Michigan Energy Code Training and Implementation Program
1.0 Hour Advanced Program Course Number 16200
Residential Energy Inspection

School of Planning, Design & Construction
Michigan State University
East Lansing, Michigan
Presenters

Residential Energy Inspection:

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Instructor # 1455

Marcus Metoyer
Instructor # 1540

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Instructor # 1616

Course Number: 16200

1 Hour Specialty:
BI, MI, or registrants with only BO/PR but no inspector registration
Acknowledgement:
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Project Support

Prepared by the School of Planning, Design and Construction at Michigan State University. Oversight provided by MSU faculty and the Center for Construction Project Performance Assessment and Improvement (C2P2ai).

Project Objectives

To train building officials, inspectors, home builders, subcontractors, suppliers, engineers and architects in the inspection requirements of the Michigan energy code for the purpose of:

1. Increasing understanding
2. Improving compliance
3. Reducing administrative time
4. Improving customer relationships
Presentation Overview

• 2009 MUEC\(^1\)
• Compliance Tools\(^1\)
• REScheck Software\(^2\)

\(^1\)As adapted from U.S. DOE provided instructional resources on the 2009 IECC with MI amendments

\(^2\)Based on U.S. DOE REScheck training case study applied to Michigan climate zone 5
Project Objectives

To train building officials, inspectors, home builders, subcontractors, suppliers, engineers and architects in the revised Michigan energy code for the purpose of:

1. Increasing understanding
2. Improving compliance
3. Reducing administrative time
4. Improving customer relationships

Go To: www.energycodes.gov
Date visited: 3/14/2011
What Does This Mean to Me?


Target Codes:

- Residential: 2009 IECC
- Commercial: ASHRAE 90.1-2007

90% compliance within 8 years

*One time* demonstration of 90% compliance required


BECP is developing guidelines and tools to use in measuring compliance with building energy codes, which:

- Foster uniformity and objectivity in measuring compliance rates
- Eliminate need for each state to develop its own procedures and tools
- Provide tools that states can adapt for their own preferred use
- Collect additional data and support related activities.
PNNL Topic Briefs

- Brief 1: Measuring 90% Compliance
- Brief 2: Sample Size
- Brief 3: Onsite Compliance Evaluation
- Brief 4: Above-Code Programs
- Brief 5: Sample Distribution and Makeup
- Brief 6: Evaluation Checklists
- Brief 7: Compliance Roadmap
- Brief 8: Renovations
- Brief 9: Alternative Codes
- Period of Evaluation
- Annual Measurement Requirements
- Approaching Jurisdictions
- Training and Tools
- Related Outcomes

http://www.energycodes.gov/arra/compliance_evaluation.stm

Date visited: 11/22/2010
Compliance Report

Measuring State Energy Code Compliance Report:

• Aggregate of previously released energy code compliance topic briefs and additional information on remaining topics

• 74 page document
  − Code adoption and equivalency
  − Annual measurement
  − Planning for compliance
  − Evaluation
  − Onsite compliance evaluation procedures (includes generating the sample sets)
  − Evaluation checklists

Evaluated buildings are each assigned a compliance rating of 0–100% based on the proportion of code requirements that each has met, and the evaluated buildings’ scores within a state are averaged to derive an overall compliance metric with an associated confidence.
Residential Data Collection Checklist
2009 International Energy Conservation Code
Climate Zone 3

Date:__________  Name of Evaluator(s):__________________________

Building Name & Address:_________________________________________________________________________
Conditioned Floor Area:_________ ft²

Building Contact: Name:________________________________ Phone:_________ Email:_____________________

Compliance Approach:  ☐ Prescriptive (402.1.2 or 402.1.3)  ☐ UA Trade-Off (402.1.4)  ☐ Building Performance (405)

State:__________  Jurisdiction:________________

Building Type:  1- and 2-Family, Detached: ☐ Single Family ☐ Multifamily: ☐ Apartment ☐

Project Type:  ☐ New Construction  ☐ Addition to existing building

<table>
<thead>
<tr>
<th>Item Number¹</th>
<th>Pre-Inspection/Plan Review</th>
<th>Code Value</th>
<th>Verified Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR1 [103.2]¹</td>
<td>Construction drawings and documentation submitted and available. Documentation sufficiently demonstrates energy code compliance.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>PR2 [403.6]²</td>
<td>HVAC loads calculations: Heating system size(s):</td>
<td>kBtu:</td>
<td>kBtu:</td>
</tr>
<tr>
<td></td>
<td>Cooling system size(s):</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional Comments: ________________________________

