2015 Michigan Energy Code for Residential
Michigan Energy Code Training and Implementation Program

1.0 Hour Residential Program Course
Presenters

Michigan Residential Energy Code Training and Implementation Program:

Tim Mrozowski, A.I.A. LEED® AP
Professor and Program Leader
Construction Management Program
mrozowsk@msu.edu

MICHIGAN STATE UNIVERSITY
School of Planning, Design and Construction
Project Support

Prepared by: The School of Planning, Design and Construction at Michigan State University.

Project funding provided by: DTE Energy

Additional support provided by:
  • Navigant
  • Midwest Energy Efficiency Alliance (MEEA)
Presentation Overview

• Background on new code
• Michigan code status
• When does it apply?
• What’s new overview?
• Code requirements
• Will REScheck™ apply?
• Will “above code” programs comply?
• Additional Resources
Disclaimer

This presentation presents an educational overview of the significant changes in the Michigan Energy Code for Residential Buildings effective February 8, 2016.

While it is believed to be accurate it is not intended to substitute for actual code language. Code language is addressed only generally and is not verbatim, language is paraphrased and not all code sections are addressed in this presentation. Designers, contractors, code officials etc, should always use the actual code in projects.
Status of Residential Energy Codes

Michigan has changed to an amended Version of IECC 2015, Included in MRC Chapter 11 February 8, 2016

Michigan Energy Code Adoption

• Michigan adopted IECC (2015) with Michigan Amendments

• Entitled “Michigan Energy Code”

• Merged provisions of IECC (2015) Chapters 1 (Scope and Application), 2 (Definitions), 3 (General Requirements) and 4 (Residential Energy Efficiency) into a single Chapter 11 in the Michigan Residential Code MRC (2015)

• Changes the order and section numbers within the code to reflect the new placement in Chapter 11
Obtaining Copies of the Code

[Website screenshot showing the ICC International Code Council website with categories and Michigan codes available for purchase.]
When Does it Apply?

- Applies to one and two family dwellings and townhouses
- Will be applied to buildings classified as R2, R3, R4 not more than three stories above grade
When Does it Apply?

Does not apply to buildings with:

Low energy usage
< 3.4 Btu/h/sq.ft. OR 1 watt/sq.ft. of floor area

OR unconditioned spaces
When Does it Apply?

• Other building types are under the Michigan commercial energy code provisions based on ASHRAE 90.1 (2007) as amended. This has not been changed at this time.

• The MI BCC Commercial Energy Code Revision Committee met during summer 2015 to consider the next commercial energy code, but it has not yet been adopted.
Application to additions and renovations

Additions, alteration, renovations and repairs to conform as relates to new construction

- Unaltered portions do not need to comply
- Additions can comply alone or in combination with existing building
- Window replacements are required to comply
- No exception to blower door testing for additions

Source: DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS DIRECTOR’S OFFICE
CONSTRUCTION CODE Filed with the Secretary of State on October 9, 2015
Application to additions and renovations

Exceptions for certain alterations, renovations and repairs:

• Storm windows over existing fenestration
• Glass only replacements
• Exposed, existing ceiling, wall or floor cavities if already filled with insulation
• Where existing roof, wall or floor cavity isn’t exposed

• Reroofing for roofs where neither sheathing nor insulation exposed
• Reroofing where roof is not part of thermal envelope (New exception added by Michigan)

Source: DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS DIRECTOR’S OFFICE CONSTRUCTION CODE Filed with the Secretary of State on October 9, 2015
Terminology

- **Prescriptive**
  - Required but can be lessened or eliminated in trade for compensating improvements elsewhere

- **Mandatory**
  - Required and cannot be traded down, even in the simulated performance path

- **Some elements have “hard limits”**
  - aka, “trade-off limits”
  - a prescriptive requirement that can only be traded so far
  - components can only be traded so far when complying with the performance requirements
Structure of MRC (2015) Chapter 11

