process, as required by WAC 480-100-640 (4) (c).

3. The **individual scores are not explained**. This lack of transparency and accountability makes the CBI scores vulnerable to manipulation that might serve PSE's business interests. For example, PSE gives the *Substation Batteries* program a relatively low score for decreasing the time and duration of power outages. This is anomalous because the DER programs that promote residential, commercial, and utility-scale batteries all receive the highest score on this metric. Why would locating the batteries partway between homes and larger battery farms be penalized? This seems to defy common sense, and PSE should justify this outcome.

The combination of these shortcomings makes the CBI vulnerable to PSE's manipulation, turning Customer Benefit Indicators into **Corporate Benefit Indicators**. To illustrate this concern, we provide a specific example of how PSE may have turned this CETA requirement to the company's advantage.

CBIs stacked against batteries

In table 3-5 of the Draft CEIP, PSE eliminates two DERs from the company's preferred portfolio: *C&I Battery Install Incentive* and *PSE Substation Batteries*. The latter disqualification is somewhat surprising because PSE is touting the benefits of a battery the company is installing in a Bainbridge substation:

> *Bainbridge Island customers benefit from battery storage, distributed solar generation, and the demand response program in three ways; increased resiliency, energy savings, and avoided infrastructure investment. Battery storage on Bainbridge Island will benefit customers through increased resiliency. The 3.3 MW battery provides frequency response which PSE estimates a benefit of 0.1hz annually because of reduced energy purchases from neighboring utilities. This benefit value is about $330,000 annually saved. BESS also defers investment in a substation. (page 90 of the Draft CEIP)*

Considering the practical example PSE cites for annual savings and investment deferral, it's odd that PSE would assign the lowest possible score to *PSE Substation Batteries* for the *Reduced cost impact* metric. Is the Bainbridge Island battery an anomaly, or is it possible that other substations would benefit from co-located batteries?

PSE believes *PSE Substation Batteries* would play a minor role in reducing the impact and duration of power outages. This is also odd, because batteries located in homes, multi-family units, businesses, and utility-scale battery farms receive the highest score on this metric. Why are batteries in substations so different?

In a similar fashion, substation batteries are judged to be poor for increasing the affordability of clean energy. But most of the other battery DERs provide a "measurable % decrease." We don't understand why putting batteries in substations is plausibly worse for affordability than locating them in homes.

The following diagram illustrates how PSE appears to have systematically underestimated the benefits of *PSE Substation Batteries* compared to other DER programs, twelve of which include batteries in other locations and configurations.

CBI	Reduced greenhouse gas emissions	Reduction of climate change impacts	Improved outdoor air quality	Improved community health
PSE Substation Batteries	2	2	2	2

These scores have little influence in the final ranking

Affordability of clean energy	Reduced cost impacts	Increase in clean energy jobs	Improved participation from named communities	Decrease in time and duration of outages	Increased resiliency	Improved home comfort
0?	0?	0?	0	1?	2	0

These scores are questionable and not explained

PSE Substation batteries have puzzling and potentially biased scores

The cumulative effect of these low scores produced an unweighted final score of **11**, the lowest total score of any of the 22 DER programs (table 3-5 in the Draft CEIP). We propose correcting the questionable scores for *PSE Substation Batteries* as follows:

- *Affordability of clean energy*: **1** (comparable to other battery DERs, although we believe PSE is underestimating the contributions of all batteries in this regard)
- *Reduced cost impacts*: **2** (comparable to other battery DERs)
- *Increase in clean energy jobs*: **1** (comparable to *Multi Family Unit Battery Program*)
- *Decrease in time and duration of outages*: **2** (comparable to other battery DERs)

These corrections produce a final unweighted score of **16.** How does that rank compared to the other DER programs? To find out, it is first necessary to correct PSE's table 3-5, which appears to incorrectly sum the weighted and unweighted scores in table 3-15. Here is the corrected table according to our calculations:

Table 3-5: DER Concept Score and Selection Using Weighted vs. Unweighted[23]

DER Concept	Unweighted CBI Score	Weighted CBI Score	CEIP portfolio w/ Unweighted CBI	CEIP portfolio w/ Weighted CBI
Residential PSE Battery Leasing - Income-eligible	~~25~~ 19	~~35~~ 27	X	X
PSE Customer-Sited Solar+Storage	~~25~~ 19	~~36~~ 28	X	X
Residential PSE Battery Leasing	~~24~~ 18	~~34~~ 26	X	X
Multi-Family Unit Battery Program	~~22~~ 16	~~30~~ 22	X	X
C&I Space Leasing for Batteries	~~21~~ 18	~~31~~ 26	X	X
Multi-Family Solar Partnership	~~21~~ 16	~~30~~ 24	X	X
Residential Rooftop Solar Leasing - Income-eligible	~~21~~ 17	~~31~~ 26	X	X
Third-party Customer-sited Distributed Battery PPA	~~20~~ 15	~~28~~ 21	X	X
Residential Battery Install Incentive	~~20~~ 14	~~28~~ 20	X	X
PSE Community Solar - Low Income	~~20~~ 17	~~29~~ 25	X	X
C&I Rooftop Solar Incentive	~~20~~ 15	~~29~~ 23	X	X
Residential Rooftop Solar Leasing	~~20~~ 16	~~30~~ 25	X	X
C&I Rooftop Solar Leasing	~~19~~ 16	~~29~~ 25		X
C&I Battery Install Incentive	~~18~~ 12	~~25~~ 17	X	X
Third-party Distributed Solar PPA (or Solar Lease)	~~18~~ 14	~~26~~ 21		X
Multi-family Rooftop Solar Incentive	~~18~~ 14	~~26~~ 21		X
C&I Battery BYO	~~18~~ 13	~~26~~ 19		X
PSE Community Solar	~~17~~ 13	~~24~~ 19		
Third-party Utility-scale Distributed Battery PPA	~~13~~ 12	~~19~~ 16		
PSE Utility-scale Distributed Battery Stations	~~13~~ 12	~~19~~ 16		
PSE Mobile Batteries	~~12~~ 11	~~17~~ 15		
PSE Substation Batteries	~~11~~ 11	~~16~~ 15	X	X

A final score of 16 is better than or equal to the scores of 15 of the 21 other DERs. Unless we have made a significant error in our calculations and assessment of the true value of substation batteries, PSE should not eliminate this DER from its preferred portfolio. Given the cost-effectiveness and continuing cost reductions of products like Tesla's Megapack battery, substation batteries should be one of the primary DER programs PSE pursues to meet its CETA obligations. Or it should provide very transparent and compelling evidence, including costs, to demonstrate this is not in the best interest of ratepayers and the environment.

What are PSE's motivations?

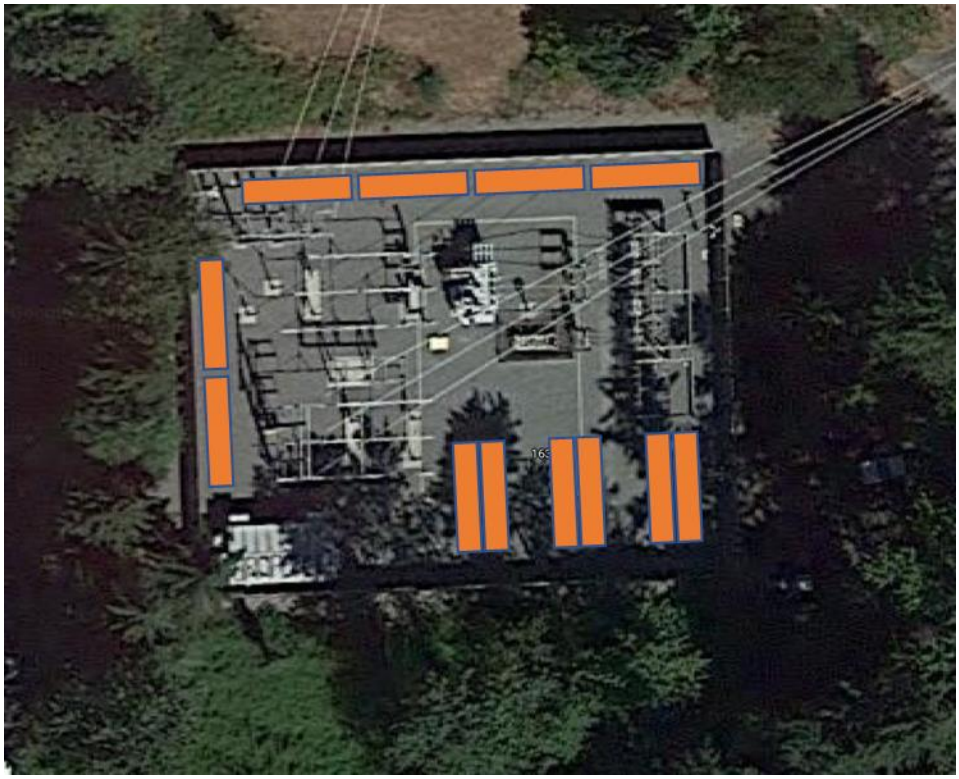
Was the elimination of *PSE Substation Batteries* an innocent mistake, or is the company responding to financial incentives that compromise its objectivity in evaluating CBIs?

