Montgomery County Building Regulations

FORM 1: THE OHIO HOME BUILDERS ALTERNATIVE ENERGY CODE COMPLIANCE OPTION

Based upon the 2013 Residential Code of Ohio, Section 1105, Ohio Home Builders Alternative Energy Code

Job address _____ Date _____

Compliance path proposed: 1 ☐ 2 ☐ Sunroom ☐ R-values on construction documents must match the chosen path option.

Insulation and Glazing Required by Component (Based upon Table 1105.2.1)									
Compliance Path	Maximum U-Factor		Minimum Insulation R-Value						
	Window and Glass Door [4]	Skylight Glazing	Ceiling [7]	Wood Frame Wall	Mass Wall [5]	Floor [2, 6]	Basement Wall [2]	Slab Perimeter [3]	Crawlspace Wall [2]
1	.32	.60	R-49	R-15 or R-13 + 3 [1]	R-13/17	R-30	R-10 / 13 4' depth	R-10 / 15 2' depth	R-10 / 13
2	.32	.60	R-49	R-13	R-13/17	R-30	R-10 / 13 4' depth	R-10 / 15 2' depth	R-10 / 13
Sun Room [8]	.50	.75	R-24	R-13	R-13/17	R-30	R-10 / 13 4' depth	R-10 / 15 2' depth	R-10 / 13

1. Exterior wall R-value includes insulation in wall and exterior continuous sheathing. "13+3" means R-13 cavity insulation plus R-3 insulated sheathing. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required where structural sheathing is used. Submit manufacturer's insulation R-values for the sheathing if this option is used.
2. As an alternative to insulating floors over crawlspaces, crawlspace walls are permitted to be insulated when the crawl space is not vented to the outside. Crawl space wall insulation shall be permanently fastened to the wall and extend downward from the floor to the finished grade level and then vertically and/or horizontally for at least an additional 24 inches (610 mm). Exposed earth in unvented crawl space foundations shall be covered with a continuous vapor retarder. All joints of the vapor retarder shall overlap by 6 inches and be sealed or taped. The edges of the vapor retarder shall extend at least 6 inches up the stem wall and shall be attached to the stem wall. R-10 means continuous insulation on the interior or exterior of the wall. R-13 refers to cavity insulation on the interior of the wall.
3. Slab perimeter insulation depth is 2 feet minimum, from the top of the slab. Use R-15 for heated slabs. A heated slab is defined as a slab-on-grade construction in which the heating elements, hydronic tubing, or hot air distribution system is in contact with, or placed within or under the slab. Includes floor slabs less than 12" below grade
4. Submit documentation from the manufacturer to verify window and glass door U-factors.
5. Mass walls for the purposes of this form shall be considered walls of concrete block, concrete, insulated concrete form (ICF), masonry cavity, brick (other than brick veneer), earth (adobe, compressed earth block, rammed earth) and solid timber/logs. The second R-Value applies when more than half the insulation is on the interior of the mass wall.
6. May be less than R-30 if floor joist depth is insufficient, but must completely fill the framing cavity, R-19 minimum. Floor insulation must be installed to maintain permanent contact with the floor sheathing.
7. Per 1105.2.2.1 in ceilings with attic spaces, R-38 shall be deemed to satisfy the requirement for R-49 wherever the full height of uncompressed R-38 insulation extends over the wall top plate at the eaves. Per 1105.2.2.2 when the design of the roof/ceiling assembly without attic space does not allow sufficient space for the required insulation, the minimum required insulation for such roof/ceiling assemblies shall be R-30. This reduction of insulation from the requirements shall be limited to 500 sq. ft. of ceiling area or twenty per cent of the total insulated ceiling area, whichever is less.
8. When using the >40% glazed category the sunroom must be thermally isolated from the rest of the house. New walls, doors and windows separating the sunroom from the conditioned space shall meet the building thermal envelope requirements. Sunroom glazing determination. Use this formula only if using sunroom guideline. Determine percent of glass in the exterior wall envelope:

   A = Gross exterior wall area, including window and door rough openings. A = _____ Sq. Ft.

   B = Total area of windows, skylights and glass doors rough openings. B = _____ Sq. Ft.

   Formula to determine percent of window area = (B ÷ A) x 100

   B _____ ÷ A _____ = _____ x 100 = _____%

   Example: 300 ÷ 600 = .5 x 100 = 50

Summary of additional requirements:

1105.1.8 Certificate. A permanent certificate shall be posted on or in the electrical distribution panel. The certificate shall not cover or obstruct the visibility of the circuit directory label, service disconnect label or other required labels. The certificate shall be

completed by the builder or registered design professional. The certificate shall 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; U-factors for fenestration; and the solar heat gain coefficient (SHGC) of fenestration. Where there is more than one value for each component, the certificate shall list the value covering the largest area. The certificate shall list the types and efficiencies of heating, cooling and service water heating equipment. Where a gas-fired unvented room heater, electric furnace and/or baseboard electric heater is installed in the residence, the certificate shall list "gas-fired unvented room heater," "electric furnace" or "baseboard electric heater," as appropriate. An efficiency shall not be listed for gas-fired unvented room heaters, electric furnaces or electric base board heaters.