Based on IECC 2015 with Michigan Amendments

Section N1101: General
Section N1102: Building Thermal Envelope **
Section N1103: Systems **
Section N1104: Electrical Power and Lighting Systems *
Section N1105: Simulated Performance Alternative (Performance)
Section N1106: Energy Rating Index Compliance Alternative **

Based on and modified from Index, Michigan Residential Code (2015)
Compliance - Four Approaches

- **Prescriptive**
  - "Prescriptive Packages Approach"

- **Trade-off**
  - "Trade-off Approach" (UA)
  - "Performance Approach"

- **Performance**

- **Above Code Programs**

---

No Michigan specific version

---

Climate Zones are unchanged from former MUEC

Source: DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS DIRECTOR’S OFFICE
CONSTRUCTION CODE Filed with the Secretary of State on October 9, 2015
Scope/Construction Documents

Information required:

- Insulation materials and R-values
- Fenestration U-Factors
- Area-weighted U-Factor calculations
- Mechanical, SWH, equipment types, sizes, and efficiencies
- Equipment and system controls
- Duct sealing, duct and pipe insulation and location
- Air sealing details

See code for complete list

Certificate

Permanently posted on the electrical distribution panel

- Don’t cover or obstruct the visibility of other required labels
- Includes the following:
  - R-values of insulation installed for the thermal building envelope, including ducts outside conditioned spaces
  - U-actors and SHGC for fenestration
  - Area-weighted U-Factor and SHGC calculations
  - Results from any required duct system and building envelope air leakage testing
  - HVAC efficiencies and types
  - SWH equipment
  - Duct sealing, duct and pipe insulation and location
  - Air sealing details

Chapter 3: Climate Zones

• Labeling requirements for fixed wall insulation
  - Compressing cotton, polyester, fiberglass, or mineral wool batts
    • Must have labeling on batt for compressed R-value

• Currently information is on packaging material per FTC requirements
R-values are to be printed on batt insulation or rigid foam board.

Blown-in insulation must have an insulation certificate at or near the opening of the attic.

The certificate should include:
- R-value of installed thickness
- Initial installed thickness
- Installed density
- Settled thickness/settled R-value
- Coverage area
- Number of bags installed

Insulation markers must be installed every 300 square feet and be marked with the minimum installed thickness and affixed to the trusses or joists.

Building Thermal Envelope consists of:

- Fenestration
- Ceilings
- Walls
  - Above grade
  - Below grade
  - Mass walls
- Floors
- Slabs
- Crawlspace
Building Thermal Envelope - Changes

- Prescriptive R Values and U-Factors have some changes **

Source: DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS DIRECTOR’S OFFICE CONSTRUCTION CODE Filed with the Secretary of State on October 9, 2015
Building Thermal Envelope - Changes

Prescriptive R Values and U-Factors have some changes

- Window U-Factors lowered from .35 to .32 (more energy efficient)
- Skylight U-Factors lowered from .6 to .55 (more energy efficient)
- Wood framed walls in Zone 7: lowered from R-21 to R-20 (less energy efficient)
- Mass walls: raised R value from R-19 to R-20 when insulation on interior (more energy efficient)
- Crawl space walls R values increased to R-15/19 from R-10/13 (more energy efficient)

U-Factor change for windows may be the most significant
Various Michigan amended values are less than IECC 2015

- **Zone 5A Ceilings**
  - R-49 (IECC 2015)
  - R-38 (Michigan)

- **Zone 5A Basement walls**
  - R-15/19 (IECC 2015)
  - R-10/13 (Michigan)

- **Wood Framed Walls in Zone 6A**
  - R-20+5 or R-13 +10 (IECC 2015)
  - R-20 or R-13 +5 (Michigan)

- **Wood Framed Walls in Zone 7**
  - R20+5 or R13 +10 (IECC 2015)
  - R-20 or R-13 +5 (Michigan)
Fenestration

Look for labels

- Area-weighted average U-Factor must not exceed = .32

- Must be certified and labeled in accordance with NFRC 100 by an “accredited, independent laboratory”

- Non-labeled windows must still use the default tables

- SHGC does not apply to residential in Michigan

Source: DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS DIRECTOR’S OFFICE CONSTRUCTION CODE Filed with the Secretary of State on October 9, 2015
Fenestration Requirement Changes

Windows

• Some typical windows from manufacturers for certain shapes and types will be above $U = 0.32$ and some below.

