PO Box 16850, Portland, OR 97292

September 9, 2021

VIA ELECTRONIC MAIL

Re: PGE Distribution System Planning

Portland General Electric
Attn: Distribution System Planning Team

Public Utility Commission of Oregon
Attn: Filing Center

Verde and the Institute for Market Transformation (IMT) appreciate the opportunity to provide direct comment on Portland General Electric (PGE)'s Distribution System Planning (DSP) process. Throughout the greater DSP proceedings, Verde has advocated for a "human-centered" approach to this work – one that begins with community needs and assets and the principles of targeted universalism[1], and layers grid/technical solutions in ways that directly improve people's lives. We are heartened that this was internalized and integrated into Staff's comments and in both the PGE and Pacific Power undertakings, and that in their February 10[2] and April 14[3] Workshops, PGE committed to a human-centered path for developing its DSP. This cannot be in name only, and the experience of some frontline community-based organizations in this process has demonstrated that PGE has a long way to go in truly demonstrating what human-centered DSP means. Verde and IMT are confident that this is possible with local knowledge and broader input and provide these comments to elucidate on how.

Two recent House Bills, HB 2021 and 2475, make it clear that it is the will of the people of the state of Oregon and the legislature that Oregon's regulated utilities make both decarbonization and correcting

[1] https://belonging.berkeley.edu/targeted-universalism
[2] https://assets.ctfassets.net/416ywc1laqmd/4EV6d4nE7KyrLMNX6qkcnX/1e8a15a5878ff841f2e3ffb7b6cd8f24/DSP_Workshop_2_-_Distribution_Planning_101___DER_Assessment.pdf
[3] https://assets.ctfassets.net/416ywc1laqmd/1yBCZcROH7W0jCKU3j6dw9/e9e0b9156df66405b41395ec2bfe5acc/DSP_Workshop_4_-_NWA_update.pdf

historical inequities central to their operations. PGE can answer this call by modelling an innovative and equity-driven distribution system plan that is replicable by other utilities such as Pacific Power by layering hosting capacity analysis (HCA) mapping with equity indicators, replacing cost-effectiveness tests for grid improvements with a community benefits test, and investing in non-wires solutions (NWS) that both address significant grid needs and routine grid management and directly reduce energy burden and improve housing quality and resiliency. Verde and IMT endeavor to support PGE and the Oregon Public Utility Commission (PUC) throughout DSP development to ensure community priorities are elevated and we also intend to hold both accountable to their commitments to a human-centered approach to DSP.

Framework: A Human-Centered Approach to Distribution System Planning

A human-centered approach to DSP is rooted in Verde's mission to build environmental wealth for communities through organizing, advocacy, and social enterprise. It is a path to increase investments in under-resourced and marginalized communities through needed grid upgrades that improve resilient infrastructure and allow for more community-based generation. These are examples of environmental wealth building within our future energy system. Traditionally, frontline communities are more likely to live directly adjacent to substations but less likely to benefit from net-metering or other distributed energy resources.[4]

A classic example of environmental injustice in the distribution system occurred in Cully, the Portland neighborhood where Verde does its work. Pacific Power reactivated the Kennedy Substation to account for increased load, mostly driven by housing redevelopment that displaced lower income community members and replaced older homes with much larger, less efficient structures. Those older homes on this feeder are also more likely to need weatherization and drive higher energy bills with poor structural quality and smaller floor area ratio. The substation itself is located near more lower- and middle-income families living in aging housing as opposed to the wealthier energy users on the feeder. The adjacent community members reacted negatively to reactivation and the noise, light, and health impacts were of great concern. They also felt that their needs were not sufficiently considered and did not receive any notice from Pacific Power of the substation repowering.

