Alabama Residential Energy Code: Autumn 2017 Update

Recorded Webinar Presentation

November 14, 2017

Presenters:
- Jeffrey Domanski
- David Abrey
AGENDA

• Alabama Housing Overview
• Alabama Residential Energy Code Field Study
• Key Challenges & Opportunities:
  – Insulation Quality
  – Building Envelope Leakage
  – Duct Tightness
  – Light Efficiency
• Savings Potential
• Recommendations and Resources
Today’s Speakers

Jeffrey Domanski
Senior Manager
IBTS

Dave Abrey
Codes Advisor
IBTS
Alabama Homes

• Alabama Homes use an average of 1,211 kWh Per Month

• The average home in Alabama uses 31.45% more energy than the average U.S. home

• The average monthly utility bill in Alabama is 26.17% greater than the national average
Consumers Expect Efficiency…

- 89% of consumers in Alabama’s region want to know the home’s energy operating costs before they buy.
- 87% believe that disclosure of energy use allows them to make informed decisions.
- 54% of people who pay $300+ on energy bills make less than $60K/yr.
National Model Energy Codes

✓ Residential:
  • 2015 IECC
  • Updated every 3 years
  • About 30% more energy efficient than 2006
Alabama Residential Energy Code Field Study – Background

• DOE Funding awarded to Project Team for 3-year project
• Purpose: evaluate effectiveness of Energy Code training
• All projects share 3 common objectives:
  1. Pre-program field study
  2. Implement education, training and outreach activities
  3. Post-program field study
Opportunities

Top issues to address:

• HVAC – Ducts
• Building Air Leakage
• Wall Insulation Quality
• Lighting Efficiency

Alabama Residential Energy Code Field Study: Baseline Report

January 2017
Key Items Meeting AL Energy Code

- Envelope Tightness: 92% (2009), 87% (2015)
- Duct Tightness: 46% (2009), 13% (2015)
- High-efficiency Ltg: 35% (2009), 20% (2015)
- Ceiling R-Value: 95% (2009), 98% (2015)
- Wall R-Value: 95% (2009), 98% (2015)
- Wall IQ: 16% (2009), 16% (2015)
- Window U-Value: 100% (2009), 100% (2015)
- Window SHGC: 92% (2009), 92% (2015)
Climate Zones

All Climate Zones are 3A except for Mobile & Baldwin which are 2A

A – Moist
B – Dry
C - Marine
Attics
# Attics/Ceilings

Table 3.5: Ceiling R-Value

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Number</td>
<td>17</td>
<td>67</td>
<td>84</td>
<td>84</td>
</tr>
<tr>
<td>Range</td>
<td>30 to 38</td>
<td>19 to 39.6</td>
<td>19 to 39.6</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>31</td>
<td>30</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>Requirement</td>
<td>R-30</td>
<td>R-30</td>
<td>R-30</td>
<td>R-30</td>
</tr>
<tr>
<td>Compliance Rate</td>
<td>17 of 17 (100%)</td>
<td>63 of 67 (94%)</td>
<td>63 of 67 (93%)</td>
<td>80 of 84 (95%)</td>
</tr>
</tbody>
</table>

![Bar chart showing CZ2, CZ3, and All CZ's compliance rates for 2009 and 2015]
For most insulations, R-30 is about 9 to 10 inches deep.

R-30 is how deep?
Plans & Specifications

Plans and/or specifications should include:

- Attic, Walls, Foundation Insulation Type & R-Value
- Window U-Value & Infiltration Type & R-Value
- Air & Vapor Barrier Specs
- Duct Sealing & Insulation Type & R-Value
- Heating Piping Insulation Type & R-Value
- Heating & Cooling Systems Specs
- Service Water Heating Specs
- Mechanical Ventilation System Specs
- Elec Power & Lighting System Specs
- Programmable Thermostat Specs
Attics/Ceilings

Baffles keep soffits clear

Baffles allow air sealing and insulation over the top plate
A significant number of attic hatches & doors did not exhibit the required insulation value (83%)

