Panel Discussion: Best Practice Examples to Foresee Problems and Address Barriers

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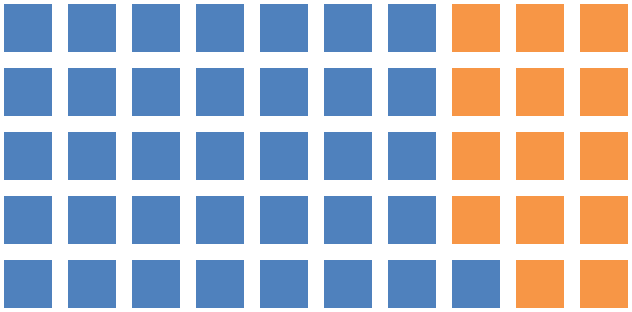
About the USG investments…

The U.S. ARRA Smart Grid Investment Grant and Smart Grid Demonstration Program spending is only one step towards developing and deploying modern, smart grids across the U.S.

SGIG & SGDP Spending — $9.5 billion with cost share by the end of both programs

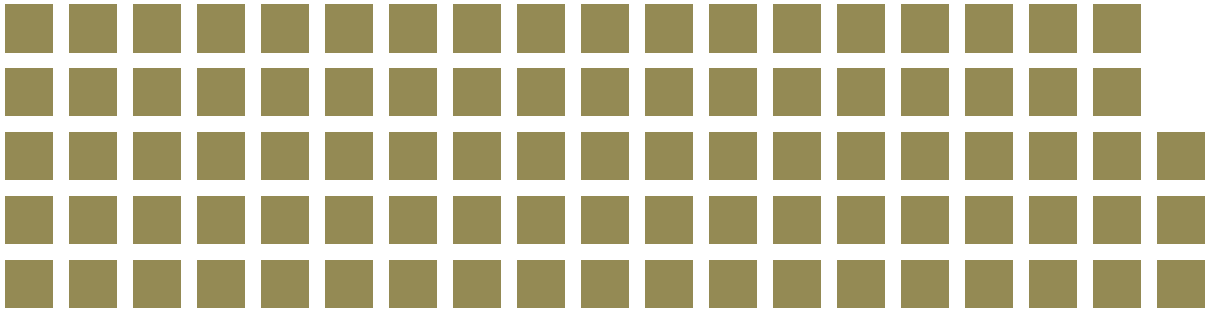
EPRI Estimate



$338 - $476 billion needed through 2030

Electric Power Research Institute. Estimating the costs and benefits of the smart grid: A preliminary estimate of the investment requirements and the resultant benefits of a fully functioning smart grid. EPRI, Palo Alto, CA; 2011.

Brattle Group Estimate



$880 billion needed through 2030

Chupka, M.W. Earle, R., Fox-Penner, P., Hledik, R. Transforming America's power industry: The investment challenge 2010 – 2030. Edison Electric Institute, Washington D.C.,: 2008.

One-offs or Scalable/Replicable?

"One-off" projects can be interesting and even impactful in the right environments.

BUT… **To leverage and extended limited public investments, pilots and demonstration projects must produce best practices and lessons learned that are both *scalable* and *replicable*.**

A question is what aspects must be scalable and replicable recognizing significant grid differences among countries and regions?

Extending knowledge is a central focus of USG Smart Grid Efforts (1 of 3)

- **Smart Grid Investment Grants Impact Analysis**
  - The impact analysis is focused on presenting empirical results as well as reporting on the costs, benefits, lessons learned, and best practices associated with these focus areas:
    - Peak Demand and Electricity Consumption
    - Operational Improvements from Advanced Metering Infrastructure (AMI)
    - Operational and Maintenance Improvements in Distribution Systems
    - Reliability Improvements in Distribution Systems
    - Energy Efficiency Improvements in Distribution Systems
    - Applications of Synchrophasor Technologies in Transmission Systems

Extending knowledge is a central focus of USG Smart Grid Efforts (2 of 3)

- **Smart Grid Demonstration Projects Tech Performance**
  - The Smart Grid Demonstration projects are demonstrating smart grid and energy storage technologies. Each of the projects will provide interim and final Technology Performance Reports.
    - Smart Grid Demonstration Projects will assess the integration of advanced technologies with existing power systems including those involving renewable and distributed energy systems and demand response programs
    - Energy Storage Demonstration Projects involve a variety of technologies including advanced batteries, flywheels, and underground compressed air systems. These projects are demonstrating a variety of size ranges and system configurations and their impacts on the grid.

Extending knowledge is a central focus of USG Smart Grid Efforts (3 of 3)

- **DOE is facilitating peer-to-peer discussions among ARRA funding recipients**
  - These closed-door sessions allow practitioners to share practical information on what worked, what didn't, and what questions remain… ***without fear of attribution!***
  - The meetings are held regionally to help ensure alignment of interests and grid characteristics.
  - The key themes are captured and aggregated for publication.
  - Power point is banned from these sessions! They are a **dialogue**.

- ***New report on progress of ARRA SG projects available at www.smartgrid.gov***

What about ISGAN?

ISGAN is a mechanism for bringing high-level government attention and action to accelerate the development and deployment of smarter electricity grids around the world.

ISGAN…

- Sponsors activities that build a **global understanding** of smart grids, **address gaps** in knowledge and tools, and **accelerate Smart Grid deployment**
- Builds on the momentum of and knowledge created by the **substantial global investments** being made in smart grids
- Is organized as a task-shared **IEA Implementing Agreement** (2011)
- Was launched as an initiative of the **Clean Energy Ministerial** (2010)
- Fulfills a key recommendation in the **Smart Grids Technology Action Plan** (released by Major Economies Forum Global Partnership, 2009)
- **Leverages cooperation** with other initiatives and Implementing Agreements

ISGAN's portfolio aims to clarify opportunities for knowledge sharing

Foundational Projects

Annex* 1: Global Smart Grid Inventory
Led by U.S. – DOE/E2RG

Annex 2: Smart Grid Case Studies
Led by Korea - KERI

Annex 3: Benefit-Cost Analyses and Toolkits
Led by Italy – RSE SpA

Annex 4: Synthesis of Insights for Decision Makers
Led by U.S. & Korea – DOE/NREL & KSGI

Newer Projects**

Annex 5: Smart Grid International Research Facility Network (SIRFN)
Led by U.S. – DOE/Sandia NL

Annex 6: Power T&D Systems
Led by Sweden & Norway – STRI AB

* "Annex" = Major Project

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What are the best practice examples, methods, or mechanisms that should be in the H2G?

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