Energize Eastside No Action Alternative – AC Interaction Summary

To assess the existing AC potential and current density interaction between the transmission lines and the pipelines under peak system loads (worst case scenario), PSE had DNV-GL run their model using the following electrical system load data. During peak electrical load conditions, the maximum current on the existing 115 kV lines south of the Lakeside substation (Bellevue South, Newcastle, and Renton EIS segments) was 618 amps for both lines based on the winter 2013-14 peak load. For the EIS No Action Alternative (i.e., do nothing), by the winter of 2027-28, the loads on the existing 115 kV lines south of the Lakeside substation, are projected to increase to 884 and 889 amps. For the two existing 115 kV lines north of the Lakeside substation (Redmond, Bellevue North, and Bellevue Central EIS segments) the peak load was 402 and 161 amps based on the winter 2013-14 peak loads. For the No Action Alternative, by the winter of 2027-28, the load on the existing 115 kV lines north of the Lakeside substation, are projected to be at 136 and 110 amps.

For all load cases, the model shows that the induced AC potential is below the 15 volt NACE limit (NACE SP0177). DNV-GL also modeled the theoretical current densities that could be found along the corridor during winter peak loads for both the OPL-16 and OPL-20 pipelines. Peak events are cumulatively limited to a week or less per year and typically a couple hours at a time. The estimated maximum theoretical current density for the OPL 16-inch pipeline was expected to be 34 A/m^2 during the 2013-14 winter and 35 A/m^2 in the winter of 2027-28 (No Action Alternative). Along the OPL 20-inch pipeline, the modeled estimated current densities for the winter maximum peaks was expected to be 25 A/m^2 for 2013-14) and 22 A/m^2 in the winter of 2027-28 (No Action Alternative). These predicted levels are not continuous along the colocation and are limited to only a couple of locations. More specifically, there are only two isolated locations along each pipeline, that are marginally above the 20 A/m^2 screening level described in the DNV-GL AC Interference Analysis (December 2016). These values do not suggest additional mitigation is or would be required – only continued monitoring. The graphs are attached.

It is important to note that as stated in DNV-GL's report, "The winter peak loading scenarios were evaluated for this study, as they resulted in the worst-case levels of AC interference on the collocated pipeline segments (i.e., winter peaks exceed summer peaks as the system can carry more load due to ambient cooling conditions)." Additionally the report states that "…Winter Peak loading scenarios represent the maximum current loading scenarios the transmission lines are expected to experience, which is expected to be limited to a week or less per year."