[4] https://www.wbur.org/cognoscenti/2019/09/18/environmental-justice-boston-climate-resiliency-roseann-bongiovanni-john-walkey

An approach to DSP that put the community members impacted by the Kennedy Substation first and focused on load reduction and flexibility may have helped to avoid the problems associated with reactivation. Non-wires solutions (NWS) investments can also help reduce building energy load to alleviate capacity constraints and improve the safety and comfort of housing. Other DERs – including demand response and storage technologies can support local balancing for voltage, reliability, and other grid concerns.[5] These are the types of solutions that are essential to a human-centered distribution system plan. Below we outline three ways that these principles can be executed easily and effectively in practice. All strategies contrast a traditional, techno-centric approach to distribution upgrades that focuses on the grid alone with a more human-centric approach that integrates and leads with community benefit.

Human-Centered DSP Solution 1: Adding Equity Indicators to Hosting Capacity Analysis

Hosting Capacity Analysis (HCA) is a useful tool for understanding the capabilities of a particular feeder and can help developers to understand ideal locations for projects. But this approach is inherently technical in nature and lacks a sense of the community need or the experience of those living and using energy on the feeder. In addition to hosting capacity itself, a more human-centered map must communicate who lives on each feeder, how people are living their lives, and the benefits or burdens with the associated energy infrastructure. Factors such as these are the kinds of community data (publicly available and anonymous through the Census) that can be mapped to create a more integrated picture:

- Race/ethnicity demographics
- Total cost burden
- Energy/utility cost burden
- Housing age or other quality-related data
- Eviction rates
- Health outcomes data

[5] https://www.hawaiianelectric.com/documents/clean_energy_hawaii/integrated_grid_planning/stakeholder_engagement/working_groups/distribution_planning/20200602_dpwg_non_wires_opportunity_evaluation_methodology.pdf

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- Natural disaster risk[6]

By valuing both grid- and community-level data, PGE, developers, and stakeholders can prioritize feeder-level investment in the most underinvested buildings and communities and the places where it will have the biggest impact both on the grid and community stability, resiliency, and health. Ultimately, providing a more nuanced and holistic approach to data mapping can merge two known data sets – one technical and grid-centered and one human-centered – to help create a better understanding of what is not known. Understanding how these two data sets interact can drive solutions grounded in targeted universalism.

Verde and IMT recommend the Greenlink Equity Mapping (GEM)[7] tool as a preexisting visualization of equity indicators that could be integrated into hosting capacity analysis shape files. Pacific Power is already undertaking this work and we would be happy to help connect PGE to the Greenlink team and a quote we have already obtained for how GEM could be layered with HCA in an efficient and timely manner. In addition, we just learned of a newly published dataset that could be further layered as Climate Justice metrics that map socioeconomic, physical, risk, and housing data that was recently utilized in Miami.[8] In total, the added layers of data can become a tool for developers who want to benefit communities through their projects to understand where the need is highest, but also where a project might cause potential displacement by raising property values or creating other unintended consequences. A good mapping tool can help lead to intentional partnership with community to ensure that any project benefits flow directly and intentionally.

Human-Centered DSP Solution 2: Utilize Community-Benefits Screening

At present, the cost-effectiveness screening practices that form the foundation of the cost-benefit analysis for NWS do not include a lens of community benefit or human-centered value.[9] Cost-

[6] Which can be obtained from local, state, or federal resilience mapping, such as the City of Portland Flood Plain Resilience Project (https://www.portland.gov/bps/environ-planning/floodplain-project/services) or the Oregon Resilience Plan

[7] https://www.equitymap.org/

[8] https://www.liebertpub.com/doi/full/10.1089/env.2021.0059?utm_source=Adestra&utm_medium=email&utm_term=&utm_content=Article3-OA&utm_campaign=ENV+OA+Sept+8+2021

[9] https://www.nationalenergyscreeningproject.org/wp-content/uploads/2021/04/OR-Info-Factsheet.pdf

effectiveness screenings take a limited approach to the scope of the benefits they assess, while encompassing a wider range of costs. They value energy savings or energy improvements against the cost of a particular technology, but not whether there is broader benefit from a health, comfort, economic, or social perspective. This is concerning, because cost-effectiveness screenings are likely to underlie all the decisions to redirect distribution funding (whether via discreet NWS projects or routine distribution / interconnection solutions). It is inherently techno-centric because it values the technology itself and the market worth rather than human impact.