Documentation. Determine if a complete set of plans/construction drawings, specifications, and energy code compliance documentation is available in the building department. If there is no building department or the locality does not conduct plan review, this information should be obtained from the registered design professional or builder having responsibility for the project. If documentation indicating a trade-off or performance approach is not provided, a prescriptive approach must be assumed for verifying compliance. Construction documents should sufficiently demonstrate energy code compliance, including but not limited to the following information:

- The location and R-values of insulation materials
- U-factors and SHGC values for windows, doors, skylights, and other fenestration products
- Information related to duct and piping location, insulation type and R-value, and means of sealing

Under the assumption that only state or local government with a responsible enforcement and/or permitting agency are included in compliance evaluations, plans and documentation are expected to be held by the responsible agency. If this is not the case, mark this code requirement and the next (PR1 and PR2) as non-compliant, unless there is another entity responsible for enforcement identified (e.g. utility, contractor licensing board, etc.) in which case they should be contacted to review PR1 and PR2 information.

HVAC Load Calculations. Verify that HVAC load calculations have been completed and submitted. Verify the methodology used in the load calculations. List the resultant heating and/or cooling loads as applicable in the Verified Value column.


Checklist Consolidation and Scoring

- BECP will provide an online database and web form
- BECP will provide services to states for converting paper checklist to the electronic format.
Step-by-Step Companion Guide

Measuring State Energy Code Compliance

Step 1: Obtain Evaluation Checklists

- A reliable measurement of energy code compliance can be conducted through a valid sample of building projects.
- BECP offers evaluation checklists for both residential and commercial buildings.

Step 2: Generate Samples

- With checklists in hand, the next step is to determine which buildings to evaluate.
- BECP recommends evaluating a significant number of buildings in each of the following areas:
  - Commercial new construction
  - Residential new construction
  - Commercial renovations
  - Residential renovations

Step 3: Conduct Field Visits

- Field visits are conducted by BECP staff to verify building performance.
- Field visits are based on the checklists provided by BECP.

Step 4: Obtain Your State’s Score

- State scores are provided through BECP’s Web-based tool.

Step 5: Analyze Your Scores

- BECP provides a detailed analysis of your state’s performance.

BECP Tool: energycodes.gov

Date visited: 12/15/2010
Building Energy Codes Resource Guide:

*Code Officials Edition*

View or download:

http://www.energycodes.gov/publications/resourceguides/

- Plan review and inspection resources
- REScheck and COMcheck reference guides
- Case studies
- Sample checklists

- Download the PDF or flip through the online version
- Register for automatic updates
Compliance Evaluation

Residential Checklist Inspection Stages

- Plan Review
- Foundation
- Framing/Rough-In
- Insulation
- Final
## Residential Data Collection Checklist

2009 International Energy Conservation Code
Climate Zone 5 and Marine 4

<table>
<thead>
<tr>
<th>Building ID:</th>
<th>Date:</th>
<th>Name of Evaluator(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Building Contact:</th>
<th>Name:</th>
<th>Phone:</th>
<th>Email:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Building Name &amp; Address:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subdivision:</th>
<th>Lot #:</th>
<th>Conditioned Floor Area:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State:</th>
<th>County:</th>
<th>Jurisdiction:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Compliance Approach (check all that apply):</th>
<th>Prescriptive</th>
<th>Trade-Off</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Compliance Software Used:</th>
<th>Green Building/Above-Code Program:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Building Type:</th>
<th>1- and 2-Family, Detached:</th>
<th>Single Family</th>
<th>Modular</th>
<th>Townhouse</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Multifamily:</td>
<td>Apartment</td>
<td>Condominium</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Type:</th>
<th>New Building</th>
<th>Existing Building Addition</th>
<th>Existing Building Renovation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IECC Section #</th>
<th>Pre-Inspection/Plan Review</th>
<th>Code Value</th>
<th>Verified Value</th>
<th>Complies</th>
<th>Comments/Assumptions¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>103.2 (PR1)</td>
<td>Construction drawings and documentation available. Documentation sufficiently demonstrates energy code compliance.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>403.6 (PR2)</td>
<td>HVAC loads calculations: Heating system size(s): Cooling system size(s): kBtu:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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## Compliance Evaluation

