Appendix A Non-Wired Alternatives

Abstract

PSE is opting for a self-build transmission line to increase its rate base and return on investment to the detriment of Eastside communities, ratepayers and the environment. According to the Regulatory Assistance Project, an organization that assists utility commissions and regulatory policymakers, the number one reason utilities prefer transmission lines over Non-Wire Alternatives (NWA) is Return on Equity.[1] Capital projects that offer a generous return on investment provide higher revenue opportunities than NWA programs, which are often expensed. Utilities nationwide are getting out of the generation business and are looking for Transmission & Distribution (T&D) projects to deploy capital.

Instead of investing $300MM on poles and wires, PSE could instead accelerate investments in projects that address existing reliability issues as discussed in **Exponent's 2012 City of Bellevue Electric Reliability Study**.[2] These include:

- distribution automation and undergrounding circuits,
- transmission flow control devices,
- smart thermostats,
- LED lighting with controls,
- communicating hot water heaters,
- Building Management Systems/Controls,
- home/business back up energy storage,
- smart EV chargers, and
- many other energy conservation and distributed resources.

These mature technologies, programs, and other non-wire alternatives are being used across the US to avoid transmission line investments. In addition to avoiding additional rate increases to cover the $300MM in project costs plus another $700MM in interest over the life of the project, these alternatives would improve reliability, reduce atmospheric CO2 levels, and integrate more renewable power. The Northwest Power Planning and Conservation Council in their most recent 7th Power Plan suggested that demand response if implemented in the Northwest would be sufficient to meet capacity needs for through 2025

[1] "Non-Wires Alternatives to Grid Congestion," Frederick Weston, Regulatory Assistance Project, July 21, 2015.

[2] *http://www.energizeeastsideeis.org/uploads/4/7/3/1/47314045/final_electrical_reliability_study_phase_ii_report_2012.pdf*

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1. Concealing peak loads, exaggerating load forecasts

Every utility in the nation tracks system, substation and feeder load data. With smart meters many utilities can track demand from each customer in time intervals as precise as 5 minutes. EQL has worked with utilities on load management projects. To develop economically sound projects, historical load data and a sound load forecast are of paramount importance.

PSE has ignored numerous requests from CENSE to share historical peak load data for Eastside communities and substations that could help substantiate and evaluate the company's claims that the Eastside transmission infrastructure will soon be stressed. In fact, PSE Transmission stopped publishing system peak load in 2010, so PSE's measured system loads are not available to the public.[3] Peak load data is the primary driver for decisions regarding new generation, transmission, and distribution. Instead, PSE points to population growth or the age of existing infrastructure as justifications for THLTL. Historic peak loads are the starting point of a load forecast. While its clear Eastside communities are growing, it is also clear that peak loads are not. According to public data from Seattle City Light and PSE system loads, document that peak loads have been declining or have remained flat since 2008.

PSE's 2014 Energize Eastside Screening Study[4]

As part of the planning process for Energize Eastside, PSE commissioned Energy and Environmental Economics, Inc. ("E3") to conduct a "Screening Study" to consider the role of NWAs in the proposed upgrades for the Eastside portion of PSE's transmission system. This minimal effort by PSE to consider non-wire alternatives, did not involve an RFP or any procurement process to evaluate real solutions. The E3 Screening study was paid for by PSE, and the assumptions, requirements, and data were provided to E3 by PSE. Most of the data and assumptions provided were not accurate and lead to poor conclusions and summaries. E3 did not independently verify the data and assumptions provided by PSE.

The first and largest error in the E3 2014 screening report relates to the Eastside load forecast. The PSE peak load growth estimate in the study is:

- 17.6 times larger than Seattle City Light's (SCL) 2017 peak load forecast,
- 9 times larger than PSE's own 2017 IRP forecast.

In addition, Seattle's population is growing faster than PSE's service area on the Eastside. The 2014 E3 Screening Study assumed a 320MW increase in PSE's peak load in King County through 2027. The study divided the growth into two increments: a 70MW increase by 2021 and another 250MW increase by 2027. This assumes peak load increases of approximately 40 MW/year. Current Eastside peak, according to PSE, is 750MW, so the annual average rate of assumed peak load growth for PSE is 5.3, while SCL assumes an annual 0.3% growth rate in system peak load.

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[3] http://www.oatioasis.com/psei/

[4] http://www.energizeeastsideeis.org/uploads/4/7/3/1/47314045/attachment_5_-_screening_study.pdf

The annual average rate of assumed peak load growth for PSE in King County is 5.3%, while SCL assumes an annual 0.3% growth rate in system peak load.

Other data points reveal PSE's exaggerations of anticipated peak load:

- Population growth is NOT correlated with winter peak.
    - In the last nine years, PSE system peak demand for its service territory has declined or remained the same, while population growth has been one of the highest in the US.
    - In the Eastside area, population has increased by 20,000 in the last six years while winter peaks have declined.
    - Although Seattle is served by a different electric utility, it's interesting to note that Seattle's population has grown by 70,000 during the last decade, but SCL's winter peaks have been flat or declined.
- PSE's 2011 Integrated Resource Plan (IRP) forecasted a winter system peak of 6,300MW in **2012**. The recent 2017 IRP forecasted the same winter peak of 6,300 occurring in **2031**.
- PSE's 2017 IRP entire service area system peak load has an AARG (Average Annual Rate of Growth) of 10 MW/yr. That means Eastside growth of perhaps 2 MW/yr. E3's Non-wires screening study assumes 40MW/yr. just for the Eastside, *20 times higher than current estimate.*
- PSE's 2017 IRP forecasts system peak load with minimum energy efficiency investment at an annual average rate of growth of **0.6%.** However, considering the data above, it is likely that Eastside peak loads will ***continue to decline or remain flat***.
- 2016 SCL IRP forecasts a 1,760MW winter peak, and assumes an increase load of 7MW/year which is 0.3% /yr.
- Electric power winter peak load is declining due to DER investments and direct use of natural gas. PSE's 2017 IP assumes power use per customer declines every year through 2035.

