"A New Way of Doing Business"

Presentation for the
NARUC Staff Subcommittee on
Consumer Affairs
7-20-08

Discussion Topics

- Overview of PGE's AMI/Smart Metering Project
- Benefits & System Capabilities
  - To PGE
  - To Customers
  - In the Future
- Communications

PGE's Smart Metering Vision

PGE will construct, own and operate a two-way advanced metering network that provides a communications and control platform to support:

- *Valued customer services*
- *Operational efficiencies & savings*
- *Collection and use of interval data*

Where Have We Been?

- Working with AMR/AMI since mid-1990s
- 6,700 automated meters in field today from various pilots and technology tests
- Our Meter Data Consolidator (MDC) has been operational since 2001
  - Currently processing over 500,000 automated reads per day plus 930,000 monthly manual reads
  - Scalability tested to over 7 million reads/day

PGE Advanced Metering Infrastructure

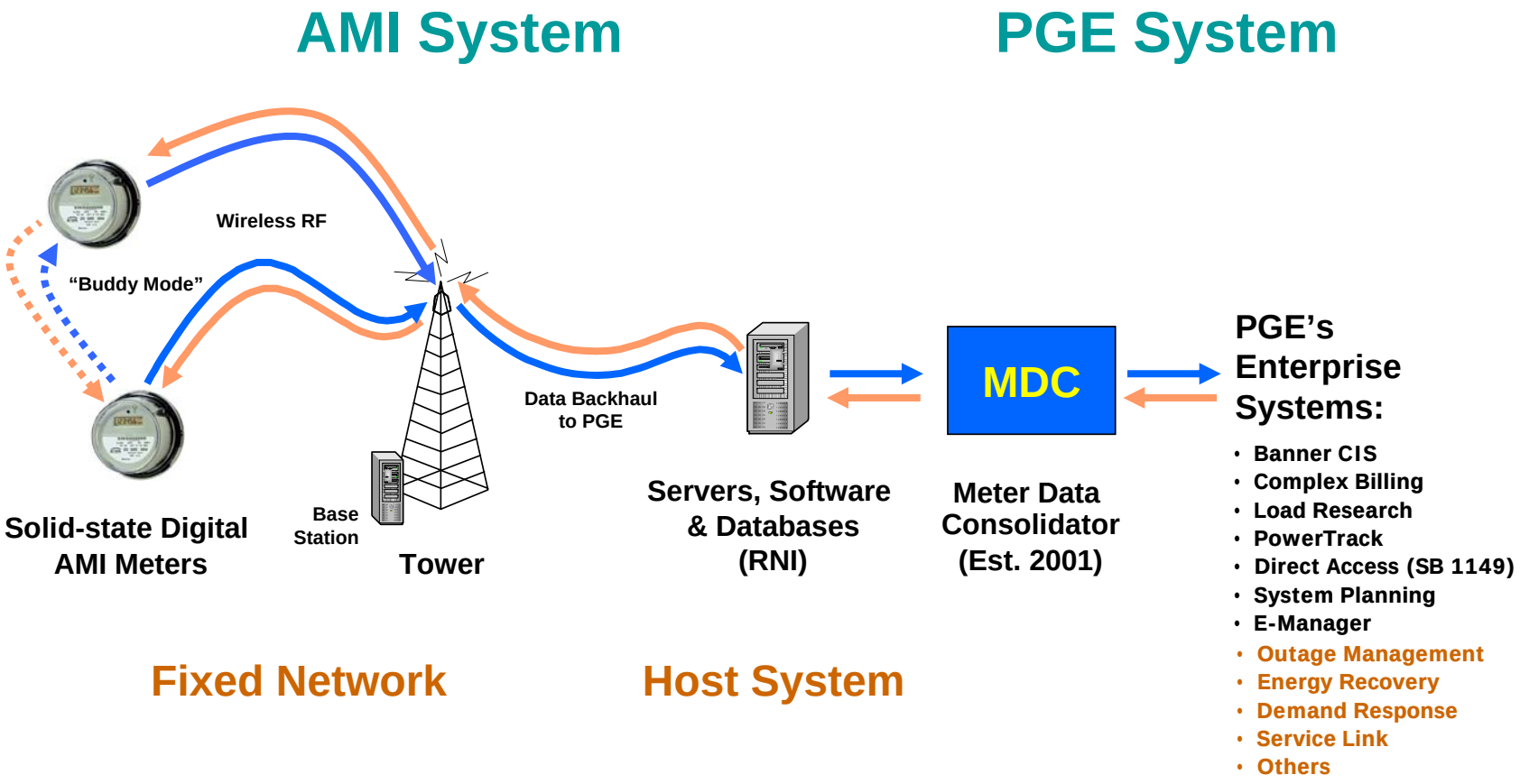
Where Are We Now?