<table>
<thead>
<tr>
<th>CLIMATE ZONE</th>
<th>FENESTRATION U-FACTOR&lt;sup&gt;b&lt;/sup&gt;</th>
<th>SKY-LIGHT U-FACTOR&lt;sup&gt;b&lt;/sup&gt;</th>
<th>GLAZED FENESTRATION SHGC&lt;sup&gt;b,e&lt;/sup&gt;</th>
<th>CEILING R-VALUE</th>
<th>WOOD FRAME WALL R-VALUE</th>
<th>MASS WALL R-VALUE&lt;sup&gt;i&lt;/sup&gt;</th>
<th>FLOOR R-VALUE</th>
<th>BASEMENT&lt;sup&gt;c&lt;/sup&gt; R-VALUE</th>
<th>SLAB&lt;sup&gt;d&lt;/sup&gt; R-VALUE &amp; DEPTH</th>
<th>CRAWLSPACE&lt;sup&gt;c&lt;/sup&gt; R-VALUE</th>
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<tbody>
<tr>
<td>2</td>
<td>0.65&lt;sup&gt;j&lt;/sup&gt;</td>
<td>0.75</td>
<td>0.30</td>
<td>30</td>
<td>13</td>
<td>4/6</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>0.50&lt;sup&gt;j&lt;/sup&gt;</td>
<td>0.65</td>
<td>0.30</td>
<td>30</td>
<td>13</td>
<td>5/8</td>
<td>19</td>
<td>5/13&lt;sup&gt;f&lt;/sup&gt;</td>
<td>0</td>
<td>5/13&lt;sup&gt;f&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Uninsulated attic hatches account for more than 40% of the energy lost into the attic even when the rest is fully insulated.
Exterior Walls

Exterior Walls were wood-framed walls with:
- 93% made with 4” studs
- 7% made with 6” studs

2017 Institute for Building Technology and Safety
### Table 3.4: Framed Wall Assembly

<table>
<thead>
<tr>
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</tr>
</thead>
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<tr>
<td><strong>Number</strong></td>
<td>14</td>
<td>54</td>
<td></td>
<td></td>
<td>68</td>
<td></td>
</tr>
<tr>
<td><strong>Range</strong></td>
<td>0.091 to 0.054</td>
<td>0.102 to 0.068</td>
<td></td>
<td></td>
<td>0.102 to 0.055</td>
<td></td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>0.086</td>
<td>0.090</td>
<td></td>
<td></td>
<td>0.089</td>
<td></td>
</tr>
<tr>
<td><strong>Climate Zone and Code</strong></td>
<td><strong>Requirement</strong></td>
<td><strong>Compliance Rate</strong></td>
<td><strong>Requirement</strong></td>
<td><strong>Compliance Rate</strong></td>
<td><strong>Requirement</strong></td>
<td><strong>Compliance Rate</strong></td>
</tr>
<tr>
<td><strong>Number</strong></td>
<td>14</td>
<td>54</td>
<td></td>
<td></td>
<td>68</td>
<td></td>
</tr>
<tr>
<td><strong>Range</strong></td>
<td>0.091 to 0.054</td>
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<td></td>
<td></td>
<td>0.102 to 0.055</td>
<td></td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>0.086</td>
<td>0.090</td>
<td></td>
<td></td>
<td>0.089</td>
<td></td>
</tr>
</tbody>
</table>

2009 vs. 2015:

- **CZ2**: 3 of 14 (21%) vs. 3 of 14 (21%)
- **CZ3**: 8 of 54 (15%) vs. 8 of 54 (15%)
- **Statewide**: 11 of 68 (16%) vs. 11 of 68 (16%)
1. Grade I: "Occasional very small gaps are acceptable." But "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."

2. Grade II: Up to 2% missing insulation

3. Grade III: Between 2% and 5% missing insulation
Wall Insulation

- No Compressions!
- No Voids!
- No Gaps!
- No Air Moving Though!
How Insulation Works

• Insulation slows heat loss/gain by trapping still air in small pockets within the insulating material.

• The trapped air within the material is actually the insulator.

Important: Most Insulations do not stop air movement!
Windows

In the Field Study, Windows in Alabama’s New Homes met the 2015 Energy Code 75% of the time.
Solar Heat Gain Coefficient (SHGC)

The SHGC is the fraction of incident solar radiation admitted through a window. SHGC is expressed as a number between 0 and 1. The lower a window’s solar heat gain coefficient, the less solar heat it transmits. Use a computer program such as RESFEN to understand heating and cooling trade-offs. SHGC = Solar Heat Gain Coefficient in fraction of incident solar angle.
## Table 3.2: Window SHGC

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number</strong></td>
<td>23</td>
<td>69</td>
<td>92</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Range</strong></td>
<td>0.26 to 0.19</td>
<td>0.62 to 0.2</td>
<td>0.62 to 0.19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>0.22</td>
<td>0.28</td>
<td>0.27</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Climate Zone and Code</th>
<th>Requirement</th>
<th>Compliance Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CZ2</strong></td>
<td>0.30</td>
<td>23 of 23 (100%)</td>
</tr>
<tr>
<td><strong>CZ3</strong></td>
<td>0.30</td>
<td>62 or 69 (90%)</td>
</tr>
<tr>
<td><strong>Statewide</strong></td>
<td>0.30</td>
<td>85 of 92 (92%)</td>
</tr>
</tbody>
</table>

2009 - 2015
Blower Door Testing

Blower Door Depressurization Test

Air Drawn in by Fan

Blower Door:
- Door Panel
- Fan
- Gauges

Fan Draws Air from House

Attic Leaks

Outgoing Air

Calculate Leakage from House Pressure and Airflow Rate

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# Envelope Tightness

## Table 3.1: Envelope Tightness (CFM50)

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number</strong></td>
<td>15</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>65</td>
<td>65</td>
</tr>
<tr>
<td><strong>Range</strong></td>
<td>8.9 to 2.65</td>
<td>7.25 to 1.42</td>
<td>7.25 to 1.42</td>
<td>8.9 to 1.42</td>
<td>8.9 to 1.42</td>
<td>8.9 to 1.42</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>5.4</td>
<td>5.1</td>
<td>5.1</td>
<td>5.2</td>
<td>5.2</td>
<td>5.2</td>
</tr>
<tr>
<td><strong>Climate Zone and Code</strong></td>
<td><strong>CZ2</strong></td>
<td><strong>CZ2</strong></td>
<td><strong>CZ3</strong></td>
<td><strong>CZ3</strong></td>
<td><strong>Statewide</strong></td>
<td><strong>Statewide</strong></td>
</tr>
<tr>
<td><strong>Requirement</strong></td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td><strong>Compliance Rate</strong></td>
<td>12 of 15 (80%)</td>
<td>7 of 15 (46%)</td>
<td>48 of 50 (96%)</td>
<td>23 of 50 (46%)</td>
<td>60 of 65 (92%)</td>
<td>30 of 65 (46%)</td>
</tr>
</tbody>
</table>

![Graph showing envelope tightness percentages for CZ2, CZ3, and all CZs](image)
Envelope Tightness

Only 46% of New Homes in Alabama meet the Envelope Air Tightness Requirements in the Energy Code

**AL Homes**

must test out at less than

5 ACH$_{50}$
5 Air Changes per Hour at a Pressure Difference of 50 Pascals

1000 cf  

1000 cf
1. Section 402.4

2. Performance testing of house leakage
   a) Blower door result must be less than 5 \( \text{ACH}_{50} \)

3. Additions, Substantial Renovations NOT included in that requirement
Envelope Tightness

**AL Homes** must test out at less than 5 $ACH_{50}$

$$ACH_{50} = \frac{CFM_{50} \times 60}{Volume}$$

*Will Require Mechanical Ventilation - AL RC*
The Volume of the Conditioned Area of the House (the heated or cooled part of the home) needs to be determined for compliance
For example:

A simple 1,500 square foot ranch with 8 foot high ceilings will have a conditioned volume of 12,000 cubic feet
AL Homes must test out at less than 5 ACH$_{50}$

$$\text{CFM}_{50} = \frac{\text{Volume}}{12}$$

This formula is helpful prior to Blower Door Testing.
The attic access must be insulated and air-sealed (weather-stripped).

A wood-framed or equivalent baffle or retainer is required where loose fill insulation is installed.
Recessed Can Lights are like small chimneys between the conditioned space and the attic.
This LED light looks like a recessed can light but is actually surface mounted!
Envelope Tightness

**Kneewalls**

*Kneewalls were often not sealed and insulated (63%)*
Look under the Kneewalls! – This should be sealed!
All attic kneewalls must be insulated and air-sealed. For example, the top and bottom of the knee-wall stud cavity must be blocked and sealed to encapsulate insulation.

Also, the floor opening underneath the kneewall’s bottom plate must sealed.
Insulation and a sealed air barrier must be installed behind all tubs and showers located on exterior walls.

Envelope areas behind bathroom tubs & showers were often not sealed (47%)
All plumbing penetrations must be appropriately air-sealed.
Envelope Tightness

Gaps between window/door and rough opening must be air-sealed with low expanding foam or backer rod & caulk
R403.3.3 Duct testing (Mandatory).
Ducts shall be pressure tested to determine air leakage by one of 3 methods:

1. Rough-in test including the manufacturer’s air handler enclosure
2. Rough-in test without the manufacturer’s air handler enclosure
3. A postconstruction test:

**Exception:** A duct air leakage test shall not be required where the ducts and air handlers are located entirely within the building thermal envelope.

A written report of the results of the test shall be signed by the party conducting the test and provided to the code official.
# Duct Tightness

## Table 3.7: Duct Tightness (CFM/100ft² CFA)

<table>
<thead>
<tr>
<th>Climate Zone</th>
<th>CZ2</th>
<th>CZ3</th>
<th>Statewide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>25</td>
<td>58</td>
<td>83</td>
</tr>
<tr>
<td>Range</td>
<td>18.1 to 4.2</td>
<td>21.3 to 3.5</td>
<td>21.3 to 3.5</td>
</tr>
<tr>
<td>Average</td>
<td>7.5</td>
<td>8.3</td>
<td>8.1</td>
</tr>
</tbody>
</table>

### Climate Zone and Code

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliance Rate</td>
<td>12 22 of 25 (88%)</td>
<td>4 4 of 25 (16%)</td>
<td>12 50 of 58 (86%)</td>
<td>4 7 of 58 (12%)</td>
<td>12 72 of 83 (87%)</td>
<td>4 11 of 83 (13%)</td>
</tr>
</tbody>
</table>

### Graphs

- **CZ2**: 2009 - 80%, 2015 - 40%
- **CZ3**: 2009 - 80%, 2015 - 40%
- **All CZ's**: 2009 - 80%, 2015 - 40%
Duct Tightness Testing

Duct Tightness Thresholds:

- At rough-in stage with - no air handler installed
  - Max 3 cfm per 100 s.f. per Cond Floor Area
    - Total Leakage

- Testing at rough-in stage w/ air handler
  - Max 4 cfm per 100 s.f. per Cond Floor Area
    - Total Leakage

- When testing at final (Post Construction)
  - Max 4 cfm per 100 s.f. per Cond Floor Area
    - Total Leakage

Alabama IRC: Blower Door and Duct Leakage test results must be displayed on Certificate!
Only 13% of the New Homes in Alabama meet this Energy Code Requirement
Duct Tightness Testing

Determining the Total Conditioned Square Footage of the House matters in Duct Testing

\[
500 + 400 + 200 + 100 = 1200 \text{ sq. ft}
\]
Duct Tightness Testing

<table>
<thead>
<tr>
<th>Conditioned Square Footage</th>
<th>4 CFM per 100 Square Feet</th>
<th>3 CFM per 100 Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000</td>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>1,500</td>
<td>60</td>
<td>45</td>
</tr>
<tr>
<td>2,000</td>
<td>80</td>
<td>60</td>
</tr>
<tr>
<td>2,500</td>
<td>100</td>
<td>75</td>
</tr>
<tr>
<td>3,000</td>
<td>120</td>
<td>90</td>
</tr>
<tr>
<td>3,500</td>
<td>140</td>
<td>105</td>
</tr>
<tr>
<td>4,000</td>
<td>160</td>
<td>120</td>
</tr>
<tr>
<td>4,500</td>
<td>180</td>
<td>135</td>
</tr>
<tr>
<td>5,000</td>
<td>200</td>
<td>150</td>
</tr>
</tbody>
</table>

Conditioned Square Feet
100

Multiplied by 4 (or 3)

Equals

Maximum Allowable Duct Leakage Rate in CFM_{25}
Duct Tightness Testing

Duct Blaster Testing

• Pressurize the Duct Work to 25 pascals of Pressure
• Seal All Supply and Return Registers
Duct Tightness Testing

Duct Sealing Diagram

Duct Leakage Locations

Correct Use of UL181 Tape
Duct Leakage
No Duct Leakage
Duct Leaks
What Type’s of Sealants?

Type 181B - M
Tapes and mastics used to seal metallic and flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked “181 B-FX” for pressure-sensitive tape or “181 BM” for mastic. Duct connections to flanges of air distribution system equipment shall be sealed and mechanically fastened. Mechanical fasteners for use with flexible nonmetallic air ducts shall comply with UL 181B and shall be marked 181B-C. Crimp joints for round metallic ducts shall have a contact lap of not less than 1 inch (25 mm) and shall be mechanically fastened by means of not less than three sheet-metal screws or rivets equally spaced around the joint.

Closure systems used to seal all ductwork shall be installed in accordance with the manufacturers’ instructions.
Duct Leaks
What Type’s of Sealants?

Don’t use conventional duck tape!

SAY NO TO DUCT TAPE
Who Can do Testing?

1. HERS Raters
2. BPI Certified Contractors (BA & ENV)
3. DET Certified
4. Other accepted by Alabama Code Officials
Lighting Efficiency

Only 21% of New Homes in Alabama meet this Energy Code Requirement.
R404.1 Lighting Equipment (Mandatory).

Not less than 75 percent of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps or not less than 75 percent of the permanently installed lighting fixtures shall contain only high-efficacy lamps. Exception: Low-voltage lighting.
### Lighting Efficiency

#### Table 3.6: High-efficiency Lighting %

<table>
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<tr>
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<tbody>
<tr>
<td><strong>Number</strong></td>
<td>15</td>
<td>56</td>
<td>71</td>
<td>56</td>
<td>71</td>
<td>34</td>
</tr>
<tr>
<td><strong>Range</strong></td>
<td>0 to 94</td>
<td>0 to 100</td>
<td>0 to 100</td>
<td>0 to 100</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>41</td>
<td>33</td>
<td>34</td>
<td>34</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Climate Zone and Code

<table>
<thead>
<tr>
<th>Requirement</th>
<th>2009</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliance Rate</td>
<td>8 of 15 (53%)</td>
<td>4 of 15 (27%)</td>
</tr>
<tr>
<td></td>
<td>17 of 56 (30%)</td>
<td>13 of 56 (23%)</td>
</tr>
<tr>
<td></td>
<td>25 of 71 (35%)</td>
<td>15 of 71 (21%)</td>
</tr>
</tbody>
</table>

#### Graph

- **CZ2**: 2009: 80%, 2015: 30%
- **CZ3**: 2009: 0%, 2015: 0%
- **All CZ's**: 2009: 0%, 2015: 0%
R404.1 Lighting equipment (Mandatory).
Not less than 75 percent of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps or not less than 75 percent of the permanently installed lighting fixtures shall contain only high-efficacy lamps.  **Exception:** Low-voltage lighting.

**Can be met with CFLs or LEDs**

(Not Halogen Bulbs or T12 Fluorescent Lamps)
Major Changes in NEW Alabama Energy Code

**Envelope Tightness**
- 2009 code: 7 ACH50
- 2015 code: 5 ACH50

**Duct Tightness**
- 2009 code: 12 cfm/100ft²
- 2015 code: 4 cfm/100ft²

**High Efficacy Lighting**
- 2009 code: 50%
- 2015 code: 75%

*Effective October 1, 2016*
Savings Potential - The Big 3

Table ES. 1. Estimated Annual Statewide Savings Potential in Alabama (2015 AL Code)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Total Energy Savings (MMBtu)</th>
<th>Total Energy Cost Savings ($)</th>
<th>Total State Emissions Reduction (MT CO2e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duct Leakage</td>
<td>14,420</td>
<td>395,063</td>
<td>2,272</td>
</tr>
<tr>
<td>Lighting</td>
<td>10,891</td>
<td>385,451</td>
<td>2,408</td>
</tr>
<tr>
<td>Envelope Air Leakage</td>
<td>11,207</td>
<td>263,089</td>
<td>1,417</td>
</tr>
<tr>
<td>Exterior Wall Insulation</td>
<td>8,022</td>
<td>201,105</td>
<td>1,116</td>
</tr>
<tr>
<td>Window SHGC</td>
<td>1,309</td>
<td>54,674</td>
<td>356</td>
</tr>
<tr>
<td>TOTAL</td>
<td>45,849 MMBtu</td>
<td>$1,299,382</td>
<td>7,569 MT CO2e</td>
</tr>
</tbody>
</table>

Lighting Efficiency, Air Sealing & Duct Sealing offer 80% of the Energy Savings Improvement
Recommendations and Resources
Additional resources, including:
• Code Notes
• Technical Assistance to Users
• Energy Codes 101
• Setting the Standard
• Training Materials
• Resource Center