1105.2.2.3 Access hatches and doors. Access doors from conditioned spaces to unconditioned spaces (e.g., attics and crawl spaces) shall be weatherstripped and insulated to a level equivalent to the insulation on the surrounding surfaces. Access shall be provided to all equipment which prevents damaging or compressing the insulation. A wood framed or equivalent baffle or retainer is required to be provided when loose fill insulation is installed, the purpose of which is to prevent the loose fill insulation from spilling into the living space when the attic access is opened and to provide a permanent means of maintaining the installed R-value of the loose fill insulation.

1105.2.4.1 The building thermal envelope shall be durably sealed to limit infiltration, including all joints and penetrations, site built windows, doors and skylights, openings between window and door assemblies, utility penetrations, dropped ceilings and chases adjacent to the thermal envelope, knee walls, walls and ceilings separating the garage from conditioned spaces, behind tubs and showers on exterior walls, common walls between dwelling units, attic access openings, rim joist junctions and other sources of infiltration.

1105.2.4.2.1 Envelope air leakage test is required, demonstrating less than 6 ACH with blower door test at a pressure of 50 Pascals, effective January 1, 2014

1105.2.4.3 Wood burning Fireplaces shall have gasketed doors and outside combustion air.

1105.2.4.5 Recessed Luminaires shall be labeled IC-rated and labeled as meeting ASTM E 283 when tested at 1.57 psi (75 Pascals) pressure difference with no more than 2.0 cfm of air movement to ceiling cavity and shall be sealed or gasketed between the housing and the interior surface.

1105.3.1.1 Programmable thermostat. Where the primary heating system is a forced air furnace, at least one thermostat per dwelling unit shall be capable of controlling the heating and cooling system on a daily schedule to maintain different temperature set points at different times of the day. This thermostat shall include the capability to set back or temporarily operate the system to maintain zone temperatures down to 55°F or up to 85°F. The thermostat shall initially be programmed with a heating temperature set point no higher than 70°F and a cooling temperature set point no lower than 78°F.

1105.3.1.2 Heat pumps having supplementary electric-resistance heat shall have controls that, except during defrost, prevent supplemental heat operation when the heat pump compressor can meet the heating load.

1105.3.2.1: Supply ducts shall be insulated to a minimum of **R-8**. All other ducts shall be insulated to **R-6**, except ducts or portions thereof located completely inside the building thermal envelope need not be insulated.

1105.3.3: 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.

1105.3.2.2 Sealing. Ducts, air handlers, filter boxes and building cavities used as ducts shall be sealed. Joints and seams shall comply with Section M1601.4. Duct tightness shall be verified by either one of the following where outside the building envelope.

1. Post-construction test: Effective Jan 1, 2014, post-construction duct tightness shall be verified to meet the values prescribed in Table 1105.3.2.2(a) by testing either the "Leakage to Outdoors" or the "Total Leakage" in accordance with the chosen compliance path. Testing shall be conducted at a pressure differential of 0.1 inch w.g. (25 Pa) across the entire system, including the manufacturer's air handler end closure. All register boots shall be taped or otherwise sealed during the test.

2. Rough-in test: Effective Jan 1, 2014, rough-in duct tightness shall be verified to meet the values prescribed in Table 1105.3.2.2(b) by testing the "Total Leakage" in accordance with the chosen compliance path. Testing shall be conducted at a pressure differential of 0.1 inch w.g. (25 Pa) across the roughed in system, including the manufacturer's air handler enclosure, if installed at the time of the test. All register boots shall be taped or otherwise sealed during the test.

Compliance path	Leakage to outdoors, per 100 sq. ft. floor area	Leakage total per 100 sq. ft. floor area
Path 1	Less than equal to 6 cfm	Less than equal to 9 cfm
Path 2	Less than equal to 4 cfm	Less than equal to 6 cfm

1105.3.2.3 Building cavities. Building framing cavities shall not be used as supply ducts.

1105.3.3 Circulating hot water systems. The first five feet of 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.

1105.3.4 Mechanical ventilation. Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating.

1105.3.6 Snow melt system controls. Snow-and ice-melting systems supplied through energy service to the building shall include automatic controls capable of shutting off the system when the pavement temperature is above 50°F (10°C) and no precipitation is falling and an automatic or manual control that will allow shutoff when the outdoor temperature is above 40°F (5°C).

1105.4.1 Lighting equipment. A minimum of 75 percent of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps.