Maryland ENERGY STAR® for New Homes Programs

A CASE STUDY IN 2012 IECC CODE COMPLIANCE

THROUGH THE TITLES AND LYRICS OF SOME GREAT SONGS
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 baseline
  - All Maryland utilities required to develop EE and DR programs
  - Programs are funded through public benefit charge to each consumer
The State of Maryland
Outline

- What is this 2012 code you speak of?
  - David Bowie

- Methodology: AKA how things work on paper
  - Hip/Hop & Rap

- Code: builders perspective
  - Rolling Stones

- Code: code inspectors perspective
  - Country Hits

- Code: utility’s perspective
  - Disco/Dance

- Execution and lessons learned
  - Motown
2012 Code

TIME TO MAKE A CHANGE – DAVID BOWIE
Under Pressure

- **2012 code adopted by Maryland**
  - Required for all homes permitted after July 1st 2012
  - Significant changes to the shell of the house
  - Insignificant changes to everything else
# Changes

<table>
<thead>
<tr>
<th>Input</th>
<th>2009 IECC Code</th>
<th>2012 IECC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall Insulation</td>
<td>R-13</td>
<td>R-20*</td>
</tr>
<tr>
<td>Ceiling Insulation</td>
<td>R-38</td>
<td>R-49*</td>
</tr>
<tr>
<td>Infiltration</td>
<td>7 ACH50*</td>
<td>3 ACH50</td>
</tr>
<tr>
<td>Duct Leakage</td>
<td>10 CFM25 per 100 square feet*</td>
<td>4 CFM25 per 100 square feet*</td>
</tr>
<tr>
<td>CFL’s</td>
<td>50% CFL’s*</td>
<td>75% CFL’s</td>
</tr>
</tbody>
</table>

* Means…. not really
Rebel Rebel

- **2009 allowances**
  - Infiltration rate and duct leakage can be estimated by visual inspection
  - 50% CFL's can be offset by higher efficiency in other equipment

- **2012 allowances**
  - Wall insulation can also be R-13 + R-5 continuous
  - 2012 attic insulation can be R-38 if raised heel trusses are used
  - A duct test doesn’t have to be done if the ducts are completely in conditioned space
Study Methodology

CAN YOU DIG IT?
WE CAN DIG IT!-
TAG TEAM
Maryland has 25 counties
- 16 of which have electric power

Statistics required the need for varying numbers of homes from each county
- 1 home for 12 counties, as much as 10 in other

In total, need to provide information on 67 homes across the state
Blurred Lines

- **Survey builders**
  - Are you doing code?
    - Everything, awesome

- **Survey Code officials**
  - Are you enforcing code?
    - Awesome

- **On site inspection**
  - Perfect
Hey Ya!

- **On site inspection of 67 homes**
- **Work without code inspectors**
- **Key inputs:**
  - Insulation
  - CFL’s
  - Windows
  - HVAC System
  - Infiltration
  - Duct Leakage
YOU CAN’T ALWAYS GET WHAT YOU WANT—ROLLING STONES

Builders Reaction to Code
Sympathy for the Devil

- Increased costs on foundation, framing, insulation, design, air sealing, verification
- Imagine a better power point
  - That costs 15% more
  - That of your staff of 50 people, 20 would be doing something different
  - That 95% of consumers couldn’t tell a difference
Tumbling Dice

- Builders pulled permits prior to July 1\textsuperscript{st}, 2012
- Builders built homes starting in June of 2012 that are still specked out
- Builders plead ignorance to code changes
- HVAC contractors “verify” duct tightness
- New rounding rules for math set by counties
Code officials reaction to code

YOU CAN TAKE THIS JOB AND SHOVE IT—JOHNNY PAYCHECK
Before He Cheats

- More options means more confusion
- Made up terms like CFM25 and ACH50
- Made up gauges like DG 700
Beautiful Mess

- Code officials who don’t perform the actual tests
  - Haven’t been trained
- Builders don’t understand requirements nor like increased costs
- Only happy party... The Rater
WHY CAN'T WE BE FRIENDS – WAR
We Should Be Dancing

- 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%
Virtual Insanity

- Dropped savings down to 1150 kWh per house
- Dropped builders because can’t incur costs
- Dropped builder leads because raters don’t have model homes, track checklists
Execution and Lessons Learned

WHAT’S GOING ON – MARVIN GAYE
I Can’t Get Next To You

- Call as many as 40 builders daily
- Drive to communities
- Drive out with meter set crews
Ain’t Too Proud To Beg

- We’re asking them to allow us access to prove they aren’t building to code
- Offering training on future houses
- Offering incentives (if they build ENERGY STAR)
Ooh Child Thing Are Gonna Get Easier

- We’ve inspected about 40 of the 67 homes thus far
- Continue to run into trouble due to homes being 2009 code, pushback from corporate offices
- What we’ve found is varying degrees of code compliance
  - Duct blaster failures
  - Infiltration failures
  - CFL’s either 100% or 0%
2012 code is a pain for everyone
Working in some capacity with code officials would have been easiest
Having the ability to pay builders for access to the homes would allow for the best payback
Wake Me Up/The End

- Slide 6: Queen and David Bowie
- Slide 7,8: David Bowie
- Slide 9: Tag Team
- Slide 10: A Tribe Called Quest
- Slide 11: Robin Thicke
- Slide 12: Outkast
- Slide 13 -15: Rolling Stones
- Slide 16: Johnny Paycheck
- Slide 17: Carrie Underwood

- Slide 18: Diamond Rio
- Slide 19: War
- Slide 20: Bee Gees
- Slide 21: Jamiroqui
- Slide 22: Marvin Gaye
- Slide 23,24: Temptations
- Slide 25: The Five Stairsteps
- Slide 26: Jackson 5, Otis Redding, James Brown
- Slide 27: Aloe Blacc, The Doors