

U.S. Department of Energy Clean Energy Innovator Fellows Training

Introduction to Integrated Resource Planning
October 31, 2024



This work was funded by the U.S. Department of Energy under Contract No. DE-AC02-05CH11231.



Agenda

- Welcome – *Myles Collins, Berkeley Lab* (2:00-2:05 ET)
- Introduction to integrated resource planning – *Devi Glick* (2:05-2:40)
- Input assumptions – *JP Carvalho and Devi Glick* (2:40-3:40)

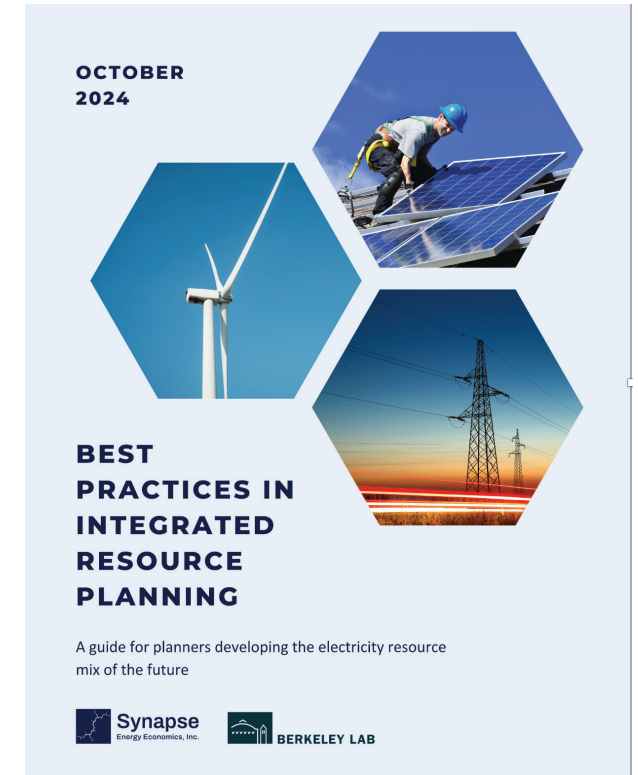
Break (3:40-3:50)

- Modeling tools – *JP Carvalho* (3:50-4:15)
- Scenarios and results – *Shelley Kwok* (4:15-4:40)
- Action Plan and integration with other proceedings – *Devi Glick and JP Carvalho* (4:40-5:00)

Q&A follows each section.

Enter your questions in the chat box at any time.

Slides are posted [here](#). A recording will be posted at this site soon.



Forthcoming report by Berkeley Lab and Synapse Energy Economics will be posted [here](#)



Today's Trainers

- **JP Carvallo** is a Research Scientist in Lawrence Berkeley National Laboratory's Energy Markets and Policy Department. His research focuses on long-term power system planning, integration and planning of distributed energy resources (DERs) and electric vehicles, and reliability and resilience valuation. JP holds Ph.D. and M.S. degrees in Energy and Resources from the University of California, Berkeley, as well as P.E. and B.S. degrees in Electronics Engineering from Universidad Técnica Federico Santa Maria, Chile.
- **Devi Glick** is a Senior Principal at Synapse Energy Economics. She conducts economic analysis and writes testimony and publications focused on a variety of issues related to electric utilities, including power plant economics, resource planning practices, and DER valuation. She develops in-house electricity system models and performs analyses using industry-standard electricity system models. Prior to joining Synapse, Devi was a Senior Associate at the Rocky Mountain Institute. Among her projects, she developed IRP modeling tools and carried out utility and regulator trainings on long-term electricity resource planning. Devi holds a Master of Public Policy and a Master of Science in Environmental Science from the University of Michigan, and a Bachelor of Arts in Environmental Studies from Middlebury College.
- **Shelley Kwok** is a Senior Associate at Synapse Energy Economics. She consults on electricity, buildings, and transportation topics including resource planning, power plant economics, building decarbonization, energy efficiency, and performance-based utility regulation. With a background in using software to process complex data sets, she has developed spreadsheet-based models to conduct cash flow and generator unit commitment analyses and is a co-developer of Synapse's Building Decarbonization Calculator to quantify the impact of changes in heating system turnover on heating system stock and energy consumption. She also has expertise using capacity expansion models to evaluate IRPs and develop optimized decarbonization pathways. Before joining Synapse, Shelley was an energy researcher at Tufts University, where she quantified the impact of installing distributed PV with optimized rooftop orientation. Shelley has a B.S. in Mechanical Engineering from Tufts University.