• Will need to know the area and U-Factor for each window type and size to compute a weighted average.

• 15 SF of window area continues to be exempt from requirement

• One door 24 ft$^2$ continues to be exempt
## Area Weighted Average Example

<table>
<thead>
<tr>
<th>Opening Type</th>
<th>Area</th>
<th>Opening</th>
<th>Quantity</th>
<th>Total Area by Type</th>
<th>U values</th>
<th>U X Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Operable</td>
<td>16</td>
<td>11.16</td>
<td>9</td>
<td>144</td>
<td>0.34</td>
<td>48.96</td>
</tr>
<tr>
<td>B Fixed</td>
<td>1.75</td>
<td>0</td>
<td>34</td>
<td>59.5</td>
<td>0.28</td>
<td>16.66</td>
</tr>
<tr>
<td>C Operable</td>
<td>9</td>
<td>5.36</td>
<td>1</td>
<td>9</td>
<td>0.35</td>
<td>3.15</td>
</tr>
<tr>
<td>D Upper Fixed</td>
<td>9.32</td>
<td>0</td>
<td>13</td>
<td>121.16</td>
<td>0.29</td>
<td>35.1364</td>
</tr>
<tr>
<td>D lower Venting</td>
<td>3.5</td>
<td>1.33</td>
<td>13</td>
<td>45.5</td>
<td>0.35</td>
<td>15.925</td>
</tr>
<tr>
<td>E Diamond Fixed</td>
<td>6.7</td>
<td>0</td>
<td>3</td>
<td>20.1</td>
<td>0.32</td>
<td>6.432</td>
</tr>
<tr>
<td>Glass Doors</td>
<td>21</td>
<td>18.1</td>
<td>2</td>
<td>42</td>
<td>0.35</td>
<td>14.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>441.26</strong></td>
<td></td>
<td><strong>140.9634</strong></td>
</tr>
<tr>
<td><strong>Avg U</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>0.319457</strong></td>
</tr>
</tbody>
</table>
Building Thermal Envelope - Changes

• New language that allows for R-30 to substitute for R-38 and R-38 to substitute for R-49 when full depth of insulation extends over the wall plate. Previously this substitution was only allowed for R-49. This impacts Zone 5A and can be achieved with raised heel trusses.

• New Language requires Eave Baffles and governs their installation in attics with air permeable insulation.
Raised Heel/Energy Truss credit if insulation is full height over exterior wall (Prescriptive)
R-30 instead of R-38
R-38 instead of R-49


Baffle required
For air permeable insulations in vented attics, a baffle shall be installed

- Adjacent to soffit and eave vents
- To maintain an opening ≥ size of vent
- To extend over top of attic insulation
- May be of any solid material
Ceilings without Attic Spaces

R-30 allowed for up to 500 ft$^2$ or 20% total insulated ceiling area, whichever is less, where

- Required insulation levels exceed R-30
- Design of roof/ceiling assembly does not provide sufficient amount of space to meet higher levels

*Note: This reduction ONLY applies to the R-value prescriptive path, not the U-factor or Total UA alternatives*
Access Hatches and Doors

- Implies an unvented crawlspace (*aka, conditioned crawlspace*)
  - Space must be mechanically vented or receive minimal supply air (*Refer to IRC*)
  - Exposed earth must be covered with a continuous Class I vapor retarder
Unconditioned space includes unheated basement, vented crawlspace, or outdoor air.

Insulation must maintain permanent contact with underside of subfloor.

