

Data Repository for Power system Open Models With Evolving Resources (*DR POWER*)

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CRITICAL NEED:

OPEN ACCESS TO REALISTIC DATASETS FOR ADVANCED GRID MODELING AND SIMULATION

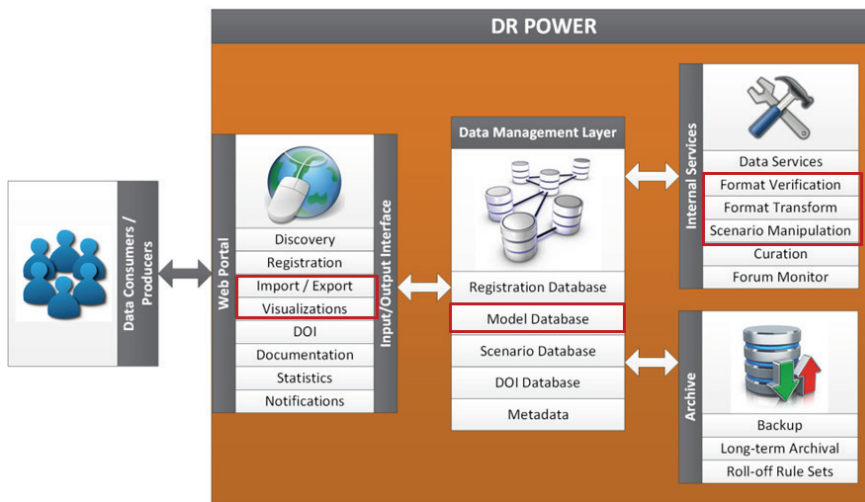
Several emerging issues are challenging the way electricity is delivered from suppliers to consumers. They include the resiliency of electric power delivery during extreme weather events, expanding use of distributed generation, the rapid growth of renewable generation, and the economic benefits of improved grid efficiency and flexibility. To further complicate, existing open-access datasets are too small and do not represent the complexity of present and future power grids. These limitations hinder researchers and developers as they attempt to fully test new methods and tools. Bottom line: the power modeling community is in need of robust, transformational models and scenarios to address grid complexity today and into the future with a large-scale, dynamic, open-access system that will support the on-line power operations community.

OUR SOLUTION:

A REPOSITORY OF REALISTIC DATASETS THAT ARE OPEN, ACCESSIBLE AND EVOLVING

PNNL and NRECA are teaming to resolve this problem by developing an integrated, user-defined approach known as Data Repository for Power System Open Models with Evolving Resources, or DR POWER.

DR POWER, the power system data repository, will serve as a repository for realistic grid models and datasets to support the energy grid operations community.



The objective is to create a repository that is open-access, flexible so that it can accommodate various power system models, scalable to expand to meet evolving demand, sustainable, curated, and citable through the use of internationally recognized Digital Object Identifiers (DOI) also used for journal citations.

This online, community-centered scenario manipulation portal will support large-scale, realistic datasets and data tooling models. DR POWER will enable the review, annotation and extension of submitted datasets through the integration of existing, open-source products, including Open Modeling Framework (OMF). PNNL will host the repository and portal in its Electricity Infrastructure Operations Center over the duration of the project and beyond.

OUR APPROACH:

A DYNAMIC REPOSITORY SUPPORTED BY POWERFUL TOOLS

The DR POWER project will develop:

- A data dictionary and supporting ontology
- A sustainable, community-driven system
- A curation process and supporting tools
- New visualizations and model editors to provide integrated transmissions and distribution models, including hybrid systems
- A collaborative research community that shares information and develops models.

THE RESULT:

A LONG-LIVED RESOURCE CAPABLE OF DRIVING CURRENT AND FUTURE GRID ADVANCES

The DR POWER project will develop:

- Citable datasets available over time to all
- Searchable datasets to meet the exact needs of researchers
- Tools to evolve datasets to meet future needs.
- Citable datasets available over time through the use of DOI to all.