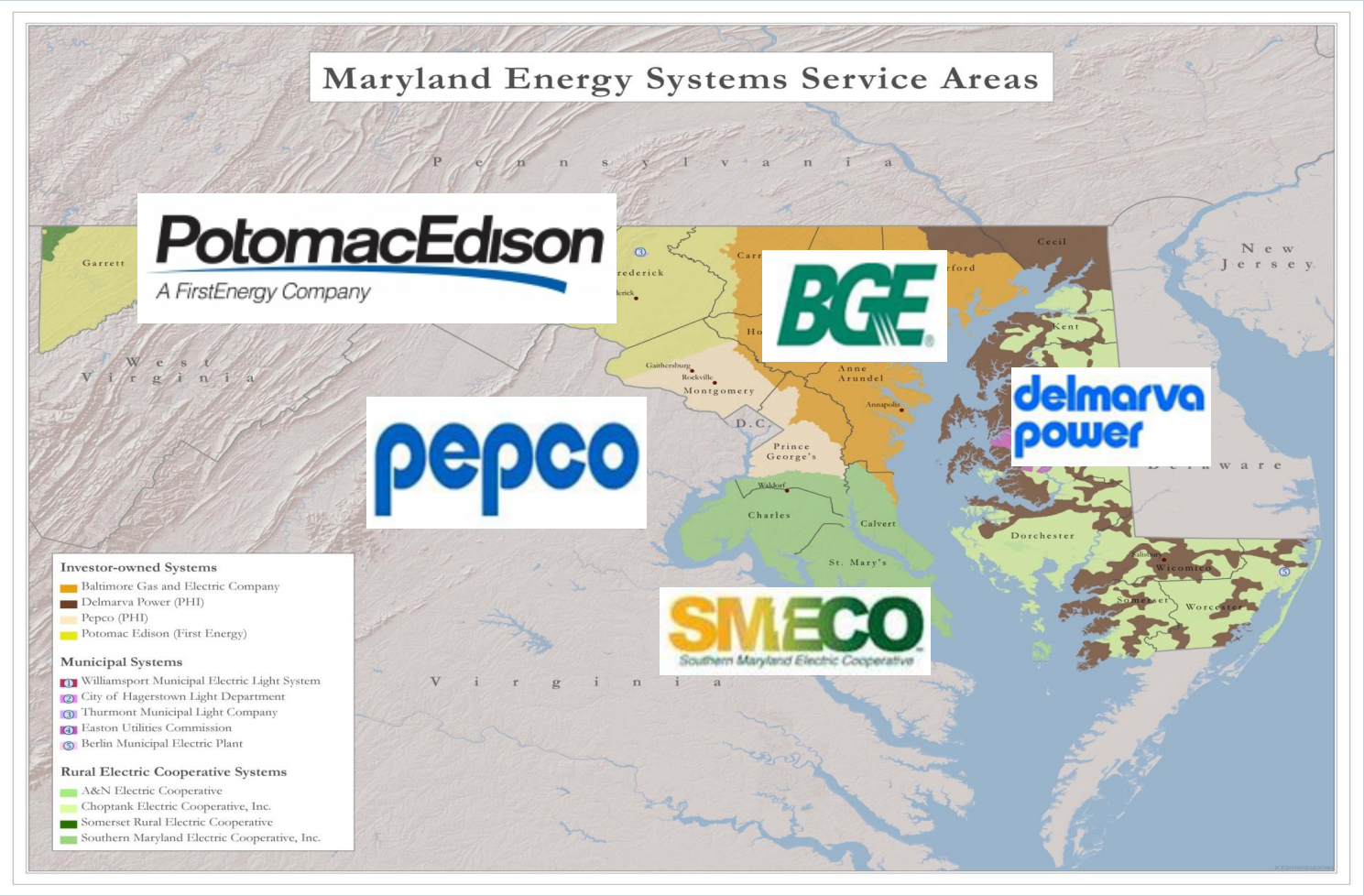
Maryland ENERGY STAR® for New Homes Programs

A CASE STUDY IN STATEWIDE MARKET TRANSFORMATION

The state of Maryland



Agenda

- Program success: How we went from 5% to 50% in 3 Years
  - Good Raters
- Setting up a solid infrastructure
  - How utilities can help Good Raters organize and optimize
- Delivering successful trainings
  - How Good Raters and Utilities can ensure high compliance
- How to ensure continued success

2009

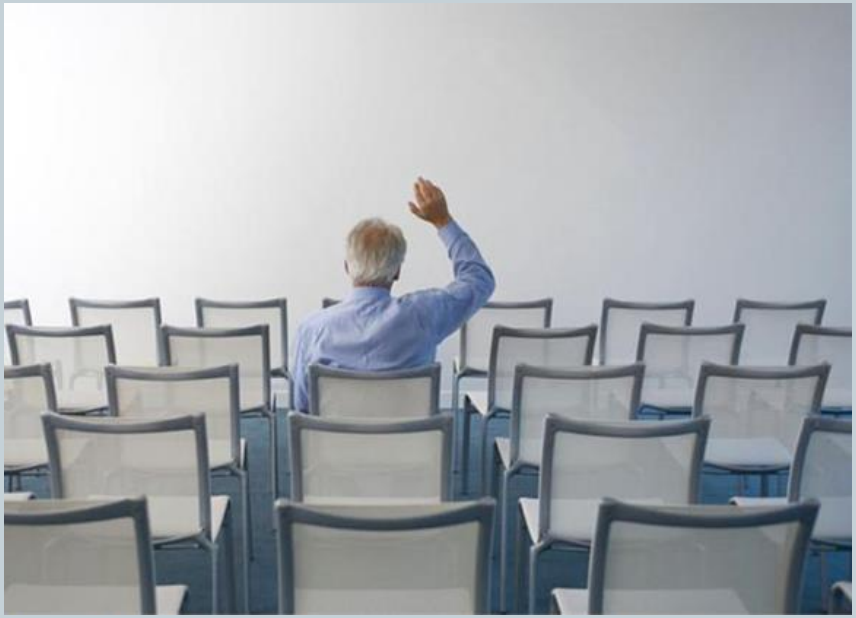
GETTING STARTED

2009: Getting Started

- EmPower Maryland Act: The driving force
  - 2008 legislation
  - 15% reduction in per capita electricity consumption and 15% reduction in per capita peak demand by 2015, compared to 2007 levels
  - All Maryland utilities required to develop EE and DR programs
  - Programs are funded through public benefit charge to each consumer

2009: Getting Started

- Considerations in designing the program
  - Goal of residential new construction market transformation to maximize energy savings
  - ENERGY STAR for New Homes penetration 5.4%
  - Large number of ENERGY STAR HERS raters
  - ENERGY STAR builders were small regional
  - Majority of homes built by national builders



2009: Getting Started

- BGE ESfNH Program launched June 1st
- Provided:
  - Technical and sales training
  - Incentives to cover 50% - 75% of incremental costs
- Tiered incentive structure:
  - HERS Index ≤ 85 = $400
  - HERS Index ≤ 80 = $800
  - HERS Index ≤ 75 = $1000

2009: Getting Started

- Increased participation in state of Maryland
  - Recruit largest builder, NVR
  - Leverage participation to recruit competitors
  - End of 2009:
    - 20 regional builders committed
    - 2 other national builders
    - Paid incentives on 59 homes

