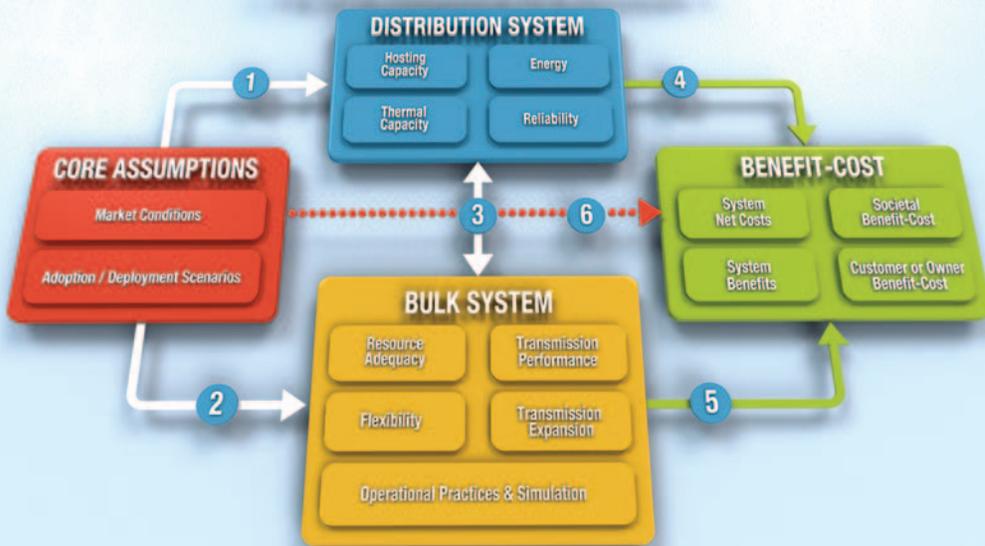


The EPRI Integrated Grid Framework



Pilot Projects Testing Innovative EPRI Analytic Framework for Integrated Grid

Realizing the full value of intermittent and distributed energy resources (DER) such as solar photovoltaic (PV), wind, and demand response technologies will require their full integration into the power grid—and into grid policies and planning. EPRI's Integrated Grid framework gives electric utilities, grid operators, and regulators tools to analyze the benefits and costs of integrating new technologies, policies, and services with existing sources of generation. EPRI is initiating a series of pilot programs to test this analytic framework on a variety of resources under a variety of operating conditions.

"EPRI is providing a scientific methodology to holistically account for the many variables in the new energy equation. This can inform the direction of new resource integration, policy, and investment," said David Porter, EPRI director of U.S. Strategic Accounts. "We need an objective, consistent, and repeatable method for evaluating new technologies and investment against the backdrop of reliability and affordability mandates. This approach provides a credible scientific basis for decisions."

Porter said understanding the benefits and the costs of adding DER to the grid required understanding the engineering impacts and then developing a benefit-cost methodology framework. EPRI's goal, he said, is to enable utilities to evaluate future business models for integrating distributed resources into the grid system, regardless of who owns them. Grid operators must prepare for the real effects of DER in order to maximize benefits to all stakeholders, he said.

In developing its benefit-cost framework, EPRI sought out comments from stakeholders. Since its release in 2015, the framework has been praised by environmental advocates as well as industry. "EPRI stressed the importance of making it freely and publicly available," Porter said.

As the next step, EPRI is using integrated grid pilot projects to work with operators to test the model's analytic tools in the field. Three projects were underway by mid-2015, with a half-dozen more in negotiation. They are projected to take one to three years. "These are not quick studies," Porter said. "We are talking about significant impacts on the electric system." Just collecting base performance data could take up to two years on some projects.

EPRI is seeking to test the framework with six technologies: utility-scale PV systems with energy storage, utility-scale PV systems without storage, distributed energy storage, microgrids, electric vehicle (EV) charging infrastructure, and customer-sided technologies such as combined heat and power systems. Modeling will look at effects down to individual circuits, said Porter, so utilities can see, for instance, where additional capacity is needed in the distribution system and where customer resources might make additions unnecessary.

"We're going to test our integrated grid model with real, live data and adjust it, and get reaction from utilities, technical providers, and regulators," Porter said.

"This approach provides a credible scientific basis for decisions."