*Exception*

Climate Zones 4c-8
R-19 permitted if cavity completely filled
Defining Below-Grade Walls

*Basement Wall* – >50% below grade

*Below grade*

*Basement wall*

*Exterior Wall* – <50% below grade
Applies to slabs with a floor surface < 12 inches below grade

- R-10 (typically 2 inches) insulation in Zones 4 and above
- Must extend downward from top of slab a minimum of 24” (Zones 4 and 5) or 48” (Zones 6, 7, and 8)
- Insulation can be vertical or extend horizontally under the slab or out from the building
- Insulation extending outward must be under 10 inches of soil or pavement
  - An additional R-5 is required for heated slabs
Section 402: Building Thermal Envelope

Typical air infiltration locations:

- Windows and doors
- Between sole plates
- Floors and exterior wall panels
- Plumbing
- Electrical
- Service access doors or hatches
- Recessed light fixtures
- Rim joist junction
Air Leakage Control

Building thermal envelope
Building Thermal Envelope- Changes

- New language requires a complete air barrier system be installed and identifies particular locations

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CRITERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air barrier and thermal barrier</td>
<td>A continuous air barrier shall be installed in the building envelope. Exterior thermal envelope contains a continuous air barrier. Breaks or joints in the air barrier shall be sealed. Air-permeable insulation shall not be used as a sealing material.</td>
</tr>
<tr>
<td>Ceiling/attic</td>
<td>The air barrier in any dropped ceiling/soffit shall be aligned with the insulation and any gaps in the air barrier sealed. Access openings, drop down stair, or knee wall doors to unconditioned attic spaces shall be sealed.</td>
</tr>
<tr>
<td>Walls</td>
<td>Corners and headers shall be insulated and the junction of the foundation and sill plate shall be sealed. The junction of the top plate and top of exterior walls shall be sealed. Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier. Knee walls shall be sealed.</td>
</tr>
<tr>
<td>Windows, skylights, and doors</td>
<td>The space between window/door jambs and framing, and skylights and framing shall be sealed.</td>
</tr>
<tr>
<td>Rim joists</td>
<td>Rim joists shall be insulated and include the air barrier.</td>
</tr>
<tr>
<td>Floors (including above-garage and cantilevered floors)</td>
<td>Insulation shall be installed to maintain permanent contact with underside of subfloor decking. The air barrier shall be installed at any exposed edge of insulation.</td>
</tr>
<tr>
<td>Crawl space walls</td>
<td>Where provided in lieu of floor insulation, insulation shall be permanently attached to the crawlspace walls. Exposed earth in unvented crawl spaces shall be covered with a class I vapor retarder with overlapping joints taped.</td>
</tr>
</tbody>
</table>

See code for full list

Source: DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS DIRECTOR’S OFFICE
CONSTRUCTION CODE Filed with the Secretary of State on October 9, 2015
Mandatory Requirements - Air Leakage

- Building thermal envelope
- Recessed lighting
- Fenestration
- Fireplaces
- Rooms with fuel burning appliances

Building Thermal Envelope–Changes

Air Barriers – good information sources Building Science Corp

Building Thermal Envelope- Changes

• New language requires blower door testing

• The former visual check has been eliminated.

• All new buildings and additions will require blower testing.
Building Thermal Envelope - Changes

Blower Door Testing

• Must achieve maximum of 4 air changes per hour when tested at 50pa (Amended from 3 ACH in IECC 2015)
• Building official can require testing by a third party who is certified and independent.
• Submit written report
• Construction Code Commission can approve certification programs
• Specific conditions for running the tests are laid out (Refer to code for details)
Air Leakage Testing Certification

A person that has a current certification from a program that provides the following as part of the certification process is approved to perform the required air leakage testing for compliance with the CHAPTER 11 OF THE MICHIGAN RESIDENTIAL CODE OR PART 10 OF THE MICHIGAN ENERGY CODE.

Program shall include instruction and training on:
- Applicable code requirements.
- Procedure for set-up for test.
- Procedure for performing test.
- How to analyze measurement readings to determine compliance.
- Troubleshooting and diagnostics.