NVHomes Ryan Homes RYLAND HOMES® RICHMOND AMERICAN HOMES

2010

THE TRANSITION TO VERSION 2.5

2010: SMECO Launch

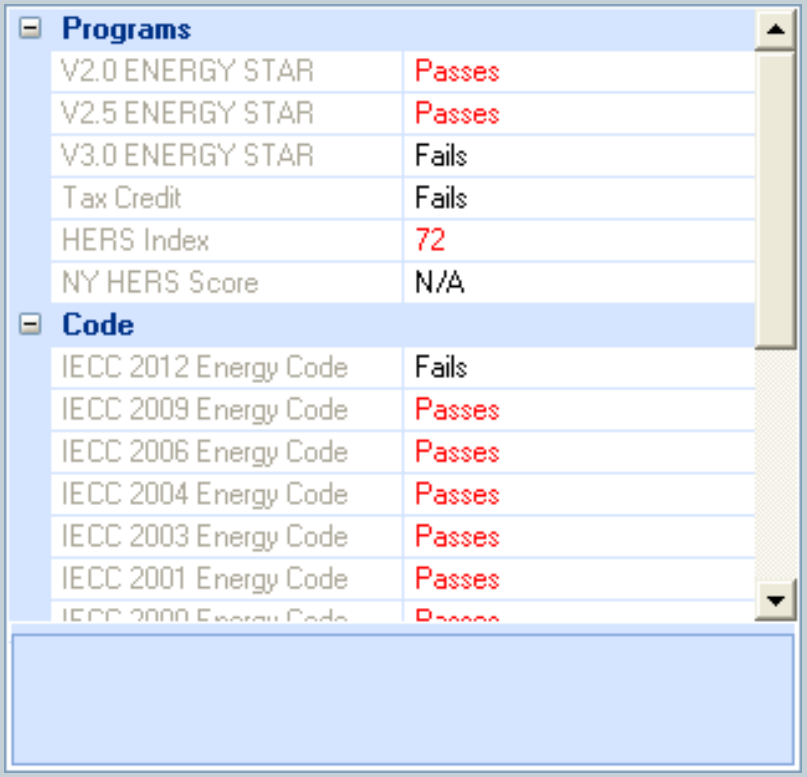
- Program launched in February
- Designed to be consistent with BGE program, with the exception of higher entry tier of $600
- Program goal – 212 homes

2010: The Transition to Version 2.5

- BGE incentivized pilot homes
- 3 builders participated
- Open houses during pre-drywall
- Tracked costs and savings associated with all builders

2010: The Transition to Version 2.5

- Ran REM/Rate on 20 popular house types
- Set homes to reference design house default
- Captured expected savings
- Based on pilot study results, re-filed with the PSC



Programs	
V2.0 ENERGY STAR	Passes
V2.5 ENERGY STAR	Passes
V3.0 ENERGY STAR	Fails
Tax Credit	Fails
HERS Index	72
NY HERS Score	N/A
Code	
IECC 2012 Energy Code	Fails
IECC 2009 Energy Code	Passes
IECC 2006 Energy Code	Passes
IECC 2004 Energy Code	Passes
IECC 2003 Energy Code	Passes
IECC 2001 Energy Code	Passes

2010: The Transition to Version 2.5

- June 2010 presentation on pilot findings
- Discuss different approaches, costs, labor
- Debuted expected incentives

2010: The Transition to Version 2.5

- New incentive January 1st, 2011
  - HERS Index ≤ 75 = $1000
  - HERS Index ≤ 70 = $1300
  - HERS Index ≤ 65 = $1600
- October 2010, engaged HVAC contractors on checklist
  - Delivered training to 40 builders and contractors

2010: Summary

- 2009: BGE paid incentives on 59 homes
- 2010:
  - BGE paid incentives on 1421 homes
  - SMECO paid incentives on 244 homes
- Increased builders to 32 total, 6 national builders

LENNAR

K Hovnanian Homes

2011

TRAINING FOR RETENTION

2011: Training for Retention

Version 3.0 Requirement for reference home	Current Trinity Homes Building Practice	Difference in HERS Index
Air Conditioner ≥ 13 Seer	Air Conditioner = 13 Seer	No change needed
Furnace ≥ 90% AFUE	Furnace = 92% AFUE	Getting additional point on HERS index.
Heat Pump ≥ 8.5 HSPF and ≥ 14.5 SEER	Heat Pump = 7.7 HSPF and 13.0 SEER	By upgrading the Heat Pump you are earning 2 points on the HERS index.
Insulation Levels to meet IRC 2009 level and achieve Grade 1 installation.	Installation is Grade 2 or Grade 3 on insulation	• Grade 1 insulation drops HERS index 1 to 2 points.
Infiltration levels must be ≤ 5 ACH50.	Currently Infiltration levels have been between 4 and 7 ACH50	• Lowering the ACH 50 can drop the HERS index between 1 and 2 points.
Window U Value ≤ .31 Window SHGC Value ≤ .33	Window U Value = .35 Window SHGC Value = .38	• U Value no change. • SHGC lower by .05 to be compliant.
Total Duct Leakage to outside ≤ 4 CFM25 per 100 square feet. Total Duct Leakage for entire system must be ≤ 6 CFM25 per 100 square feet	Ducts currently leaking between 4% and 6% for the building envelope.	• Ducts brought inside the conditioned house can lower the HERS index by 3-5 points.
80% of all light fixtures must have energy efficient CFL's.	0% of light fixtures have energy efficient CFL's	• 80% CFL can lower HERS index between 3 and 4 points. • 90% CFL can lower HERS index between 4 and 6 points.

2011: Training for Retention

- Train contractors
  - April 2011 - paid for HVAC orientation fee for 20 contractors
- Train HERS Raters
  - May 2011 - paid $1500 for all 30 current Raters to attend
- Train sales staff
  - Webinar highlighted the upgrades associated with Version 3
  - Customized sales training available for all builders

