Committee on Energy Resources and the Environment

The Future of the Grid: Getting to 2030 and Beyond

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GridWise Alliance
A consortium of passionate stakeholders focused on modernizing our electric grid, collaborating to transform the nation’s electric power grid.
Future of the Grid
Evolving to Meet America’s Needs

- Partnership - GridWise Alliance and the Office of Electricity Delivery and Energy Reliability
- Four Regional Workshops
- National Summit in Washington, DC
- Final report – December, 2014
Electric System of the Future

- Evolving Grid Operations
- Evolving Business Model
- Evolving Regulatory Model
- Planning the Transition
Characteristics
Electric System of the Future

- Generation
  - Centralized and distributed
  - Dispatchable and non-dispatchable
  - Microgrids – complementary not replacement

- Energy storage
  - Important
  - Still need “dispatchable” generation and resources

- Balancing supply and demand
  - Increasing complex and important
  - Moves down into distribution network

- Consumers
  - Different expectations and options
  - Prosumers

- Markets
  - Wholesale and retail
  - Third party non-regulated competitive players
Evolving Grid Operations

- Will still want and need a grid
- No longer just a delivery “pipe”
  - => Multi-way power flow
- Must be agile and “fractal”
  - Flexible, adaptable, responsive
- Enabling platform
  - For a very dynamic and complex system
  - Robust retail market
- Balancing supply and demand
  - Distribution will look and act more like transmission
  - Essential function for both T&D
- Connecting markets
  - Linking new retail markets to wholesale markets
Evolving Business Model

Future Value Propositions for Grid Operators

- Integrating all types of generations
- Being agnostic as to where supply comes from
- Increasing grid efficiency
- Enabling customers to provide services back to grid
- Facilitating a retail market for consumers to buy and sell services
- Optimizing assets utilization
- Supporting/implementing public policies
- Maintaining a safe and reliable grid
- Enabling highly reliable and resilient energy services to end consumers
- Identifying most cost-effective way to achieve outcomes
Portfolio of Selectable Services

- Basic service
- Enhanced service
- High-reliability services
- Microgrid services
- Financing services
- Buying/selling ancillary services, such as:
  - VAR Support
  - Voltage Support
  - Frequency Response
  - Spinning Reserve
  - Backup Power Support
Challenges for Regulators

- Providing regulatory clarity in time of significant change
- Align regulatory process to embrace speed of change and technology innovation
- Balancing public good with the needs and desires of individual consumers
- Addressing consumers’ obligations to the grid as well as utilities’ obligations to consumers in the future
Recommendations

- Establish clear and comprehensive guiding principles
- Develop a unifying architecture to ensure interoperability across the entire grid
- Create a framework for guiding investments and the development of state/regional roadmaps.
- Drive solutions through stakeholder engagement and education.
- Address technology challenges and limitations through robust research and analysis.
Q&A

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Report can be downloaded from:
www.gridwise.org