Program shall have hands-on practical field examination consisting of:
- Set-up and preparation of equipment.
- Operation of the equipment.
- Performance of air leakage rate diagnostics.
- Analysis of the results.

http://www.michigan.gov/lara/0,4601,7-154-10575-376044--,00.html date visited March, 16 2016
What’s New for Residential Buildings?

• Recessed light fixtures that penetrate into the building thermal envelope must be IC rated and labeled
• Must not have more air leakage than 2.0 CFM
• Sealed with gaskets or caulk between the fixture and finished surfaces
• The exception from the 2009 MUEC for non IC rated fixtures to be installed in site-built sealed enclosures of drywall and other materials was eliminated

What’s New for Residential Buildings?

Fireplaces

• Required to have outdoor combustion air
• Required to have flue dampers (new)
• Dropped language requiring gasketed doors

(There may be a typo here in omitting the tight fitting language for doors)


Steel-frame

- Changes to insulation levels
- List equivalence in comparison to required wood framed values
Mass Walls

• Concrete block, concrete, insulated concrete form (ICF), masonry cavity, brick (other than brick veneer), earth, and solid timber/logs

• Any other walls having a heat capacity ≥6 Btu/ft.²/°F
Sunrooms

Less stringent insulation R-value and glazing U-factor requirements

Sunroom definition:

• One story structure
• Glazing area >40% glazing of gross exterior wall and roof area
• Separate heating or cooling system or zone
• Must be thermally isolated (both HVAC and physical separation—closeable doors or windows between sunroom and rest of the house)
• Can use unlimited glass
Sunroom Requirements

- Ceiling Insulation = R-24
- Wall Insulation = R-13
- Fenestration U-Factor $U = 0.45$
- Skylight U-Factor $U = 0.70$
Mechanical Systems

Expanded Mechanical Systems requirements

Equipment efficiency set by Federal law, not the energy code

Officials should still check and verify that proper equipment is installed and that documentation is present such as yellow FTC Energy Guide Labels.

Equipment Sizing and Efficiency Rating

• Equipment Sizing
  • Load calculations determine the proper capacity (size) of equipment
    • Goal is big enough to ensure comfort but no bigger
  • Sizing shall be performed in accordance with ACCA Manual S based on loads calculated in accordance with ACCA Manual J (other approved methods)

• Efficiency Rating
  • New or replacement heating/cooling equipment shall have an efficacy rating equal to or greater than minimum required by federal law for geographic location of installation

Mechanical Systems

Dampers required
On outside air intakes
And exhaust

No change from previous MUEC
New requirements
Ventilation Fan Efficiency
in Table N1103.5.1

Range hoods, In-line fans, bathroom and utility room fans etc.
Programmable Thermostat

- At least one programmable thermostat controlling the primary heating/cooling per dwelling unit
- Capability to set back or temporarily operate the system to maintain zone temperatures
  - down to 55°F (13°C) or
  - up to 85°F (29°C)
- Initially programmed by manufacturer with:
  - heating temperature set point no higher than 70°F (21°C) and
  - cooling temperature set point no lower than 78°F (26°C)
Heat Pump Supplementary Heat

Prevent supplementary electric-resistance heat when heat pump can meet the heating load
Mechanical Systems

Ductwork Insulation

R-6 within the building but outside conditioned space

R-8 when outside the building

R-8 min. between duct and outside surface when duct located in a cavity

Watch installation quality

Duct Sealing - Mandatory

• Sealing (Mandatory)
  • Joints and seams to comply with IMC or IRC
  • All ducts, air handlers, and filter boxes to be sealed

• Exceptions
  – No additional joint seals required for air-impermeable spray foam products
  – Continuously welded and locking-type joints and seams other than snap-lock and button-lock types and ducts having static pressures < 2 in. w.c. pressure classification don’t require additional closure systems
Mechanical Systems

Ductwork sealing as required by mechanical provisions

Check installation quality

Duct Testing - Mandatory

Ducts shall be pressure tested to determine air leakage by either of the following:

- **Rough-in test**
  - Total leakage measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the system including manufacturer’s air handler enclosure

- **Postconstruction test**
  - Total leakage measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the entire system including manufacturer’s air handler enclosure

- **Exception**
  - Duct air leakage test not required where ducts and air handlers are entirely within the building thermal envelope

A written report of results of test signed by the party conducting test and provided to code official
Duct Tightness Tests

Sealed Air Handler - **Mandatory**

Air handlers to have a manufacturer’s designation for an air leakage of \( \leq 2\% \) of design air flow rate per ASHRAE 193

Limitation on use of framing cavities as ducts or plenums if in thermal envelope*
Building Cavities

Duct Construction

The Michigan Residential Code (MRC) Sections N1103.2.3 and M1601.1.1 conflict regarding the use of building framing cavities for plenums. To resolve the conflict we look at the definition of “cost effective” in MCL 125.1502a(p), and MCL 125.1504(3)(f) and (g).

The conflict is resolved in favor of M1601.1.1 as MRC Section M1601 is the definitive section on duct construction. This decision is based on MRC Section R102.1 (Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable.) and that Section N1103.2.3 has not been shown to meet the definition of cost effective.

http://www.michigan.gov/lara/0,4601,7-154-10575---.00.html  date visited September 14, 2016
Mechanical System Piping Insulation - Mandatory

• R-3 required on
  • HVAC systems
    • Exception: Piping that conveys fluids between 55 and 105°F

• If exposed to weather,
  • protect from damage, including
    • Sunlight
    • Moisture
    • Equipment maintenance
    • Wind
  • Provide shielding from solar radiation that can cause degradation of material
  • Adhesive tape is not allowed

Mechanical Systems

Service Water

• Circulating hot water systems
  Requires Automatic shutoff or manual switch

• Hot water piping Insulation R3 for pipes larger than ¾” and other specified locations such as serving multiple units, outside condition space etc.
Snow Melt System Controls

- Snow- and ice-melting system controls
  - Automatic shutoff when pavement temperature is > 50°F and no precipitation is falling
  - Automatic or manual shutoff when outdoor temperature is > 40°F
Heated Pools

• Heater switch location changed
• Covers required
• Deleted R-12 insulation requirement for covers

Exception:

covers not required if at least 70% of energy from sources such as solar
(previously 60%)

Portable Spas - *Mandatory*

- Energy consumption of electric-powered portable spas shall be controlled by the requirements of APSP-14
Systems

Systems serving multiple dwelling units shall comply with Sections C403 and C404 of IECC 2015 in lieu of Section R403

Mechanical Systems

Lighting and Power

• 75% high efficacy lamps (changed from 50%)
• Low voltage system do not have to use high efficacy lamps
• No continuous pilot lights on fuel gas lighting systems
Performance Approaches

Two approaches:

• Simulated Performance Alternative
• Energy Rating Index Alternative
Performance Approaches

Simulated Performance Alternative

- Software based
- Computer simulation
- Minimum software requirements
- New requirement for documentation of software capabilities (This is not REScheck™)
- Largely unchanged from former MUEC)
Performance Approaches

Energy Rating Index Alternative

• Does not specifically mention HERS but it is likely implied
• Software based
• Compliance Report required
• Proposed design is simulated against a reference design based on IECC 2006
• Must meet thermal envelope insulation requirements of IECC 2009
• Must meet the maximum index of Table 1106.4
• Must still meet mandatory requirements
Energy Rating Index

- ERI is defined much like the RESNET HERS Index:
  - Integer value
  - 100 corresponds to an “ERI reference design”
  - 0 corresponds to a net zero energy home
  - Each integer value represents a one percent change in the total energy use of the rated design relative to the reference design
  - ERI considers all energy used in the residence

- ERI differs from traditional performance path
  - ERI considers all energy used in the residence, whereas the performance path includes only heating, cooling, lighting, and water heating (excludes appliances and other uses)
  - Equipment and appliance efficiencies can be involved in trade-offs
  - Credit toward compliance may be available for renewable energy

