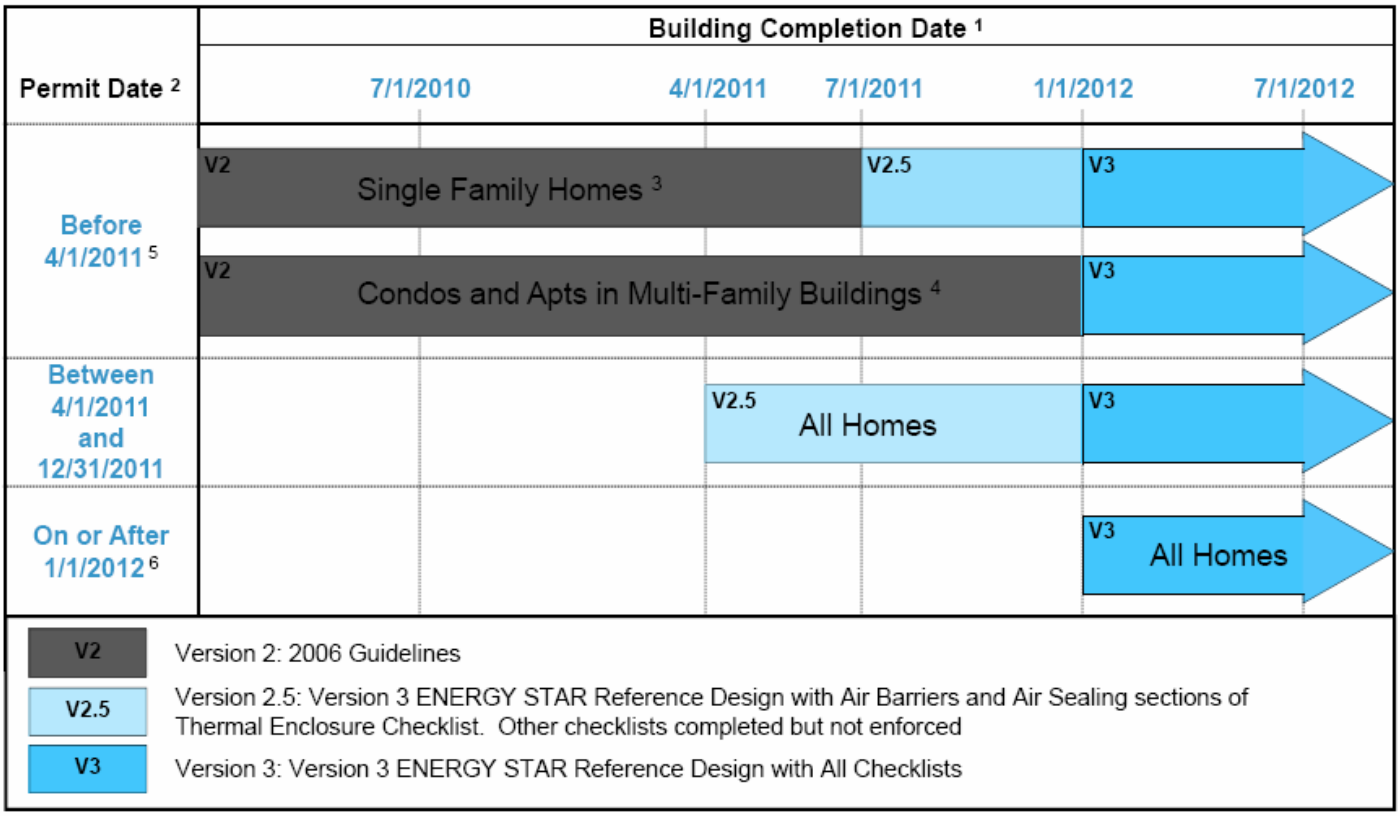
ENERGY STAR VERSION 2.5 AND 3.0 SUMMARY

These are not all of the requirements, but this is a quick list of the highlights. The Yellow highlighted areas are those which are required for Version 2.5 for homes permitted after April 1, 2011 and completed by December 31, 2011. Homes permitted after January 1, 2012 must meet all of the new requirements. For the full list of new program requirements and clarifications, go to the E-Library page and see the section for Energy Codes where you can download copies of the new guidelines.

ENERGY STAR New Homes Version 3 Implementation Schedule



NEW HERS INDEX TARGET: Building Envelope Insulation R-values are modeled using the IECC 2009, so while ***these insulation levels can be traded off***, the reference home uses the following values for calculating the new HERS Target threshold.

