



# Department of Water and Power City of Los Angeles



## Advanced Metering Infrastructure / Smart Grid Project

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# Advanced Metering Infrastructure / Smart Grid Project

## Implementation Strategy

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- ☐ Open, non-proprietary communications with easily interchangeable components throughout AMI system
- ☐ “Plug and play” – a new device would be able to register itself upon installation and immediately begin to communicate with neighboring systems
- ☐ Minimize impact of communication technology change by installing a scalable RF mesh and IP backbone network using public communication network
- ☐ Provide access to home premises for high energy residential consumers to monitor and control electric load with “off-the-shelf” network devices
- ☐ Design a flexible AMI / Smart Grid foundation for future technology standards, system interfaces, and regulatory requirements



# Advanced Metering Infrastructure / Smart Grid Project

## AMI Five Year Full Implementation Plan

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### Goals:

- ❑ Infrastructure shall support multiple core functions beyond meter reading, including distribution operations, system reliability, energy efficiency, and customer services, etc.
- ❑ Minimize O&M costs
  - Automate Meter Reading
  - Improve Customer Service
  - Automate Outage Management
- ❑ Improve rate design and analysis capabilities

### Metering Plan:

Implement a flexible AMI plan that can work with any communication medium

- Wireless (Public Network) two way communication meters
  - 25,000 large and medium Commercial and Industrial customers – equipped with TOU, power quality, outage notification, and web presentment functions
  - 64,000 residential customers with monthly energy consumption over 1,200 kWh – equipped with ZigBee protocols to monitor and control home electric devices
  - 10,000 identified high turn over residences – equipped with remote turn on / off functions
  - 2,500 critical care residential customers – equipped with outage notification function
- Walk-by or drive-by (RF) one way communication meters that can be upgraded to fixed network or RF mesh network configurations
  - 180,000 small commercial with RF demand meter
  - 1.1 million residential RF meters
  - 674,000 water ERT modules



# Advanced Metering Infrastructure / Smart Grid Project

## AMI Benefits

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### Remote Turn-on/off

- o *Research metering technologies to provide turn-on/turn-off remote capability*
- o *Beneficial in high transition and high crime areas*

### Calendar Month Billing for Large Customers

- o *Provide customers billing schedule option consistent with available interval data*
- o *Improve cost management for customers*

### Improve Safety

- o *Install AMR meters in difficult to read areas (i.e. locked yards, dogs, gangs)*

### Special Rates

- o *Enhance ability to provide special rates such as Critical Peak Pricing, Net Metering, and Load Curtailment*

### Improved Customer Services

- o *Provide the Department the ability to detect power outages*
- o *Support Energy Efficiency programs via AMR and web capability*
- o *Support proactive services to our Critical Care Customers*

### Support Energy Efficiency Programs

- o *Provide audit data for all large and medium commercial and industrial customers*
- o *Support home energy management 64,000 residential high energy consumers*



# Advanced Metering Infrastructure / Smart Grid Project

## Value of Public Wireless Network

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- ☐ Over 70 Billion dollars of North American investment over the last two years
- ☐ Hundreds of Billions of dollars of global investment in public wireless ecosystem
- ☐ Coverage everywhere and improving
- ☐ Available bandwidth to support advanced metering transactions and customer communications
- ☐ No capital required to build out or support network infrastructure
- ☐ Targeted or mass deployments economically viable
- ☐ Highly scalable, reliable and secure
- ☐ New technology standards are backwards compatible
- ☐ Future-proof investment in technology – robust infrastructure growth opportunities



## Advanced Metering Infrastructure / Smart Grid Project

### Compare Network Investments

<u>Technology</u>	<u>2006 Endpoints</u>	<u>2010 Endpoints</u>	<u>2007 Investment</u>	<u>Cumulative 2007-2010 Investment</u>
BPL	30,000	400,000	\$50,000,000	\$200,000,000
Mesh	40,000	5,000,000	\$100,000,000	\$400,000,000
Proprietary RF	12,000,000	12,000,000	\$100,000,000	\$400,000,000
Public Wireless	2,800,000,000	3,500,000,000	\$30,000,000,000	\$120,000,000,000



# Recommended AMI/Smart Grid for State Wide Implementation Policy

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## **For Commercial and Industrial Customer Demand Level over 30 kW:**

- ☐ Public wireless network
- ☐ Two way communication
- ☐ “Plug and play” – a new device would be able to register itself upon installation and immediately begin to communicate
- ☐ Remote load control
- ☐ Time-Of-Use
- ☐ Power outage notifications and power quality events
- ☐ Fifteen minute interval data and web posting
- ☐ Net metering, Co-Gen, and kVar selective functionalities



# Recommended AMI/Smart Grid for State Wide Implementation Policy

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For Residential Customers Monthly Usage Over 1200 kWh:

- ☐ Public wireless network
- ☐ Two way communication
- ☐ “Plug and play” – a new device would be able to register itself upon installation and immediately begin to communicate
- ☐ Home Load Management
- ☐ Time-Of-Use
- ☐ Net metering

For Critical Care Customers:

- ☐ Public wireless network
- ☐ Two way communication
- ☐ Power Outage Notifications

For High Turn Over Area:

- ☐ Public wireless network
- ☐ Two way communication
- ☐ Remote Turn on/off

