

# **Radnor Sustainability Series**

## **Overview of Act 129 – Energy Efficiency & Conservation and Smart Metering**

**10/1/09**

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# Today's Discussion

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- PA Act 129 Overview
- PECO Proposed Energy Efficiency & Conservation (EE&C) Programs
- Smart Metering Plan

- Signed into Law on October 15, 2008
- Three components
  - Energy Efficiency and Conservation (EE&C)
  - Smart Meters – deployment of “smart meter” technology
- Electric Distribution Companies (EDCs) with at least 100,000 customers must develop a plan to reduce electric energy consumption and demand
- PECO’s EE&C plan filed with the PUC on 7/1/09
- PUC will render a decision on the Plan on 10/15/09

- Energy Efficiency (Consumption)
  - Savings target of 1% for each EDC by May 31, 2011 (~394MkWh)
  - 3% savings target by May 31, 2013 (~1.2B kWh)
  - Baseline set from forecasted usage for 6/1/09 to 5/31/10
- Demand Reduction (Demand)
  - 4.5% reduction off of 100 hrs peak demand for each EDC by May 31, 2013 (355 MW)
  - Baseline peak demand set from 6/1/07 – 5/31/08

# Other EE&C Requirements

- 2% Annual Cost Cap for EE&C Plans
  - ~85.5M/yr or \$342M over the 4 year plan
  - Program costs recovered from all rate classes
- Minimum of 10% of consumption reductions shall be obtained from federal, state and local governments, municipalities, schools and non-profits
- Plan must include measures for Low Income Households
- Plan must include how QA and performance will be measured, verified and evaluated
- Plans must be cost effective
  - Total Resource Cost (TRC) Test as outlined in the *California Standard Practice Manual*
- Penalties
  - **Failure to achieve usage and/or demand savings - \$1M to \$20M**

- EDC's must competitively bid out the implementation of a portion of the Plan to Conservation Service Providers (CSPs)
  - ➔ All CSPs must be registered and approved by PUC
  - ➔ PUC established a registry of entities that will provide consultation, design, administration and management services to an EDC
  - ➔ Registry establishes minimum requirements for CSPs to do business with EDCs
    - EDCs can impose more stringent requirements
  - ➔ PUC CSP registry available at [www.puc.state.pa.us](http://www.puc.state.pa.us)

# Proposed Residential EE&C Programs



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Program	Components	Launch Date
CFL Initiative <i>PUC Approved</i>	<ul style="list-style-type: none"> <li>Retailer Discounts – 6.5M CFL bulbs</li> <li>Give Away Events – 200,000 CFL bulbs</li> <li>Recycling</li> </ul>	Oct 2009
Low Income Energy Efficiency	<ul style="list-style-type: none"> <li>Low Income Weatherization Program – 20,000 addl. Participants - 4 years</li> <li>Expand Low Income Usage Reduction Program - 6 addl. bulbs (31,500 hh)</li> <li>Weatherization Program Partnership</li> </ul>	Q1 2010
Whole Home Performance	<ul style="list-style-type: none"> <li>Customer pays approximately \$300 for Home Performance Audit</li> <li>Direct Installation of Low-Cost Measures</li> <li>Assistance with Additional Measure Installations</li> </ul>	Q2 2010
Home Energy Incentives	<ul style="list-style-type: none"> <li>Customers can purchase and install up to 21 different types of products/services</li> <li>Customers or contractors submit rebate forms</li> </ul>	Q1 2010
New Construction	<ul style="list-style-type: none"> <li>Incentives to builders who build to energy efficient standards consistent with ENERGY STAR®</li> <li>Education and Outreach</li> </ul>	Q4 2011
Appliance Pick Up	<ul style="list-style-type: none"> <li>Customer incentive to remove secondary refrigerator, freezer or room a/c units</li> <li>Environmental Disposal of Units</li> </ul>	Q1 2010
Direct Load Control	<ul style="list-style-type: none"> <li>Incentive during four summer months for participation with Central A/C or Central A/C and Electric Water Heater</li> </ul>	Q2 2010

