Demand Side Management

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Consumers Energy Overview

• The Utility
  ■ Principal subsidiary of CMS Energy
  ■ 7,700 employees
  ■ $6.2B in annual sales

• Electric and Gas Service
  ■ 1.8 million electric customers
  ■ 1.7 million gas customers

• Generation
  ■ 37,000 GwH per year
  ■ Fleet of 28 facilities/plants
  ■ Mix of coal, natural gas, hydro
  ■ Wind and solar growing
Consumers Energy is investing $7 billion in Michigan over the next five years as part of its Balanced Energy Initiative which will:

- Provide reliable and affordable energy
- Expand renewables portfolio
- Environmental stewardship
- Support a healthy economy
The Energy Optimization Plan

- **Company and customer benefits align**
  - Avoid peaking capacity and lower energy use
    - Energy conservation and efficiency
    - Load management
    - Time-of-use pricing/demand response
  - Reduce loss and costs
    - Theft detection and managing unpaid accounts
    - Metering accuracy and meter reading efficiencies
    - Improved access to information
Energy Optimization Plan 2009-2014

- Residential programs focus on
  - Efficient products (lighting)
  - Weatherization
  - Appliance recycling
  - Early education

- Business programs focus on
  - Lighting
  - Operational changes
  - Custom programs for large users

- Reduction targets
  - 5.5 % of electric
  - 3.85 % of gas

- $508 million program
  - $90 million annually
Energy Optimization - Program Highlights

• Popular residential programs
  ■ Compact fluorescent light bulbs
  ■ High efficiency furnace rebates
  ■ Appliance recycling
  ■ HVAC and water heaters

• Popular business programs
  ■ Commercial lighting
  ■ Customized programs initiated by customer
Energy Optimization 2009 Results

• 2009 goals exceeded
  ■ Electric savings of 144,000 MWh
  ■ Gas savings of 368,000 Mcf of gas

• 2010 goals designed to top 2009 savings
  ■ Continue the 2009 programs
  ■ Focus on most popular, cost effective measures
  ■ Launch new pilot programs
    ◆ New construction
    ◆ Air compression

• Satisfy decoupling requirements of PA 295
Smart Grid Program

• Smart Meter Technology
  - Advanced electric and gas meters
    - Two-way communications between the utility and its customers
    - Thermostats talk to the meter
    - Near real-time usage and rate information

- Customer benefits
  - Lower energy usage
  - Rate design options
  - Increased billing accuracy
  - Immediate electric outage identification and notification
Smart Utility Strategy – Value Statement

Renewables
Distributed Generation

Smart Power

Smart Grid

Customers

Load Management
Demand Response

Usage Information
Energy Efficiency
Flexible Billing Options

Smart Choices

Meter Reading
Outage Detection
Circuit Monitoring

Move in / Move out
Credit Disconnects
Taking a ‘Thoughtful Approach’

• We will:
  ■ Assess vendors’ claims
  ■ Develop open standards
  ■ Assess appropriate levels of security
  ■ Collaborate with others
  ■ Align with the MPSC

• We won’t begin mass deployment until
  ■ Appropriate security standards are in place
  ■ Vendor equipment performance is validated
<table>
<thead>
<tr>
<th>Cost</th>
<th>15%</th>
<th>5%</th>
<th>80%</th>
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</thead>
<tbody>
<tr>
<td>SAP and other core business systems</td>
<td>Data and communications</td>
<td>Meters and field communications</td>
<td></td>
</tr>
<tr>
<td>• Billing</td>
<td>• Work and Asset Management</td>
<td>• Meters and field communications</td>
<td></td>
</tr>
<tr>
<td>• Customer Information</td>
<td>• Customer Information</td>
<td>• Energy Management</td>
<td></td>
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<tr>
<td>• Outage Management</td>
<td>• Outage Management</td>
<td>• Field Communications</td>
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Testing, Evaluation & Demonstration

Smart Service Learning Center (SSLC)

Testing & Evaluation

Kitchen
Living Room
Laundry
Backyard

Smart Grid

PHEV

Smart Services Learning Center

Call Center
Dispatch

HAN

Work Bench
Meter Stand

Consumers Energy
Direct Load Management Pilot Program

- Direct management of AC load
- Pilot Objectives
  - Understand implementation
  - Customer motivation
  - Assess overall potential
Dynamic Pricing Pilot Program

- Objectives
  - Test customer response to price
    - Collect better information
    - Dynamic rates
  - Assess reduction potential
  - Understand implementation
  - Identify barriers and constraints
### Smart Grid Benefits Summary

<table>
<thead>
<tr>
<th>Issue</th>
<th>Pre-Smart Grid</th>
<th>Post-Smart Grid</th>
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</thead>
<tbody>
<tr>
<td>Meter reading</td>
<td>Manual 85 percent</td>
<td>Near 100 percent</td>
</tr>
<tr>
<td>Customer usage inquiries</td>
<td>Limited information – monthly read data</td>
<td>Expanded information – hourly read data</td>
</tr>
<tr>
<td>Move-in/Move-out</td>
<td>Soft disconnect – unallocated usage</td>
<td>Remote – electric (90 percent)</td>
</tr>
<tr>
<td>Credit disconnect and theft ID</td>
<td>Field action – electric and gas</td>
<td>Remote – electric (90 percent)</td>
</tr>
<tr>
<td>Outage detection</td>
<td>Customer notifies company</td>
<td>System notification</td>
</tr>
<tr>
<td>Customer load control</td>
<td>Limited</td>
<td>Expanded – A/C load cycling</td>
</tr>
<tr>
<td>Demand response</td>
<td>Large customers – manual notification</td>
<td>Expanded – automated price signals</td>
</tr>
</tbody>
</table>

Smart Grid will provide many customer benefits
Smart Grid Program Timeline

2009
- Prerequisites
- Meter & Network Communications Pilot
- Smart Grid Phase 2 Pilot

2010
- Systems Enablement
- Demand Response Pilot
- Dynamic Pricing C&I Pilot

2011

2012

2013

2014
- Meter Mass Deployment
  - Ramp-Up
  - Complete 2016
- Vendor Deployment Prep
- Production Pilot