National Grid:
an international electricity and gas company

National Grid Electricity and Gas Service Areas - US

Largest utility in UK; second largest in US*
- 50% UK, 50% US
- 50% Electricity, 50% Gas
- 50% Transmission, 50% Distribution
- 27,000-plus employees
- Almost 18 million customers

Northeast US
- Distributes electricity to 3.3 million customers
- Services 1.1 million customers of Long Island Power Authority (LIPA)
- Provides natural gas to 3.5 million customers
- Currently owns over 4,000MW of generation

*Based on customer numbers; includes the servicing of LIPA’s 1.1 million customers
Aspects of Smart Grid Changes

- Significant Pilot of Metering Based Equipment (> 100K meters)
- Distribution Equipment
  - Reclosers, sectionalizes, switches
- Control Room Changes
  - How do you deal with this new information?
Proposed Smart Grid Pilots

- Three States
  - Massachusetts
    - 15,000 meters plus potentially 100,000 more
  - Rhode Island
    - 10,000 meters
  - New York
    - 80,000 meters in two locations

- Regulatory Filings made in Three States

- DOE Filings made

- Next Steps
  - DOE indications Dec. 2009
  - NY PSC prioritization August 2009
  - MA Approval October 2009
  - Rhode Island?
Smart Grid Distribution System – New York Pilot

Objectives
- Integrated Grid / Network Communications
- Advanced Smart Meters (real time measurement and communication of consumption)
- Automated Load Management imbedded in existing DSM Programs
- Remote status detection and operation of Distribution Equipment
- TOU or Hourly Pricing
- Coverage of .25% of service territory
- Reductions of 5% in peak and average load consumption of participants

Selection Criteria
- Mix of Urban and Suburban
- Mix of Commercial and Residential
- Existing Reliability Challenges
- Potential to interconnect feeders
- Mix of existing and potential Distributed Generation, Wind, Solar, PHEV

Syracuse
- East Syracuse
- 3 complete substations in a contiguous area (Syracuse University is an add on option)
- Existing Distribution Automation project
- 17,100 customers – sub-urban, rural mix
- Opportunities to improve reliability
- Opportunities to interconnect feeders
Control Room Changes

- New common EMS for Transmission

- Replace Outage Management System (OMS)

- New Distribution Management System (DMS)
  - Enhanced capabilities needed to manage data from Smart Grid
  - Eliminate paper maps
  - Automated load calculations
  - On-line switching orders
  - Self healing grid technologies
  - Fault isolation and restoration switching
  - Volt/VAR management
Significant Challenges to Overcome

- DOE acceptance of proposals and findings
- State Regulators acceptance and approval of non-DOE funding for utilities
- Information storage and analysis issues
- Significant new sources of Distribution data for Control Room Operators