<table>
<thead>
<tr>
<th>IECC Section #</th>
<th>Foundation Inspection</th>
<th>Code Value</th>
<th>Verified Value</th>
<th>Complies</th>
<th>Comments/Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>402.1.1 [FO1]</td>
<td>Slab edge insulation R-value.</td>
<td>Unheated: R-10, Heated: R-15</td>
<td>R-____</td>
<td>☐</td>
<td>☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>303.2, 402.2.8 [FO2]</td>
<td>Slab edge insulation installed per manufacturer's instructions.</td>
<td></td>
<td></td>
<td>☐</td>
<td>☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>402.1.1 [FO3]</td>
<td>Slab edge insulation depth/length.</td>
<td>2 ft.</td>
<td>____ ft.</td>
<td>☐</td>
<td>☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>303.2 [FO5]</td>
<td>Basement wall exterior insulation installed per manufacturer's instructions.</td>
<td></td>
<td></td>
<td>☐</td>
<td>☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>402.2.7 [FO6]</td>
<td>Basement wall exterior insulation depth.</td>
<td>10 ft. or to basement floor</td>
<td>____ ft.</td>
<td>☐</td>
<td>☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>402.2.9 [FO7]</td>
<td>Crawl space wall insulation R-value.</td>
<td>Continuous: R-10, Cavity: R-13</td>
<td>R-____ R-____</td>
<td>☐</td>
<td>☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>303.2 [FO8]</td>
<td>Crawl space wall insulation installed per manufacturer's instructions.</td>
<td></td>
<td></td>
<td>☐</td>
<td>☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>402.2.9 [FO9]</td>
<td>Crawl space continuous vapor retarder installed with joints overlapped by 6 inches and sealed, and extending at least 6&quot; up the stem wall.</td>
<td></td>
<td></td>
<td>☐</td>
<td>☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>303.2.1 [FO10]</td>
<td>Exposed foundation insulation protection.</td>
<td></td>
<td></td>
<td>☐</td>
<td>☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>403.8 [FO11]</td>
<td>Snow melt controls.</td>
<td></td>
<td></td>
<td></td>
<td>☐ ☐ ☐ ☐</td>
</tr>
</tbody>
</table>
Foundation Insulation

- Insulation can be cut at 45 degree angle
- Verify R-values

FO1 [402.2.8, 303.2]¹  Slab edge insulation R-value. Installed per manufacturer’s instructions.

Slab Insulation

| FO2 [402.2.8]¹ | Slab edge insulation depth/length |

Basement wall exterior insulation R-value. Installed per manufacturer’s instructions.

[FO3 [402.1.1, 303.2]$^1$]

### Basement Wall Insulation

<table>
<thead>
<tr>
<th>FO4 [402.2.7]</th>
<th>Basement wall exterior insulation depth</th>
</tr>
</thead>
</table>

**Evaluating Residential Buildings for Statewide Compliance. U. S. DOE Building Energy Codes Program.**  
Date visited: 6/28/2011
Crawl Space Wall Insulation

Crawl space wall insulation R-value. Installed per manufacturer’s instructions.

FO5 [402.2.9, 303.2]¹

Insulation Protection

| FO7 [303.2.1]^2 | Insulation protection |

# Framing/Rough-in Inspection

<table>
<thead>
<tr>
<th>USEC Section #</th>
<th>Insulation Inspection</th>
<th>Code Value</th>
<th>Verified Value</th>
<th>Complies</th>
<th>Comments/Assumptions</th>
</tr>
</thead>
</table>
| 402.1.1, 402.2.5, 402.2.6 | Floor insulation R-value.                                  | Wood: R-30/
Steel.  
See footnote | R-____ | □ □ □ □ |                  |
| 303.2         | Wall insulation R-value.                                  | Wood: R-20 or R-13+R-5
Mass: R-17
Steel.  
See footnote | R-____ | □ □ □ □ |                  |
| 303.2         | Wall insulation installed per manufacturer's instructions. |            |                |          |                     |
| 402.1.1, 402.2.5, 402.2.6 | Basement wall interior insulation R-value.                |            |                | □ □ □ □ |                     |
| 303.2         | Basement wall interior insulation installed per manufacturer's instructions. |            |                | □ □ □ □ |                     |
| 402.2.7       | Basement wall interior insulation depth.                  | 10 ft or to basement floor | □ □ □ □ |                     |
| 402.2.11      | Sunroom wall insulation R-value.                          | R-13       | R-____         | □ □ □ □ |                     |
| 303.2         | Sunroom wall insulation installed per manufacturer's Instructions. |            |                | □ □ □ □ |                     |
| 402.2.11      | Sunroom ceiling insulation R-value.                       | R-24       | R-____         | □ □ □ □ |                     |
| 303.2         | Sunroom ceiling insulation installed per manufacturer's instructions. |            |                | □ □ □ □ |                     |
| 402.4.2, 402.4.2.1 | Air sealing complies with sealing requirements via blower door test. If applicable, verification via visual inspection should be marked N/A. | ACH 50 ≤ 7
ACHI 50 = ______ | □ □ □ □ |                     |
| 303.1         | All installed insulation labeled or installed R-value provided. |            |                | □ □ □ □ |                     |
| 402.4.1, 402.4.2 | Air sealing of all openings and penetrations via visual inspection: 
- Site-built fenestration  
- Window/door openings  
- Utility penetrations |            |                | □ □ □ □ |                     |