- Signed Contracts with AMI Vendor (Sensus) and Contract Meter Installer (Wellington)
- Developing internal IT systems and business processes to support AMI
- Board approval for project funding
- OPUC approval of AMI tariff request (UE 189)
  - Covers accelerated depreciation of existing metering systems plus recovery of AMI costs less O&M savings
    - Took effect June 1, 2008
    - 1% average rate increase over 31 month tariff period
    - Thereafter, downward influence on rates due to annual O&M savings

Where Are We Headed?

- System Acceptance Testing — June 2008–December 2008
- Full Deployment — December 2008-July 2010
- Business Process Design/Redesign — Ongoing thru mid-2010
- Customer & System-Related Benefits — Ongoing
  - Distribution Asset Utilization
  - Outage Management
  - Interval Data Usage (data warehouse)
  - Demand Response/Direct Load Control

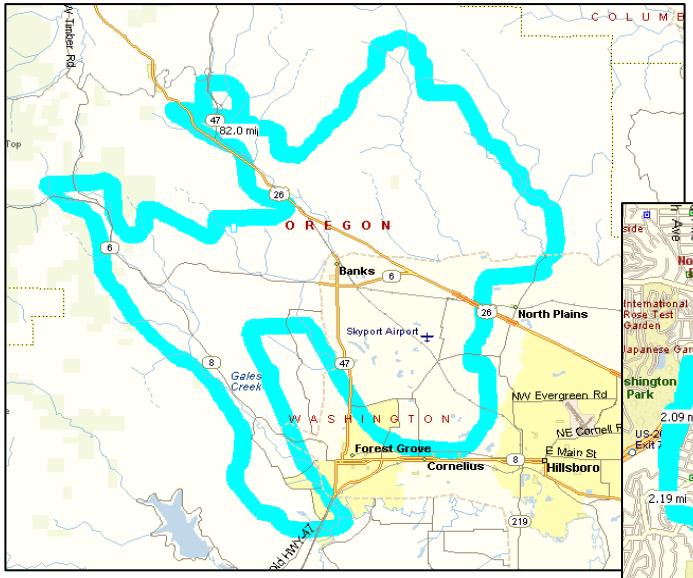
Our Proposed AMI System



System Rollout

- Stage 1: System Acceptance Testing (SAT)
  - About 16,000 meters; up to 5 RF towers
  - 5-7 months of end-to-end testing & analysis
- Stage 2: Full Deployment
  - Additional 835,000 meters and ~45 Total RF towers
    - Existing radio towers or PGE facilities
  - Maximum deployment rate 45-50K meters/month over a 20-month period
    - ± 2,500 meter exchanges per day performed by the CMI
  - New service installs, routine meter exchanges and three-phase transformer-rated handled by PGE Meter Services
- Stage 3: System Optimization

