

# Smart Metering Project Fact Sheet

## Portland General Electric Co.

**Objective** Implement a two-way advanced metering system to achieve operational efficiencies, reduce costs, satisfy the emerging needs of our customers, and position PGE for the smart grid/smart home of the future.

### Technology

**Meters:** 830,000 smart meters, including 230,000 with remote disconnect capability

**Meter Suppliers:** Sensus and Elster (current)

**Network:** Sensus FlexNet™ two-way wireless system operating on a licensed spectrum  
47 tower locations throughout PGE's 4,000 square mile service area

**Host System:** Sensus FlexWare™ 1.7 operating on a Sensus Regional Network Interface (RNI)



**MDM:** Meter data consolidator (MDC) installed in 2001 and upgraded by PGE multiple times. Collects and validates all metered data. Capable of handling register reads from 1.2 million meters, interval data from 100,000 meters and storage for up to 7 terabytes of validated meter data.

### Budget & Project Timeline

**Project Cost:** \$154 million (\$144 million capital)

**Network Build:** January 2008 - December 2009

**Meter Deployment:** May 2008 - August 2010

### Operational Benefits

**Annual O&M Savings:** \$18.2 million

**ROE (20-year):** \$35 million NPV

**Automation:** On-cycle billing, move-in/move-out processing, remote connect/disconnect, work order processing, lost revenue protection, routine meter exchange

### Customer Benefits

**Preferred Due Date:** Ability for customer to select preferred time of month to have utility bill due

**Energy Tracker:** Online presentation of interval data, usage history, energy analysis tools

**High Bill Resolution:** Faster resolution of high bill complaints and usage questions

**Rate Benefit:** Downward pressure on rates due to annual O&M cost savings

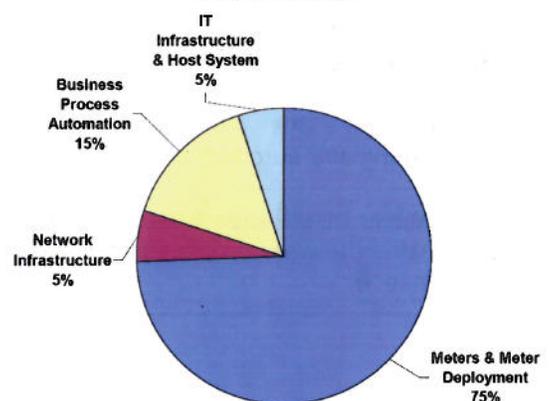
### Industry Recognition

**Utilimetrics:** "Excellence in AMI/Smart Grid Management" (2010)

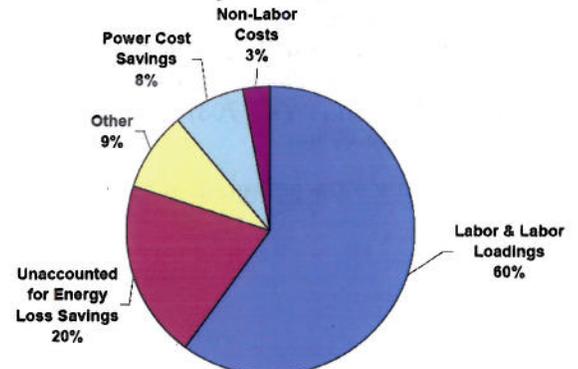
**Metering America:** "10 Years of Excellence" in Meter Data Management (2009)

**Chartwell:** "Best Practices" for Advance Metering & Data Management (2008)

**Project Budget**



**Project Benefits**



## Operational Cost Savings

Hard cost benefits (savings) are derived from a variety of business process automation activities associated with PGE's smart metering project. Below is the breakout of the projected annual O&M savings (2011). These savings do not include other potential benefits that could be derived from the system, including future demand response, distribution automation and outage management functionality.

<b>Automated Meter Exchange / On Cycle Billing</b> Remote meter reading and automation of the on-cycle billing system. Savings include lowered meter reading costs and improved meter accuracy. Refined the processes and procedures to ensure accurate bills and adjustments, and streamlined the previously manual net bill process.	\$ 11.2 million
<b>Connects</b> Ability to disconnect and reconnect meters remotely (230,000 meters). Savings include reduced field costs, improved cash flow, and reduction in unbilled energy usage between tenants.	\$ 2.3 million
<b>Lost Revenue Protection</b> Leveraging the system's analytical tools to identify unusual usage patterns and potential areas of distribution system losses. Enables PGE to proactively identify energy loss by analyzing interval usage data collected through the system. System detects meter tamper, voltage irregularities and enables transformer-level metering with aggregation of downstream load to check for losses.	\$ 1.3 million
<b>Preferred Due Date</b> Enabling customers to select the time of month when they would prefer to have their electricity bills due. Savings primarily from cash flow improvements and modifications to late fee timing.	\$ 2.0 million
<b>Move in / Move Out</b> Streamlining and automation of move-in/move-out processes.	\$ 775,000
<b>Smart Meter Installation &amp; Maintenance</b> Automating the work orders and processing of ongoing meter installation and maintenance.	\$ 640,000

Annual O&M Savings (2011) \$ 18.2 million

### For More Information:

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**Advanced  
Metering  
Infrastructure**

# Bruce Carpenter

VICE PRESIDENT, DISTRIBUTION



Vice President Bruce Carpenter is responsible for PGE's Distribution, which includes, Response & Restoration Crews, Transportation & Utility Assets, Meter & Field Services, Sourcing & Contracts, Vegetation Management & Locating Services, Dispatch & Service inspection, Field Operations, Asset Management, Substation Operations and oversight of PGE's Smart Meter project and

Transmission and Distribution Transformation Project.

Previously, Carpenter served as general manager of PGE's revenue operations, responsible for metering services, meter data acquisition services, and billing and collections. Carpenter has more than 30 years experience in the utility industry. He joined PGE in 1979 after having served as an intern with the company. During his tenure with PGE, he has served in a variety of capacities in most every PGE division, including internal audit, rates & regulatory affairs, operations planning, generation, finance and customer service. In 1996, Carpenter left PGE to serve as president of two companies that began as affiliates of PGE: FirstPoint Utility Services, Inc., and Si<sup>3</sup>. Since returning to PGE in 2000, he has overseen PGE's strategic initiative to deploy 825,000 new smart meters to replace electric meters on customer homes and businesses.

Carpenter serves on the boards of Western Energy Institute, Salvation Army Cascade Division's Portland Metro Advisory Board, and the Board of Trustees for Utilimetrics, the world's premier smart metering association.

He earned a bachelor's degree in business from Southern Oregon State College, and received his MBA from Oregon State University.

Carpenter and his wife, Beth, live in West Linn. They have two children; Michael, a student at Wilsonville High School and Andrew, a student at Linfield College.

