The Electric Industry – Key Issues Shaping the Transformation

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The Electric Distribution System in Transition

As of 2015, utilities deployed

SMART METERS

60+ MILLION

Utilities are investing

MORE THAN

$20B

ANNUALLY in the
distribution grid

Digital grid enables

TWO-WAY

power and
information flows

Source: The Edison Foundation Institute for Electric Innovation, Thought Leaders Speak Out: Key Trends Driving Change in the Electric Power Industry, December 2015
Grid Evolution Requires Increasing Investment

- Grid Technologies
- Digitization
- Data Analytics
- Distribution system sensing and monitoring
- Controls to enhance operational efficiency and to integrate new resources to improve reliability and grid resiliency, achieve power supply diversity, and achieve evolving clean energy goals.
Energy Storage

Energy storage can be deployed in all parts of the grid, has applications in all parts of the value chain.

Source: Navigant

Bulk Energy Services
• Electric energy time-shifts (Arbitrage)
• Electric supply capacity

Ancillary Services
• Regulation
• Spinning, non-spinning and supplemental reserves
• Voltage support
• Black start

Transmission Infrastructure Services
• Transmission upgrade deferral
• Transmission congestion relief

Distribution Infrastructure Services
• Distribution upgrade deferral
• Voltage support

Customer Energy Management Services
• Power quality
• Power reliability
• Retail electric energy time-shift
• Demand charge management

Source: Adapted from DOE/EPRI Handbook
Evolving Distribution Grid
Public Policy Issues

The public policy issues relating to the evolving distribution grid fall into five categories:

- What planning process should be employed for the evolving grid?
- How should the grid be designed and constructed?
- How and by whom should the grid be operated?
- How and by whom should the grid DER marketplace be designed and managed? What services behind the meter can be provided and by whom?
- How should services be priced and rates determined?
Industry Goal

Strike a Balance Among Reliability, Sustainability, and Affordability

Reliability

Sustainability

Affordability

- Attain Customers’ Desired Level of Electric Reliability . . .
- . . . At as Low a Cost to Electricity Customers as Possible.