Date visited: 6/28/2011
Floor Insulation

Floor insulation R-value (requirement varies depending on floor type). Installed per manufacturer’s instructions.

FR1 [402.1.1, 402.2.5, 402.2.6, 303.2]¹


Determine and record the U-factor(s) for the window, door, and glass block assemblies installed in the building envelope that are not skylights (e.g., are at least 15 degrees from vertical), including fenestration assemblies installed in a sunroom that is thermally isolated from the rest of the building.

<table>
<thead>
<tr>
<th>FR2 [402.1, 402.3.3, 402.3.5]$^1$</th>
<th>Glazing U-factor (including sunrooms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR3 [402.1, 402.3.5]$^1$</td>
<td>Skylight U-factor (including sunrooms)$^3$</td>
</tr>
<tr>
<td>FR4 [303.1.3]$^1$</td>
<td>NFRC labels present</td>
</tr>
<tr>
<td>FR5 [402.1.2, 402.3.3]$^1$</td>
<td>Glazing SHGC value$^4$</td>
</tr>
<tr>
<td>FR6 [402.1.1, 303.2][sup 1]</td>
<td>Mass wall exterior insulation R-value. Installed per manufacturer’s instructions.</td>
</tr>
</tbody>
</table>
Duct Insulation

FR7 [403.2.1]¹  Duct insulation


Duct Leaks

 Courtesy: WSU Extension Energy Program
Duct Sealing

Ducts, air handlers, filter boxes, and building cavities used as return air ducts have joints and seams sealed.

FR8 [403.2.2]¹

| Duct sealing complies with listed sealing methods |

FR10 [403.2.3]\(^1\) | Building cavities NOT used for supply ducts

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HVAC Piping Insulation


Outdoor Intake/Exhaust Openings

FR12 [403.5]² Dampers Installed on all outdoor Intake and exhaust openings

FR13 [403.4]^2 | Circulating hot-water piping insulation

| FR14 [402.4.5]$^2$ | Recessed lighting fixtures meet infiltration criteria |

---


Fenestration and Door Air Leakage

**World's Best Window Co.**

**Millennium 2000+**
Vinyl-Clad Wood Frame
Double Glazing • Argon Fill • Low E
Product Type: Vertical Slider

**ENERGY PERFORMANCE RATINGS**

<table>
<thead>
<tr>
<th>U-Factor (U.S./I-P)</th>
<th>Solar Heat Gain Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.30</td>
<td>0.30</td>
</tr>
</tbody>
</table>

**ADDITIONAL PERFORMANCE RATINGS**

<table>
<thead>
<tr>
<th>Visible Transmittance</th>
<th>Air Leakage (U.S./I-P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.51</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for any specific use. Consult manufacturer’s literature for other product performance information. (www.nfrc.org)

<table>
<thead>
<tr>
<th>FR15 [402.4.4]^2</th>
<th>Glazed fenestration air leakage: Swinging door air leakage</th>
</tr>
</thead>
</table>
**Wall Insulation and Installation**

<table>
<thead>
<tr>
<th>IN1</th>
<th>Wall insulation R-value. Installed per manufacturer’s instructions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>[402.1.1&lt;br&gt;402.2.5&lt;br&gt;402.2.4, 303.2]¹</td>
<td>Wall insulation R-value. Installed per manufacturer’s instructions.</td>
</tr>
</tbody>
</table>

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IN2 [402.1.1]¹

Basement wall interior insulation R-value. Installed per manufacturer’s Instructions.