The second mistaken assumption in the 2014 E3 Screening Study is the project could be deferred for only seven years (through 2021). However, the Project could be deferred indefinitely as demonstrated by:

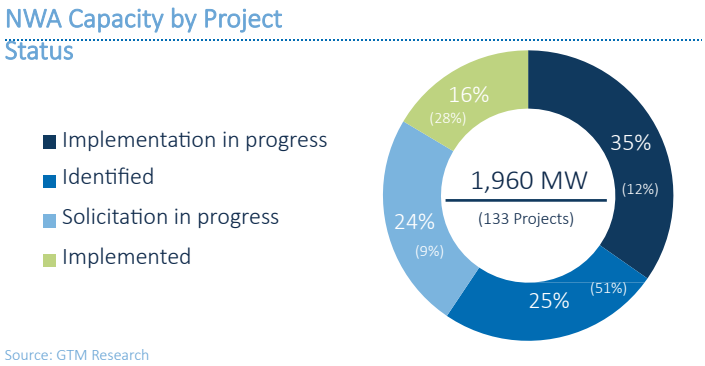
- Estimates of energy conservation, demand response, and DER in NPPCC 7th plan;
- PSE's 2017 IRP winter peak demand reduction estimate from Navigant.

With a 20-year deferral, the deferral value would increase the cost effectiveness of a NWA by over $300/kW/yr. This higher value would allow the inclusion of most technical options offered by DERs.

2. Non-Wire Alternatives to Energize Eastside

Energy Efficiency, Demand Response, and Distributed Energy

Utilities have used distributed energy resources to avoid specific transmission projects since the early 1990s. In fact, BPA avoided building a proposed North Cascade Crossing transmission line in the mid-1990s using non-wire investments, which included increased spending on energy conservation in the Puget Sound area.[10] Since 1995 the technology, programs, and resources to provide non-wire alternatives have grown exponentially. Over 1,000 MW of US transmission capacity has been avoided with Non-Wire Alternatives (NWA). According to a 2017 report for the Vermont Public Service Commission, in the last five years 1,900 MW of transmission and distribution capacity upgrades are being implemented or evaluated with NWA.[11] Most of these NWA investments are in Energy Conservation, Demand Response, and other Distributed Energy Resources.



Source: 2017 GTM Report for Vermont Public Service Commission

Figure 1: US Non-Wire Alternative Projects,

a. What are Non-Wire Alternatives (NWA)?

NWA include:

1. Energy conservation
2. Demand response (DR)
3. Distributed generation
4. Energy storage
5. Dynamic voltage regulation
6. Grid infrastructure investments (e.g., series inductors, transformers, static VAR compensation, capacitance
7. Market solutions, (e.g.) locational marginal price (as seen in open electric power markets)
8. Generation redispatch

[10] https://www.enerfy.gov/sites/prod/files/2015/04/f22/EIS-0160-FEIS.pdf

[11] https://www.vermontspc.com/library/document/download/5936/GTMR_-_Non-Wires_Alternatives_Projects.pdf

This report focuses on energy conservation, demand response, and other distributed energy resources.

1. Energy conservation

Utilities can increase energy conservation by implementing programs that incentivize customers to *purchase* efficient electric-using equipment (i.e.,LED bulbs, refrigerators, washers and dryers) or to *modify* their energy-using behaviors (i.e. running appliances during non-peak hours.) Energy Conservation programs and investment have been implemented since the 1970s. The Pacific Northwest is a national leader in acquiring energy efficiency and it is a MANDATED top priority all other regional utilities, including PSE, to procure *all cost-effective energy conservation.*[12]

2. Demand Response (DR) or load management

Demand Response (DR) is a reduction or shift in electric use based on a system operator or price signal. It has been used since the mid 1980s. Demand response is used primarily for reducing peak loads, deferring transmission and distribution investments, and providing regulation services and other ancillary services. The first demand response program in the Northwest was started in 1985 by the City of Milton-Freewater's municipal utility in Oregon. Milton-Freewater used radio receivers to control hot water heaters to reduce winter peak loads and avoid infrastructure and power costs. Nationwide demand response provides over 50,000MW of peaking capacity and the North American Electric Reliability Council (NERC) includes demand response programs in their reliability assessments.[13] On average, utilities reduce their seasonal peak capacity by 6% through operation DR programs. The technology for demand response has become more sophisticated, more cost effective and more flexible ,(able to work on most electric load types). Besides small DR programs like that at Milton Freewater, the only commercially operating demand response programs in the Northwest are summer irrigation programs in Idaho via Idaho Power and PacifiCorp.

