

Reading Municipal Light Department (RMLD) Board of Commissioners  
Power Contract, Rate Setting, Green Power Committee Regular Session Agenda

Monday, March 22, 2010

7:00 p.m.

General Manager's Conference Room

1. Smart Grid Initiative
2. Cost of Service Study
3. Massachusetts Renewable Energy Trust Fund
4. Energy RFP
5. Concord Steam
6. Executive Session:  
Move that the Board go into Executive Session to discuss power supply issues based on Chapter 164 Section 47D exemption from public records and open meeting requirements, and return to regular session for the sole purpose of adjournment.
7. Motion to Adjourn

# Reading Municipal Light Department

## Smart Grid: Metering and Distribution Automation

# What it Means to the Utility

- Metering Automation
  - Remote meter reading
  - Increased read frequency
- Distribution Automation
  - Remote switching applications
  - Remote capacitor bank operation

# Smart Grid and Metering

- Value of Smart Grid
- Features of consideration
- Alternative solution to AMI
- Trade-offs between technologies
- Costing analysis

# Value of Smart Grid Technology for Customers

- Consumption awareness
  - Increased efficient energy use
  - Partnering with the utility
- Cost control
  - Through DR and efficient consumption
  - Business process metering efficiencies
  - Reduction of meter tampering through monitoring and read frequency

# Features of Consideration

- Remote reads down to 5 minute interval data
- TOU reads
- Indication of voltage (outage notification)
- Ease of implementation during transition
- Compatibility with billing software - Cogsdale
- Remote disconnection
- Backhaul communication method
- Integration with Home Area Networks/DR

# Alternative Solution to AMI

- **Obsolete Technology - AMR**
  - Existing low-powered ERTs in RMLD meters
  - Existing drive-by technology w/ 'go-book'
  - Eclipsed by 'next-generation' high-powered ERTs
- **Current Technology - AMR**
  - Upgrade residential meters to high-powered ERTs
  - Transmit signal to repeaters/collectors for interval consumption data collection, outage recognition and tampering analysis

# AMR-----AMI

## Trade-offs

- Approx. \$50/meter
- No remote disconnect
- DR via HAN product
- Proven technology
- Drive-by compatible
- Minimal security
- Consumption tracking
- Approx. \$125/meter
- Remote disconnect
- DR via meter or HAN
- Unproven technology
- Drive-by incompatible
- Extensive security
- Consumption tracking
- privacy concerns
- hacking concerns
- privacy concerns



# Costing Analysis\*

• AMI meter cost	\$3.212M
• AMR meter cost	<u>\$1.250M</u>
• <u>Meter cost delta</u>	<u>\$1.962M</u>
• Removal and Installation	\$0.600M
• Hardware & Software	\$0.600M
• Misc. install costs	\$0.150M
• <u>AMR meter cost</u>	<u>\$1.250M</u>
• <b>AMR Meter Upgrade Cost</b>	<b>\$2.600M</b>

\*Based upon 25,700 residential meters

# Smart Grid Metering Benefits

- At exactly the moment a customer loses power, each meter sends a signal to the RMLD
- All meter reading is done remotely from the meter to the office at pre-determined times
- Final reads can be done from the office
- TOU consumption data will be available for Cost of Service Study
- Meters can be ‘pinged’ to determine the boundaries of system trouble, augmenting the T-man’s response and analysis

# RMLD's Smart Grid Residential Initiative

## Technology

Do not have access to Real-Time information

Ability to have recorders installed to access detail data

Ability to control applications with high usage

Water heaters

AC compressors

Pool pumps

Dehumidifiers

## Data Analysis

Ability to analyze data (Billing Data)

- Graph Monthly usage (Completed for the Town of Reading)
  - Size of home
  - Type of home
  - Year built
  - Manual
- Customer Requested
  - High Bill

## Education

Residential Customer

- Provide customer with comparative usage data
- Above, Below, Average usage
- Usage – What are the major contributors to electric usage
- Need to monitor/measure applications of usage
  - Appliances
  - Heating
  - Lighting

Programs

- Schools within RMLD System
- Kilowatt Meters – School Libraries
- Senior Center Programs
- RCTV Infommercials

Information

- Conversations with RMLD personnel
  - Energy Efficiency Engineer

- Customer Specialists
- Engineers
- Meter Department Personnel
- In-Brief
- Newspaper Articles
- Website
- RCTV
- Publications

## Tools

RMLD has met with several vendors developing applications

- Ease of installation
- Easy to use
- Ability to control usage
- Cost – Capital and O&M

## Pilot Program – Home Area Network

- Work with vendor to set up 10 homes to gather data and test beta equipment.
  - Ability for customer/RMLD to access real-time data via internet, e-mail, cellphone
  - Ability for customers to gain understanding of what contributes to usage
  - Data Analysis
  - No electrician needed for installation (except water heater disconnect)

## Rate Structure

- Need to analyze data to develop various rates
  - Modification of Time of Use
    - Smaller window of peak period (Noon – 6pm)
    - Larger Price Differential between on/off peak rates
  - Stand-by rate
  - Net-metering
  - Real time pricing