2012

LOTS OF BEGINNINGS & VERSION 3

2012: New Beginnings

- Beginning of new 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

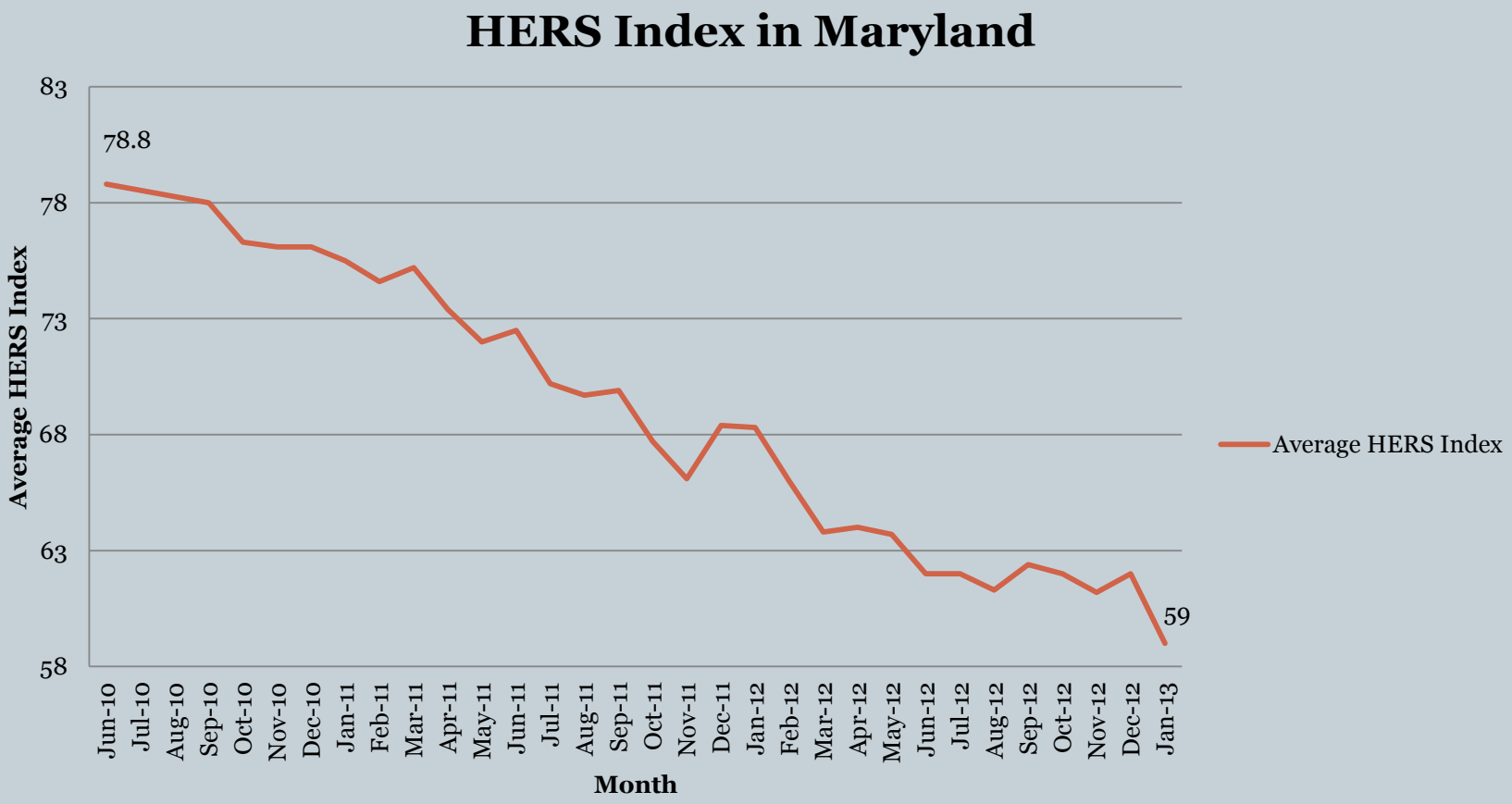
2012: Final Preparations for V3

- Held HVAC training in field for contractors
- Additional trainings planned based on feedback
- Check in meetings scheduled with each builder
- Monthly technical bulletin based on field QA/QC

2012: Summary

- 2009: BGE paid incentives on 59 homes
- 2010:
  - BGE paid incentives on 1421 homes
  - SMECO paid incentives on 244 homes
- 2011:
  - BGE paid incentives on 1677 homes
  - SMECO paid incentives on 400 homes
- 2012:
  - BGE Paid incentives on 1800 homes
  - SMECO paid incentives no 550 homes

Results


HERS Index in Maryland
Average HERS Index
83
78
73
68
63
58
78.8
59
Jun-10
Jul-10
Aug-10
Sep-10
Oct-10
Nov-10
Dec-10
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Oct-11
Nov-11
Dec-11
Jan-12
Feb-12
Mar-12
Apr-12
May-12
Jun-12
Jul-12
Aug-12
Sep-12
Oct-12
Nov-12
Dec-12
Jan-13
Month
Average HERS Index

Setting up the Infrastructure

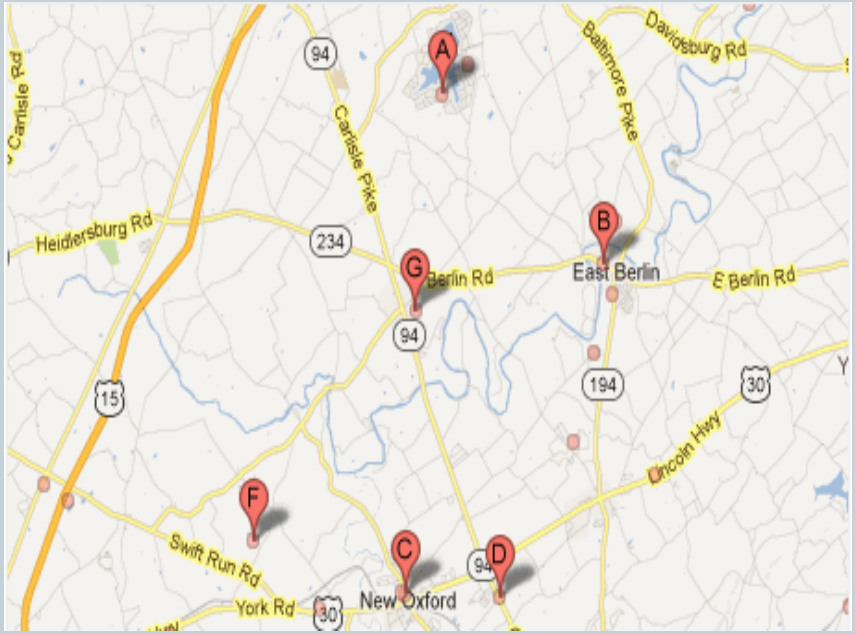
RECRUITMENT MEETINGS
WEBSITE PRESENCE
ONLINE DATA SYSTEMS
QUALITY ASSURANCE

Setting up the Infrastructure

- Invite utility reps with you to discuss program with builders. Give opportunity for utility to hear concerns from builders.

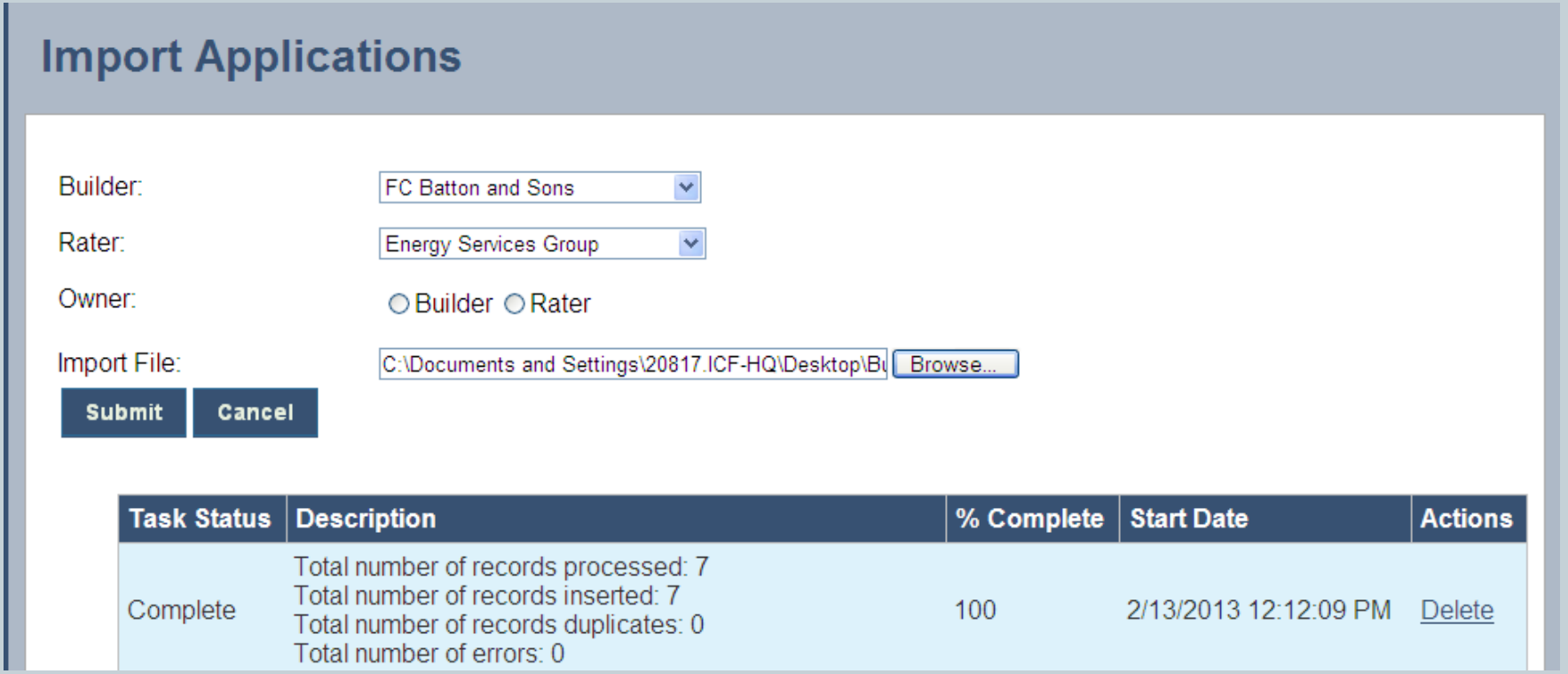
Setting up the Infrastructure

- Have website displaying participating builders and raters
- Allow customers to use website to find homes within locations they are searching.



