

DEPARTMENT OF ENERGY, LABOR, AND ECONOMIC GROWTH

DIRECTOR'S OFFICE

CONSTRUCTION CODE

Filed with the Secretary of State on November 8, 2010

These rules take effect March 9, 2011

(By authority conferred on the director of the department of energy, labor, and economic growth by section 4 of 1972 PA 230, MCL 125.1504, and Executive Reorganization Order Nos. 2003-1 and 2008-20, MCL 445.2011 and MCL 445.2025)

R 408.31059, R 408.31060, R 408.31061, R 408.31062, R 408.31063, R 408.31064, R 408.31065, R 408.31066, R 408.31069, and R 408.31070, of the Michigan Administrative Code are amended, and R 408.31060a, R 408.31060b, R 408.31060c, R 408.31060d, R 408.31060e, and R 408.31063a are added to the Code as follows:

PART 10
MICHIGAN UNIFORM ENERGY CODE

R 408.31059 Applicable code.

Rule 1059. The provisions of the international energy conservation code, 2009 edition, except for sections 102.1.1, 107.2 to 107.5, 301.2, 301.3, 402.3.2, 501.1, to 506.6.2 and Tables 303.1.3(3), 502.1.2, 502.2(1), 502.2(2), 502.3, 502.4.4, 503.2.3(1), 503.2.3(2), 503.2.3(3), 503.2.3(4), 503.2.3(5), 503.2.3(6), 503.2.3(7), 503.2.8, 503.2.10.1(1), 503.2.10.1(2), 503.3.1(1), 503.3.1(2), 504.2, 505.5.2, 505.6.2(1), 505.6.2, 505.6.2(2), 506.5.1(1), 506.5.1(2), 506.5.1(3), 506.5.1(4), and 506.6.1(5) govern the energy efficiency for the design and construction of residential buildings and, with exceptions noted, the international energy conservation code is adopted by reference in these rules. All references to the international building code, international residential code, international energy conservation code, international electrical code, international existing building code, international mechanical code, and international plumbing code mean the Michigan building code, Michigan residential code, Michigan uniform energy code, Michigan electrical code, Michigan rehabilitation code for existing buildings, Michigan mechanical code, and Michigan plumbing code respectively. -The Michigan uniform energy code is available for inspection or purchase at the Okemos office of the Michigan Department of Energy, Labor and Economic Growth, Bureau of Construction Codes, 2501 Woodlake Circle, Okemos, Michigan 48864, at a cost as of the time of adoption of these rules of \$38.00 or may be purchased from the International Code Council, 500 New Jersey Avenue, N.W., 6th Floor, Washington, D.C. 20001.

R 408.31060 Scope; requirements.

Rule 1060. Sections 101.1, 101.2, 101.3, 101.4.3, and 101.4.4 of the code are amended to read as follows:

June 23, 2010

101.1. Title. This code shall be known and cited as the “Michigan Uniform Energy Code.” It is referred to herein as “this code.”

101.4.3. Additions, alterations, renovations or repairs. Additions, alterations, renovations or repairs to an existing building, building system or portion thereof, shall meet both of the following requirements:

(1) Conform to the provisions of this code as they relate to new construction without requiring the unaltered portion or portions of the existing building or building system to comply with this code.

(2) Not create an unsafe or hazardous condition or overload existing building systems. An addition shall be deemed to comply with this code if the addition alone complies or if the existing building and addition comply with this code as a single building.

Exceptions: The following need not comply provided the energy use of the building is not increased:

1. Storm windows installed over existing fenestration.
2. Glass only replacements in an existing sash and frame.
3. Existing ceiling, wall, or floor cavities exposed during construction provided that these cavities are filled with insulation.
4. Construction where the existing roof, wall, or floor cavity is not exposed.
5. Reroofing for roofs where neither the sheathing nor the insulation is exposed. Roofs without insulation in the cavity and where the sheathing or insulation is exposed during reroofing shall be insulated either above or below the sheathing.
6. Replacement of existing doors that separate conditioned space from the exterior shall not require the installation of a vestibule or revolving door, provided, however, that an existing vestibule that separates a conditioned space from the exterior shall not be removed.
7. Alterations that replace less than 50% of the luminaries in a space, provided that such alterations do not increase the installed interior lighting power.
8. Alterations that replace only the bulb and ballast within the existing luminaries in a space provided that the alteration does not increase the installed interior lighting power.
9. An existing detached 1-and 2-family dwelling, other than replacement fenestration as provided by section 402.3.6.
10. A detached 1-and 2-family dwelling that is moved into or within a jurisdiction. A home manufactured pursuant to the Michigan premanufactured unit rules that is shipped for initial installation or initial assembly and installation on a building site shall not be considered a moved building.

101.4.4. Change in occupancy or use. Spaces undergoing a change in occupancy that would result in an increase in demand for either fossil fuel or electrical energy shall comply with this code.

R 408.31060a Construction documents.

Rule 1060a. Section 103.1 of the code is amended to read as follows:

103.1. Submittal documents. Construction documents, special inspection and structural programs, and other data shall meet both of the following requirements:

- (1) Submitted in 1 or more sets with each application for a permit.
- (2) Prepared by, or under the direct supervision of, a registered design professional when required by 1980 PA 299, MCL 339.101 to 339.2721.

Where special conditions exist, the building official is authorized to require additional construction documents to be prepared by a registered design professional.

R 408.31060b Fees.

Rule 1060b. Section 107.1 of the code is amended to read as follows:

107.1. Payment of fees. The fees prescribed by the act shall be paid to the enforcing agency of the jurisdiction before a permit to begin work for new construction, alteration, removal, demolition, or other building operation may be issued. In addition, an amendment to a permit necessitating an additional fee shall not be approved until the additional fee has been paid.

R 408.31060c Board of appeals.

Rule 1060c. Sections 109.1 and 109.3 of the code are amended to read as follows:

109.1 Means of appeal. (1) An interested person may appeal a decision of the enforcing agency to the board of appeals in accordance with the act. An application for appeal shall be based on both of the following:

(a) A claim that the true intent of the code or the rules governing construction have been incorrectly interpreted.

(b) The provisions of the code do not apply, or an equal or better form of construction is proposed.

(2) The decision of a local board of appeals may be appealed to the construction code commission in accordance with the act and time frames.

Exception: Requests for barrier free design exception shall be in accordance with 1966 PA 1, MCL 125.1352 to 125.1356.

109.3 Qualifications. The board of appeals shall consist of members who are qualified in accordance with the act.

R 408.31060d Definitions.

Rule 1060d. The definitions of "building" and "building official" in section 202 of the code are amended to read as follows:

Building. "Building" means a combination of materials, whether portable or fixed, forming a structure affording a facility or shelter for use or occupancy by persons, animals, or property. The term does not include a building incidental to the use for agricultural purposes of the land on which the building is located if it is not used in the business of retail trade. The term shall be construed as though followed by the words "or part or parts of the building and all equipment in the building" unless the context clearly requires a different meaning.

Building Official. "Building official" means the person who is appointed and employed by a governmental subdivision, who is charged with the administration and enforcement of the state codes specified in R 408.30499 of the Michigan Building Code, and who is registered in accordance with the requirements of 1986 PA 54, MCL 338.2301 to 338.2313.

R 408.31060e Climate Zones.

Rule 1060e. Section 301.1 and Tables 301.1 and 301.3(2) of the code are amended and Figure 301.1a is added to the code to read as follows:

301.1 General. Climate zones from figures 301.1, 301.1a or table 301.1 shall be used in determining the applicable requirements of this code.