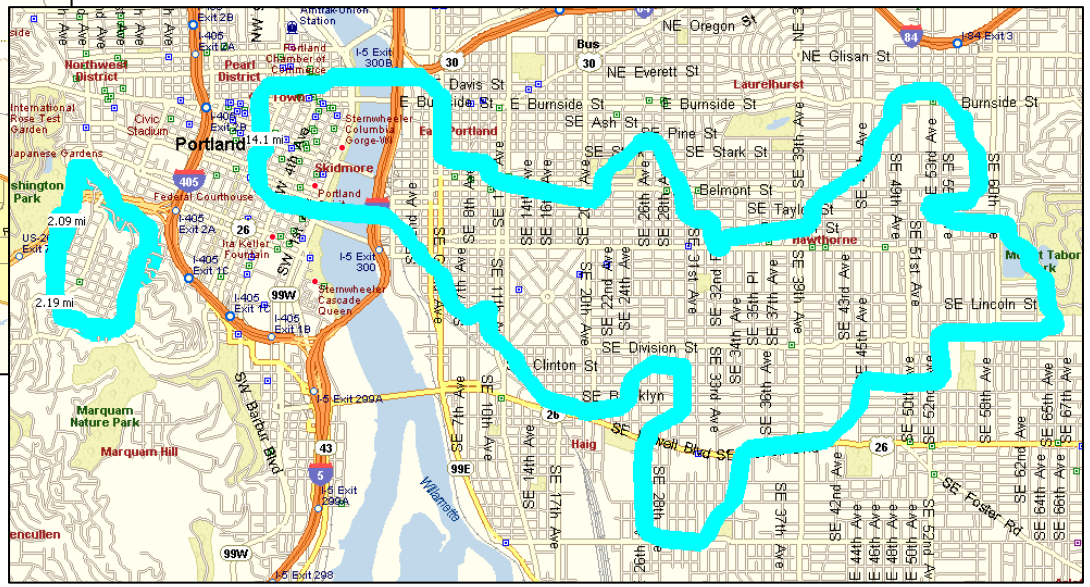
SAT Test Areas



Rural Area

Banks/Gales Creek

(about 3,000 meters)