Setting up the Infrastructure

- Data submission and capture system
  - Wanted system which allowed for batch uploading of homes



Setting up the Infrastructure

- System that holds all necessary documents for house files
- System that notifies both builders and raters when home is ready for payment

Dear American Dreams,

Thank you for your participation in the SMECO for New Homes program. The following homes have passed the expected completion date, and need to be submitted for payment. Please visit the website https://smeconewhomes.icfwebservices.com to submit the following homes:

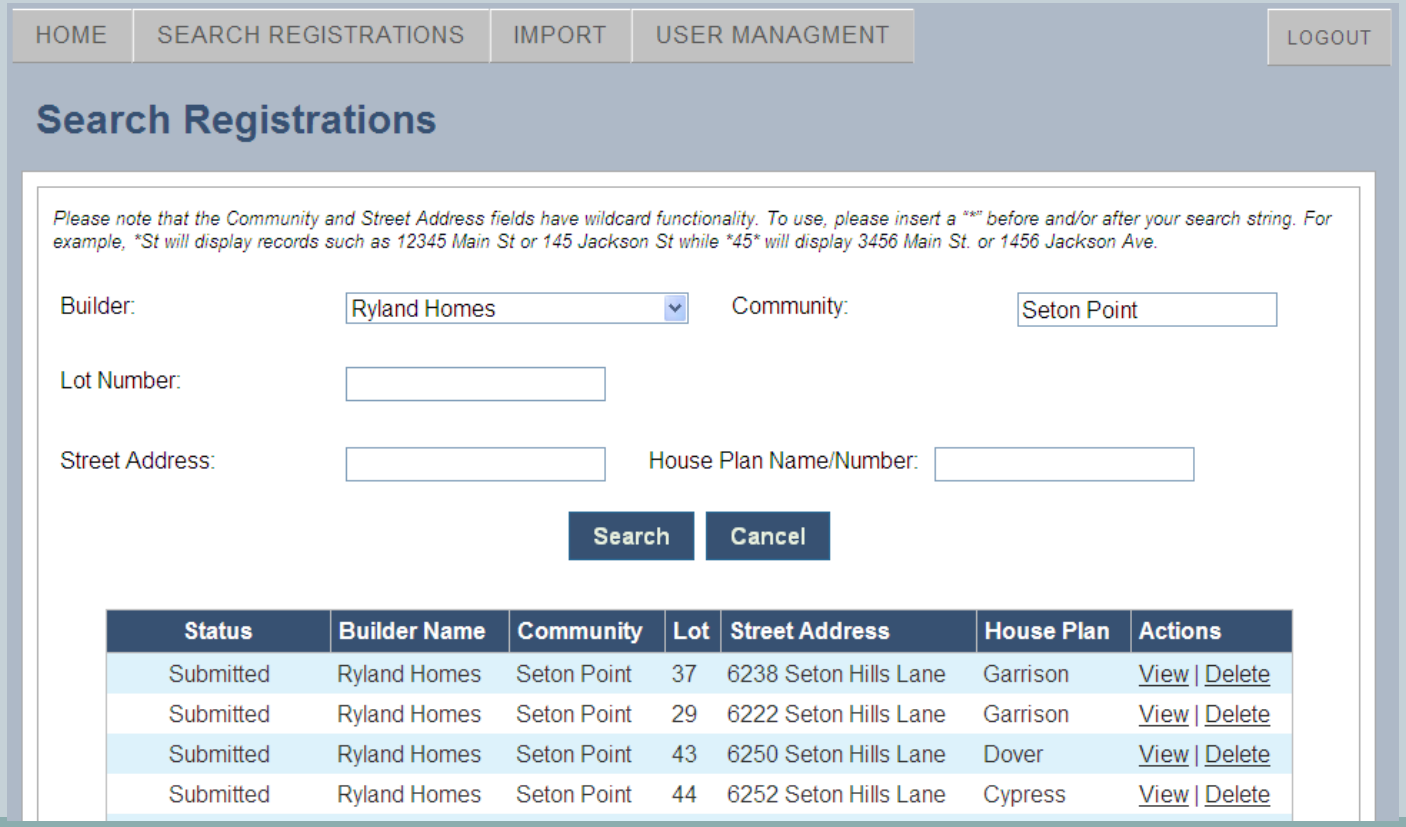
Builder	Community Name	Lot Number	Street Address
American Dreams	Chaptico	Pcl 8	36339 Mill Point Road
American Dreams	Piney Point	P 162	17679 Steuart Petroleum Road
American Dreams	St. Marys	6	

If you have any questions please feel free to contact your account manager.

Thank you again for making the SMECO for New Homes program successful.

Setting up the Infrastructure

- System which is easy to, search for homes by community, lot, street address, builder, house type.



Setting up the Infrastructure

Quality Assurance

Evolution of Quality Assurance

Q/A Procedure and Results

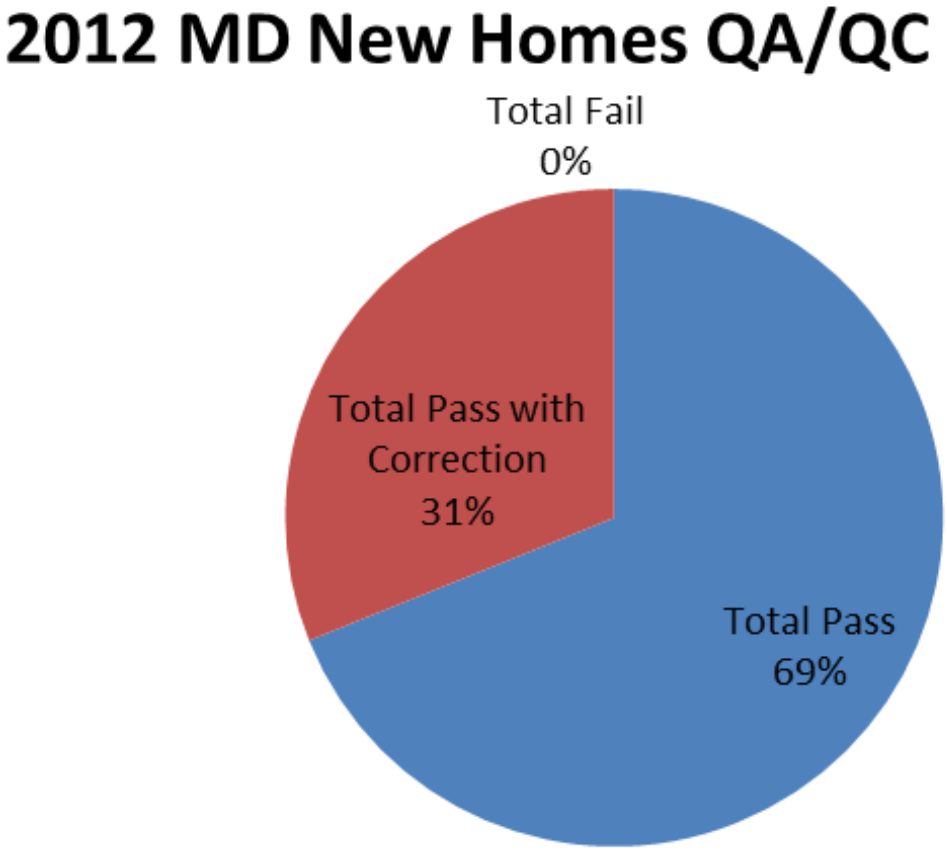
- To verify installed measures within the building
  - Examples: infiltration rates, duct leakage, equipment efficiency
- To ensure raters are properly testing and completing checklists
  - Blower door tests, duct leakage, ventilation, thermal enclosure checklists
- To provide technical support and training at the field level
  - Direct contact with the field supervisors, laborers, and field raters

Q/A Procedure and Results

Types of Inspections:

- “Over-the-Shoulder” type inspection where QA inspector assists Rater
- QA inspector performs independent tests to compare against data submitted by Rater