Upcoming Trainings for Clean Energy Innovator Fellows

□ Nov. 14 – **Integrated Distribution System Planning**

Register [here](#)

- ▣ An integrated decision framework for distribution planning
- ▣ Translating state policy goals into planning guidance
- ▣ State distribution planning practices
- ▣ Non-wires alternatives and virtual power plants
- ▣ Forecasting loads and distributed energy resources (DERs)
- ▣ DER planning
- ▣ Identifying grid needs and evaluating investment options
- ▣ Utility data, metrics and analyses that states can ask for

□ Dec. 19 – **Transportation Electrification**

Register [here](#)

- ▣ How EV loads differ from other types of loads
- ▣ Policy, technology, and market forces driving EV loads
- ▣ How rates and managed charging shape EV loads
- ▣ Grid impacts of EV charging
- ▣ Planning and financing grid upgrades to support EV charging
- ▣ EV rate design — policy objectives, design elements, current experience, and customer response

All trainings from 2–5 p.m. Eastern



Integrated Distribution System Planning 2.0: Planning for Electrification and Distributed Energy Resources

- Regional training and action planning workshops for states hosted by NARUC, NASEO and Berkeley Lab, funded by U.S. Department of Energy
- All new curriculum!* Participants will learn:
 - Best practices in the region and across the U.S. for planning distribution systems
 - How utilities are incorporating transportation and building electrification and DERs in local grid planning
 - How to design stakeholder-informed planning processes to achieve state goals
 - Current distribution planning challenges in the region and potential solutions
 - Questions to ask utilities in the distribution planning process
 - Actions to advance distribution planning in your state

Register now!

- **Charlotte, December 11-12:** <https://naseo.org/event-registration?EventID=9024>
- **Detroit, March 11-12:** <https://maxxwww.naruc.org/forms/meeting/MeetingFormPublic/view?id=21689C00000061>

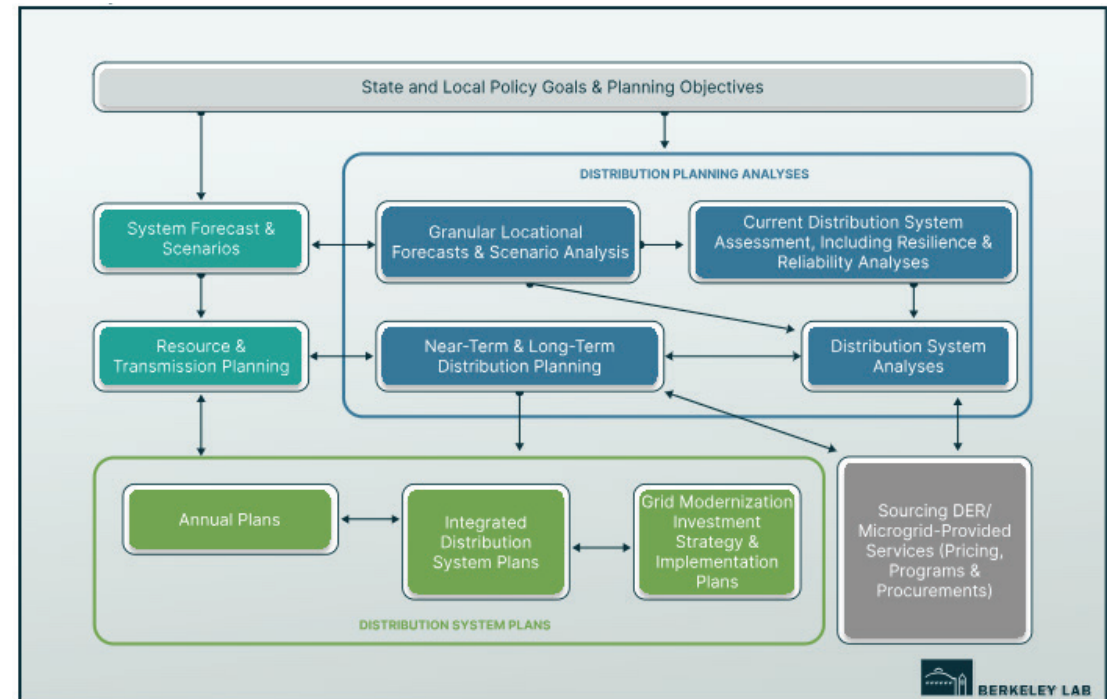
Registration for Salt Lake City, April 23-24, coming soon.

*See slides and video recordings from our last round of training [here](#).



Other Training and Technical Assistance Resources

- Berkeley Lab
 - ▣ Integrated Distribution System Planning [website](#)
 - ▣ Other topics: Search by research area [here](#)
- U.S. Department of Energy
 - ▣ [Office of Energy Efficiency and Renewable Energy](#) (EERE)
 - ▣ Distribution Grid Transformation [website](#)
 - ▣ Grid Resilience and Transmission Planning Resource [Hub](#)
- [Resources and Assistance for State Energy Offices and Regulators program](#), funded by DOE EERE and Office of Electricity
- NARUC Regulatory Training Initiative [courses](#)
- NASUCA [regulatory basics courses](#) and DOE/Berkeley Lab [trainings](#)
- [NASEO](#) – search publications, issues and events



[Interactive Framework](#) for Integrated Distribution System Planning

