DOE Smart Grid Peer Review

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Public Power and APPA

• Public power: operated by local governments; reliable, responsive, not-for-profit
• 2,000 community-owned electric utilities, 46 million people
• Non-profit, non-partisan organization, est. 1940
  – Public policy interests
  – Member services
  – Reliable electricity at reasonable prices
  – Proper protection of the environment
Public Power in the US
Public Power by Number of Customers Served

Customers Served

- More than 100,000: 22
- 40,001 - 100,000: 30
- 20,001 to 40,000: 80
- 10,001 to 20,000: 133
- 4,001 to 10,000: 308
- 2,001 to 4,000: 340
- 1,001 to 2,000: 384
- 11 to 1,000: 648
- Less than 10: 63

0 100 200 300 400 500 600 700

American Public Power Association
DEED

• Demonstration of Energy Efficient Developments
• Created in 1980
  – 100 members
  – Less than $100k per year
• DEED today
  – 660+ public power utility members
  – Almost $600k per year
• Given out $7M year to date
• Joined Distribution Systems Testing, Application, and Research (D-STAR)
Projects Funded

• Utility-led projects (Smart Grid focus)
  – Field Measurement of Plug in Electric Vehicle (PEV) Grid Impacts - SMUD
  – Cost-Effective Decentralized Volt/VAR Control on Distribution Feeders – Fayetteville, NC
  – Customer Perceptions of Exceptional Service and Smart Grid
  – 1-MW Battery Energy Storage Project for Peak-Shaving at Long Island Bus – NYPA
  – Etc. etc.
Projects Funded

• Student-led projects:
  – Wind energy penetration
  – Implementing HAN technology with AMI
  – Wireless Access Technologies for Low Cost Cap Bank Controllers
  – Grid-independent electricity generation for remote access based on unitized regenerative hydroxide exchange membrane fuel cell system
DOE Smart Grid Grants

  – 33 public power utilities received grants, $550M
  – California: City of Anaheim, Burbank, Glendale, Los Angeles, Modesto Irrigation District, Sacramento Municipal Utility District
  – Amount awarded ranged from $400,000 to $128M
Smart Grid

- DOE funded projects focus:
  - Smart meter installation
  - Distribution Automation
  - Demand response & energy efficiency
  - Dynamic pricing
  - Development of customer portals
  - Upgrading IT and communications infrastructures
  - EV charging stations

Photo credit: Sacramento Municipal Utility District
Smart Grid

- Key challenges:
  - Cost justification
  - Interoperability
  - Cyber security
  - Smart meter pushback
  - Customer education
Looking to the future

- Developing strong business cases
  - Understanding what’s important to each community
- Integration of renewables
  - Energy storage, demand response
- Interoperability
  - Standards and technologies
- Educate customers
  - Let them crawl before asking them to walk
- Continued R&D
  - Safety, reliability, and cost should be baselines
Thank you

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