Q/A Procedure and Results



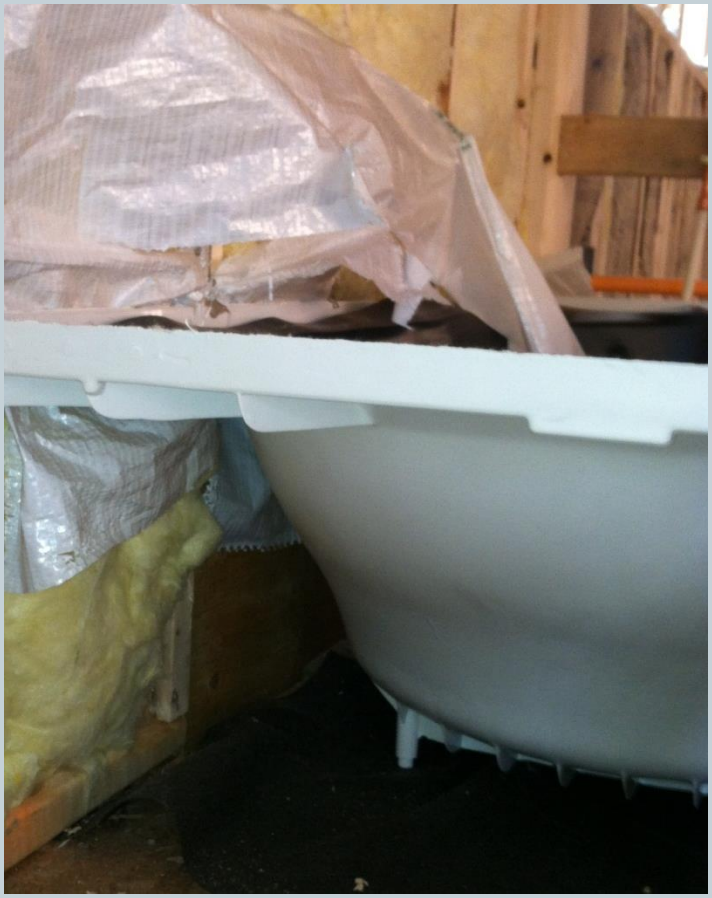
Q/A Procedure and Results

Early in the program we found:

Grade II & III Insulation Installations

Q/A Procedure and Results

Early in the program we found:



Ineffective Air Barriers

Q/A Procedure and Results

Early in the program we found:

Improper Testing Procedures

Q/A Procedure and Results

Early in the program we found:

Struggles with Duct Leakage

Q/A Procedure and Results

Early in the program we found:

Things that were just strange!

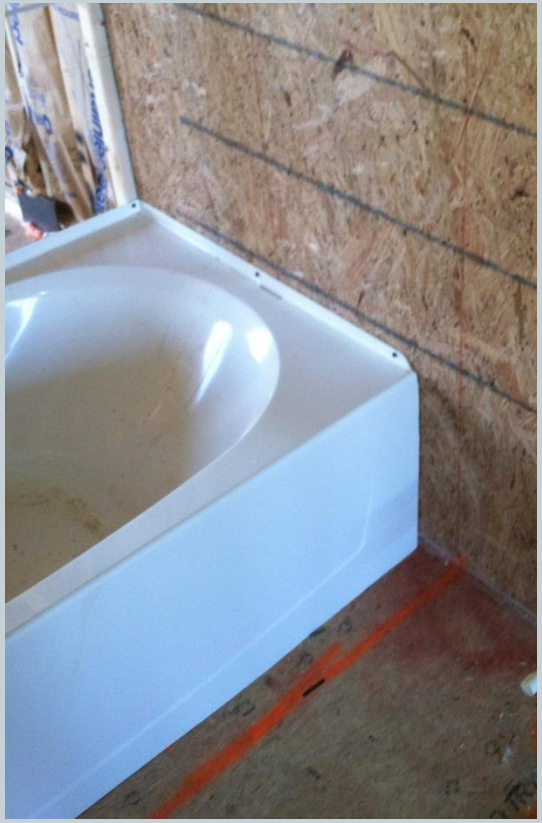
Q/A Procedure and Results

Today we are seeing:

Better Insulation Installations

Q/A Procedure and Results

Today we are seeing:



Effective Air Barriers

Q/A Procedure and Results

Today we are seeing:

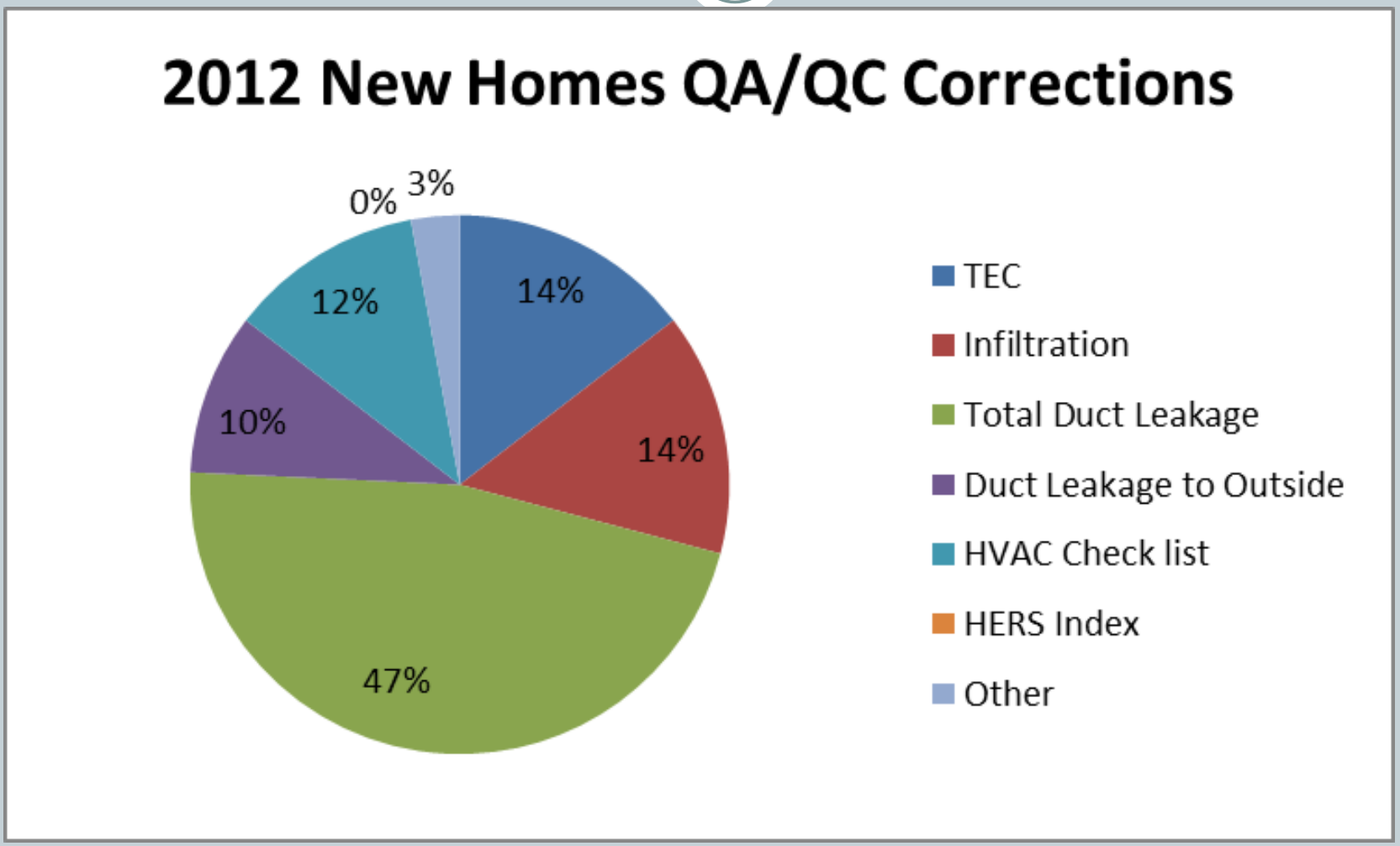
Better Testing

Q/A Procedure and Results

Today we are seeing:

Things that are just strange!