3. Distributed Energy Resources (DER)

Distributed Energy Resources (DER) include Energy Efficiency (EE) and Demand Response, but also includes generation, storage, voltage regulation, and other demand-side resources at customers sites or downstream of the substation, e.g., distributed renewables (e.g., solar), energy storage, controlled EV charging, etc.

b. How do utilities plan transmission and procure NWA?

Many utilities that identify a transmission need to support load are mandated to conduct an open NWA-RFP process. RFPs for NWAs are drafted by utilities, evaluated and modified by independent evaluators and stakeholders, and administered by an independent evaluator. Many of these same utilities also employ distributed resource planning and integrating transmission and distribution with the Integrated resource plan. Such planning processes consider the capacity of the utility's distribution systems to accommodate generation/storage, as well as evaluate the cost-effectiveness of demand- side management, e.g., energy

[12] https://www.nwcouncil.org/media/7491066/eeonepager.pdf
[13] https://www.nerc.com/pa/RAPA/PA/Performance%20Analysis%20DL/SOR_2017_MASTER_20170613.pdf

conservation and demand response.

New York: In New York, the commission articulated its vision for NWAs, stating, " it does not want the utilities to contemplate necessary infrastructure upgrades and then issue RFPs to resolve the underlying system needs, but rather to "consider the procurement process earlier and more broadly incorporate system design into NWA solutions."

Vermont: Vermont's transmission planning committee (VSPC), bulk transmission owner (VELCO), and its distribution utilities participate in a least-cost integrated resource planning process that guides the expansion of the state's transmission system. The process, instituted in 2006, institutionalizes the identification, procurement and cost allocation of NWAs at the transmission and sub-transmission levels. It has evolved into a 10-step process that includes RFPs.[16]

Washington State: In 2016, the Washington Utilities and Transportation Commission (WUTC) created an open docket (UE-161024) to modify the Integrated Resource Planning methodology to include transmission and distribution planning. Currently, PSE separates its resource and transmission planning and does not consider *specific locational values* of DER programs. In comparison, across the US a separate-planning methodology has been replaced by unified planning, especially in places with open markets and progressive regulatory environments, e.g., CA, TX, NY, and New England. PSE and other Independently owned utilities (IOUs) in Washington will likely join the rest of the country in a unified evaluation as the WUTC rulemaking process provides clear rules and processes for improved planning and procurement processes. EQL Energy has provided comments and testimony on UE-161024.

c. Recent examples of Utility NWA programs

In the U.S there are at least 133 examples of utilities and projects implementing NWA programs to avoid or defer transmission and distribution investments.

New York has a mandated and defined process for procuring NWAs. Listed are examples from ConEd, Rochester Gas & Electric, and NYSEG are below.

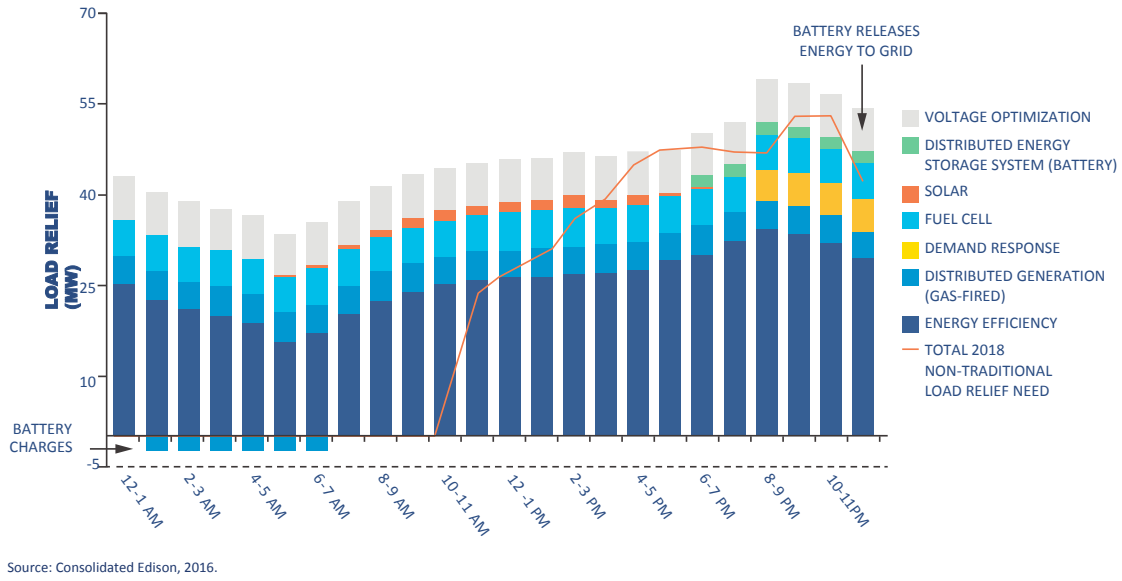
1. https://www.coned.com/en/business-partners/business-opportunities/non-wires-solutions
2. http://rge.com/SuppliersAndPartners/NonWiresAlternatives/ProjectOpportunities.html
3. http://www.nyseg.com/SuppliersAndPartners/NonWiresAlternatives/ProjectOpportunities.html

The largest project is the Brooklyn-Queens Demand Management (BQDM) Program in New York where ConEd is avoiding a $1Billion transmission project. The program has used efficiency and demand management since 2014 and is expected to save customers about $24.5 million over its lifetime and save ratepayers $800MM in capital costs. By the summer of 2018, the BQDM program will have contracted over

[16] https://www.vermontspc.com/library/document/download/5936/GTMR_-_Non-Wires_Alternatives_Projects.pdf

52 MW of DER to meet demand. The program budget is $200MM and undergoes an evaluation and extension process every two years. If the DER program did not meet its goals, the NY Public Service Commission could choose to end the program and proceed with the proposed ConEd transmission project. Since 2014 the program has achieved its goals and was extended in 2018.