| IN3 [402.2.7]\(^1\) | Basement wall interior insulation depth |

Basement Wall Insulation Depth

### Air Sealing

**Air Sealing (Blower Door Test)**

**Check List**

<table>
<thead>
<tr>
<th>IN5</th>
<th>Air sealing complies with sealing requirements or tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>[402.4.1, 402.4.2]¹</td>
<td></td>
</tr>
</tbody>
</table>

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Date visited: 6/28/2011
Air Sealing Checklist

Blower Door Testing

Visual Inspection

IN5 [402.4.1, 402.4.2]¹

Air sealing complies with sealing requirements or tested
All installed insulation labeled or installed R-value provided
### Insulation Inspection

<table>
<thead>
<tr>
<th>IECC Section #</th>
<th>Final Inspection Provisions</th>
<th>Code Value</th>
<th>Verified Value</th>
<th>Complies</th>
<th>Comments/Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>402.1.1 402.2.1 402.2.2</td>
<td>Ceiling insulation R-value</td>
<td>Wood: R-38&lt;sup&gt;11&lt;/sup&gt; Steel Truss:&lt;sup&gt;12&lt;/sup&gt; Steel Joist: R-49</td>
<td>R-&lt;br&gt;Wood&lt;br&gt;Steel</td>
<td>□ □ □ □</td>
<td></td>
</tr>
<tr>
<td>303.1.1.1, 303.2</td>
<td>Ceiling insulation installed per manufacturer’s instructions. Blown insulation marked every 300 ft&lt;sup&gt;2&lt;/sup&gt;.</td>
<td></td>
<td></td>
<td>□ □ □ □</td>
<td></td>
</tr>
<tr>
<td>402.2.3</td>
<td>Attic access hatch and door insulation.</td>
<td>R-38</td>
<td>R-——</td>
<td>□ □ □ □</td>
<td></td>
</tr>
<tr>
<td>403.2.2</td>
<td>Duct tightness via post-construction test. If applicable, verification via rough-in test should be marked N/A.</td>
<td>To Outdoors:&lt;br&gt;8 cfm&lt;br&gt;Across System: 12 cfm</td>
<td>____ cfm</td>
<td>□ □ □ □</td>
<td></td>
</tr>
<tr>
<td>403.6</td>
<td>Heating and cooling equipment type and capacity as per plans.</td>
<td></td>
<td></td>
<td>□ □ □ □</td>
<td></td>
</tr>
<tr>
<td>404.1</td>
<td>Lighting - 50% of lamps are high efficacies.</td>
<td></td>
<td></td>
<td>□ □ □ □</td>
<td></td>
</tr>
<tr>
<td>401.3</td>
<td>Certificate posted.</td>
<td></td>
<td></td>
<td>□ □ □ □</td>
<td></td>
</tr>
<tr>
<td>402.4.3</td>
<td>Wood burning fireplace - gasketed doors and outdoor air for combustion.</td>
<td></td>
<td></td>
<td>□ □ □ □</td>
<td></td>
</tr>
<tr>
<td>403.1.1</td>
<td>Programmable thermostats installed on forced air furnaces.</td>
<td></td>
<td></td>
<td>□ □ □ □</td>
<td></td>
</tr>
<tr>
<td>403.1.2</td>
<td>Heat pump thermostat installed on heat pumps.</td>
<td></td>
<td></td>
<td>□ □ □ □</td>
<td></td>
</tr>
<tr>
<td>403.4</td>
<td>Circulating service hot water systems have automatic or accessible manual controls.</td>
<td></td>
<td></td>
<td>□ □ □ □</td>
<td></td>
</tr>
<tr>
<td>403.9</td>
<td>Pool heaters, covers, and automatic or accessible manual controls.</td>
<td></td>
<td></td>
<td>□ □ □ □</td>
<td></td>
</tr>
</tbody>
</table>

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**Evaluating Residential Buildings for Statewide Compliance. U. S. DOE Building Energy Codes Program.**

FI1
[402.1.1
402.2.1
402.2.2, 303.1.1.1, 303.2]¹

Ceiling insulation R-value. Installed per manufacturer’s instructions. Blown insulation marked every 300 ft².