# Proposed Residential EE&C Programs



Program	Components	Launch Date
Super Peak TOU	<ul style="list-style-type: none"><li>• Customer charged higher prices during “super peak” periods and lower rates in off peak periods</li></ul>	Q1 2011
Renewable Resources (\$5.0M)	<ul style="list-style-type: none"><li>• Rebates for solar PV and hot water systems through contractors and turn- key providers</li><li>• Educate homeowners and businesses about financial incentives including Stimulus opportunities and tax credits</li><li>• Facilitate access to technical expertise for installation of solar PV and hot water systems</li></ul>	Q2 2010



# Proposed Comm. & Industrial Programs

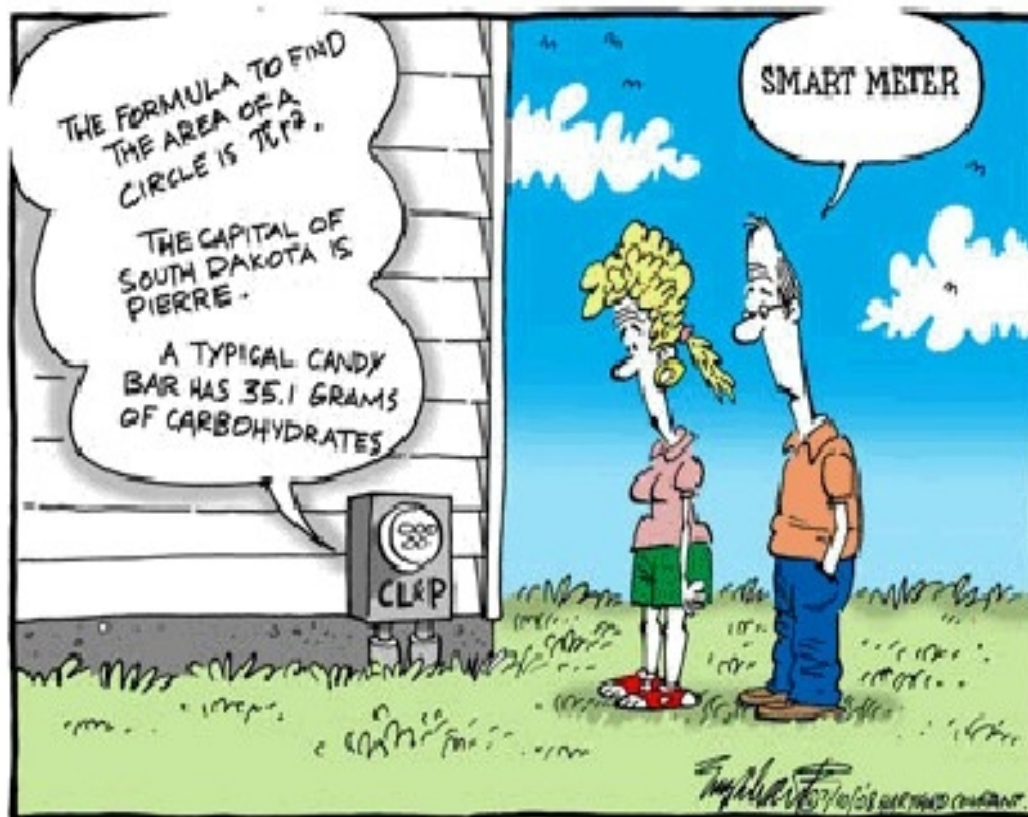
Program/incentive	Components
Equipment Incentives (\$32.6M)	<ul style="list-style-type: none"> <li>• Prescriptive and Custom Incentives</li> <li>• Measures for different types of C&amp;I Customers (Small Business, Medium and Large C&amp;I)</li> <li>• Small Business CFL Program</li> </ul>
New Construction (\$1.9M)	<ul style="list-style-type: none"> <li>• Training for design and engineering community</li> <li>• Design Assistance</li> <li>• Incentives for installations</li> </ul>
Direct Load Control (\$5.5M)	<ul style="list-style-type: none"> <li>• Installation of a Programmable Communicating Thermostat (PCT) for Central Air Conditioning Unit</li> <li>• Incentive during four summer months for allowing remote adjustment of temperature settings</li> </ul>
Super Peak TOU (\$0.9M)	<ul style="list-style-type: none"> <li>• Customer charged higher prices during “super peak” periods and lower rates in off peak periods</li> <li>• Customers may also participate in the Direct Load Control Program</li> </ul>
Distributed Energy Resources (\$11.1M)	<ul style="list-style-type: none"> <li>• Financial incentives provided to existing and new backup generation owners</li> </ul>
Permanent Load Reduction (\$3.4M)	<ul style="list-style-type: none"> <li>• Incentives for projects and technologies designed to shift electricity usage from peak to off peak permanently</li> </ul>
DR Aggregator Contracts (\$20.8M)	<ul style="list-style-type: none"> <li>• Establish performance contracts with Curtailment Service Providers to recruit new and existing customers to deliver demand reductions as called by PECO</li> </ul>