The current approaches to DER implementation and interconnection do not include community context for the program or interconnection, that is to say, they do not provide any sense for how the necessary technological improvements will impact people directly.

While Verde and IMT theoretically support adding or amplifying non-energy benefits within cost-effectiveness screening models, we find that these efforts fall short on a number of levels. They still exclude non-technical stakeholders from the process and inevitably still center the analysis from a strictly technical point of view that puts grid -benefit first and simply adds coefficients for ancillary human benefits.

Verde and IMT would like to propose the development of a Community Benefits Screening as the, or a, key resource test that strives to maximize community benefits through a human- centered analysis. The equity factors described as HCA layers (Solution 1) could set baselines for community need and be incorporated into the test to value impacts to those baselines. This would be an effective way to determine which potential feeder improvements could provide maximal community benefit, and an ideal test would be designed flexibly to account for different baselines or community needs with a goal of a set improvement factor that aggregated the value of different community benefits that stem from different investments.

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Human-Centered DSP Solution 3: Maximize Redirection of Distribution Spending and Interconnection Efforts Toward Community Beneficial Solutions

PGE spends an average of about $300 million per year on distribution system upgrades, all of which is rate based and recovered from citizens through customer bills, with an additional regulated rate of return.[10] Distribution system planning is designed to reduce these costs by targeting utility upgrades on key feeders and spurring development where it provides maximum grid benefit. The human-centered DSP approach championed in this proceeding pivots this assessment to also consider maximum community benefit. The holistic mapping described in the previous section is a crucial way to determine where grid and community benefits intersect, but the grid investments themselves must fundamentally be designed to benefit the communities that pay for these upgrades and that have been historically underserved by both public and private institutions.

Of the $300 million on distribution system upgrades, PGE spends approximately $50 million on capacity upgrades alone and an average of $75 million and $85 million are spent on reliability & power quality and new customer projects, respectively.[11] The DERs that comprise NWS can be used to mitigate capacity constraints. Increasingly, they are also being used to address reliability and other technical concerns.[12,13] We acknowledge that some spending on exclusively grid-focused investments within each of these categories is necessary. We also acknowledge that the timeline for implementing a NWS vs. a traditional solution is a concern. Currently, these traditional investments provide grid benefit, but not additional community benefit. However, we believe that a significant subset of these investments can be replaced with weatherization/energy efficiency/demand flexibility/storage upgrades to manage load on a feeder or substation and improve building and housing quality, and resiliency upgrades such as storage and grid integration to balance generation.

[10] https://downloads.ctfassets.net/416ywc1laqmd/5qXwnnXA03JMpHnv0qmjVM/74a1c5ea62b4fc7461660d308d3eb703/DRAFT_Baseline_requirements_version_0.xlsx
[11] https://downloads.ctfassets.net/416ywc1laqmd/5qXwnnXA03JMpHnv0qmjVM/74a1c5ea62b4fc7461660d308d3eb703/DRAFT_Baseline_requirements_version_0.xlsx
[12] https://emp.lbl.gov/publications/locational-value-distributed-energy
[13] https://www.hawaiianelectric.com/documents/clean_energy_hawaii/integrated_grid_planning/stakeholder_engagement/working_groups/distribution_planning/20200602_dpwg_non_wires_opportunity_evaluation_methodology.pdf

In addition to routine distribution spending, we would like to call attention to the opportunities within current interconnection practices. Interconnection fees can significantly change the economics of a proposed project, and can be a barrier for projects in under-resourced neighborhoods. For example, Verde is only able to cover interconnection costs for its community solar projects thanks to the availability of the Portland Clean Energy Fund, and projects like those developed by Solarize Rogue that do not have access to such a ready source of funding have faced significant delays.

Theoretically, some of the capacity and reliability constraints that trigger high interconnection fees can be mitigated with customer-sited DER solutions, like battery storage, flexible demand, and energy efficiency. Given the low and dropping cost of these resources, it is likely that implementing DERs as a part of the interconnection process could save money for project developers while providing additional community benefits.

