

Data Request for the Distribution Grid Atlas

Model-based, distribution powerflow analysis is a foundational component of system planning and grid modernization efforts, but data security is an impediment to collaboration among utility engineers, researchers, developers, community members, and other stakeholders.

Pacific Northwest National Laboratory (PNNL) and the National Renewable Energy Laboratory (NREL) are partnering to develop the new **Distribution Grid Atlas—a publicly available catalog of realistic, geographically relevant, representative distribution feeder models without sensitive geographic information, customer data, or disclosure of utility models.** We are looking for utilities to share data for the Distribution Grid Atlas.

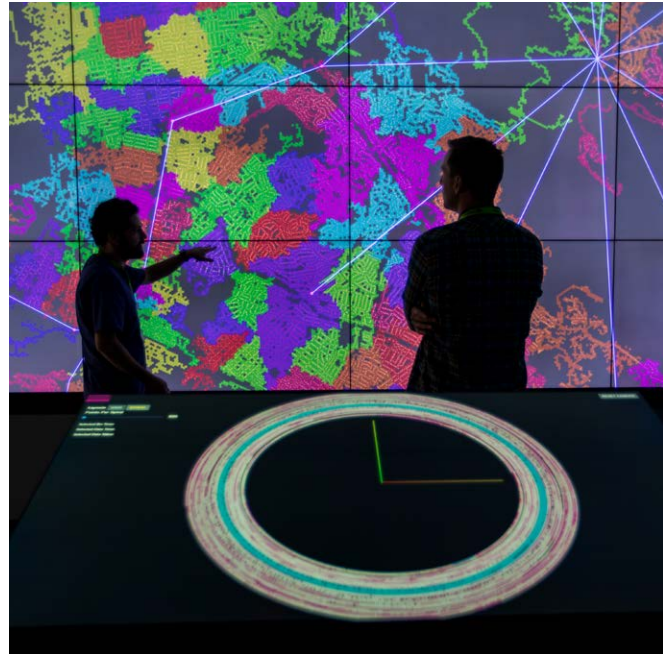
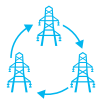


Photo by Werner Slocum, NREL 67845

The Atlas will foster new innovative solutions on pressing issues such as electrification loading impacts, resilience planning strategies, asset management for aging infrastructure, distributed energy resource management, and grid equity. We envision the following use cases for the Atlas, among others:



Utility Collaboration

A database of utility design practices and circuit performance metrics will inform the Atlas. The design practice database and Atlas models will **allow for industry-wide collaboration and cross-utility information sharing to implement and improve on industry best practices.**



Stakeholder Engagement

Communicating utility engineering principles to external stakeholders can be a challenge. The Atlas will **enable a better collective understanding of the technical challenges we face in a rapidly evolving industry.**



Research Collaboration

Continuous collaboration with our nation's premier research institutions can accelerate the development of cutting-edge solutions for the power sector. The Atlas will **streamline future laboratory research efforts and reduce the R&D burden on utilities.**





Photo by Werner Slocum, NREL 67862

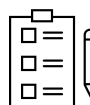
Let's Make the Atlas Possible

Utility collaboration is essential to capture realistic system performance (e.g., electric vehicle/distributed energy resource hosting capacity and reliability) and the diversity of design and operational practices found in the United States. We need input from all types of utilities, regardless of business model, size, or geographic location. We recognize the sensitivity of the data and will work with our utility partners to protect it while developing the Atlas. We are asking utilities to help us in this effort by providing NREL and PNNL with the following data sources:



Powerflow Modeling Data and Geographic Information Systems (GIS)

Existing load flow models or GIS files in the utilities' software of choice (e.g., Synergi, Cyme, OpenDSS, Q-GIS, and GIS SmallWorld); alternatively, utilities may send only model *metadata* (e.g. common conductor sizes or voltage classes) extracted using a tool provided by PNNL or NREL.



Survey Data

Questions will cover substation, primary, secondary, voltage management and protection design philosophies. Because no utility has an average distribution system, the surveys will collect statistical data on both typical and *atypical* configurations.

All contributed models and data will remain confidential, and none of these will be publicly disclosed.

Models and data will be deleted when the Distribution Grid Atlas is complete.

The U.S. Department of Energy oversees PNNL and NREL as two of its national laboratories. For more information about the national laboratory system, see <https://www.energy.gov/national-laboratories>.