# Other Proposed Programs

Program	Components
Government/Public/Non-Profit (\$29.5M)	<ul style="list-style-type: none"><li>• Incentives for street light replacements</li><li>• Incentives for traffic signal replacements</li><li>• Prescriptive Rebates (lighting, HVAC, motors, controls, etc.)</li><li>• Custom Rebates (chillers, water/wastewater upgrades, etc.)</li><li>• Partial audit cost reimbursement for installation of recommended measures</li></ul>
Renewable Resources (\$2.3M)	<ul style="list-style-type: none"><li>• Rebates for solar PV and hot water systems through contractors and turn- key providers</li><li>• Educate homeowners and businesses about financial incentives including Stimulus opportunities and tax credits</li><li>• Facilitate access to technical expertise for installation of solar PV and hot water systems</li></ul>
Conservation Voltage Reduction (\$4.5M)	<ul style="list-style-type: none"><li>• Incorporates voltage regulation techniques on distribution feeders</li></ul>

# **PECO's Smart Meter Plan**

# What is a Smart Meter?



## Smart Meters are the foundational element of a Smart Grid

### Smart Home/Business

- Real-time usage and pricing statistics
- Home Area Network composed of smart devices and appliances that know the price of energy

### Smart Meters (AMI)

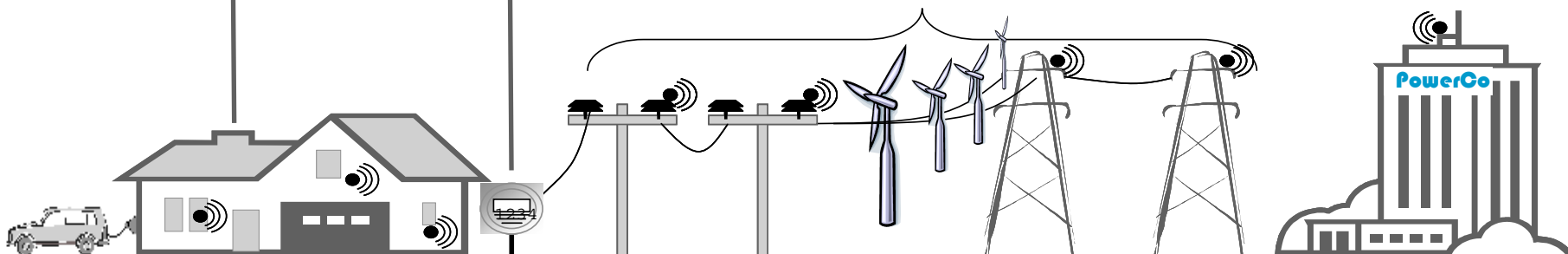
- A method to enable two-way information flow
- System status, customer outage status, usage and pricing signals delivered to and from location