² Date visited: 6/28/2011
Attic Access hatch and door insulation

F12
[402.2.3]¹

Attic Access Insulation


Sunroom Ceiling Insulation

Sunroom ceiling insulation. Installed per manufacturer’s instructions

Door U-factor

<table>
<thead>
<tr>
<th>FI4</th>
<th>[402.1.1, 402.3.4]¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door U-factor</td>
<td></td>
</tr>
</tbody>
</table>


Heating Equipment

Verify make and model against information on the plans

| FI5 [403.2.6]1 | Heating and cooling equipment type, make and model as per plans |

Lighting

- 50% of lamps are high efficacy

F16 [404.1]¹


Programmable Thermostat

Programmable thermostats installed on forced air furnaces

<table>
<thead>
<tr>
<th>FI7</th>
<th>Programmable thermostats installed on forced air furnaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>[403.1.1]^2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FI8</th>
<th>Heat pump thermostat installed on heat pumps</th>
</tr>
</thead>
<tbody>
<tr>
<td>[403.3]^2</td>
<td></td>
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</tbody>
</table>
Gasketed Fireplace Doors

Fireplace - Gasketed doors and outdoor air for combustion


Circulating service hot water systems have automatic or accessible controls

| FI10 [403.4]| Circulating service hot water systems have automatic or accessible controls |

REScheck Compliance Software
Training Module

School of Planning, Design & Construction
Michigan State University
East Lansing, Michigan
Demonstrate Compliance

Prescriptive

Trade-off

Performance

“Prescriptive Packages Approach”

“Trade-off Approach”

“Performance Approach”

Residential Requirements of the 2009 IECC. U. S. DOE Building Energy Codes Program.

Your compliance report (12.1 KB) is ready.

Click the link to view the report, or right-click it and select "Save Target As" to save the report on your computer.

An RTF version of the report (102.6 KB) may also be viewed or saved.

You may also e-mail the PDF version of the compliance report to your local code official using the REScheck-Web. Simply complete the following form and click the "Send Report" button below. Fields marked with a red asterisk (*) are required.

**Send Report To**

* Permitting Facility: Facility Name
* Facility E-mail Address: email@facility.com
Address(es) for CC: (Other Team Members)

**From**

* Your Name: Sparty
* Your Company: 
* Your E-mail Address: remylee@msu.edu

Additional Notes: Enter additional notes or project communications here.

» Send Report
Compliance Report

Generated by REScheck-Web Software

Compliance Certificate

Project Information and Passing Score Displayed

Inventory of Building Components
Inspection Checklist

Checklist Allows Code Official to Verify Individual Building Components

Ceilings:
- Ceiling: Raised or Energy Truss, R-38.0 cavity insulation
  Comments: ________________________________
  Insulation must achieve full height over the plate lines of exterior walls.

Above-Grade Walls:
- Exterior Wall 1: Wood Frame, 16in. o.c., R-19.0 cavity insulation
  Comments: ________________________________
- Ext. Wall 2 South: Wood Frame, 16in. o.c., R-19.0 cavity insulation
  Comments: ________________________________
- Ext. Wall 3 East: Wood Frame, 16in. o.c., R-19.0 cavity insulation
  Comments: ________________________________
- Ext. Wall 4 West: Wood Frame, 16in. o.c., R-19.0 cavity insulation
  Comments: ________________________________
- Knee Wall West: Wood Frame, 16in. o.c., R-19.0 cavity insulation
  Comments: ________________________________
- Knee Wall East: Wood Frame, 16in. o.c., R-19.0 cavity insulation
  Comments: ________________________________
# 2009 IECC Energy Efficiency Certificate

**Insulation Rating**

<table>
<thead>
<tr>
<th>Component</th>
<th>R-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceiling / Roof</td>
<td>38.00</td>
</tr>
<tr>
<td>Wall</td>
<td>19.00</td>
</tr>
<tr>
<td>Floor / Foundation</td>
<td>30.00</td>
</tr>
<tr>
<td>Ductwork (unconditioned spaces):</td>
<td></td>
</tr>
</tbody>
</table>

**Glass & Door Rating**

<table>
<thead>
<tr>
<th>Component</th>
<th>U-Factor</th>
<th>SHGC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Window</td>
<td>0.35</td>
<td>0.15</td>
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<tr>
<td>Door</td>
<td>0.50</td>
<td>NA</td>
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</tbody>
</table>

**Heating & Cooling Equipment Efficiency**

<table>
<thead>
<tr>
<th>Component</th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating System</td>
<td></td>
</tr>
<tr>
<td>Cooling System</td>
<td></td>
</tr>
<tr>
<td>Water Heater</td>
<td></td>
</tr>
</tbody>
</table>

Name: ___________________________ Date: __________

Comments: Bob White
Compliance Discussion Session

Topics for Discussion:

- Current state of energy codes
- Feasibility
- Cost of code compliance
- Enforcement
- Record-keeping
- Barriers to code compliance
- Technical assistance