It's no secret that PSE has a financial incentive to prefer large transmission projects, such as the "Energize Eastside" project that would upgrade transmission lines in four Eastside cities. Although the project was proposed eight years ago to serve peak winter demand during a rare contingency scenario,

climate change and increasing efficiency has eliminated the winter need for the project. This is the finding of a 2020 report by Synapse, an independent analyst hired by the Eastside city of Newcastle.

Desperate to salvage at least $90 million that it has already spent on the project, PSE is currently attempting to justify the project to serve a smaller summer peak. However, a summer peak can be served by alternatives such as solar panels and batteries, which also align with CETA goals. If batteries were installed in local substations, Eastside customers would enjoy the same benefits that customers on Bainbridge Island will soon have: fewer power outages, greater resiliency in emergency scenarios, and cheaper, cleaner electricity during peak hours. In many substations, there is extra room to install batteries, avoiding the need to set aside valuable land elsewhere.

For example, consider the Lake Hills substation in East Bellevue, which contains four circuits serving a total of 5,500 customers in 2020. The substation has enough extra space to accommodate 12 Tesla Megapack batteries, capable of delivering a total of 18 MW for two hours. That would be enough to cover two hours of the 2024 peak demand on the Lake Hills substation predicted in 2018 WECC base cases (12 MW in a "heavy summer" scenario, 18 MW in a "heavy winter" scenario). The following photo shows a possible configuration of the batteries with standard spacing. (The dimensions of the Lake Hills substation are 135' x 100', and each Megapack is 23.5' x 5.5'.)



Lake Hills substation with potential Tesla Megapack battery locations shown in orange

Although there is room for 12 Megapacks, it would be expensive to use batteries to cover 100% of the substation's maximum load. Instead, consider the benefit of covering summer peak demand for any one of the substation's circuits for two hours. That would require only four batteries at a cost of $4.5 million. The batteries would provide some protection from power outages, some resiliency during emergencies, and cost savings by time shifting cheap renewable energy to serve peak hours.

PSE silos analysis

PSE tends to analyze solutions in silos. Even though batteries can provide many benefits, PSE appears to value only one benefit at a time in different contexts. Perhaps this is the legacy of building transmission lines, which provide only one benefit. But this practice underestimates the value of batteries and their ability to reduce ratepayer costs practically every day of the year. If this siloed analysis is allowed to continue, the CEIP will produce a grid that is more costly for customers, less reliable and resilient, and more damaging to the climate than it could be.

To justify the scores PSE assigns to all battery solutions (residential, C&I, and grid-scale), PSE must be transparent about its calculations. For example, how does PSE value the ability to time shift renewable energy and reduce peak loads on the transmission system? How does PSE value the cost of power outages that might be avoided through quick release of stored electricity? How does PSE value the ability to stabilize frequency and voltage during periods of grid instability? How does PSE value the flexibility of "just in time" infrastructure investments – just the amount of investment necessary to serve demand close to its source? How does PSE value deferral of investments in transmission and distribution systems?

Unless PSE answers these questions in a transparent and credible fashion, the public cannot believe that PSE is providing its customers with the best energy solutions for the least cost.

WAC requirements for CBIs

WAC 480-100-640 (4) (c) describes requirements for CBIs as follows:

> *Include proposed or updated customer benefit indicators and associated weighting factors related to WAC 480-100-610 (4)(c) including, at a minimum, one or more customer benefit indicators associated with energy benefits, nonenergy benefits, reduction of burdens, public health, environment, reduction in cost, energy security, and resiliency. Customer benefit indicators and weighting factors must be developed consistent with the advisory group process and public participation plan described in WAC 480-100-655.*

Although PSE may have included "associated weighting factors" for its CBIs, it seems contrary to the intent of this WAC that only 3 of the 11 possible weights would have any practical impact on the outcome of the analysis. Also, applying an identical "multiply by two" weight to different indicators is overly simplistic and not likely to produce the most beneficial and cost-effective solutions for customers.

The WAC implies that weighting factors must be consistent with feedback provided by advisory groups and the public. PSE has not encouraged feedback from the IRP Advisory Group regarding the weighting factors and has explicitly ignored the feedback we attempted to provide. Washington Clean Energy Coalition members Kevin Jones and Don Marsh patiently explained a better method for developing weighting factors. PSE employees politely listened to the feedback and, it seems, ignored it.

Sincerely,

Don Marsh, Washington Clean Energy Coalition
Kevin Jones, Vashon Climate Action Group