The program includes 6,000 small businesses, 1,400 multi-family buildings and 8,800 homes that cut overall load on the distribution system and thus saw lower bills. Small business efficiency measures resulted in 110 GWH of annual energy reduction. The residential sector saved 27 GWH/year. Figure 2 below summarizes the DER resources that provided over 55MW of peak load reductions after 3 years.



Source: Consolidated Edison, 2016.

Figure 2: 2017 ConEd BQDM NWA Resource Portfolio (MW)

The BQDM is creating partnerships for DER services between private energy developers and utilities for DER. Over 12 third-party providers are providing smaller, cleaner energy systems using a variety of technologies such as solar, combined heat and power, microgrids, gas micro-turbines and storage.

How do DERs address transmission issues?

DER resources reduce the energy and capacity load on the distribution system and, in many cases, improve customer reliability and resiliency. These resources can be implemented to target specific locations, seasons, and times of day, and hence can be very helpful at reducing peak capacity requirements at specific locations.

1. *System Perspective.* Most utility planners, when evaluating DERs, include a generic avoided Transmission and Distribution (T&D) cost adder as a proxy for avoiding the need to transmit power from a distant source. This savings impacts cost effectiveness analysis which identifies a positive benefit/cost ratio for DER investments.

2. *Local Perspective.* In the 1990s, utilities began to target specific areas to incorporate DERS as non-wire investments to avoid building specific transmission or distribution projects. The list of these projects nationwide is quite long and has been summarized by groups such as the Regulatory Assistance Project in 2004 and 2015.[17] As of mid-2016, there were 133 NWA projects that had either been implemented or were in the pipeline. Those projects add up to a total of 1,960 MW of capacity with 1,150 MW in post-identification stages and 490 MW of earlier-stage projects listed as "identified NWA opportunities."[18] The amount of MW of NWA implemented since 1990 is over 1,000MW.

The main challenge for Non-Wire Alternatives (NWAs) -- and the reason they've been driven by mandates, not economics -- is that they don't provide utilities and their shareholders a return on investment. Utilities can recover the costs of DER programs and lower bills for ratepayers. However, shareholders aren't satisfied with cost recovery alone, they want a return on capital that comes with large generation and transmission projects. PSE shareholders receive a 9.8% return on investment for capital projects.

Many states, e.g., New York, California, Maine, Vermont, Massachusetts, Hawaii, Connecticut, Maryland and New Jersey have recognized these barriers and have developed mechanisms and incentives for utilities to plan and pursue NWA.[19]

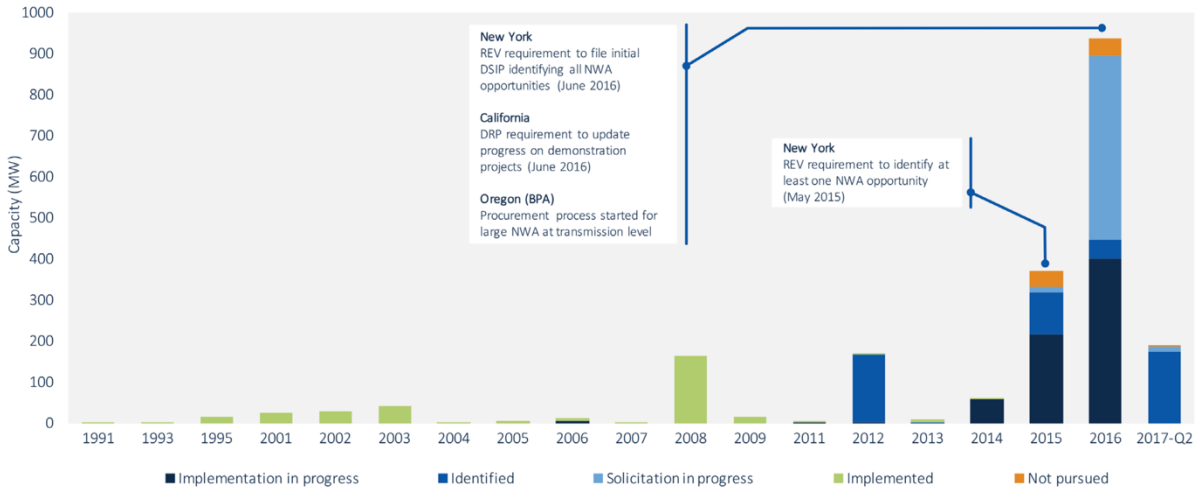


Figure 3: History of NWA Project in United States (source GTM 2017)

[17] http://www.raponline.org/wp-content/uploads/2016/05/rap-weston-non-wires-alternatives-nga-webinar-2015-7-21.pdf
http://www.raponline.org/wp-content/uploads/2016/05/rap-sedano-nonwirealternatives-2004-12-16.pdf
[18] https://www.greentechmedia.com/articles/read/gtm-research-non-wires-alternatives-market#gs.zDFpMNc
[19] https://pubs.naruc.org/pub.cfm?id=536EF440-2354-D714-51CE-C1F37F9B3530

d. How do EE/DR/DER address the requirements for the Talbot Hill to Lakeside Transmission Line?

