Maryland ENERGY STAR® for New Homes Programs

TALKING ‘BOUT AN EVOLUTION
The State of Maryland

Maryland Energy Systems Service Areas

Investor-owned Systems
- Baltimore Gas and Electric Company
- Delmarva Power (PEPCO)
- Pepco (PEPCO)
- Potomac Edison (FirstEnergy)

Municipal Systems
- Williamsport Municipal Electric Light System
- City of Hagerstown Light Department
- Thurmont Municipal Light Company
- Eastern Utilities Commission
- Berlin Municipal Electric Plant

Rural Electric Cooperative Systems
- AEM Electric Cooperative
- Chestnut Electric Cooperative, Inc.
- Somerset Rural Electric Cooperative
- Southern Maryland Electric Cooperative, Inc.
Agenda

- The Early Years: 2009-2011
- The Version 3 Transition: 2012-2014
- The Future: 2015-~2047
The Early Years

GROWING A PROGRAM WITH ENERGY STAR
The Early Years

- 2009: BGE Launch
  - Through the building recession, homes weren't being built, homes weren't being bought.
  - Anemic ENERGY STAR market penetration of ~4 to 6% throughout the state.
  - Only two active raters providing “large” volume prior to the program.
The Early Years

- Began recruiting familiar and largest builders in the territory:
  - NV Homes
  - Ryan Homes
  - Beazer Homes

- ENERGY STAR and HERS 85 = $400
- ENERGY STAR and HERS 80 = $800
- ENERGY STAR and HERS 75 = $1000
The Early Years

- **Full Disclosure:**
  - I had no idea what I was doing.
  - I thought that the home was applied to captured savings.
  - I thought that a lower HERS Index automatically meant higher savings.
  - I thought that builders would have admin staff dedicated to applying.
The Early Years

- By the end of 2009, we had paid incentives on 53 homes.
- We had 1150 homes in the pipeline.
- Of the suite of residential programs, it was the smallest, least successful program we ran.
The Early Years

- February 2010 SMECO launched its program
- June 2010, BGE received 250 homes submitted for payment
- September 2010, BGE received 780 homes submitted for payment, SMECO received 130 homes
- Trainings were held on:
  - How to sell ENERGY STAR houses,
  - How to pass the ever complicated TBC,
  - How to seal ducts
In anticipation of the upcoming Version 3 transition, a new incentive structure was deployed in 2011.

- ENERGY STAR V2.5 and HERS Index < 75 = $1000
- ENERGY STAR V2.5 and HERS Index <70 = $1300
- ENERGY STAR V2.5 and HERS Index <65 = $1600
The Early Years

- By the end 2011, BGE and SMECO met goals
  - BGE paid incentives on ~1675 homes in 2011
  - SMECO paid incentives on ~490 homes in 2011
  - Builders were following the lead of large production builders
  - Found value in incentives, found value in differentiation through brand.
The Version 3 Transition
The Version 3 Transition

- Beginning of new PSC program cycle
- Pepco, Delmarva Power, and Potomac Edison all launch programs in February 2012
  - All Maryland utilities collaborated to provide simple program for builders, raters, and PSC
- Creation of new Home Registration and Rebate Tool, used across all five programs
Welcome to the BGE Home Registration Web Application

Welcome to the BGE Home Registration Web Application. We are pleased to offer this new web service to make it more convenient for you and your company to participate and apply for incentives. The system will verify that your application materials are complete and accurate, and shorten the time it takes to process and return your incentives.

We value your participation in the BGE ENERGY STAR for New Homes Program. Thank You!

Create new registration | Review registrations | Change password?
The Version 3 Transition

- 2012 averaging 2100 kWh per house in Maryland
- With the addition of 3 new utilities in Maryland varying market penetration metrics between 40 and 55%
The Version 3 Transition

- 2012 code adopted by Maryland
  - Ran simulation on 300 homes compared to code
  - Capture savings from HVAC checklist
  - Require 90% CFL
  - No savings lost for failed code compliance
The Version 3 Transition

- Dropped savings down to 1150 kWh per house
- Dropped builders because can’t incur costs
- Dropped builder leads because raters don’t have to model homes, track checklists
The Version 3 Transition

- **On site inspection of 67 homes**
- **Work without code inspectors**
- **Key inputs:**
  - Insulation
  - CFL’s
  - Windows
  - HVAC System
  - Infiltration
  - Duct Leakage

