnected transmission system is planned such that the Network can be operated to supply projected customer demands and projected Firm (non-recallable reserved) Transmission Services, at all demand levels over the range of forecast system demands" under NERC Transmission Planning performance categories P1 through P7. PSE must also adhere to NERC and WECC mandatory performance requirements. The transmission system must be able to survive the single worst contingency (abnormal condition) that could occur on the system.

No single event on a major transmission line can disrupt the system's ability to supply electricity to all the end users. For example, if multiple transmission lines are delivering power to the same point, and one of the lines goes out of service, the remaining lines must be able to pick-up the amount of electricity that was being carried by the line that went out of service plus the load it was already carrying prior to the event. This is true even if the line with the highest capacity is the one that goes out of service. To accomplish this, certain transmission lines are not normally loaded to their full capability – they hold some of their capacity in reserve, often up to 50%, so the system can remain secure under various contingencies.

When planning a system improvement, PSE will utilize the standard voltages of the region and standard design practices developed and updated over the years. Standardization of specific types and sizes of equipment, such as conductors and breakers, allows for consistency throughout the electric system. In addition, standardization provides the following benefits:

- Ease of repairs and maintenance
- Higher level of safety due to familiarity of Operations personnel with the equipment, associated operating practices, ratings, and any peculiarities
- Flexibility as resources become interchangeable across PSE service territory
- More efficient training
- Reduced inventory cost
- Reuse of equipment removed from service

3. There is concern that by building the aerial transmission alternative in a manner that allows for future expansion will preclude the aggressive exploration and use of emerging technologies. Specifically, if the lines are built in a configuration that entails one 230kV line and the other built to a 230kV standard, but operated at 115kV, won't this discourage the exploration of new technologies since PSE has already made a significant capital investment?

Planning ahead for basic electrical delivery infrastructure needs is a nationally recognized prudent utility practice. However, emerging technologies are regularly evaluated on their own merits and implemented where effective. Many regulatory processes are available to track

progress on emerging technologies. For example, the Integrated Resource Planning process, reviewed by the Washington Utilities and Transportation Commission, is one such open process where the implementation of emerging technologies is discussed. Since it is reasonably foreseeable that load growth may continue in the Eastside area, it is prudent to plan to be able to meet that growth with minimal future intrusion, much as Washington's GMA municipalities themselves must plan for growth (in their case, 20 years of growth).

If the project is constructed with a new 230 kV line and an adjoining high capacity 115 kV line, few will be able to discern the difference between the two. Additionally, a high capacity 115kV circuit is needed now for reliability. Because the incremental costs between 115 kV and 230 kV conductors (wire) and insulators are negligible, it is prudent to build it to 230 kV standards should it become necessary to operate it at 230 kV in the future.

Energize Eastside is a basic delivery system and transformation improvement project. Although this could change in the future, most currently discussed emerging technologies are energy supply solutions, not energy delivery solutions. Where warranted, PSE plans for future load growth and builds system components accordingly. To build the Energize Eastside project to accommodate future capacity would contribute negligible incremental costs. This small additional cost would not financially preclude PSE from exploring or implementing new technologies if additional upgrades are needed in the future. When the time comes for additional system reinforcement, PSE will review all possible solutions available at that time.