Energy Efficiency, Demand-Response and Distributed Energy Resources can be designed to focus investment and programs in regions susceptible to winter peak-loads. Figure 1 represents how PSE could focus DER technology and programs on Eastside load, in addition to targeted energy efficiency programs. (Data represents load on a winter peak day for a 55MW campus in British Columbia).

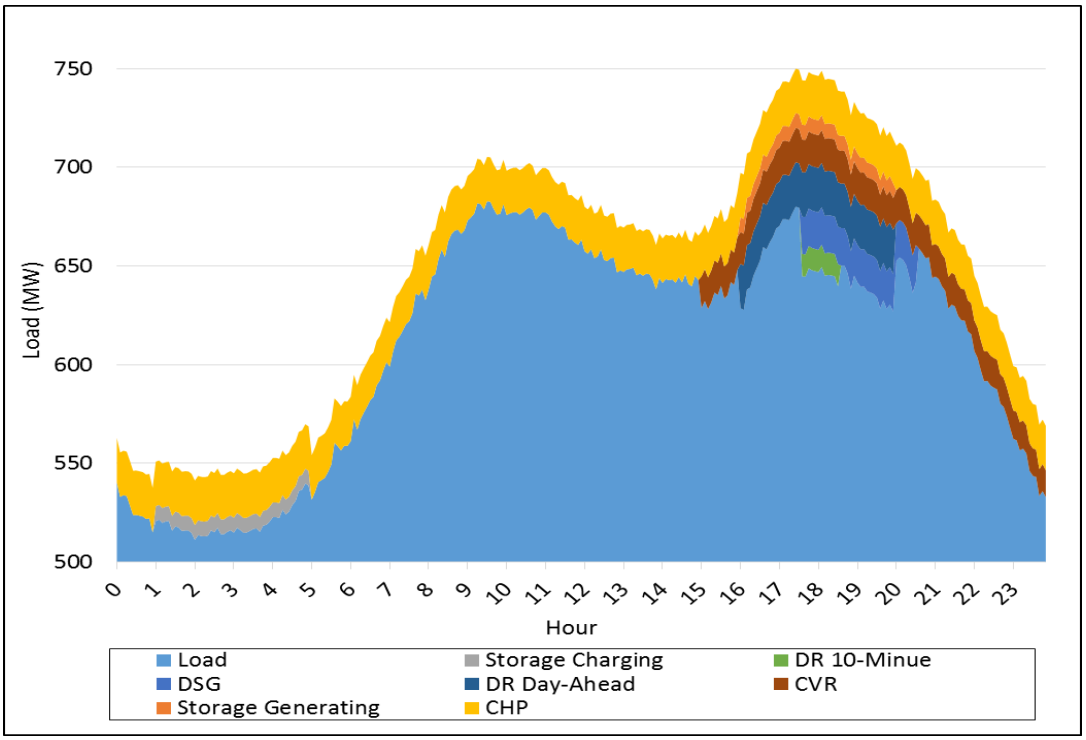


Figure 4: Example of DERs effect on Eastside Peak Loads (excluding EE)

Because PSE has not responded to requests for historical peak loads on Eastside substations, it is difficult to determine the actual need and objectives for a NWA program.

What type of resources and programs would avoid the need to build the Project?

Many utilities are using specific, mature programs to address peak loads. These include:

1. Commercial & Industrial energy efficiency and demand response
    a. HVAC and Roof Top Unit retrofit, new units, and demand response
    b. Lighting
    c. Strategic Energy Management both commercial and industrial (includes both EE and DR)
2. Smart Thermostats – especially for electric furnaces, baseboard and Line Voltage Thermostats (LVT)
3. Smart EV Charging program.

4. Electric Hot Water Heat Pumps and communications (CTA-2045).
   For example, if the 3.5MM electric water heaters in the Northwest were equipped with communication and controls to avoid peak time usage, they would provide (or eliminate) 500MW of peak capacity, at a cost of approx. $150MM. *This is 5 times more cost effective than Energize Eastside.*
5. Heat pump programs directed at inefficient space heating, e.g., ductless heat pumps.
6. Customer energy storage
7. Combined Heat and Power (generate electricity along with a heat process)
8. Voltage Optimization
9. Dispatchable Standby Generation (DSG)

Cost of NWAs

A variety of cost-effective resources could be deployed for NWA. In 2014, E3 Screening Study used $155/kW-yr. as the cost effective measure for NWA investments. Given the increase in Energize Eastside project costs since 2014, and that E3 assumed only 4 years of deferral, this value has potentially doubled to over $300/kW-yr. Northwest Power Plan Conservation Council (NPPCC) states in their 7th plan that over 1,400 MW of demand is available at a price below $25/kW-yr.

Table 1: Categories of EE, DR, and DER to address Transmission requirement

Resource Characteristic	Dispatchable and Higher system value	Seasonal Peaks and High priced times	Load Management and distributed renewables
Response Times	Day-ahead - 10 minutes	Day-ahead	None
Duration	1-3 hours	3 hours	Dependent
Availability	3 consecutive days	3 consecutive days	Measured Capacity
Hours per year	40	60-100	dependent
Supply Curves	$20/kW-yr. to $300/kW-yr	12$/kW-yr. to $210/kW-yr.	$25/kW-yr. and $150/MWh
Firmness	Fixed amount	MW and hour forecast based on agreed variable, e.g., temperature	Baseline M&V
Examples	Storage, Dispatchable Standby Generation, DR 10 min, CHP w/storage	Day ahead DR, EV charging	EE, CHP, pricing (e.g., critical peak pricing), solar

If PSE accelerated its investment and emphasis on DR to address Eastside peak loads, loads could drop sufficiently to eliminate the need for Energize Eastside .

