5th Annual ENERGY STAR® for New Homes Sponsor Meeting
April 27, 2011

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Sr. VP, Strategy & Regulatory Affairs
Baltimore Gas & Electric Company
Safety Message – Travel Safety

- Stay with your luggage until the luggage is checked
- Carry important papers with you
- NEVER check anything that you cannot afford to lose
- Photocopy your passport, driver's license and credit cards
- Vary your schedule at the hotel
- Do not use unmarked taxi cabs
- Pay the cab driver upon arriving at your destination while you are still in the vehicle
- Bring along a basic first aid kit
- Discuss with your family what to do in event of an emergency
Welcome to Baltimore! Home of…

The Preakness- Second leg of the Triple Crown

The world-renowned Johns Hopkins Hospital

Edgar Allen Poe’s grave (in case you wondered where the Baltimore Ravens got their name!)

The Star-Spangled Banner (Fort McHenry, 1816)

The first commercial ice cream factory (1851)

The Supreme Court’s first African-American Justice- Thurgood Marshall
**BGE and Constellation Energy: An Introduction**

**Constellation Energy**
- Fortune 500 Company headquartered in Baltimore MD; $14.3 billion in revenues; 10,000+ employees

**Constellation Generation Group**
- 12,000+ MW of generation capacity – fossil, nuclear, and renewable

**Constellation NewEnergy**
- Leading supplier of innovative energy products and solutions, over 30,000 customers in 38 states and D.C.

**Baltimore Gas and Electric**
- Founded in 1816, BGE is the oldest utility in the Western Hemisphere and the second oldest in world
- Transmission and distribution utility for more than 1.2 million electricity customers and 650,000 natural gas customers in Central Maryland
The Tumultuous Events of 2006 - 2007

- Rate Caps Expire 72% Rate Shock!
- "Reregulation" Movement Begins
- Customer Satisfaction Plummets
- Political Turmoil PSC Fired
- BGE at Risk of Bankruptcy
- FPL Merger Aborted
- CEG Sues State, Eventually Reaches Settlement
Locally, Regionally, and Nationally --
A Set of Consistent Challenges Confront Our Industry

- Increasing Demand for Energy
- Rising Energy Prices (*over the long term*)
- Increasing RPS Requirements, Growing Levels of Renewable Energy
- Emergence of Electric Vehicles, Potential Grid Disruptions
- Significant Investments Needed in New and Replacement Infrastructure
- Transmission Congestion & Resource Adequacy Concerns
- More Stringent Environmental Regulations
- Increasing Customer Expectations Compliance Standards
EmPOWER Maryland

- Proposed by Governor O’Malley in 2007, passed into law in 2008
- Requires a 15% per capita reduction in energy consumption and peak demand by 2015
- Utilities required to implement programs to achieve the bulk of the savings; the State also has a piece of the target
- Programs must be cost effective
BGE Smart Energy Savers Program® Launched in 2007

Energy Efficiency

Demand Response

Smart Grid
BGE PeakRewards℠ Program

- Customers allow “smart cycling” of their air conditioning in exchange for annual bill credits
- Choice of “smart” thermostat or outdoor switch
- Choice of 3 levels of cycling – 50%, 75%, or 100% -- and up to 2 over-rides per summer
- Ability to remotely adjust thermostat settings / programming
- Over 350,000 residential customers enrolled (about 40%)
- Over 500 MW of demand reduction to date
- Produces the equivalent capacity of building a large new power plant at a fraction of the cost

Cost Comparison
- PeakRewards: $165 per kW
- New Peaking Plant: ~$1,000 per kW
Marketing of PeakRewards™

- Awareness of PeakRewards™ increased to 84% at the end of 2010 from 73% at the end of 2009
- Introduced a new message highlighting five years of savings ($1,790) from PeakRewards™
- Promoted ReferralRewards and the Baltimore Ravens partnership
- Targeted Water Heater and A/C marketing
- Over 1.4 million pieces of direct mail sent during 2010 with Call Center following up - outbound telemarketing
- Over 500,000 geographically targeted Money Mailers sent in 2010
BGE Energy Efficiency & Conservation Program

A portfolio of initiatives to lower energy bills and increase efficiency:

• Efficient lighting and appliances
• Heating and cooling
• Home energy audits and retrofits
• New construction
• Targeted low income programs
• Custom solutions for large commercial accounts

Maryland has approved revenue decoupling for both electric and gas delivery

Cost Comparison
- Cost to Reduce Consumption: 2-3 cents per kWh
- Cost to Supply More Power: 8-10 cents per kWh
• Launched on June 1, 2009
• Currently, nearly 4,000 homes committed to the program
• ENERGY STAR New Homes built as a part of the BGE program represent 36% of the total new construction in the service territory
• Provided extensive training sessions reaching over 450 people including:
  − Individual builder training
  − Technical training
  − Sales and marketing training
• Proactive approach to preparing for Version 3 Guidelines
  − Pilot study with participating builders constructing homes to Version 3 Guidelines
  − Three builders selected to represent a cross-section of builder and home types
• The combined efforts have resulted in an award winning program
Significant results achieved through 2010

- 2010 winner Platts Energy Efficiency Program of the Year Award. Additional awards from ENERGY STAR, AESP, the AMA
- 6.3 million compact fluorescent light bulbs sold
- 67,000 ENERGY STAR appliance rebates
- 25,000 efficient HVAC system replacements
- 12,000 Quick Home Energy Check-ups
- In addition, over:
  - 11,000 recycled inefficient, working appliances
  - 1,800 limited income audits
  - 1,400 ENERGY STAR new homes
  - Over 5,000 lighting assessments for Small Business Lighting Solutions
  - Over 1,000 commercial projects