Performance Approaches

Energy Rating Index Alternative

<table>
<thead>
<tr>
<th>Climate Zone</th>
<th>Energy Rating Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>52</td>
</tr>
<tr>
<td>2</td>
<td>52</td>
</tr>
<tr>
<td>3</td>
<td>51</td>
</tr>
<tr>
<td>4</td>
<td>54</td>
</tr>
<tr>
<td>5</td>
<td>55</td>
</tr>
<tr>
<td>6</td>
<td>54</td>
</tr>
<tr>
<td>7</td>
<td>53</td>
</tr>
<tr>
<td>8</td>
<td>53</td>
</tr>
</tbody>
</table>

Source: DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS DIRECTOR’S OFFICE CONSTRUCTION CODE Filed with the Secretary of State on October 9, 2015
Will REScheck™ apply?

As of February 8, 2016 there will be no specific tab in REScheck™ that will apply to Michigan.
Will REScheck™ apply?

• DOE has no plans to develop state specific versions of amended state versions of IECC as they have in the past

Reasonable Approach:
• Use the IECC 2015 Tab. This would meet and exceed Michigan requirements for R values and U-Factors
Will REScheck™ apply?

Select IECC 2015
## Will REScheck™ apply?

**REScheck Software Version 4.6.2**

**Inspection Checklist**

**Energy Code: 2015 IECC**

Requirements: 0.0% were addressed directly in the REScheck software.

Text in the "Comments/Assumptions" column is provided by the user in the REScheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

<table>
<thead>
<tr>
<th>Section # &amp; Req.ID</th>
<th>Pre-Inspection/Plan Review</th>
<th>Plans Verified Value</th>
<th>Field Verified Value</th>
<th>Complies?</th>
<th>Comments/Assumptions</th>
</tr>
</thead>
</table>
| 103.1, 103.2 [PR1]
| Construction drawings and
documentation demonstrate energy code compliance for the building envelope. Thermal envelope represented on construction documents. | | | | | |
| 103.1, 103.2, 403.7 [PR3]
| Construction drawings and documentation demonstrate energy code compliance for lighting and mechanical systems. Systems serving multiple dwelling units must demonstrate compliance with the IECC Commercial Provisions. | | | | | |
| 302.1, 403.7 [PR2]
| Heating and cooling equipment is sized per ACCA Manual S based on loads calculated per ACCA Manual J or other methods approved by the code official. | Heating: Btu/hr___ | Heating: Btu/hr___ | | | |

4/23/2017
Will REScheck™ apply?

ResCheck Software Version 4.6.2

Compliance Certificate

Project

Energy Code: 2015 IECC
Location: Lansing, Michigan
Construction Type: Single-family
Project Type: New Construction
Conditioned Floor Area: 3,200 ft²
Glazing Area: 11%
Climate Zone: 5 (7101 HDD)
Permit Date: 
Permit Number: 

Construction Site: 
Owner/Agent: 
Designer/Contractor: 

Compliance: Passes using UA trade-off

Compliance: 1.6% Better Than Code
Maximum UA: 247
Your UA: 243

The % Better or Worse Than Code Index reflects how close to compliance the house is based on code trade-off rules. It DOES NOT provide an estimate of energy use or cost relative to a minimum-code home.
Will REScheck™ apply?

IECC 2015 Based on 3 air changes per hour. Michigan has amended this to 4 air changes per hour (ach)

Could accept 4ach as test result, since UA alternative approach in REScheck™ is not influenced by air changes (it is based solely on R and U factors).
Will “above code” programs comply?

The state construction code commission can evaluate and approve above code programs as meeting or exceeding code requirements.

Two named above code programs

- ICC-700 (2012) Silver rating
- Energy Star Version 3

(Note: while Michigan code states Energy Star v3.0, the newer v3.1 may be more appropriate as Energy Star does may not recognize v3.0 in states that have adopted IECC 2012 or 2015)
Q and A