NATIONAL COUNCIL ON ELECTRICITY POLICY

Innovations in Electricity Modeling
Virtual Training Series for National Council on Electricity Policy
October 1 – November 1, 2021

The National council on Electricity Policy and Lawrence Berkeley National Laboratory are offering free virtual training on innovations in electricity system modeling, in partnership with Pacific Northwest National Laboratory and National Renewable Energy Laboratory. All state-level electricity decision-makers are invited to attend this training designed for National Council on Electricity Policy members, including utility commissioners, state energy officials, state legislators, air agency officials, and utility consumer advocates.

Each of the four sessions includes 90 minutes of training and 30 minutes of Q&A. Participants will learn:
- What modeling tools and methods are available to plan distribution and bulk power systems with distributed energy resources (DERs), including comprehensive planning approaches
- How utilities analyze utility-scale and distributed storage in integrated resource planning, ways state officials can review the analysis, and how to improve evaluation of storage in planning
- How to assess technical and economic impacts of DERs for distribution and bulk power systems, and what changes are needed in load forecasting, potential assessments, and modeling to treat energy efficiency and demand response on a comparable basis to other resources during planning
- Ways to improve planning throughout the electricity system in the face of climate change

You may attend some or all trainings. Use registration links below for each of the four sessions.

Session #1 – Introduction to Tools to Support Comprehensive Electricity Planning
Friday, October 1, 12 p.m. to 2 p.m. Eastern
Register at: https://us02web.zoom.us/meeting/register/tZwucOGtqDkvGdafnHE_gBeiy8_SLwxzI2q3

Session #2 – State of the Art Practices for Modeling Storage in Integrated Resource Planning
Tuesday, October 12, 12 p.m. to 2 p.m. Eastern
Register at: https://us02web.zoom.us/meeting/register/tZMkcu2hqjopHtxcaDD_F4s3T0HsR_D_wP6u

Session #3 – Integrating DERs into Bulk Power System Planning
Wednesday, October 20, 12 p.m. to 2 p.m. Eastern
Register at: https://us02web.zoom.us/meeting/register/tZYtcOioqzwoGdy6MrPjQLAr-GhGUSgHmHAN

Session #4 – Planning for Climate Variability
Monday, November 1, 1:30 p.m. to 3:30 p.m. Eastern
Register at: https://us02web.zoom.us/meeting/register/tZAscOCsrzwpHNHj_Voq0BNNFkXkYIz08GeQ

See next page for details on each session. Contact Kerry Worthington at NARUC with questions. *Thanks to the U.S. Department of Energy's Grid Modernization Laboratory Consortium for funding this training.*

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Tools and Methods for Distribution System Planning with Distributed Energy Resources (DERs)
Juliet Homer and Tom McDermott, Pacific Northwest National Laboratory
Building on a report for U.S. Department of Energy's grid modernization initiative, this presentation focuses on tools and methods for planning distribution systems with DERs.

Modeling Tool Integration for Comprehensive Electricity Planning
JP Carvallo, Berkeley Lab
This presentation introduces modeling approaches that utilities and utility regulators — as well as other planning entities — can employ for comprehensive assessments of the power system. You'll learn about traditional modeling tools that utilities use for distribution, transmission, and generation planning, as well as models that regional grid operators use. The final segment covers capabilities and uses of comprehensive planning tools.

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State of the Art Practices for Modeling Storage in Integrated Resource Planning
Chandler Miller, Berkeley Lab, and Jeremy Twitchell, Pacific Northwest National Laboratory
This session explores assumptions and methodologies that utilities are using today to incorporate both utility-scale and distributed storage in resource planning, best practices for modeling storage, and opportunities to improve its consideration in integrated resource planning.

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Sequential Integrated Analysis of DERs in Distribution and Bulk Power Systems
JP Carvallo, Berkeley Lab
This presentation introduces a sequential planning framework that allows for whole-system analysis of DERs. The framework is characterized by: (1) a set of DER adoption and operation scenarios and (2) simulation of technical, economic, and rate impacts for distribution and bulk power systems using industry-standard capacity expansion and power flow models. The framework gives utility regulators a comprehensive view of rate and economic impacts of DERs across different segments of the value chain. Applying the framework for Indiana demonstrates how other states can use it.

Energy Efficiency and Demand Response as Resource Options in Bulk Power System Planning
Natalie Mims Frick, Berkeley Lab
Starting with the motivation for treating energy efficiency and demand response on a comparable basis to other resources, the presentation turns to related changes that may be needed in bulk power system

planning processes. That includes changes in load forecasting, resource potential assessments, and inputs and methods for capacity expansion planning modeling.

Session #4 – Planning for Climate Variability
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Register at: https://us02web.zoom.us/meeting/register/tZAscOCsrzwpHNHj_Voq0BNNFkXkYIz08GeQ

Load forecasting with climate variability for transmission and distribution system planning
Rui Yang, National Renewable Energy Laboratory, and Juliet Homer, Pacific Northwest National Laboratory
This session will succinctly explain how utilities and regional grid operators predict where grid hotspots will occur to identify infrastructure reinforcement needs, plan distribution and transmission systems, manage grid assets, and adjust day-ahead or intraday planning. The presenters will share best practices in load forecasting (including net loads), highlight forecasting challenges in the face of climate variability, and discuss emerging technologies used in the forecasting process.

Resource, asset, and contingency planning with climate variability
Juliet Homer, Pacific Northwest National Laboratory, John Fazio, Northwest Power and Conservation Council, and Robert Lempert, RAND Corporation
Climate variability has implications for resource planning (e.g., resource adequacy and integrated resource planning), asset planning (e.g., supply infrastructure and physical delivery), and contingency planning (e.g., climate-related vulnerabilities for assets, markets, and operations). This presentation addresses considerations, best practices, and emerging trends in resource, asset, and contingency planning for climate variability.