Lifecycle energy savings of $728 million achieved to date
Energy Efficiency Programs Took Off in 2010

Red portion of line represents Fast Track results (Jan - April 2009)
EE Programs Driving Customer Satisfaction

- 2010 year-end survey showing 47% of customers have heard about the energy efficiency programs, a 13% increase over 2009
- During 2010, website traffic grew 34% with nearly 600,000 visits to BGESmartEnergy.com
- Customer Satisfaction consistently strong:
  - PeakRewards<sup>SM</sup>: 98% satisfied
  - Limited Income Energy Audits: 99% satisfied
  - Quick Home Energy Check-up: 98% satisfied
  - Lighting & Appliance & HVAC Rebates: 91% satisfied
BGE Smart Grid Initiative – Tying it all Together
Enter the Smart Grid…

Driving Improvements in utility operations . . .

**Automation**
- Distribution
- Substation
- Auto restoration
- Capacitor Control

**Fault Locating**
- Remote Indication
- OMS Integration

**Outage Management**
- Outage Notification
- Restoration Notification

**Efficient Delivery**
- Reduced line losses through volt / VAR management
- Voltage Conservation Management (VCR)

**Equipment Monitoring**
- Temperature
- Load
- Voltage

**Communications**
- Robust 2-way communications network throughout the grid and to every customer’s meter
Enter the Smart Grid…

... and supporting new consumer products and pricing structures to enable cost savings and demand and energy reductions.

• Solar
• Wind
• Micro-Turbines

Electric Vehicles Smart Charging
• PHEV
• EV
• V2G

Energy Storage
• Batteries
• Fly Wheels
• Ice

AMI & Smart Energy Pricing
• Rebates earned for reducing peak demand
• Improved price signals and energy conservation

Demand Response
• Smart Thermostats
• Load Control Switches for HVAC, hot water heaters

Home Area Network
• ZigBee Network
• Smart Meters communicate to Smart Thermostats & Appliances
• In-Home Displays and Internet Portals track usage

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- 1,000 customers randomly selected
- Day ahead notification of a peak event
- Rebates offered for energy reductions during peak periods (2pm to 7pm)
- Test groups included:
  - Price incentive only
  - Price incentive with in-home display (Orb)
  - Price incentive with Smart Thermostat and Orb
- Advanced meters installed to record customers’ usage on an hourly basis to calculate bill rebates
Actual Load Shapes for Participants and Control Group During a Critical Peak Event
In 3 years of Pilots, Customers Have Demonstrated Significant Engagement in Managing Consumption

Customers respond emphatically to pricing signals, reducing peak consumption by approximately one-quarter to one-third...

Average customer savings was $115 over the summer months...

More than 98% reduced their bills, all socio-demographic groups

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**Average Peak Load Reduction**

- Price Signal Only: 22% - 26%
- Price Signal plus In-Home Display: 27% - 31%
- Price Signal, IHD, & Smart Thermostat: 32% - 37%

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BGE
SEP Customer Survey Results

On a scale of 1 to 5, where 1 is "Very Dissatisfied" and 5 is "Very Satisfied", please rate your overall satisfaction with the pilot program. (Select one option)

Over 93% of customers were satisfied with Smart Energy Pricing; 97% wished to continue participation
New Energy Management Tools

• BGE is now piloting Energy Management Web Applications and In-Home Display Devices (IHDs)
• Provides real time customer experience before rolling out solutions in early 2012

• Real-time monitoring of energy use
• Ability to anticipate energy bill
• Analytical tools to save money
• Comparisons to comparable homes
• Evaluation of pricing options
• Smart charging of EV’s
• Much, much more…. 
Multiple Channels will be used to Provide Customers Information About Their Energy Consumption
Smart Grid Economics Are Compelling

Economics to the average residential customer:

- 10-Year Costs: $220
- 10-Year Benefits: $1,390
- Cost-Benefit ratio (nom): 6.3 to 1
Key Benefit Areas

**Customer Benefits**
- **Lower customer bills** through Smart Energy Pricing bill credits and energy conservation
- **Vastly improved usage and bill data** through an advanced customer energy management platform
- **Improved reliability** through automated outage and restoration reporting
- **Improved customer service** through on-demand reads, remote turn-on and turn-off, voltage monitoring and reduced estimated bills
- **Supports** Home Area Networks, Smart Appliances and In-Home Energy displays

**Operational Benefits**
- **Reduced peak load** through Smart Energy Pricing bill credits and energy conservation
- **Reduced O&M** through remote meter reading, remote turn-on and turn-off and improved storm operations
- **Reduced Transmission and Distribution capital** through improved gas and electric system models
  - **Reduced energy theft** through remote meter tampering notices and usage algorithms

**Grid Benefits**
- **Future support for:**
  - Conservation voltage reduction
  - 2-way capacitor control
  - Line loss reduction
  - Remote fault location
  - Expanded distribution automation

**Societal Benefits**
- **Reduced greenhouse gases**
- **Fewer new power plants required**
- **Downward pressure on energy prices**
- **Expanded renewable generation**
- **Smart charging of electric vehicles**
Other Sustainability Initiatives

- PHEV demonstration program launched
  - Conversion of 5 Prius and 1 Ford Escape vehicles to PHEV’s
  - Participating with GM and EPRI on the Chevy Volt launch
  - Testing smart charging applications, TOU rate filing pending

- Solar energy build-out at BGE facilities
  - Spring Gardens facility completed in 2009, White Marsh in 2010
  - Additional projects scheduled each of the next 5 years

- Smart Grid demonstration project launched to reduce line losses in power delivery
Welcome to Baltimore,

Enjoy the Conference!