IEPR Committee Comments
Glendale *Water & Power*

Craig Kuennen, Business Transformation & Marketing Administrator

June 22, 2011

California Energy Commission POU Panel Presentation

Glendale *Water & Power*

- Municipal utility NE of Los Angeles
- 88,000 electric and 33,000 water meters
- Home to the Americana, Disney, Nestle and DreamWorks
- 1 of 33 Publicly Owned Utilities selected by DOE for a Smart Grid Grant – GWP Received $20 million
- 1st in Nation to Sign DOE Agreement
- Awarded $1 million PIER Smart Grid Grant from CEC
- Adopted the Smart Grid Maturity Model for Planning Purposes

Your Trusted Community Utility

PLANNING FOR THE FUTURE

3 Year Distribution System Vision

- GWP starts to deploy initial grid monitoring and control features that are tied to the smart grid vision. There is an emphasis on communications in support of grid automation
  - Initial distribution to substation automation project is underway
  - Advanced outage restoration schemes are being implemented, which automatically resolve (self-heal) or reduce the magnitude of unplanned outages
  - Aside from SCADA, piloting of remote asset monitoring of key grid assets to support manual decision making is underway
  - Investment in and expansion of data communications networks in support of grid operations is underway

Five Year Distribution System Vision

- Analytics, automation, and control operate across multiple systems and organizational functions
  - Information to support analysis and decision making for grid operations is available across multiple systems and organizational functions
  - Control analytics have been implemented and are used to improve cross-LOB decision making
  - Grid operations' planning is now fact-based planning using grid data made available by deployed smart grid capabilities
  - Smart meters are important grid management sensors within the organization's network
  - Grid data is used by an organization's physical and cyber security functions to support situational awareness and diagnostic activities

Distribution System Strategy

- First Year Milestones – June 30, 2012
  - Develop a business case for new equipment and systems related to smart grid for at least one business function
  - Evaluate new sensors, switches and communications technologies for grid monitoring and control
  - Proof-of-concept projects and/or component testing for grid monitoring and control underway
  - Evaluate outage and distribution management systems linked to substation automation (beyond SCADA)
  - Safety and security (physical and cyber) requirements considered in 100% of grid operation initiatives

City of Glendale Water & Power
Your Trusted Community Utility

Distribution System Strategy

- Third Year Milestones – June 30, 2013
  - A minimum 70% of system has distribution to substation automation.
  - Greater than 20% of the grid has advanced outage restoration schemes in place to automatically resolve (self-heal) or reduce the magnitude of unplanned outages.
  - Aside from SCADA, pilots for remote asset monitoring of key grid assets to support manual decision making have been completed and technology is being deployed.
  - Greater that 80% of the grid is supported by expanded data communications networks in support of grid operations

Distribution System Strategy

- Fifth Year Milestones – June 30, 2015
  - Smart grid information made available across most functions and systems.
  - Implementation of new control analytics has improved decision making across most or all line-of-business.
  - Greater than 90% of grid operations planning has transitioned from estimation to fact-based using grid data.
  - To great extent (≥40%) smart meters become important grid management sensors within our network.
  - Grid data is being used to support physical and cyber security through situational awareness and diagnostic activities comprehensively across grid.
  - Numerous analytics-based decision types are being automatically executed to support automated decision-making.

GWP SMART GRID

Smart Grid Project at a Glance

- $70 million total - $51 million electric, $19 million water
- 88,000 electric and 33,000 water meters
- Proof of Concept – Completed April 2010
- Tropos Citywide Wi-Fi Backhaul – Installed for AMI
- Full AMI deployment commenced December 2010
- AMI installation to be completed by September 2011
- Customer Programs
- Enterprise Computer Systems
- Distribution Automation Pilot

Customer Programs

- In Home Displays
- OPOWER Web Portal
- Thermal Energy Storage
- Demand Response
- Experimental Pricing Programs
- Electric Vehicle Program

Enterprise Computer Systems

- Enterprise Service Bus (ESB)
- Geographic Information System (GIS)
- Asset Management System (AMS)
- Outage Management System (OMS)
- Distribution Management/Modeling System (DMS)
- Transformer Information Load Management System (TILM)
- Load Forecasting System (LFS)
- Electric Vehicle Management (EVM)
- Load Management System (LMS)
- Mobile Work Force Management System (MWFMS)

Distribution Automation

- DA Pilot by September 2012 on 4 feeders
- 10-15 year long term DA project dependent on funding
- Technologies
  - Expanded Tropos Wi-Fi Communication System
  - Automated Feeder/Reclosers/Fault Interrupter
  - Automated Capacitors
  - Automated Regulators/Load Tap Changer (LTC
  - Remote Fault Indicators
  - Disturbance Monitoring Relays
  - Smart Protective Relays

Your Trusted Community Utility

Other Distribution System Programs

- Improvements for Reliability
  - Continuous system upgrades from 4kV to 12 kV
  - Life of equipment is based on loading and history
  - Regular inspection and maintenance in place
  - Capital Improvement Program
  - Failure analysis of all preventable events

Smart Grid Environmental Goals

- Three Year Goal
  - Implemented business processes that deliver an environmentally friendly energy network while minimizing costs and sustaining profitability.
  - Collaborating with industry stakeholders in addressing societal and environmental issues
- Five Year Goal
  - Will extend and integrate technology, business processes, and assets to the regional and national grids to maximize societal value and environmental benefits