We reviewed the twenty most recent Small Generator Interconnection Study Reports available on Oasis OATI (summarized in Table 1) and found that the average interconnect requires $254,000 in distribution modifications.[14, 15] These findings are line with a study by NREL that found average interconnection costs to mitigate thermal overloads for systems between 0.1 and 5 MW can range from $75,000 to $200,000.[16] A subset of these investments may be abated with feeder-specific investment in underinvested buildings.

We request that PGE explore options to redesign the interconnection process with community benefits in mind. One potential path would be to move toward a Preemptive Upgrade Cost Sharing[17] interconnection model focused on community benefiting-DERs. Ideally this means that, where viable, PGE would provide capital for a localized DER solution – like battery storage and/or neighborhood scale grid interactive water heater retrofits – that mitigates distribution modification costs and recovers the cost over time from future projects who also benefit from this DER. This model would provide localized community benefits and likely reduce costs for developers.

[14] https://www.oasis.oati.com/pge/
[15] https://ifmt.box.com/s/ryo9q381eqikl9zoutkujo22vy06rret
[16] https://www.nrel.gov/docs/fy18osti/71232.pdf
[17] https://www.nrel.gov/docs/fy19osti/72102.pdf

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Table 1: Trends in Interconnection Fees

Avg. system size (MWAC)	Avg. Distribution Modification Cost	Avg. Distribution Cost per MW	Avg. Protection Modification Cost	Avg. Communication Equipment Cost	Avg. Total Cost to Interconnect
2.26	$254,017	$ 112,280	$167,837	$170,521	$598,691

The goal is to make a fundamental shift from a more techno-centric approach, which seeks to upgrade equipment or add specific technology to create new capacity. These upgrades are designed to solve the perceived problem that current equipment is not sufficient to handle new load or generation. This is an expansion model rather than an improvement model exemplified by building new or reactivating old substations like Kennedy. In contrast, a targeted universalism approach would create additional capacity on existing equipment by improving the buildings and community resiliency of the most energy burdened and underinvested communities on a feeder. A human-centric view of grid constraints shows that historical underinvestment in certain buildings and communities have led to inefficient levels and patterns of energy use; human-centric solutions are designed to address the human root of the issues. These social and energy inefficiencies constrain both the grid and the ability for communities to build wealth and live improved lives as it intersects with high energy bills, poor health, and lack of comfortable homes. Focusing on community investments in addition to grid needs is also a way to ensure that all future DERs are community-benefiting projects, and avoid perpetuating inequities caused by the simultaneous exclusionary and unjust histories of housing development, zoning, and energy infrastructure.

To estimate the potential capacity savings from redirecting a subset of distribution spending and interconnection fees, in Table 2, we compare cost per MW data for five demand flexibility programs from PGE's Flexible Load Plan to the data presented in the DSP Baseline Requirements table and the interconnection data from OASIS OATI.[18] We assume that demand flexibility programs can mitigate one third of all capacity spending, and use this as the program budget for each flexibility program. A non-wires alternatives pilot program by Xcel Energy and the Center for Energy and the Environment in Minnesota

[18] More information on our methodology is available here: https://ifmt.box.com/s/qz3pzgfsj6k3aaygldf90skzxhjc22sy

used the forecasted deferral savings to form the basis of a NWS budget, supporting this approach.[19] In this pilot, the implemented NWS exceeded the savings goal while staying in the budget range. We invite PGE and other stakeholders to discuss the analysis in Table 2 as a starting point.

