

Alaska Wind Working Group Agenda

Thursday, February 20, 2025

2:00 PM Call to Order and Introduction of Presenters

- **Jimmy Nelson, Ph. D.**, Director, Energy and Environmental Economics, Inc. (E3)
- **Arne Olson**, Senior Partner, Energy and Environmental Economics, Inc. (E3)

2:10 PM Presentation

- **Jimmy Nelson, Ph. D.**, and **Arne Olson** present on detailed production simulation analysis of the Railbelt system conducted by E3
 - Smaller, isolated electrical systems like the Alaska Railbelt experience more acute challenges with integrating variable renewable energy sources than larger electrical interconnections with more resource diversity. The largest Railbelt utilities – Golden Valley Electric Association (GVEA), Chugach Electric Association, Matanuska Electric Association, and Homer Electric Association – retained Energy and Environmental Economics, Inc. (E3) to perform a detailed production simulation analysis of the Railbelt system with much more wind generation than is currently online. This study was funded in part through AEA's Renewable Energy Fund program, with a grant issued to GVEA.
 - The analysis answered key questions around the integration of 300 MW of new wind capacity by 2030, including:
 - Can reliability be maintained?
 - By how much would production costs (fuel, variable, and start costs) be reduced?
 - By how much would greenhouse gas emissions be reduced?
 - What level of wind curtailment would be expected?
 - How can the Railbelt's transmission, generation, and storage resources be used to balance wind variability and uncertainty?
 - How could Railbelt operations evolve to accommodate more wind?
 - Sensitivity analyses explored the impact of changes to operational practices, fuel costs, and infrastructure.

3:10 PM Question and Answer for Presentation

3:30 PM Round-Robin Updates

4:00 PM Adjourn

About the Presenters:

Jimmy Nelson, Ph. D. - Jimmy advises utilities, system operators, and state agencies on the operations, economics, and planning of decarbonizing electricity systems. His technical expertise in electricity planning and dispatch optimization models helps clients to understand the impacts of higher levels of variable renewable energy resources on their systems. Dr. Nelson's work frequently focuses on the role of reliability in the context of resource planning and operations. In the planning context, he has led the development of dynamic capacity accreditation for renewable and storage resources in capacity expansion models. He also frequently advises clients on the modeling of operational reserves in production cost models. He has a long history supporting California Public Utilities Commission's integrated resource planning process and was E3's technical manager for the development of the CPUC's 2019-20 Reference System Plan. His study Investigating the Economic Value of Flexible Solar Power Plant Operation received the Public Utility Fortnightly's Top Innovators Award in 2018. Prior to joining E3 in 2016, Jimmy was a Kendall Science Fellow at the Union of Concerned Scientists and earned a Ph.D. from the Energy and Resources Group at the University of California, Berkeley.



Arne Olson - Arne leads E3's Bulk Energy Infrastructure practice helping clients navigate changes to bulk electric system operations and investment needs brought about by increasing policy and market interest in clean and renewable energy production. He has led a number of landmark studies of the feasibility and cost of achieving deep decarbonization and high renewable penetration goals for electric utilities, including studies of 100% renewable and net zero energy systems in New England, California, the Pacific Northwest and the Midwest. Arne has also led the development of E3's industry-leading resource planning software including the RESOLVE model that develops optimal portfolios of renewable, conventional and energy storage resources and the RECAP model that calculates Loss-of-Load Probability and related statistics to ensure that power systems can meet load reliably under high renewable penetrations. Arne has 25

years of experience in energy analysis, and he is a frequent speaker at energy conferences on the role renewable energy will play in decarbonizing the grid. His clients include utilities, asset owners, market operators, government agencies and environmental organizations. Prior to joining E3 in 2002, he served for six years in the Energy Policy Division of the Washington State Energy Office and its successor agencies.