Table 301.1
Climate Zones by County

Zones		
5A	6A	7
Allegan	Alcona	Baraga
Barry	Alger	Chippewa
Bay	Alpena	Gogebic
Berrien	Antrim	Houghton
Branch	Arenac	Iron
Calhoun	Benzie	Keweenaw
Cass	Charlevoix	Luce
Clinton	Cheboygan	Mackinac
Eaton	Clare	Ontonagon
Genesee	Crawford	Schoolcraft
Gratiot	Delta	
Hillsdale	Dickinson	
Ingham	Emmet	
Ionia	Gladwin	
Jackson	Grand Traverse	
Kalamazoo	Huron	
Kent	Iosco	
Lapeer	Isabella	
Lenawee	Kalkaska	
Livingston	Lake	
Macomb	Leelanau	
Midland	Manistee	
Monroe	Marquette	
Montcalm	Mason	
Muskegon	Mecosta	
Oakland	Menominee	
Ottawa	Missaukee	
Saginaw	Montmorency	
Shiawassee	Newaygo	
St. Clair	Oceana	
St. Joseph	Ogemaw	
Tuscola	Osceola	
Van Buren	Oscoda	
Washtenaw	Otsego	
Wayne	Presque Isle	
	Roscommon	
	Sanilac	
	Wexford	

Key: A – Moist. Absence of moisture designation indicates moisture regime is irrelevant.

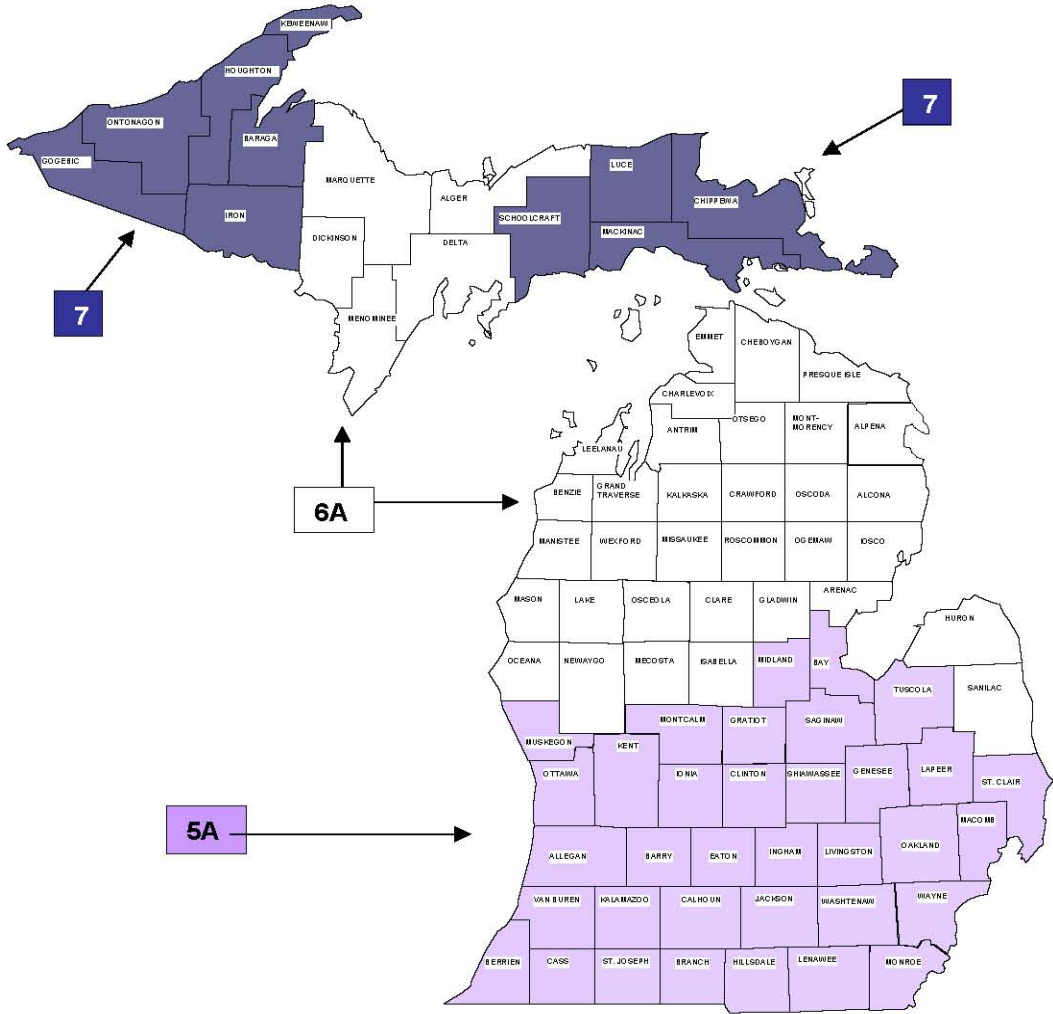
Table 301.3(2)

Climate Zone Definitions

Zone Number	Thermal Criteria	
	IP Units	SI Units
5A	$5400 < \text{HDD}65^{\circ}\text{F} \leq 7200$	$3000 < \text{HDD}18^{\circ}\text{C} \leq 4000$
6A	$7200 < \text{HDD}65^{\circ}\text{F} \leq 9000$	$4000 < \text{HDD}18^{\circ}\text{C} \leq 5000$
7	$9000 < \text{HDD}65^{\circ}\text{F} \leq 12600$	$5000 < \text{HDD}18^{\circ}\text{C} \leq 7000$

For SI: $^{\circ}\text{C} = [(^{\circ}\text{F}) - 32] / 1.8$

**FIGURE 301.1a
CLIMATE ZONES**



R 408.31061 Certificate.

Rule 1061. Section 401.3 of the code is amended to read as follows:

401.3 Certificate. A permanent certificate shall be posted on or in the electrical distribution panel, and shall meet all of the following:

- (a) Be affixed or attached so it does not cover or obstruct the visibility of the circuit directory label, service disconnect label, or other required labels.
- (b) Be completed by the builder or registered design professional.
- (c) List the predominant *R*-values of insulation installed in or on ceiling/roof, walls, foundation (slab, basement wall, crawlspace wall and/or floor) and ducts outside conditioned spaces and *U*-factors for fenestration. If there is more than 1 value for each component, then the certificate shall list the value covering the largest area.
- (d) List the types and efficiencies of heating, cooling and service water heating equipment.
- (e) If a gas-fired unvented room heater, electric furnace, or baseboard electric heater is installed in the residence, then the certificate shall list “gas-fired unvented room heater,” as appropriate. An efficiency shall not be listed for gas-fired unvented room heaters, electric furnaces, or electric baseboard heaters.

R 408.31062 Fenestration product rating.

Rule 1062. Section 303.1.3 of the code is amended to read as follows:

303.1.3. Fenestration product rating. *U*-factors of fenestration products (windows, doors and skylights) shall be determined in accordance with NFRC 100 by an accredited, independent laboratory, and labeled and certified by the manufacturer. Products lacking such a labeled *U*-factor shall be assigned a default *U*-factor from Table 303.1.3(1) or 303.1.3(2).

Exception: Computer simulations by independent NFRC certified laboratories or approval under section 21 of 1972 PA 230, MCL 125.1521 are considered in compliance with this section.

R 408.31063 Insulation and fenestration criteria.

Rule 1063. Insulation and fenestration criteria. Tables 402.1.1 of the code is amended to read as follows:

TABLE 402.1.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT

CLIMATE ZONE	FENESTRATION <i>U</i> -FACTOR	SKYLIGHT ^a <i>U</i> -FACTOR	CEILING <i>R</i> -Value	WOOD FRAME WALL <i>R</i> -VALUE	MASS WALL <i>R</i> -VALUE ^f	FLOOR <i>R</i> -VALUE	BASEMENT ^b WALL <i>R</i> -VALUE	SLAB ^c <i>R</i> -VALUE AND DEPTH	CRAWL SPACE ^c WALL <i>R</i> -VALUE
5A	0.35	0.60	38	20 or 13 + 5 ^e	13/17	30 ^d	10/13	10, 2ft	10/13
6A	0.35	0.60	49	20 or 13 + 5 ^e	15/19	30 ^d	15/19	10, 4ft	10/13
7	0.35	0.60	49	21	19/21	38 ^d	15/19	10, 4ft	10/13

a. The fenestration *U*-factor column excludes skylights.

b. The first *R*-value applies to continuous insulation, the second to framing cavity insulation; either insulation meets the requirement.

c. *R*-5 shall be added to the required slab edge *R*-values for heated slabs. Insulation depth shall be the depth of the footing or 2 feet, whichever is less, in zones 1-3 for heated slabs.

d. Or insulation sufficient to fill the framing cavity, *R*-19 minimum.

e. “13+5” means *R*-13 cavity insulation plus *R*-5 insulated sheathing. If structural sheathing covers 25% or less of the exterior, *R*-5 sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25% of exterior, structural sheathing shall be supplemented with insulated sheathing of at least *R*-2.

f. The second *R*-value applies when more than half the insulation is on the interior.

R 408.31063a Specific insulation requirements (prescriptive).

Rule 1063a Sections 402.2.1 and 402.2.11 of the code are amended to read as follows.

402.2.1 Ceilings with attic spaces. When section 402.1.1 would require R-49 in the ceiling, R-38 shall satisfy the requirement for R-49 wherever the full height of uncompressed R-38 insulation extends over the wall top plate at the eaves. This reduction shall not apply to the U-factor alternative approach in section 402.1.3 and the total UA alternative in section 402.1.4.

402.2.11 Thermally isolated sunroom insulation. The minimum ceiling insulation R-values shall be R-24 in zones 5 to 7. The minimum wall R-value shall be R-13 in all zones. New wall or walls separating a sunroom from conditioned space shall meet the building thermal envelope requirements.

R 408.301064 Fenestration.

Rule 1064. Sections 402.3.3 and 402.3.6 of the code are amended to read as follows:

402.3.3 Glazed fenestration exemption. Up to 15 square feet (1.4m²) of glazed fenestration per dwelling unit shall be permitted to be exempt from U-factor requirements in section 402.1.1. This exemption shall not apply to the U-factor alternative approach in section 402.1.3 and the total UA alternative in section 402.1.4.

402.3.6. Replacement fenestration. Where some or all of an existing fenestration unit is replaced with new fenestration product, including sash and glazing, the replacement fenestration unit shall meet the applicable requirements for *U*-factor in table 402.1.1. Where some or all of an existing fenestration unit is replaced with a new fenestration product, including sash and glazing, the replacement fenestration unit shall meet the applicable requirements for *U*-factor in Table 402.1.1.

R 408.31065 Equivalent U-Factors.

Rule 1065. Section 402.1.4 and table 402.1.3 of the code are amended to read as follows:

Table 402.1.3
Equivalent U-Factors^a

Climate Zone	Fenestration <i>U</i> -Factor	Skylight <i>U</i> -Factor	Ceiling <i>U</i> -Factor	Frame Wall <i>U</i> -Factor	Mass wall <i>U</i> -Factor ^b	Floor <i>U</i> -Factor	Basement Wall <i>U</i> -Factor ^d	Crawl Space Wall <i>U</i> -Factor ^c
5A	0.35	0.60	0.030	0.057	0.082	0.033	0.059	0.065
6A	0.35	0.60	0.026	0.057	0.060	0.033	0.050	0.065
7	0.35	0.60	0.026	0.057	0.057	0.026	0.050	0.065

a. Nonfenestration *U*-factors shall be obtained from measurement, calculation, or an approved source.