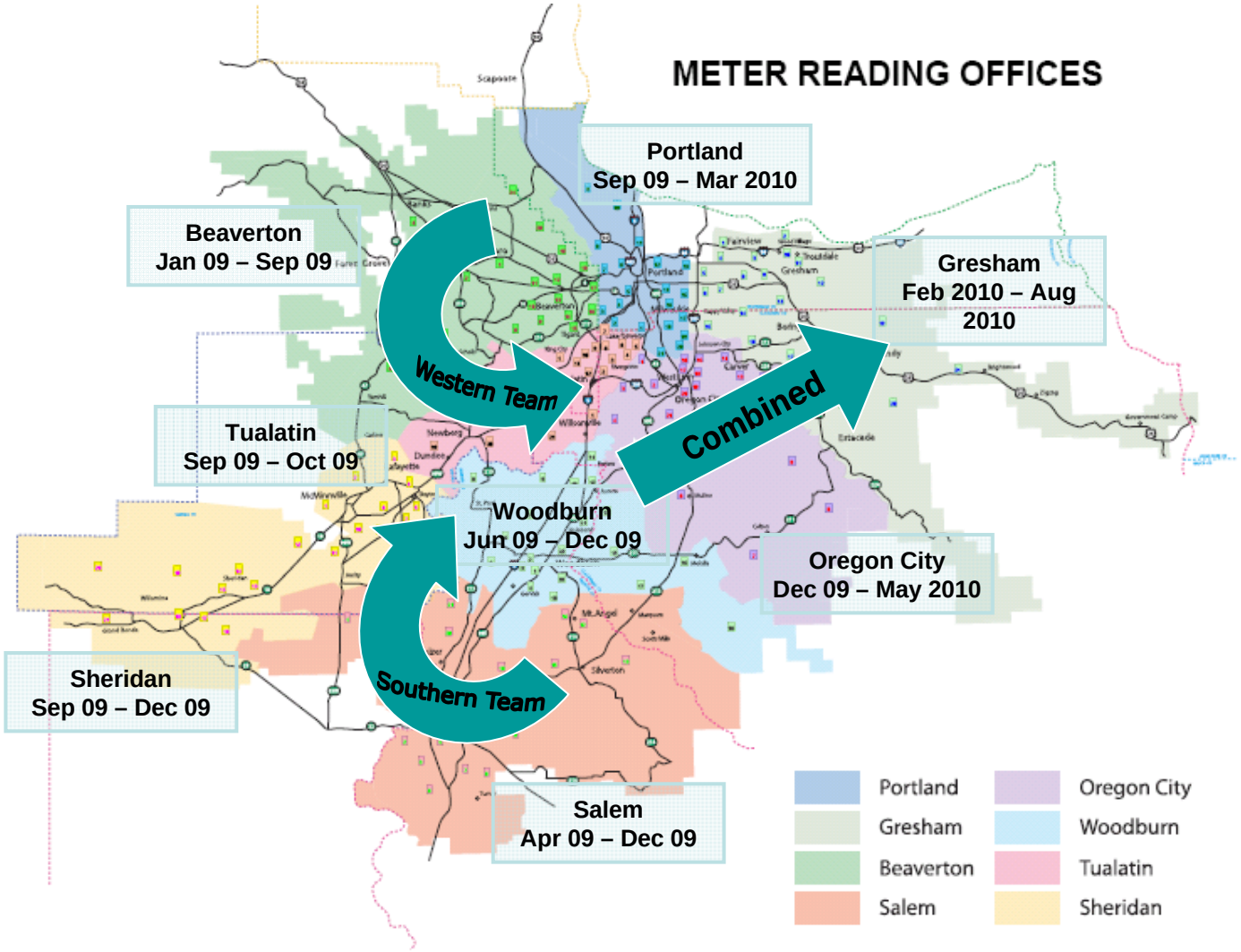
Urban Area

SE Portland/Downtown

(about 13,000 meters)

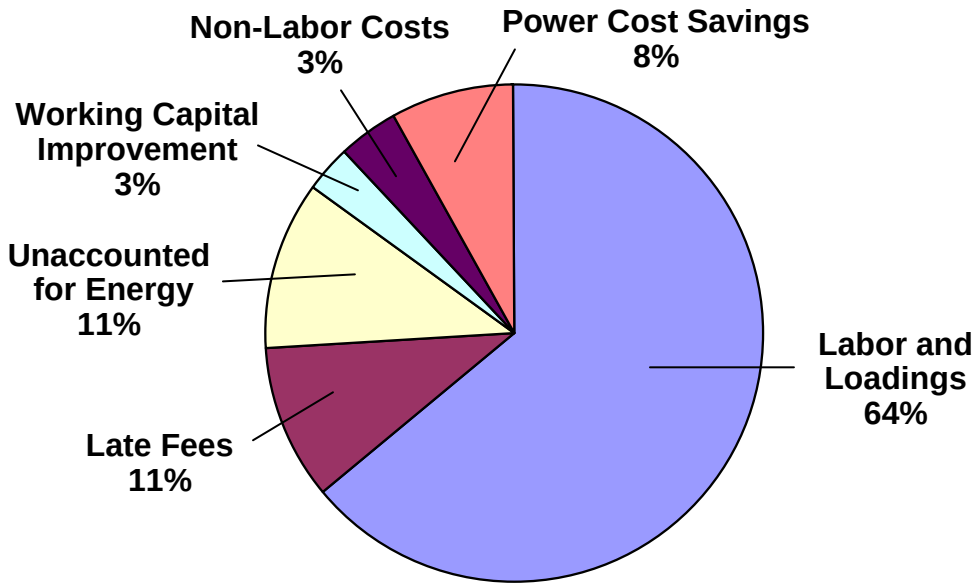
PGE Advanced Metering Infrastructure

Field Deployment - Wellington



What Does AMI Mean to PGE?

- "Biggest Distribution Project at PGE in Over 50 Years" – Steve Hawke
- Operational savings
  - $18.2 million/year in operational savings in first full year after deployment (2011)



What Does AMI Mean to PGE?

- Opportunities for Additional Benefits
  - Ones We Know About – Customer & Systems Related Benefits
    - Demand Response
      - Direct Load Control
      - Critical Peak Pricing (CPP)
      - Appliance Market Transformation
    - Outage Management
    - Distribution Asset Utilization
    - Customer Information – Web & Bill Presentment of Data
  - Ones We're Not Sure About Yet – Beyond
    - Refinement of Operational and Customer & Systems-related Benefits
    - Additional Benefits
      - Smart Grid
      - Future ???

