AN INDUSTRY PERSPECTIVE ON THE FUTURE ENERGY DELIVERY SYSTEM CHALLENGES TO SUPPORT DECARBONIZATION AND ELECTRIFICATION INCLUDING OPPORTUNITIES TO UTILIZE COMPLIMENTARY ENERGY SOLUTIONS

~ by ~

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OVERVIEW

Utilities are facing unprecedented challenges to meet aggressive clean energy requirements to reduce contributions to climate change while ensuring the grid is prepared for rapid electrification for both customers' homes, businesses and transportation. While the clean energy focus is typically on the resources necessary to generate the clean power, a substantial risk is ensuring the transmission and distribution (T&D) delivery system can support the resource mix changes while continuing to deliver a reliable and resilient service for customers. This includes potentially significant changes in underlying powerflow to deliver peak power from stochastic renewable sources coupled with higher penetration of distributed energy resources (DERs). In parallel with the clean energy challenges, building and transportation electrification will continue to drive additional pressure reshaping peak demand and duration for the T&D delivery system.

This talk will explore the current challenges to delivery clean energy to customers and support electrification. I will discuss the sheer magnitude of the problem and update on work completed to utilize non-wire and non-pipe alternatives to address these needs. A case study facing an urban area within Puget Sound Energy's footprint will illustrate some of the near-term challenges recently identified. This will highlight modeling and planning tool gaps to study these types of solutions that leverage non-wire, non-pipe alternatives, and energy sharing solutions. The talk will conclude by identifying future opportunities for academia and research institutions to help overcome these challenges in partnership with the utilities.

BIO

Jens Nedrud, P.E., is the Manager of Electric System Planning at Puget Sound Energy. Currently, he leads a team responsible for the development of PSE's transmission and distribution delivery grid enhancements to meet customers future energy needs. He has over 18 years of experience in the utility industry where he has worked in non-wire alternatives development, grid modernization strategy, DER integration, transmission & distribution planning, substation design and large-scale transmission project management. Jens has worked on more than 100 infrastructure projects, and specializes in developing modern creative solutions that balance technical, regulatory and community needs. He received his bachelors and master's degrees in electrical engineering from the University of Washington and is a registered professional engineer in the state of Washington.