Q/A Procedure and Results



Training

How Good Raters and Utilities can Ensure High Compliance

Training

- Monthly Technical Bulletins
  - Based on field findings throughout the year.
  - 2012 Topics
    - Duct leakage requirements
    - Taping furnaces during duct testing
    - Static pressure testing
    - ASHRAE 62.2
    - Effective air barriers
    - Caulking supply and returns
    - Assessing HVAC airflow and electrical parameters
    - 2012 IECC
    - Cabinet toe kick registers

Insulation Grading

Maryland New Homes Programs Technical Bulletin:
Insulation Grading
March 1, 2012

Energy Star Version 3 (Rev. 05) requires all ceiling, wall, floor, and slab insulation to achieve RESNET-defined Grade I insulation or, alternatively, Grade II for surfaces with insulated sheathing as outlined in the Thermal Enclosure Checklist (Item 2.2).

As all homes participating in the BGE, SMECO, Pepco, Delmarva Power, and/or Potomac Edison New Homes Programs that are completed after July 1st must be qualified under ENERGY STAR Version 3, please take the time to re-familiarize yourselves with the RESNET Technical Standards regarding insulation grading:

Grade I
"Grade I" shall be used to describe insulation that is generally installed according to manufacturers instructions and/or industry standards. A "Grade I" installation requires that the insulation material uniformly fills each cavity side-to-side and top-to-bottom, without substantial gaps or voids around obstructions (such as blocking or bridging), and is split, installed, and/or fitted tightly around wiring and other services in the cavity. To inspect, probe in, around, or through the insulation and/or vapor retarder in several places to see whether these requirements are met. Replace or repair the vapor retarder and insulation as necessary. During inspection (typically before drywall is installed), if the exterior sheathing is visible from the building interior through gaps in the cavity insulation material, it is not considered a "Grade I" installation.

To attain a rating of "Grade I", wall insulation shall be:
- Enclosed on all six sides
- In substantial contact with the sheathing material on at least one side (interior or exterior) of the cavity. No exterior sheathing should be visible through gaps in the material.
- Designated for side-stapled tabs, provided the tabs are stapled neatly (no buckling), and provided the batt is only compressed at the edges of each cavity, to the depth of the tab itself.
- Installed with no substantial gaps or voids around obstructions (i.e. blocking, plumbing, electrical boxes)

For exterior applications of rigid insulation, insulation shall be in firm contact with the structural sheathing materials, and tightly fitted at joints to be considered a "Grade I" installation.

For sprayed or blown-in products, density shall be sufficient that the fill material springs back when compressed slightly with a hand or finger, and provided it meets the other requirements of Grade I insulation.

Examples of Grade I Insulation:

No Compression

Only Compressed to depth of side-stapled tabs

No Gaps at plumbing

Source: RESNET National Home Energy Rating Technical Guidelines, Appendix A, 2006

ENERGY STAR New Homes Technical Bulletin - Insulation Grading
P. 2

Grade II
"Grade II" shall be used to describe an installation with moderate to frequent installation defects: gaps around wiring, electrical outlets, plumbing and other intrusions; rounded edges or "shoulders"; or incomplete fill amounting to less than 10% of the area with 70% or more of the intended thickness (i.e., 30% compressed); or gaps and spaces running clear through the insulation amounting to no more than 2% of the total surface area covered by the insulation.

To attain a rating of "Grade II", wall insulation shall:
- Be enclosed on all six sides
- Be in substantial contact with the sheathing material on at least one side (interior or exterior) of the cavity.
- Have moderate to frequent gaps around wiring, electrical outlets, and plumbing intrusions.
- Have gaps/spaces clear through the insulation amounting to up to 2" of total surface area covered by insulation; or
- Have incomplete fill/compression of up to 30% of intended thickness, to up to 10% of the area.

Examples of Grade II Insulation:

30% Compression

Compression Gaps at Plumbing

Compression Gaps at Electrical

Grade III
"Grade III" shall be used to describe an installation with substantial gaps and voids, with missing insulation amounting to greater than 2% of the area, but less than 5% of the surface area is intended to occupy. More than 5% missing insulation shall be considered uninsulated surfaces.

"Grade III", wall insulation shall include:
- Wall insulation that is not in substantial contact with the sheathing on at least one side of the cavity.
- Wall insulation in a wall that is open (unsheathed) on one side and exposed to the exterior, ambient conditions or a vented attic or crawlspace.
- NOTE: The presence of an air-impermeable barrier such as housewrap will be considered to enclose the building cavities.

Examples of Grade III Insulation:

Substantial Voids, No Rigid Backing

Substantial Voids, Missing Insulation

Backing Missing or Not Properly Attached

Mineral Wool Insulation

Technical Bulletin: Mineral Wool Insulation
January 1, 2013

A number of program builders have been using mineral wool insulation (Rockwool) on their projects. This is often driven by code inspectors, who frequently require these products for fire blocking as they are usually rated non-combustible and act as a fire barrier. In addition to fire prevention, mineral wool has several benefits:

- It is available in higher insulation values than fiberglass batts.
- The rigid shape allows the batt to be cut accurately and enables it to fill stud voids more completely.
- It has water repelling capabilities (hydrophobic).
- It has good sound absorption and noise vibration reduction.

Though you may find the benefits of mineral wool more desirable than fiberglass for your construction practices, please note that mineral wool is not an air barrier. Air sealing practices must be consistent whether using mineral wool or fiberglass insulation.

Example 1
The picture to the left shows a second floor top plate in a multi-family project. Mineral wool insulation was installed for fire blocking at the party wall as required by the local code inspector. When the foam air sealing was installed at the top plate, the contractor went around the mineral wool. There is still air transmittance between the second floor and the attic. The mineral wool should have been temporarily pulled to allow continuous air sealing across the top plate and then reinstalled.

Example 2
The picture to the left shows a second floor top plate in a multi-family project. Mineral wool insulation was installed between the top plate and the party wall. Although this satisfies fire stopping requirements, it is NOT adequate air sealing and could cause a failure in your air infiltration testing.

Duct Testing protocol

Technical Bulletin - Proper Duct Testing

May 1, 2012

In response to the April Technical Bulletin (Duct Leakage Requirements), we have received a number of inquiries about proper duct testing. The MD ENERGY STAR for New Homes programs follow RESNET Standards as outlined below:

- 803.3 Protocol for Preparing the Building and the Duct System for a Duct Leakage Test (Items 803.3.1-803.3.8 are used for both Total and Outside Leakage tests)
- 803.3.1 Adjust the HVAC system controls so that the air handler fan does not turn on during the test.
- 803.3.2 Turn off any fans that could change the pressure in either the conditioned space or any spaces containing ducts or air handlers (bathroom fans, clothes dryers, kitchen vent hood, attic fan, etc.).
- 803.3.2 Turn off all vented combustion appliances if there is a possibility that the space containing the appliance will be depressurized during the test procedure.
- 803.3.3 Remove all filters from the duct system and air handler cabinet. If the duct leakage testing system is installed at a central return grille, also remove the filter from that grille.
- 803.3.4 Any intentional openings into the duct system such as combustion air or ventilation ducts shall be left in their normal non-ventilation operating position. Motorized dampers should be closed.
- 803.3.5 If ducts run through unconditioned spaces such as attics, garages or crawlspaces, open vents, access panels, doors, or windows between those spaces and the outside to eliminate pressure changes due to duct leakage during the test procedure.
- 803.3.6 Supply registers and return grilles shall be temporarily sealed in some manner so as to allow for the pressurization of the duct system.
- 803.3.7 Zone and bypass (not balancing) dampers shall be set to the open position to allow uniform pressures throughout the duct system.

  Total leakage test only: Fully open at least one door, window or comparable opening between the building and outside to prevent changes in building pressure when the duct leakage testing system is running.

  Leakage to the outside test only: All exterior doors and windows between the building and outside shall be closed, and other openings to the outside that may hinder the ability of a blower door fan to pressurize the building to 25 Pa with reference to outside should be closed or covered in some manner. Interior doors shall be open.