### Smart Distribution System

- Real-time reporting of status and outages
- Automated controls of relays and reclosers. Efficient field force management
- Effective interconnection of renewable energy sources

### Smart Utility

- More efficient data collection, processing and back office functions



Leveraging **common** communication systems and information processing is critical

# Smart Meter Overview



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- Act 129 (October 2008)
  - Obligates PECO to furnish “Smart Meter Technology”: (1) upon customer request; (2) in new building construction; and (3) in accordance with a depreciation schedule not to exceed 15 years
  - Defines “Smart Meter Technology” as metering and network capable of:
    - **bi-directional communications**,
    - which records customer usage on **at least an hourly basis**,
    - enables **time-of-use rates and real time price programs**, and
    - **supports automatic control** of the customer’s electricity consumption
  - Provides for full-and-current cost recovery of all prudent and reasonable costs, including related electric distribution system upgrades, less operating and capital costs savings realized, through base rates or rider

## Milestones

- Smart Meter Filing – August 14, 2009
- Anticipated approval date – Mid-April 2010
- Initial meter deployment – October 2011

## Key Tasks include:

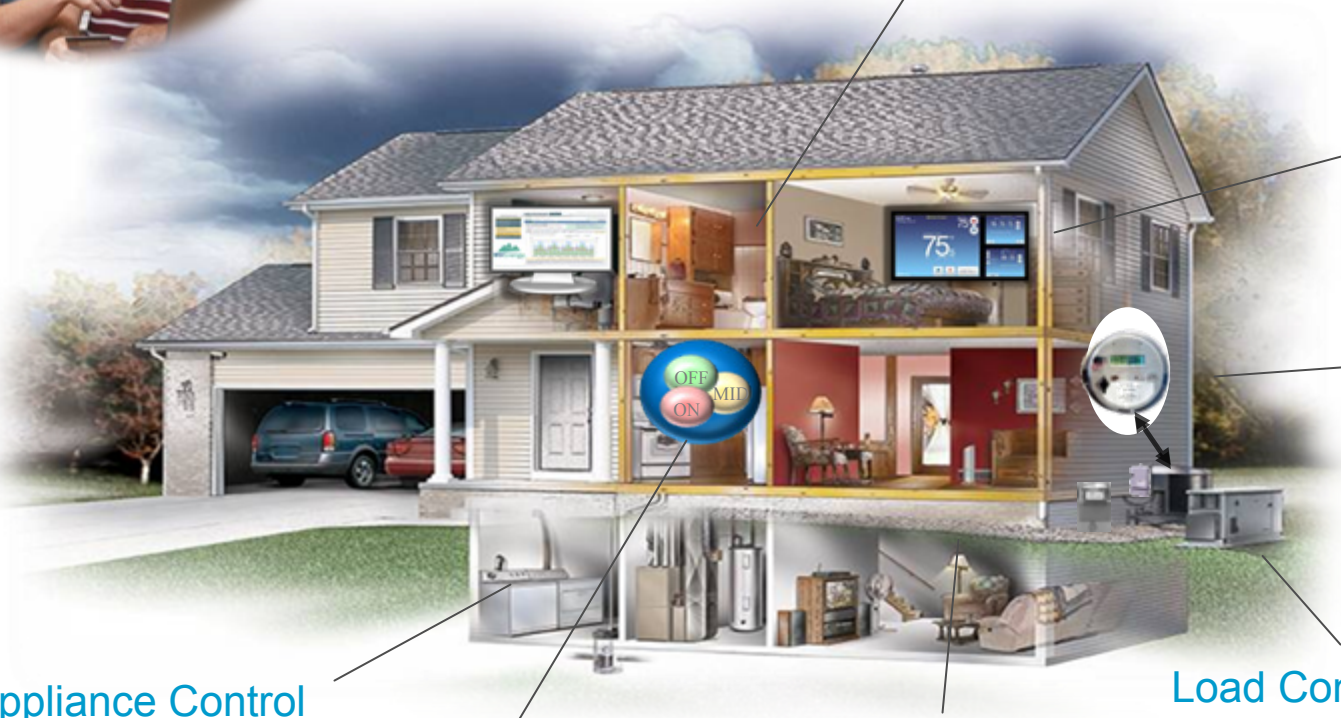
- Technology Selection
- Internal IT System Deployment
- Communication Network Installation
- New Rate Development