What is the potential load reduction from EE/DR/DER on PSE's Eastside?
Based on data from reports by PSE consultants and estimations of load size and type, PSE could procure enough DERs to ensure that Eastside peak loads would not increase until 2035.

What is needed?

Assuming a 0.6% growth rate[20] on a 700MW peak, load increase would be 3MW in 2020 rising to a cumulative of 56MW by 2037.

[20] PSE's 2017 IRP system peak load growth rate is 0.6%. Likely exaggerated higher as system peak has declined since 2009.

What could be done?

As part of PSE's 2017 IRP, Navigant suggested that, starting in 2018, PSE has the potential to reduce winter *system* peak demand by188MW - excluding distributed generation and energy storage. Figure 5 shows that by 2037, potential demand reduction would exceed 1,800MW.

This is not surprising, since PSE has not integrated load management, demand response, or distributed generation into its non-wired alternatives. If PSE added backup power and customer storage to this analysis, peak demand reductions would improve by 50%. Most utilities achieve a 6% peak capacity reduction from demand response programs alone. PSE's stated winter peak is 5,000MW, Therefore, PSE's potential for *system* peak demand reduction is 282MW in 2018 and 2,500MW by 2037.

If we assume Eastside load growth is 20% of PSE's system load growth, that would mean potential Eastside peak load reduction through EE/DR/DER would start at 57MW in 2018 and increase to 500MW by 2035.

Because load grows at 0.6%/yr., in 2020 Eastside may need 3MWof peak reduction and could achieve 57MW. To meet a 0.6%/yr. load growth, PSE DER vendors would need to add 3-4 MW of load reduction measures every year through 2037. This is relatively easy using mature technologies and utility programs.

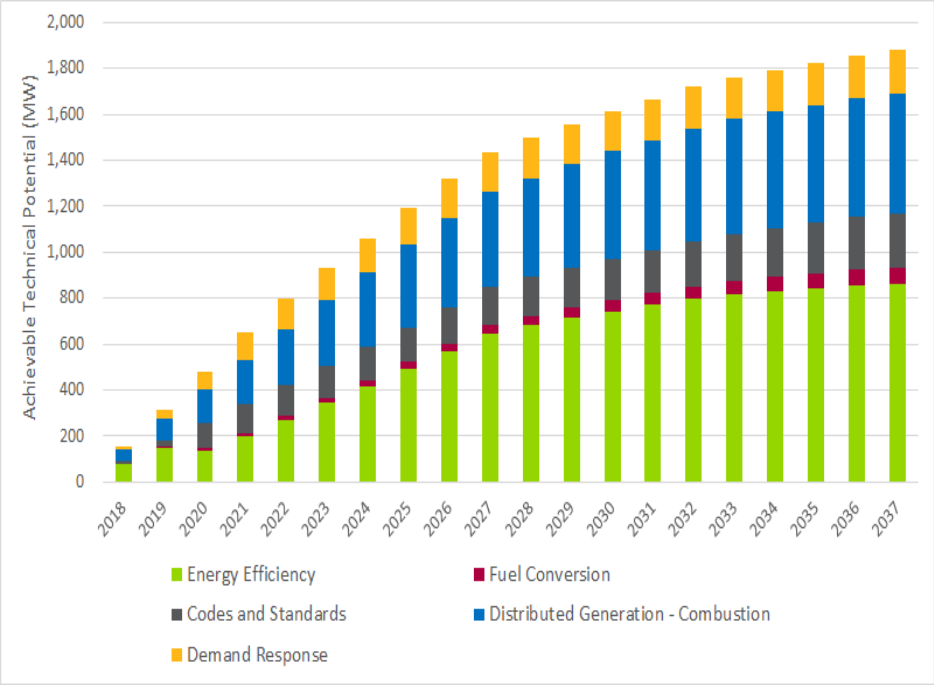


Figure 5: 2017 Navigant Assessment of PSE Winter Peak Demand Reduction Potential excluding storage and distributed generation)[21]

[21] https://pse.com/aboutpse/EnergySupply/Documents/DSR-Conservation-Potential-Assessment.pdf

Just as energy conservation measures decrease the need for new generating facilities, load reducing strategies decrease the need for more and/or larger transmission lines.

3. Energy Conservation

PSE has not issued an RFP for energy conservation or any distributed energy resources to *specifically* reduce Eastside peak loads as strategies to avoid construction of Energize Eastside. In the Northwest, the NPPCC 7th Plan has set regional goals achievable from accelerated energy conservation. Efficiency is by far the least expensive resource available to the region, avoiding the risks of volatile fuel prices and large-scale resource and infrastructure development, while mitigating the risk of potential carbon pricing policies.[22]

In 2015, Northeast Energy Efficiency Partnership cited many examples of energy efficiency being used to avoid transmission and distribution (T&D) infrastructure projects. Energy conservation has been used to avoid T&D investments in both passive and active. [23]

- *Passive deferral* - System-wide efficiency programs, implemented for broad-based economics nevertheless produce enough load reduction to defer specific T&D investments.
- *Active deferral* - when geographically-targeted efforts to promote efficiency – intentionally designed to defer specific T&D projects – meet their objectives.

