Considerations for Resilience Guidelines for Oregon Utilities' Clean Energy Plans

For the Oregon Public Utility Commission and Oregon Electricity Stakeholders

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Oregon Context

- Oregon House Bill 2021 sets ambitious emission reduction targets for retail electricity providers (80% below baseline by 2030, 90% by 2035 and 100% by 2040)
- Section 4 requires the Oregon Public Utility Commission (PUC) to establish reasonable and prudent industry resilience standards and guidelines that state investor-owned utilities will address in Clean Energy Plans.
- The U.S. Dept. of Energy Grid Modernization Laboratory Consortium prepared a report summarizing risk-based approaches for power system and community resilience planning with an emphasis, established by the PUC, on **customer-centered resilience planning**, and developed an analysis process.

Customer-centered resilience planning

- Resilience is effective if **communities** are resilient, not if the **grid** is resilient.
- Communications planning and implementation are critical, and should be coordinated with government, service providers, and civic groups to target subcommunities through creative, targeted outreach.

Centering the customer in resilience planning includes:

1. Understanding and defining discrepancies in community/household capabilities to endure adverse impacts from service disruptions
2. Incorporating these discrepancies into prioritization and decision-making

Resilience Planning Analysis

Define Resilience Goals

- Account for variations in hardship, consequences, and costs experienced by different members of the community
- Map and evaluate historically impacted communities with poor reliability
- Develop community engagement plans and assess potential projects that account for zone of tolerance

As defined by the Oregon PUC: **“community energy resilience”** means the ability of a specific community to maintain the availability of energy needed to support the provision of energy-dependent critical public services to the community following non-routine disruptions of severe impact or duration to the state’s broader energy systems.

Develop System and Resilience Metrics

- Go beyond traditional reliability metrics, which can inform resilience metrics, but don't encompass the full experience
- Use metrics that account for the fact that resilience and risk are hyper-local and resilience is related to high-impact, low-frequency events which may not have historical occurrence
- Existing metrics for the bulk power system from NERC/FERC and the distribution system address reliability, but don't point to customers who regularly experience longer-duration or disproportionately frequent outages

Characterize Threats: Probabilities and Consequences

- Evaluate historical and potential future threats through multiple quantitative and qualitative approaches, including: stakeholder threat-risk prioritization, bowtie risk assessment (Figure 1), and climate change vulnerability assessment (Figure 2)
- Explicitly characterize threats to identified and vulnerable communities; use weighting and scoring techniques

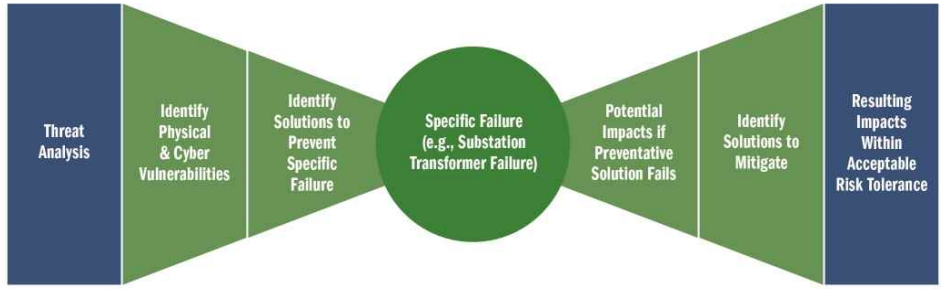

Figure 1. Resilience Bowtie Method (adapted from De Martini and Taft 2022)

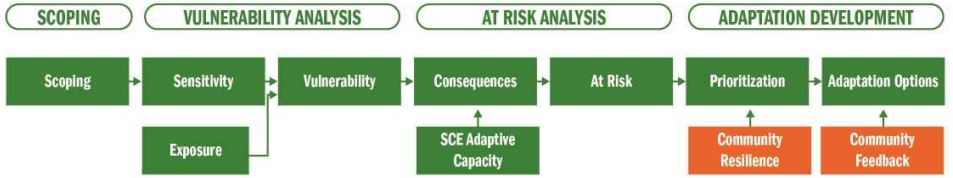

Figure 2. Example climate change vulnerability assessment framework. Source: Southern California Edison Climate Adaptation and Vulnerability Assessment Analytical Framework (adapted from SCE 2022).

De Martini P, Taft J. 2022. Distribution Resilience and Reliability Planning. PNNL-32574. January 2022. Pacific Northwest National Laboratory. https://gridarchitecture.pnnl.gov/media/advanced/Resillience_Solution_Analysis_paper.pdf

Southern California Edison (SCE). 2022. Climate Change Vulnerability Assessment Pursuant to Decision 20-08-046. Advice Letter 4793-E (U 338-E). Rosemead, CA. See also SCE's climate adaptation website.

Determine Mitigation Measures and Valuation Choices

- Consider a variety of end-to-end resilience measures that span the generation, transmission, distribution, and customer systems
- Engage in holistic benefit-cost analysis that includes the full suite of benefits that are difficult to quantify
- Use methods that help prioritize investment, including risk spend efficiency that incorporates the magnitude of action

Thank you!

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