# In-Premise Opportunities - Residential



Advanced Rates

Home Area Network



Demand Response

Smart Metering

Load Control Devices

Automated Gas Reads

Appliance Control

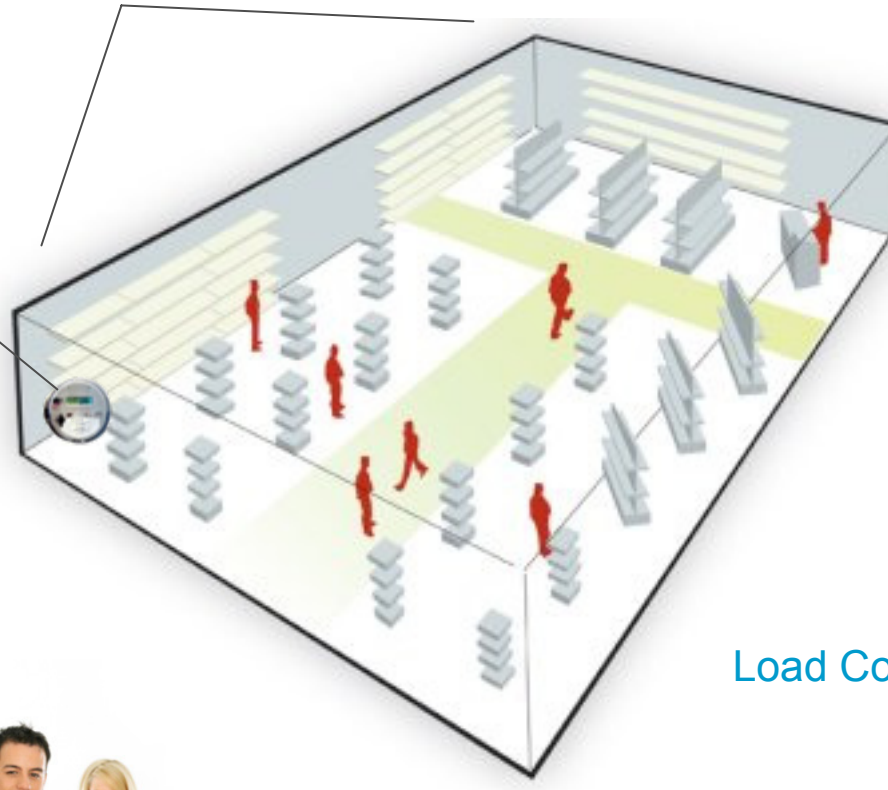
In-Home Displays & Web-Access



# In-Premise Opportunities - Commercial

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## In-Premise Network



Smart  
Metering

HVAC  
Control

Lighting  
Control

Advanced Rates

Load Control Devices

Displays &  
Web-Access



# Potential Enabling Devices

- **Displays**

- Able to provide customers with usage information, price notification, total bill estimates
- Can be placed in most obvious location in premise to maximize impact
- Specific PECO functionality to be determined



- **Controllable Thermostats**

- Controllable thermostats provide the availability for the HVAC system to automatically react to price signals or curtailment commands by raising or lower temperatures or blower set-points.
- Programs will be linked to future rates
- A few degree change can result in significant demand reduction when aggregated together
- Operation does not significantly impact customer comfort
- Customer retains over-ride control



- **Direct load Control**

- Facilitates control of legacy or “dumb” equip. such as lighting, hot water heaters, pool pumps/motors
- Provides the means for customers to participate in demand response programs without replacing the appliances or systems



**Questions?**