b. When more than half the insulation is on the interior, the mass wall *U*-factors shall be the same as the frame wall *U*-factor in Zones 5 to 7.

c. Basement wall *U*-factor requirements shown in Table 402.1.3 include wall construction and interior air films, but exclude soil conductivity and exterior air films.

d. Foundation *U*-factor requirements shown in Table 402.1.3 include wall construction and interior air films, but exclude soil conductivity and exterior air films. *U*-factors for determining code compliance in accordance with section 402.1.4 (total UA alternative) of section 405 (simulated performance alternative) shall be modified to include soil conductivity and exterior air films.

402.1.4 Total UA alternative. If the total building thermal envelope UA (sum of U-factor times assembly area) is less than or equal to the total UA resulting from using the U-factors in Table 402.1.3 (multiplied by the same assembly area as in the proposed building), the building shall be considered in compliance with Table 402.1.1. The UA calculation shall be done using a

method consistent with the ASHRAE Handbook of Fundamentals and shall include the thermal bridging effects of framing materials.

R 408.31066 Systems

Rule 1066. Sections 403.2.2, 403.3 and 403.4 of the code are amended to read as follows:

403.2.2 Sealing (mandatory). All ducts, air handlers, filter boxes, and building cavities used as ducts shall be sealed. Joints and seams shall comply with section M1601.4.1 of the Michigan residential code.

403.3 Mechanical system piping insulation (mandatory). Mechanical system piping capable of carrying fluids above 105°F (41°C) or below 55°F (13° C) shall be insulated to a minimum of R-3.

Exceptions:

1. Factory-installed piping within HVAC equipment tested and rated in accordance with a test procedure referenced by this code.

2. Runout piping not exceeding 4 feet (1219 mm) in length and 1 inch (25 mm) in diameter between the control valve and HVAC coil.

403.4 Circulating hot water systems (mandatory). All circulating service hot water piping shall be insulated to at least R-2. Circulating hot water systems shall include an automatic or readily accessible manual switch that can turn off the hot water circulating pump when the system is not in use.

Exceptions:

1. Factory-installed piping within HVAC equipment tested and rated in accordance with a test procedure referenced by this code.

2. Runout piping not exceeding 4 feet (1219 mm) in length and 1 inch (25 mm) in diameter between the control valve and HVAC coil.

R 408.31069 Recessed lighting.

Rule 1069. Section 402.4.5 of the code is amended to read as follows:

402.4.5 Recessed lighting. When installed in the building thermal envelope, recessed lighting fixtures shall meet 1 of the following requirements:

(a) Type IC rated, manufactured with no penetrations between the inside of the recessed fixture and ceiling cavity and sealed or gasketed to prevent air leakage into the unconditioned space.

(b) Type IC or non-IC rated, installed inside a sealed box constructed from a minimum 0.5-inch-thick (12.7 mm) gypsum wallboard or constructed from a preformed polymeric vapor barrier, or other air-tight assembly manufactured for this purpose, while maintaining required clearances of not less than 0.5 inch (12.7 mm) from combustible material and not less than 3 inches (76 mm) from insulation material.

(c) Type IC rated and admitting not more than 2.0 cubic feet per minute (cfm) (0.944 L/s) of air movement from the conditioned space to the ceiling cavity when tested in accordance with ASTM E 283. The lighting fixture shall be tested at 1.57 psi (75 Pa) pressure difference and shall be labeled.

R 408.31070 Steel-frame ceilings, walls, and floors.

Rule 1070. Section 402.2.5 of the code are amended to read as follows:

402.2.5 Steel-frame ceilings, walls, and floors. Steel-frame ceilings, walls, and floors shall meet the insulation requirements of table 402.2.5 or shall meet the U-factor requirements in table 402.1.3. The calculation of the U-factor for a steel-frame envelope assembly shall use a series-parallel path calculation method.

