How Southern Company has increased reliability and resilience using AMI and DER

Smart Grid and Climate Change

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Southern Company

- One of the largest electric utilities in the U.S.
- 4.4 million customers
- 46,000 MWs of generation
Vertical Integration/Integrated Resource Planning

• Best combination of demand side, generation, transmission
  – Total life cycle cost – price impact to customers
  – Firm physical transmission delivery service
  – Firm fuel transportation or fuel storage
  – Diversity of: fuel type, fuel supply basin and fuel transportation

• Integration
  – Planners (generation, transmission, demand side, fuel)
  – Operations (generation fleet, fuel, transmission, demand side)

• Cost-based economic dispatch of owned and contracted resources

• Results: clean, safe, reliable and affordable energy
Southern Company Actions

Customers at center of business model
- High Reliability
- Low Price
- High Customer Satisfaction

The Full Portfolio
- Nuclear
- 21st Century Coal
- Natural Gas
- Renewables
- Energy Efficiency
Example Southern Company Actions that Improve Reliability and Resilience

• Fleet/fuel/basin/transportation diversity
• Firm fuel transportation or on site fuel storage
• Demand Response such as
  – Distribution voltage control
  – Energy Select
  – Interruptible
  – Real time pricing
• Advanced Metering
Clean Power Plan

• National energy policy is responsibility of Congress and the states, which have lens to balance utilities’ responsibility to provide clean, safe, reliable and affordable power

• Overreaching rule directly impacts national energy policy and impedes states’ authority to act in the best interests of customers
EPA Modeling

• EPA predicts Southern’s compliance approach as a combination of actions
  – Retirement of specific coal-fired units
  – Increased use of existing natural gas combined-cycle units
  – Addition of new natural gas units and solar PV generation
  – Additional demand-side energy efficiency
Example System Impacts of High Solar Penetration

• Benefits: avoided fuel, VO&M, compliance, deferred capacity and FO&M

• Costs: generation mix, regulating reserves, operating reserves, bottom out, maintenance, local or area voltage stabilization, etc.
Example CPP Reliability Risks

- Long infrastructure lead times

- High capacity factor gas vs. high penetration of intermittent renewables
Summary

• Driven by what is best for our customers

• Objective of planning process: clean, safe, reliable and affordable energy