The concept of ratepayer-funded energy conservation was introduced in 1976 by Dr. Amory Lovins in his book, *Soft Energy Paths*. Dr. Lovins would later coin the term "negawatt" to represent utility investments in energy conservation and renewables as a means to avoid construction of supply side infrastructure, e.g., power plants and *transmission infrastructure*. Energy conservation planners use utility-provided avoided-costs to determine energy conservation actions that would result in lower costs per kilowatt hour than supply side alternatives.

The Washington Public Power Supply System, or WPPSS, disaster was caused by building generation **based on unrealistically high load forecasts**. During the 1970s and 80s, many Northwest utilities had exaggerated load-forecast growth rates, and electric intensity (kWh/person) decreased annually due to energy conservation and changes in consumer behavior. SCL's "Energy 1990" study concluded that loads could be met with conservation and opted out of the nuclear plants. At the same time, Northwest utilities were busy planning the construction of five nuclear plants. Eventually the utilities mothballed all but one of the nuclear plants due to a combination of continued low load growth and increasing costs for nuclear

[22] Northwest Power Planning and Conservation Council, 7th Plan Executive Summary.
[23] http://www.neep.org/sites/default/files/products/EMV-Forum-Geo-Targeting_Final_2015-01-20.pdf

plants. The only plant actually constructed is now known as the Columbia Generating Station and is operated by Energy Northwest.

In 1983, Energy Northwest, formerly known as Washington Public Power Supply System, or WPPSS, defaulted on $2.25B in bonds. BPA had provided financial security for the construction of three of the five plants and continues to carry $6 Billion in debt on its books. The Northwest continues to pay for what is still considered the largest municipal bond default in our US history.

Seattle City Light avoided a portion of the WPPSS crisis by opting out of the Plants 4 and 5 in 1975. Seattle decided to increase investment in energy conservation measures including the "Kill-a-Watt" program that began in 1974. During this time the environmental movement was beginning to question the wisdom of nuclear power. The Washington Environmental Council filed suit to require City Light to produce an environmental impact statement on the nuclear plants which would have delayed the process five years. The environmental group dropped its suit when City Light Superintendent Vickery opened up the decision-making process. He established a 27-member Citizens' Overview Committee, made up of citizens and including environmentalists, to look at the needs for power and the best ways to provide it. City Light produced a study, Energy 1990, which examined ways to meet future power needs.

City Light staff supported first a 10 percent piece of the two new nuclear plants, then a 5 percent piece. The citizens' committee opposed participation in nuclear power and instead proposed that conservation be used to meet growth. The Seattle City Council supported the committee's approach and voted 6 to 3 not to participate in WPPSS 4 and 5. Good decision Seattle.

The WPSS default is relevant to the current debate on Energize Eastside and utility proposals to build peaking power plants. PSE continues to rely on 100-year old supply side solutions in an environment where customer preference and technologies will eventually provide 40% of energy resources on the distribution system, i.e., distributed energy resources.

In 1980, Congress passed the Northwest Power Act which put into law the priority of achieving all cost effective energy conservation, distributed renewables, and efficient production of electricity (e.g., CHP). The state of Washington put this into law in 2006, called I-937, for all utilities to pursue all available cost-effective energy conservation.[24] The only interesting hitch to the law is that the utility gets to decide what is cost-effective. So, every two years there is a debate between stakeholders and utilities as to what is cost-effective.

PSE has not issued an RFP or evaluated the cost effectiveness of increased amount of energy conservation to address the winter peak they say is growing on the Eastside.

[24] https://www.sos.wa.gov/elections/initiatives/text/i937.pdf

4. Demand Response

There are over 10 million customers participating in some form of Demand Response program in the US. In North America DR peak capacity reductions are over 50,000 MW and provide utility systems with 5-10% in seasonal peak reduction. PSE has 0% peak capacity reduction from DR.

The Northwest Power Planning and Conservation Council ("NPPCC") in their most recent power plan (7th) identified more than 4,300 megawatts of regional demand response potential. "A significant amount of this potential, nearly 1,500 megawatts, is available at relatively low cost; less than $25 per kilowatt of peak capacity per year. When compared to the alternative of constructing a simple cycle gas-fired turbine, demand response can be deployed sooner, in quantities better matched to the peak capacity need, deferring the need for transmission upgrades or expansions." [25]

In 2016, the Supreme Court struck down a lower court opinion and ruled that the Federal Energy Regulatory Commission (FERC) has the authority to regulate demand response and operators should pay the wholesale market price to DR providers just like a generator.[26] This means that customers and vendors that provide a curtailment would receive the locational marginal price for power.

"The Federal Power Act (FPA) provides FERC with the authority to regulate wholesale market operators' compensation of demand response bids because the practices at issue directly affect wholesale rates, FERC has not regulated retail sales, and the contrary view would conflict with the FPA's core purposes. Moreover, FERC's decision to compensate demand response providers at the locational marginal price, which is the same price paid to generators, instead of at the locational marginal price less the retail rate for electricity, is not arbitrary and capricious when FERC provided a detailed explanation for that decision and responded at length to contrary views."

Why has PSE hesitated to implement DR?