<table>
<thead>
<tr>
<th>Builder:</th>
<th>Lot #:</th>
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<tbody>
<tr>
<td>Community:</td>
<td>County:</td>
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<tr>
<td>Street Address:</td>
<td></td>
</tr>
<tr>
<td>House Type:</td>
<td></td>
</tr>
<tr>
<td>□ SFD</td>
<td>□ Townhouse</td>
</tr>
<tr>
<td>Foundation:</td>
<td></td>
</tr>
<tr>
<td>□ Basement</td>
<td>□ Slab</td>
</tr>
<tr>
<td>Area:</td>
<td>Volume:</td>
</tr>
<tr>
<td># of Bedrooms:</td>
<td>Ventilation Rate:</td>
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</table>

| Whole House Air Infiltration: | CFM @ 50 Pa | Fan PR: | RING: |

<table>
<thead>
<tr>
<th>HVAC SYSTEM # 1</th>
<th>HVAC SYSTEM # 2</th>
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<tr>
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<td>Brand:</td>
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<td>Furnace/HP Model #:</td>
<td>Furnace/HP Model #:</td>
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<tr>
<td>Programable T-Stat?</td>
<td>Programable T-Stat?</td>
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<td>□ No</td>
</tr>
<tr>
<td>Input BTU</td>
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<tr>
<td>Output BTU</td>
<td>Output BTU</td>
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<td>Condensor Model #:</td>
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<td>A/C SEER:</td>
<td>A/C SEER:</td>
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<td>Total Duct Leakage:</td>
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<td>Leakage to Outside:</td>
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<tr>
<td>% of Duct Outside:</td>
<td>% of Duct Outside:</td>
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<tr>
<td>Duct R-Value:</td>
<td>Duct R-Value:</td>
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<table>
<thead>
<tr>
<th>Above Grade Wall Insulation Value:</th>
<th>RESNET Grade:</th>
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<tbody>
<tr>
<td>Below Grade Wall Insulation Value:</td>
<td>RESNET Grade:</td>
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<td>Attic Insulation Value:</td>
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<td>Hot Water Brand:</td>
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<td>Windows</td>
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<td>Lighting</td>
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<td>Notes:</td>
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## The Version 3 Transition

<table>
<thead>
<tr>
<th>Inspected Input</th>
<th>2012 Code Requirement</th>
<th>Baseline Study result</th>
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<tbody>
<tr>
<td>Ceiling R-Value</td>
<td>R-49</td>
<td>R-44</td>
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<td>Wall R-Value</td>
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<td>R-18</td>
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<td>Infiltration</td>
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<td>3.5 ACH50</td>
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<tr>
<td>Duct Leakage</td>
<td>4 CFM25</td>
<td>8.4 CFM25</td>
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<tr>
<td>CFL%</td>
<td>75%</td>
<td>43%</td>
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The Version 3 Transition

- EM&V contractors agreed that code was poorly enforced
  - Changed program’s realization rate to 112%.
- Numbers of homes continued to climb across all utilities
  - 2014 over 4500 homes certified ENERGY STAR.
  - 2008 there were 644 homes certified ENERGY STAR
  - 700% increase in homes certified over 6 years
PROGRAM DESIGN FOR 2015-2047 The Future
The Future

- Sticking with ENERGY STAR Version 3.1
- Incentive structure steps away from HERS Index:
  - ENERGY STAR Version 3.1 and 90% CFL requirement
  - Single Family Detached = $1250
  - Townhome or attached product = $750
  - Two on Two condos = $550
  - Multifamily condos = $400
The Future

- Savings through 2015 ranges between 1200 and 1500 kWh across the 5 utilities.
- Very little improvements left in building the home that provides large kWh savings at a cost effective rate.
  - 16 SEER AC units
  - LED lighting provides no additional kWh in HERS methodology
  - Program needs to stay agnostic on fuel switching for water heaters.
The Future

- Maryland is an early adopter of code, 2018 code will be made public end of 2015.
- Program has been successful after year one and want to continue partnership with building industry.
- Transitioning towards consumer behavior to supplement savings
The Future

- Current Pilot has over 600 homes receiving learning thermostats to capture the associated savings.
  - Once cycle is completed, anticipating ~700 to 1100 kWh savings per house
  - Develop supply chain to deliver learning thermostats to all builders starting 2018
  - Looking into collaborative behavioral formats to engage with customers after purchase
  - Don’t want to increase costs for builders participating in program.
The End