Are available through the Building Energy Codes Program.
BECP – Your Resource

Additional resources, including:
- Code Notes
- Technical Assistance to Users
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www.energycodes.gov
Additional resources, including:
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https://energy.gov/eere/buildings/building-energy-codes-program
Resources - BCAP

http://bcapcodes.org/code-status/state/alabama/
ENERGY CODE SUPPORT SERVICES

- Plan Review
- Site Inspection
- Hands-on Field Training
- One-On-One Training

Find Out About Services Today

Jeffrey Domanski
email: energycode@ibts.org
phone: (646) 483-1338
Energy Specialist Registry

This site contains information on providers of energy services in support of IECC and ASHRAE 90.1 Energy Code compliance, including special inspections, testing, review, and guidance. It has been created to help users of these services find service providers, and as a resource for everyone to understand the services that can be utilized to enhance code compliance, including municipal Code Enforcement Officials and administrators, designers, builders and contractors, building developers, and construction equipment and materials suppliers. It is currently focused on providers located and providing service in New York State. Information within more states will be added in the future.

Click here to learn more about the New York State Energy Conservation Construction Code.

For information on being included on the Energy Code Specialist Registry, please contact energycode@ibts.org.

Disclaimer: This registry is not intended to provide opinion on the quality of the energy professionals included herein, only to provide direction to users on where to find them, and obtain information to assist with selecting a resource that can assist you.
# IBTS ENERGY SPECIALIST REGISTRY – Where to find Help

<table>
<thead>
<tr>
<th>Company</th>
<th>Contact Person</th>
<th>Contact Info</th>
<th>Service Areas</th>
<th>Services Provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company A</td>
<td>Jane Simpson</td>
<td>703-555-1234 <a href="mailto:jsimpson@companya.com">jsimpson@companya.com</a></td>
<td>NYC, Mid-Hudson, Capital</td>
<td>RA, PE, DET</td>
</tr>
<tr>
<td>Company B</td>
<td>Tom Williams</td>
<td>718-555-1234 <a href="mailto:twilliams@companyb.com">twilliams@companyb.com</a></td>
<td>North Country</td>
<td>ICC-CEI, BPI-R</td>
</tr>
<tr>
<td>Company C</td>
<td>Mary Jones</td>
<td>212-555-1234 <a href="mailto:mjones@companyc.com">mjones@companyc.com</a></td>
<td>Finger Lakes</td>
<td>ICC-REI, ICC-MI</td>
</tr>
<tr>
<td>Company D</td>
<td>Bob Costas</td>
<td>718-555-1234 <a href="mailto:bcostas@companycd.com">bcostas@companycd.com</a></td>
<td>North Country</td>
<td>ICC-RBI, ICC-REPE</td>
</tr>
<tr>
<td>Company E</td>
<td>Jim Seymour</td>
<td>212-555-1234 <a href="mailto:jseymour@companye.com">jseymour@companye.com</a></td>
<td>Finger Lakes</td>
<td>BPI-R, BPI-ENV</td>
</tr>
<tr>
<td>Company F</td>
<td>Troy Atkman</td>
<td>718-555-1234 <a href="mailto:takman@companyt.com">takman@companyt.com</a></td>
<td>North Country</td>
<td>DOS-CEO, PE</td>
</tr>
<tr>
<td>Company G</td>
<td>Michael Irvin</td>
<td>212-555-1234 <a href="mailto:mirvin@companyg.com">mirvin@companyg.com</a></td>
<td>Finger Lakes</td>
<td>BPI-IDL, RA</td>
</tr>
<tr>
<td>Company H</td>
<td>Emmitt Smith</td>
<td>718-555-1234 <a href="mailto:esmith@companyh.com">esmith@companyh.com</a></td>
<td>North Country</td>
<td>ABAA-A, LEED GA</td>
</tr>
<tr>
<td>Company I</td>
<td>Deion Sanders</td>
<td>212-555-1234 <a href="mailto:dsanders@companvi.com">dsanders@companvi.com</a></td>
<td>Finger Lakes</td>
<td>LEED AP, DET RA</td>
</tr>
</tbody>
</table>
Resources – for Questions

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Jeffrey Domanski
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Institute for Building Technology and Safety
Phone: 646-483-1338
Email: jdomanski@ibts.org
Thank you!

- David Cohan – U.S. Department or Energy
- Kelly Crandall – Institute for Market Transformation
- Heather Goggin – ADECA Energy Program
- Jerry Adams – Calhoun Community College
- Jason Reid – Home Builders Assoc. of Alabama
- Mike DeWein – Leidos
- Code Officials Association of Alabama