It is not mandatory, it doesn't provide a return on investment, and it would reduce their peak load. PSE is not mandated by NPCC planning requirements and it is not included in I-937 law. Energy Efficiency investments are mandated in Washington by I-937, but this mandate does not include load management or programs to address system or infrastructure capacity. PSE does not want to reduce peak load, because load growth is what allows them to justify investments in T&D and peaking gas power plants.

In its 2015 IRP, PSE's identified a need for 122MW of DR by 2020 to meet winter capacity. PSE issued an RFP, received bids, and then, without additional scrutiny, changed its cost-effectiveness analysis and informed the WUTC, that the company decided not to include DR in the IRP.

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[25] https://www.nwcouncil.org/media/7149940/7thplanfinal_allchapters.pdf Page 1-10.
[26] https://www.supremecourt.gov/opinions/15pdf/14-840-%20new_o75q.pdf

Evidence of PSE avoiding DR can be seen in how PSE dealt with demand response in their 2015 IRP. PSE determined a need for 122MW of DR for winter capacity by 2020. They issued an RFP, received bids, and then changed their cost effectiveness analysis with no scrutiny and told WUTC they were not going to do DR. PSE wrote and RFP requiring hour ahead response, which requires more costly communication and control and is more difficult to attain participation. An hour-ahead response is not a requirement to manage or reduce winter peaks. This issue, among others, was pointed out to the WUTC in their review of the 2016 RFP. WUTC commissioners acknowledged the arguments but chose to allow PSE to proceed.[27] Moreover, PSE changed their avoided cost values and determined they would not pursue DR at this time.

PSE has again identified DR in its most recent 2017 IRP. The 2018 RFP was issued March 29, 2018 and is received comments at WUTC through May 25, 2018. PSE does not actively focus on winter peak capacity extra value or cost-effectiveness for Eastside NWA.[28]

5. Community Choice

Eastside communities have the potential to control their power supply and reliability. In 2017 Microsoft successfully exited regulated service from PSE and is now enacting its own strategy for energy supply and demand management. Microsoft wanted to pursue more renewable energy and more demand-side resources at lower cost. Currently Community Choice Aggregation (CCAs) is possible in the states of Massachusetts, Ohio, California, Illinois, New Jersey, New York, and Rhode Island, and as of 2014, served nearly 5% of Americans in over 1300 municipalities...[29] CCAs allow communities to manage their power supply procurement and allow spending and customer programs that promote DERs or other community priorities.

Though Washington does not have a CCA law, Eastside communities should understand that successful examples of community-controlled electricity exist.

6. Reliability

A recent survey of US utilities found that three-quarters of survey respondents name AMI as the top distribution automation solution planned at their utility, followed by fault location, isolation and service restoration (FLISR) technology (67 %) and advanced distribution management systems (ADMS) (62 %). These solutions — AMI, ADMS, FLISR and asset management tools in addition to providing improved reliability — will play a critical role in collecting and delivering the data that will help utilities accommodate the most important application – DER

[27] https://www.utc.wa.gov/_layouts/15/CasesPublicWebsite/GetDocument.ashx?docID=27&year=2016&docketNumber=160808
[28] https://www.utc.wa.gov/_layouts/15/CasesPublicWebsite/GetDocument.ashx?docID=34&year=2016&docketNumber=160808
[29] https://en.wikipedia.org/wiki/Community_Choice_Aggregation

7. Conclusion

Puget Sound Energy has not provided the historical or a valid load forecasts to verify an increasing peak load on the Eastside. Instead the company has resorted to irrelevant facts, e.g. population is growing and the transmission line is old. Most evidence demonstrates that PSE has exaggerated eastside load forecast by a factor of 17.

If, in fact, there is a peak load issue, it could be addressed in better ways than higher voltage transmission lines. Keith DeClerck, City of Bellevue's independent analyst, summarizes PSE's proposed Energize Eastside project[30] using the analogy of a hose serving water to the Eastside communities. DeClerck suggested the solutions include:

1. Shifting the demand for water away from peak times (load shift),
2. Drilling wells to provide water during peak times (distributed generation),
3. Reducing the use of water (energy conservation),
4. Storing water to be used at peak times (energy storage), or
5. Increasing the pressure in the hose to the sprinkler heads (higher voltage transmission and new pressure regulators).

PSE's non-wire screening study was based on incorrect assumptions and data and provided invalid conclusions. PSE has not issued an RFP or made any attempts to price real NWA solutions. These active Non-Wire procurements and programs are a normal business process and have been happening in the United States since the 1990s. PSE does only what is minimally required to meet the energy efficiency mandates of I-937 and the company has postponed demand response and other peak-load management tools since 2001.

Recommendations to Eastside Communities

Deny permits for Talbot Hill/Lakes and:

1. Demand PSE provides verifiable, historical, peak-seasonal-load data on all Eastside substations and feeders that are creating the transmission need;
2. Hire independent consultant to construct a valid load forecast and transmission model based on ta verifiable load forecast;
3. Mandate PSE appoint a third party to evaluate load forecast and coordinate planning and procurement of Non-Wire Alternatives; and
4. Demand PSE develop an open RFP for Eastside Non-Wire Alternatives and use a community-sponsored independent evaluator to receive public stakeholder input, approve the RFP and evaluate the outcomes.

[30] http://www.energizeeastsideeis.org/uploads/4/7/3/1/47314045/stantec_review_memo_eastside_needs_assessment_report.pdf