Table 2: Potential MW Savings from Repurposing One-Third of Current Distribution Capacity and Interconnection Spending

Program	Customer Class	2019 Program Cost (million)	2019 MW Savings (Avg. Summer and Winter)	Cost of Capacity Savings ($million/MW)	Proposed budget: 1/3 of distribution capacity spending (million)	Potential MW Savings	Proposed budget: 1/3 of interconnection capacity spending (million)	Potential MW Savings
Flex	R	$2.05	6.6	0.31	$16.5	**5.12**	$4.30	**1.33**
Thermo-stats	R	$3.64	13.7	0.27	$16.5	**4.46**	$4.30	**1.16**
Energy Partner	C&I	$2.66	21.8	0.12	$16.5	**1.98**	$4.30	**0.52**
MFWH	MF	$2.99	3.4	0.88	$16.5	**14.52**	$4.30	**3.78**
Source	*PGE Flexible Load Plan*				*PGE Baseline Data*		*PGE Baseline Data and OASIS OATI*	

In order to better understand how alternative, human-centered grid investments could be best utilized, PGE would do well to provide further insight into the components of distribution spending and the makeup of interconnection-related upgrades. There is an asymmetry of information around this spending: what it is, what it means, and what alternatives could lead to similar outcomes with increased

[19] https://www.mncee.org/sites/default/files/report-files/Non-Wires%20Alternatives%20as%20a%20Path%20to%20Local%20Clean%20Energy.pdf

community benefit. There is an asymmetry of information about grid constraints and possible components of NWS – it is currently unclear how the various components of NWS match with grid constraints, which makes it impossible for community to identify the overlap between their needs, viable local NWS components, and grid needs. As part of its Distribution System Plan, in addition to releasing a more holistic hosting capacity analysis map that integrates equity indicators, PGE should release a data set of past distribution and interconnection investments by type (i.e., dollars spent on transformers, conductors, etc. [or another representation that enables a direct comparison with DER alternatives]), cost, and the potential benefits of replacing this with DERs. It will also be important to understand whether additional funds can be activated by not requiring the highest quality level of equipment or by adding a Community Benefits Test to assess the human-centered value of possible alternatives (see "Solution 2" for a description of a Community Benefits Test). It may also be advisable to convene a working group to delve into this data and determine potential opportunities. The goal would be to identify, with stakeholder input, how specific building/community-level measures can mitigate common distribution constraints, publish a report so that non-technical stakeholders can effectively participate in the DSP process, and put those recommendations into practice in the distribution system plan.

In lieu of deeper analysis and collaborative work, there is a framework for potential solutions that could be considered. Many project-related interconnection upgrades are designed to offset the increased generation on a feeder. This can be easily displaced with on-site storage and/or grid-integrated storage that provides a similar balancing effect. Similarly, reliability spending such as DPU (distribution protection unit) relay replacement program and substation upgrades or reactivation (like Kennedy in Cully) can be replaced with building-level upgrades such as manufactured home replacement, weatherization, energy efficiency, or demand response that improve reliability by reducing load. PGE already has undertaken experimental work through its Smart Grid Test Bed pilots for demand response and could target diverse neighborhoods like Woodburn and Portsmouth or Parkrose (Portland) for an alternative interconnection fee/upgrade model that utilizes community benefits tests to make improvements that provide direct and measurable community benefit.

Conclusion: Verde and IMT are grateful for the thoughtful work PGE has put into its stakeholder engagement and human-centered approach to its distribution system plan development. We see significant potential for groundbreaking changes to how we invest in, upgrade, and build out our distribution system. Specifically, we will summarize the highest potential opportunities below. We ask that PGE:

- Identify, with stakeholder input, how specific building/community-level measures can mitigate common distribution constraints and publish a report.
- Add equity indicators to its HCA map, and preferably combine with the GEM tool for easy exploration and analysis, and as a tool for developers to understand the opportunity to provide community benefit.
- Support the development of a new Community Benefits Screening test to value project or grid improvements.
- Create a testbed process to determine whether interconnection costs can be diverted to cover resiliency or building improvements that maximize community benefit.
- Put these requests into practice in the Phase 2 distribution system plan proceeding and future filings, while also utilizing a truly community-led process for writing the plan. To avoid the problems that have emerged with community-based organizations already in this proceeding, funds should be directed to the PUC to distribute to community-serving organizations. It will be essential to institute a buffer between utilities and community after the loss of trust during this docket.

Thank you for your consideration and collaboration. We look forward to meeting with you to discuss these comments further.

Respectfully,

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