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Available Technologies

GridLAB-D™

Summary

GridLAB-D™ is a power distribution system simulation and analysis tool that provides valuable information to users who design and operate distribution systems, and to utilities that wish to take advantage of the latest energy technologies. The technology, developed by researchers at Pacific Northwest National Laboratory in collaboration with industry and academia, is a flexible simulation environment that can be integrated with a variety of third-party data management and analysis tools. At its core is an advanced algorithm that simultaneously coordinates the state of millions of independent devices, each of which is described by multiple differential equations.

At its simplest, GridLAB-D examines in detail the interplay of every part of a distribution system with every other. It does not require the use of reduced-order models for aggregate behavior of consumer electrical systems, which averts the danger of erroneous or misapplied assumptions. Its use enables industry and government planners to design more effective and efficient programs to manage load growth and improve power distribution system reliability.

GridLAB-D incorporates an extensive suite of tools to build and manage studies and analyze results, including:

- * agent-based and information-based modeling tools that allow users to create detailed models of how new end-use technologies, distributed energy resources, distribution automation, and retail markets interact and evolve over time

- * tools to create and validate rate structures, examine consumer reaction, and verify the interaction and dependence of programs with other technologies and wholesale markets

- * interfaces to industry-standard power systems tools and analysis systems.

ADVANTAGES

- * Algorithm handles unusual situations much more accurately than traditional finite difference-based simulators

- * Handles widely disparate time scales, ranging from sub-seconds to many years

- * Very easy to integrate with new modules and third party systems

RELATED LINKS

- » [GridLAB-D Website](#)

<http://www.gridlabd.org>

Technology Portfolio(s)

- » Energy Efficiency
- » Modeling Tools

Potential Industry Applications

- » Energy & Utilities

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