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R 408.31087, R 408.31088, R 408.31089, and R 408.31090 of the Michigan Administrative Code are amended and R 408.31087a is added to the code as follows:

PART 10a

MICHIGAN UNIFORM ENERGY CODE

R 408.31087 Applicable code.

Rule 1087. Rules governing the energy efficiency for the design and construction of buildings and structures, not including residential buildings, shall be those contained in the international energy conservation code, 2009 edition, section 501.1 and the ASHRAE energy standard for buildings except low-rise residential buildings, ANSI/ASHRAE/IESNA standard 90.1-2007 (hereafter the standard), including appendices A, B, C, and D. With the amendments noted, Section 501.1 of the international energy conservation code and the standard are adopted in these rules by reference. The Michigan uniform energy code is available for inspection or purchase at the Okemos office of the Michigan Department of Energy, Labor and Economic Growth, Bureau of Construction Codes, 2501 Woodlake Circle, Okemos, Michigan 48864, at a cost as of the time of adoption of these rules of \$38.00 or may be purchased from the International Code Council, 500 New Jersey Avenue, N.W., 6th Floor, Washington, D.C. 20001. The ASHRAE 90.1-2007 standard is available for inspection at the Okemos office of the Michigan Department of Energy, Labor and Economic Growth, Bureau of Construction Codes. The standard may be purchased from the American Society of Heating, Refrigeration and Air-Conditioning Engineers, Inc., 1791 Tullie Circle, NE, Atlanta, Georgia 30329, at a cost as of the time of adoption of these rules of \$119.95 each. Copies may be obtained from the Michigan Department of Energy, Labor and Economic Growth, Bureau of Construction Codes, 2501 Woodlake Circle, Okemos, Michigan 48864, at a cost as of the time of adoption of these rules of \$119.95 each plus the department's cost for shipping and handling.

R 408.31087a Scope.

Rule 1087a. Section 501.1 of the code is amended to read as follows:

501.1. Scope. The requirements contained in this chapter are applicable to commercial buildings, or portions of commercial buildings. These commercial buildings shall meet

the requirements of ASHRAE/IESNA Standard 90.1, “Energy Standard for Buildings Except for Low-Rise Residential Buildings, and the requirements contained in this chapter.

R 408.31088 Definitions.

Rule 1088. The definition of building official in Section 3.2 of the standard is amended to read as follows:

3.2 Building official. "Building official" means the person who is appointed and employed by a governmental subdivision charged with the administration and enforcement of the state code or codes and who is registered in accordance with the requirements of 1986 PA 54, MCL 338.2301 to 338.2313.

R 408.31089 Heating, ventilating, and air-conditioning alterations.

Rule 1089. Section 6.1.1.3.1 of the standard is amended to read as follows:

6.1.1.3.1 New HVAC equipment as a direct replacement of existing HVAC equipment shall comply with the specific minimum efficiency requirements applicable to that equipment including, but not limited to, air conditioners and condensing units, heat pumps, water chilling packages, packaged terminal and room air conditioners and heat pumps, furnaces, duct furnaces, unit heaters, boilers, and cooling towers. Any new control devices as a direct replacement of existing control devices shall comply with the specific requirements of sections 6.4.3.3.1 to 6.4.3.3.4.

Exceptions:

1. For equipment that is being modified or repaired but not replaced provided that such modifications will not result in an increase in energy usage.
2. Where a replacement or alteration of equipment requires extensive revisions to other systems, equipment, or elements of a building and such replaced or altered equipment is a like-for-like replacement.
3. For a refrigerant change of existing equipment.
4. For the relocation of existing equipment.

R 408.31090 Administrative requirements.

Rule 1090. Section 4.1.2 of the standard is amended to read as follows:

4.1.2 Administrative requirements relating to permits, enforcement, interpretations, and appeals shall be in accordance with 1972 PA 230, MCL 125. 1501 to 125.1531.