

The Los Angeles City Distributed Generation & Smart Grid PROGRAM

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

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Los Angeles Department of Water and Power

- ▶ Total Customers: \approx 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.

