The Los Angeles City Distributed Generation & Smart Grid PROGRAM

Prepared by the Los Angeles Department of Water and Power (LADWP)

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by John Dennis
Director of Power System Planning and Development

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Los Angeles Department of Water and Power

- Total Customers: ≈1.4 Million
- Peak Load: 6,144 MW
- Total Renewables: 1,276 MW
- Power Assets:
  - Distribution Stations
    - Conventional: 123
    - Pole-Top: 33
    - Receiving Stations: 20
  - Miles of Distribution Lines
    - Overhead: 5,520 (4.8 kV) & 1,274 (34.5kV)
    - Underground: 2,250 (4.8 kV) & 1,221 (34.5kV)

Vision for our Distribution System

- Plan, design, implement, operate, and maintain a distribution system that is safe, economical, and reliable in supplying power to customers in the city of Los Angeles.
- Address aging infrastructure including replacement programs for poles, conductors, distribution transformers, station transformers and circuit breakers and various other system elements.
- Implement automation efficiencies and technology.

Distributed Generation:

- 2010 Integrated Resource Plan incorporated Combined Heat and Power (CHP) goals:
  - Load Forecasts
  - Meet Native Load Requirements
  - Set operating and replacement reserves
  - Specify energy efficiency and load reduction programs
  - Achieved 20% renewable energy by 2010
  - Achieve 33% renewable energy by 2020
  - ➔ Develop CHP / FIT target goals
  - Reduce GHG emissions to 35% of 1990 levels by 2030

Distributed Generation:

- Current – 350 MW of Customer-Installed DG.
- Current Distributed solar:
  - Utility-Scale Solar – 1 MW
  - Commercial Customer Solar – 16 MW
  - Residential Customer Solar – 17 MW
- Solar incentive program goal of 130 MW of customer-installed PV systems by 2016.
- Current Feed-in Tariff program is expected to add 150 MW of solar DG.
- Thousands of DG installations planned and implemented from 1kW to over 10MW.

Distributed Generation:
Current Incentives – Standard Energy Credit

- LADWP's "Standard Energy Credit" is the dollar amount per unit of energy that LADWP credits to its customers for excess energy they sell to LADWP.
- The Standard Energy Credit is based on LADWP's estimated system marginal generation cost, and is publically posted at the beginning of each month for that month.
- The Standard Energy Credit is designed to encourage customer-owned generation, shift demand from the electric grid, and provide accurate price signals to customers.
- The Standard Energy Credit encourages Cogeneration, or Combined Heat and Power (CHP) customers, who have a need for heat (or steam), and then can sell excess power to LADWP.

Distributed Generation: Future Incentives

- If the generation is renewable, LADWP will provide the renewable premium based on the energy market plus the Standard Energy Credit.

- If the generation is not renewable, LADWP will purchase the excess energy at the Standard Energy Credit.

Smart Grid:

- Smart Grid Regional Demonstration Project
  - Began in December of 2009
  - Awarded a $60 million dollar grant from the Department of Energy, American Reinvestment and Recovery Act
  - 10-year project
  - Focuses on Customer and Behavioral Studies, Cyber Security, Demand Response and Electric Vehicles.
  - Collaborating on a smart grid program with:
    - Jet Propulsion Laboratory (JPL)
    - University of Southern California (USC)
    - University of California, Los Angeles (UCLA)
  - 20,000+ fully-functional "smart meters" currently installed

Smart Grid:

- SB 17 defines the way utilities modernize transmission & distribution systems.

- LADWP's Smart Grid Initiatives:
  - Renewable Integration (DG)
  - Transmission Automation
  - Substation Automation
  - Distribution Automation
  - AMI Metering
  - Demand Response
  - Communications
  - System Data Integration
  - Cyber Security

Current Challenges:

- Smart Grid and DG technologies are still under development.
- Potential to strand existing generation assets and negatively impact the local economy.
- Excess amount of DG (i.e. during low load conditions) may result in problems controlling and operating the distribution and transmission system.
- Numerous initiatives underway during the next decade that require careful planning, proper integration, and adequate central control.