The programs allow for the sealing of air handlers prior to duct leakage testing provided that they meet all of the following requirements:

A. Installed measures are in accordance with the furnace manufacturer's installation recommendations.
B. Use of a product designed for the application of sealing an air handler.
   - UL181B Tape for the access panels
   - Non-hardening putty for piping, drain, latch, switch, and wire penetrations
C. Burner compartment ventilation openings are not covered.
D. All measures to be installed in a semi-permanent manner with the intent only to be removed by an HVAC technician.

Note: Duct mask is intended for the temporary sealing of registers for testing. It is NOT designed for the semi-permanent sealing of an air handler.

Source: RESNET 2006 Mortgage Industry National Home Energy Rating Standards

Total Duct Leakage

Technical Bulletin:
Caulking Duct Boots for Successful Total Duct Leakage Testing
September 1, 2012

ENERGY STAR Version 3 and the 2012 IECC have more stringent requirements for total duct leakage in new homes. Below are the current requirements in regards to total duct leakage at final inspection for homes participating in the Maryland Utility New Homes Programs.

2012 IECC: 4% Total Duct Leakage
- Projects permitted after July 1, 2012.
- 2012 IECC supersedes ENERGY STAR Version 3.
- No total duct leakage requirement if ductwork is 100% inside conditioned space.

ENERGY STAR V3: 8% Total Duct Leakage
- Projects completed after July 1, 2012.
- Please reference program materials at www.energystar.gov/newhomespartners for additional requirements.

In order to meet these requirements, it is almost certain that all supply and return duct boots will need to be caulked or otherwise sealed where they meet drywall, subfloor, or framework prior to installing the registers. This should be completed on all floors within conditioned space.


Supply not caulked at boot and drywall intersection.


Supply caulked at boot and drywall intersection.

NOTE: Footnote 25 of ENERGY STAR's National Program Requirements allows the rater to waive the 4% leakage to outside test if the total duct leakage is below 4% (5% for homes under 1200 sq. ft.). The total leakage test must be completed at final inspection even if the project passed at pre-drywall.

Toe Kick Registers

Technical Bulletin: Duct Testing Cabinet Toe Kick Registers

December 1, 2012

A number of builders are still using kitchen cabinet toe kick HVAC supplies. If the supply does not have a sealed, ducted boot from the subfloor to register, the cabinetry must be treated as a building cavity.

Per Item 2.5 of the EPA ENERGY STAR Certified Homes HVAC System Quality Installation Rater Checklist:
Building cavities not used as supply or return ducts unless they meet Items 3.2, 3.3, 4.1, and 4.2 of this Checklist.

Items 4.1, 4.2 and Footnote 17 specifically address duct leakage and state:

4.1: *Total Rater-measured duct leakage ≤ 8 CFM25 per 100 sq. ft. of conditioned area.*[17]

4.2: *Rater-measured duct leakage to outdoors ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area.*[17,18]

Footnote 17: *Duct leakage shall be determined and documented by a Rater using a RESNET-approved testing protocol only after all components of the system have been installed including the air handler, the ductwork, the duct boots, and the register grilles atop the finished surface (e.g., drywall, carpeting, flooring). Leakage limits shall be assessed on a per-system, rather than per-home, basis.*

The Maryland utility ENERGY STAR New Homes Programs require masking kitchen toe supplies at the register and not the subfloor during final duct leakage testing.

To successfully pass Items 4.1 and 4.2, builders will likely need to seal the interior of the cabinet cavities or ensure that the supply is continuously ducted and sealed from the subfloor to the toe kick register. The program is not requiring that these measures be prescriptively used, these are just best practices to meet ENERGY STAR duct leakage requirements.

Example 1: Ductwork terminating at subfloor. Cabinet cavity will likely need sealed at all subfloor and drywall connections to achieve passing duct leakage results.

Example 2: Supply continuously ducted to toe kick register (Best Practice). Boot will need sealed at register similar to other finished surfaces.

Ventilation

Technical Bulletin - ASHRAE Standard 62.2 Summary

July 1, 2012

ASHRAE Standard 62.2 is intended to provide acceptable indoor air quality through minimum requirements of mechanical and natural ventilation for single family houses as well as multifamily structures that are three stories or fewer above grade.

WHOLE BUILDING VENTILATION

Whole building ventilation is required through the use of a mechanical exhaust system, supply system, or combination thereof. Required ventilation rates are based on floor area and the number of bedrooms and are specified in Table 4.1a or, equivalently, Equation 4.1a.

Equation 4.1a

$$Q_{fan} = 0.01A_{floor} + 7.5(N_{br} + 1)$$

Q_{fan} = fan flow rate, cfm
A_{floor} = floor area, ft^2
N_{br} = number of bedrooms, not to be less than one

Table 4.1a

Ventilation Air Requirements, cfm

Floor Area (ft^2)	Bedrooms 0-1	2-3	4-5	6-7	>7
<1500	30	45	60	75	90
1501-3000	45	60	75	90	105
3001-4500	60	75	90	105	120
4501-6000	75	90	105	120	135
6001-7500	90	105	120	135	150
>7500	105	120	135	150	165

The effective ventilation rate of an intermittent system must be equivalent to the continuous ventilation requirement. The effective ventilation rate can be calculated using Equation 4.2 and values for ventilation effectiveness in Table 4.2.

Equation 4.2

$$Q_f = Q_r / (\varepsilon f)$$

Q_f = fan flow rate during the on-cycle
Q_r = ventilation air requirement (from Table 4.1a)
T_{cyc} = fan cycle time, defined as the total time for one on-cycle and one off-cycle (used in Table 4.2)
ε = ventilation effectiveness (from Table 4.2)
f = fractional on time, defined as the on-time for one cycle divided by the cycle time

Table 4.2

Ventilation Effectiveness for Intermittent Fans

Fractional On-Time, f	Cycle Time, T_{cyc} (h) 0-4	8	12	24
0.1	1.00	0.79	*	*
0.2	1.00	0.84	0.56	*
0.3	1.00	0.89	0.71	*
0.4	1.00	0.92	0.81	0.20
0.5	1.00	0.94	0.87	0.52
0.6	1.00	0.97	0.92	0.73
0.7	1.00	0.98	0.96	0.86
0.8	1.00	0.99	0.98	0.94
0.9	1.00	1.00	1.00	0.99
1.0	1.00	1.00	1.00	1.00

*Condition not allowed since no amount of intermittent ventilation will provide equivalent ventilation

LOCAL EXHAUST

Each kitchen and bathroom must have local mechanical exhaust installed. Intermittent exhaust fans must be at least the amount indicated in Table 5.1 and continuous exhaust fans must be at least the amount indicated in Table 5.2.

Table 5.1 Intermittent Local Ventilation Exhaust Airflow Rates

Application	Airflow	Notes
Kitchen	100 cfm	Vented range hood (including appliance-range hood combinations) required if exhaust fan flow rate is less than 5 kitchen air changes per hour.
Bathroom	50 cfm	

Table 5.2 Continuous Local Ventilation Exhaust Airflow Rates

Application	Airflow	Notes
Kitchen	5 ach	Based on kitchen volume.
Bathroom	20 cfm	

Static Pressure Testing

Technical Bulletin:
Assessing HVAC Fan Airflow & Electrical Parameters
October 1, 2012

The EPA has released a short video designed to educate their program partners about two of the key HVAC commissioning testes required for the ENERGY STAR Qualified New Homes Program.

1. **Assessing HVAC fan airflow (static pressure testing) -** This data is collected in Section 9 of the HVAC Contractor Checklist and should be verified by the Rater in Section 1.3 of the HVAC Rater Checklist.
2. **Measuring two electrical parameters of the HVAC equipment -** This data is collected in Section 9 of the HVAC Contractor Checklist.

