

ALTERNATIVES FOR ADDRESSING PEAK LOAD

Bainbridge Island capacity and reliability project



What is the problem?

Puget Sound Energy's analysis of the electric needs on Bainbridge Island shows that PSE's two substations serving the Winslow area – Winslow, built in 1966 and Murden Cove, built in 1980– are at near maximum capacity and the customer electric load of island is peaking above designed operating levels during the winter months, increasing the risk for system failure and outages. Furthermore, Winslow and Murden Cove substations are served radially, which means they are each served by one transmission line. If the line serving a substation goes out, the substation and the customers it serves lose power.

What are the solutions?

There are two primary ways the Bainbridge Island community can address peaking issues: reduce load or increase the capacity of the electric system serving the island.

1. Reduce load

PSE is currently working with the Bainbridge Island community to examine ways that the island can reduce load. Reducing the several megawatts of energy needed to eliminate the need for new electric infrastructure will require significant changes from residents and businesses, and to the way they use power. The Bainbridge Island Community Energy Task Force, created in spring 2009 to specifically address this issue, is working to explore and develop load-reducing solutions for the island.

2. Add capacity

Adding capacity requires adding electric infrastructure in one of three ways: a) build a new substation, b) double-bank an existing substation, or c) increase the size of the existing transformer. Regardless of the option chosen, looping the existing substations will increase reliability. By creating a transmission loop, each substation will be fed by two transmission lines; if one line goes out the other line will still feed the substation and customers, helping to increase reliability.

a) Build a new Bainbridge Island substation

Benefits: Increases capacity of the electric system; close to load center; provides backup to all three existing substations; and leaves all options to double bank three of the four, if built, substations to accommodate future load growth.

Challenges: Impacts a new property; vegetation (i.e., tree removal); and short-term construction activities such as noise or traffic delays.

b) Rebuild/double bank Winslow substation

Benefits: Increases capacity of the electric system; could provide back up to Murden Cove substation; no impact to new property (existing property may be large enough); and cost is most likely similar to building new substation.

Challenges: Requires additional distribution feeders north through a narrow corridor toward the load center; would not back up Port Madison substation; location is not close to the load; expands footprint of existing substation; impacts larger footprint on existing PSE property and adjacent properties; impacts vegetation (i.e., tree removal); and short-term construction activities such as noise or traffic delays.

c) Double bank Murden Cove substation

Benefits: Increases capacity of the electric system; could provide back up to Winslow substation; no impact to new property; cost may be slightly less compared to building a new substation; designed for a double bank so no additional property or expansion of footprint is necessary.

Challenges: Requires additional distribution feeders in a congested area and south through a narrow corridor in order to back up the Winslow circuits; location is not close to load; impacts vegetation (i.e., tree removal); short-term construction activities such as noise or traffic delays.

d) Install larger transformers at Winslow and/or Murden Cove

Benefits: Increases capacity of the electric system; no impact to new property; slight increase in impacts to existing PSE property and adjacent properties; could provide some back up to Winslow or Murden Cove substation; does not require additional feeders to add the capacity; and short-term costs may be less than a new or rebuilt substation.

Challenges: Replacing the existing transformers with larger 40 megavolt amperes (MVA) transformers provides a shorter-term solution (adds 15 MVA, instead of 25 MVA with the other options); 40 MVA transformers are not PSE standard equipment; a standard (25 MVA) mobile substation used for emergency back up would not be large enough to pick up the entire load; would require additional distribution feeders in a congested area to back up other substations; existing feeders run closer to capacity (if additional feeders are not added); and short-term construction activities such as noise or traffic delays.

PSE's commitment

PSE remains focused on our vital mission to provide essential energy to our customers. At the same time, we work hard to keep people informed of scheduled activities in their communities, and to ask for suggestions and opinions as those activities are being planned.

For additional information or questions please contact:

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