Customer & Systems Related Benefits

- What are they?
  - Demand Response
  - Interval Data Usage (IDU) – data warehouse
  - Distribution Asset Utilization
  - Information Driven Energy Savings (IDES)
  - Outage Management
- History
  - Business Case and submittal to OPUC based on operational benefits
  - OPUC Staff interested in other potential benefits
  - PGE unwilling to commit specific $ benefits
- Commitment
  - Conditions and Scoping Plan of potential costs and benefits included in Stipulation signed by almost all Parties involved in Case
  - Sets projects for initial plans and pilots to assess potential for achieving benefits

Demand Response

- Description
  - Develop programs and assess industry activity in the areas of Direct Load Control, Critical Peak Pricing and Appliance Market Transformation
- Project activities
  - Direct Load Control
    - Elicit proposals from vendors for MW savings programs in both large and residential markets and evaluate for program implementation
  - Critical Peak Pricing
    - Develop experimental tariffs for implementation as AMI system roll out completed
  - Appliance Market Transformation
    - Continue to work with appliance makers, policy makers and other industry organizations to move towards communication ready appliances able to accept load control signals

Interval Data Usage (IDU)

- Project description
  - Develop requirements for a system solution to store and manage AMI interval data for all meters regardless of billing class to accommodate downstream applications expected to use interval data
- Project activities
  - Requirements Document
    - Data Requirements – type, retention, availability, validation, interval/aggregation
  - Site calls / visits
    - PECO, Exelon, Southern Company, California utilities
  - Vendor visits
    - Itron, Oracle, Nexus, eMeter
  - Next step — Decision to build/buy/expand & enhance in-house MDC
  - Determine path forward

Distribution Asset Utilization

- Project description
  - Provide, through deploying AMI capabilities, a new way of delivering more accurate status of system load which can result in more efficient ”right-sizing” of assets. Two areas potentially most affected by AMI are transformer sizing and circuit maintenance.
- Project activities
  - Visit AMI utilities
  - Prepare sample variables for proof-of-concept
  - Perform distribution switchable section meter data verification proof-of-concept
  - Determine path forward
- Project benefits
  - Avoid service transformer failures
  - Proper transformer sizing
  - Delayed feeder conductor work

Information Driven Energy Savings

- Project description
  - Leverage AMI platform to offer interval data related energy saving features and tools to residential and general business customers, and CSRs
- Project activities
  - Gather detailed data and process requirements
  - Coordinate efforts with the Web initiative to determine AMI and outside-AMI solutions
  - Determine path forward
- Project benefits
  - New ways of sharing energy information that engage customers to understand how they use and consume energy
  - User friendly and highly customizable web utilities that will allow customers to manage energy usage and save energy
  - Effectiveness and efficiency of CSRs who assist with customer high bill complaint problems

Outage Management

- Project description
  - Provide an approach to develop requirements for Outage Management leveraging the new functionality and capabilities offered by AMI.
- Project deliverables
  - Develop near-term AMI requirements/capabilities before new Outage Management System (OMS) is implemented
  - Develop AMI requirements/capabilities for potential long-term implementation as part of new OMS requirements
- Potential benefits
  - Avoided trouble calls
  - Faster one-premise outage response
  - Improved storm management
  - Faster fault location identification
  - Reduced Contact Center costs

Benefits – As the Customer Sees It

- Faster response to billing & usage inquiries and to open/close account transactions
- Fewer estimated bills
- More accurate bills
- Enhanced service options, such as customer-selected due date
- Better data for energy management
- Downward pressure rates over the long term due to operational efficiencies and specific tariffs that reward changes in usage patterns

Communications

- External Parties
  - OPUC and Other Intervener Groups
    - Accurate information on the status of deployment and our progress in meeting specific deliverables, including both timing and money saved
  - Customers
    - Accurate and timely information on meter replacement timing and impact, energy usage, and cost savings opportunities
  - Media/General Public
    - Accurate information on overall project timing and progress

Communications

- Internal Parties
  - Personnel Directly Impacted by Project
    - Direct support and information to assist them in future career planning (Managing Organizational Change project)
  - Other Impacted Organizations
    - Accurate and timely information on meter replacement and business process redesign timing and impact
  - PGE Executive Team
    - Accurate and timely information on project status (budget and schedule) and risk mitigation activities
  - General Employee Group
    - Information on overall project timing and progress and potential opportunities for use of AMI derived information

More Information

- **www.PortlandGeneral.com/smartmeter**
- **AMI Project Office**
  - Joel Westvold, AMI Director 503-464-7583
  - Dean Smith, Project Communications 503-464-7769
  - Melissa Swenson, Business Processes 503-464-7564
  - Tom Gallegos, Field Deployment 504-464-7748
  - Joan Amero, Organizational Change 503-464-7264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