We highly recommend that you view this video, which can be accessed at:

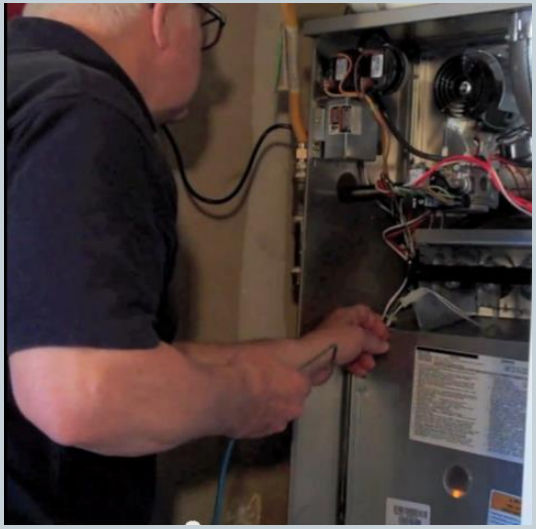
http://youtu.be/zVtTBsXmkuE

Please note that the HVAC contractor must complete the above tests as part of the HVAC Contractor Checklist and should properly label the test ports for the static pressure testing as required by Section 9.5. The HERS Rater will verify the static pressure test results as part of his or her final inspection.

For additional information on static pressure testing, please reference the ICF Technical Bulletin for Maryland ENERGY STAR Qualified New Homes dated June 1, 2012.

Training

- Mix of webinars and live trainings
  - Webinars will take place at 7:30 AM or 3:00 PM to accommodate people working in the field
  - Developing HVAC training curriculum for builders and raters



Training

HVAC Design Theory

HVAC Rater Requirements

Sales Training

Advanced Thermal Enclosure Techniques

Ventilation Design

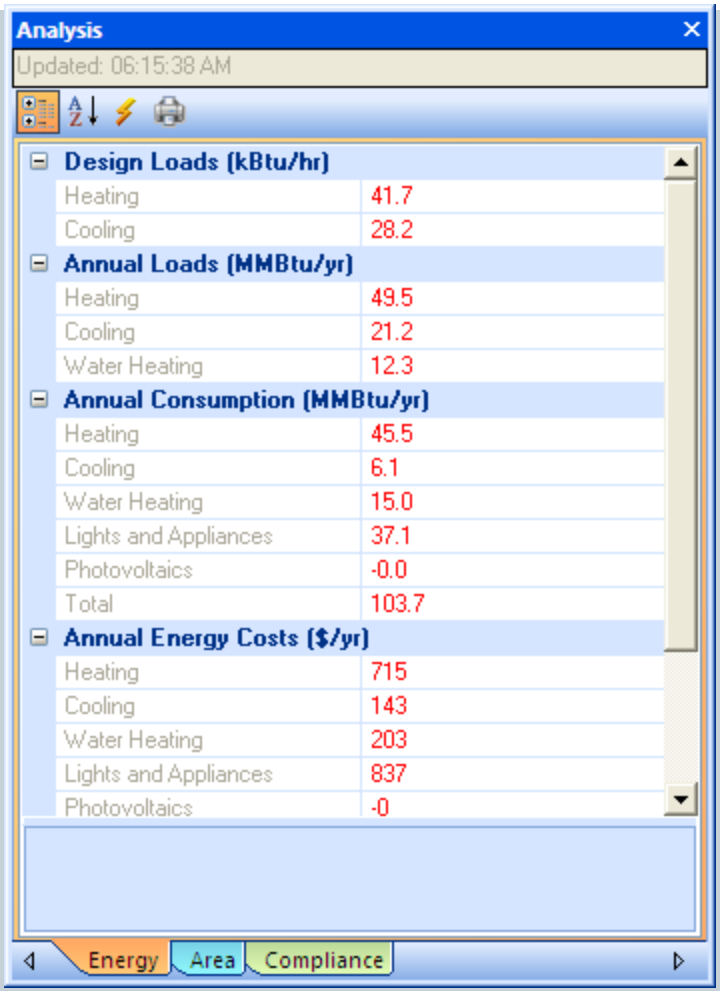
Water Management Techniques

Continued Program Success

WHAT TO DO TO KEEP THE PROGRAM RELEVANT

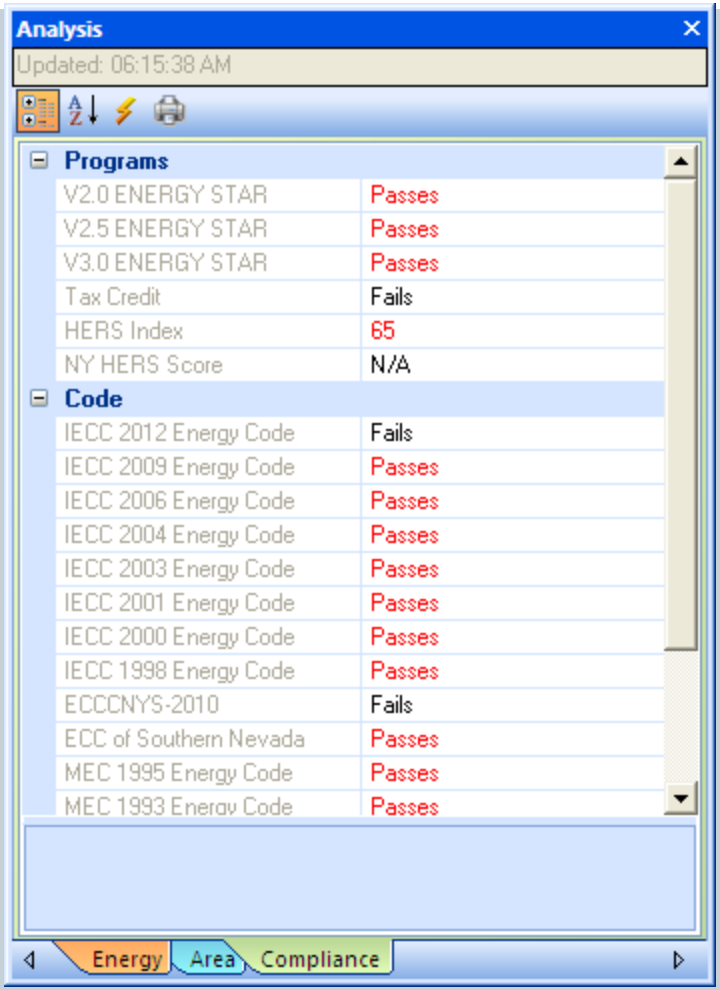
Continued program success

- How Raters can help influence utilities:
  - Find out what goals of program are, decrease electric usage or decrease natural gas usage



Continued program success

- Track code compliance in the jurisdiction: Utilities need to capture meaningful savings above code for program to be successful



Continued program success

- Marketing collateral offered
  - Yard signs, stickers, plaques, balloons

Continued program success

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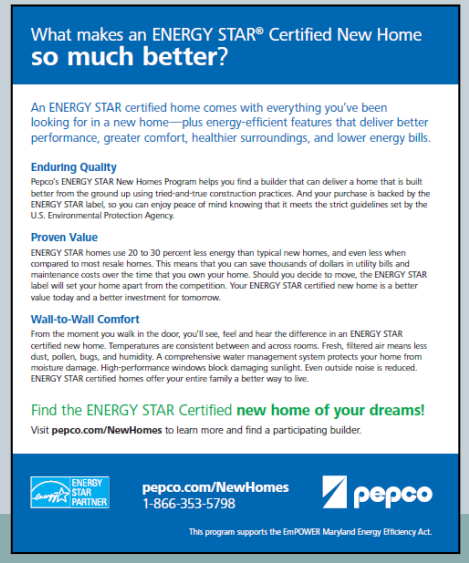
ENERGY STAR® homes are 20–30% more efficient than standard homes. Find a builder today.
pepco.com/SaveEnergy



Key Lessons Learned

- Plan the trainings as soon as possible
- Present specification as a partner
- Research expected costs - compare across builders
- Partners find value above and beyond rebate

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SMECO
Southern Maryland Electric Cooperative

Question and Answer

QUESTIONS?