Windows	U-.35 or lower
Walls	R-20 (2x6) or R-13 + R-5 (2x4)
Ceilings	R-38 (or R-30 if you can achieve R-30 over the top plates)
Framed Floors	R-30
Found. Walls	R-10 continuous (interior or exterior) or R-13 cavities. No class 1 vapor barriers allowed!

Changed definition of conditioned floor area to exclude some basements! If the basement is finished it is included (and has always been). If the basement is unfinished, but has supply duct terminations, it is conditioned space. If the basement is unfinished and has no supply ducts, it is unconditioned. This is important because duct leakage maximums under the old method allowed for a greater square footage allowance for leakage.

Square footage penalty for 3BR homes over 2200 ft, and 4BR homes over 2800. This penalty called the "square footage adjustment factor" amounts to a slight lowering of the HERS score required to meet ENERGY STAR

New Checklists There are now four checklists to be completed for each home. The checklists are required to be completed, but the only one enforced is the Thermal Enclosure checklist.

- "Thermal Enclosure Checklist" for the rater, an expanded version of the thermal bypass checklist to be done before drywall
- "HVAC Quality Installation Checklist" for Contractors to fill out
- "HVAC System Quality Installation Checklist" for Raters to fill out
- "Water Management System Checklist" for builders to fill out

NOTE: Version 2.5 (Homes permitted after April 1 and completed by December 31) requires that all the checklists be completed, but the only one to which compliance is required is the Thermal Enclosure Checklist.

Tighter Duct Leakage Less than 4 cfm of leakage to outdoors per 100 square foot of conditioned space
Less than 6 cfm of TOTAL leakage (inside and outside) per 100 square feet

Tighter Blower door #s Homes must be tighter than 4 ACH 50, our "rule of thumb" about our blower door number needing to be about 50% of our above grade square footage is now the official rule.

Square ft	CFM @50
1000	533
1500	800
2000	1067
2500	1333
3000	1600
3500	1867
4000	2133

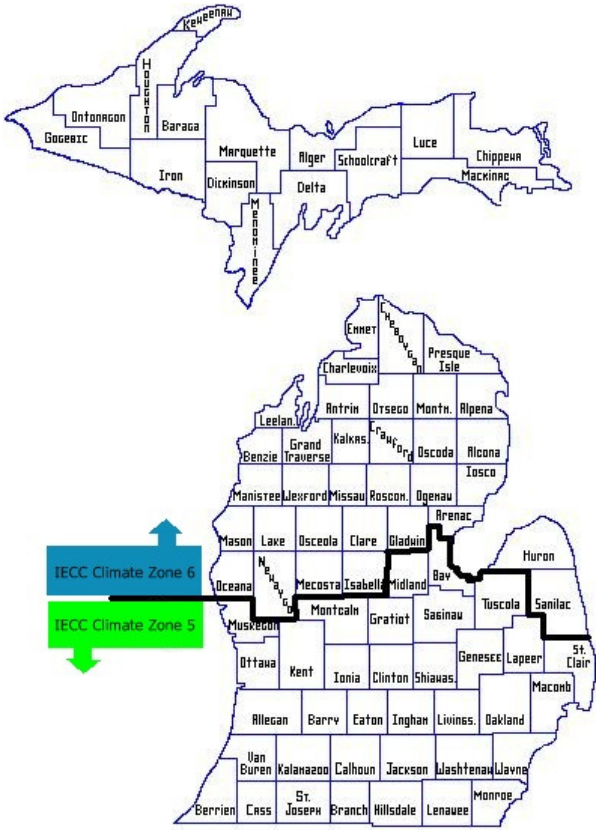
Water heaters MUST be Power Vent with minimum EF of .61 for 40 Gallons, .59 for 50 Gallons

Programmable thermostats are required, if the system is geo-thermal, T-stat must be "adaptive recovery"

Sheetrock must be sealed at the top plates with caulk or foam (CONSTRUCTION ADHESIVE SHALL NOT BE USED!) at the attic/wall interface. Apply sealant directly between sheetrock and top plate or to the seam between the two from the attic above
Other Items

- Rough openings around windows and doors sealed with **caulk or foam** (not fiberglass chinking!)
- Attic access panels must have durable R-10 or higher insulation **adhered** to the cover
- A duct may run on an exterior wall only if a minimum R-6 insulation is provided on the exterior side
- Duct boots must be sealed to floor, wall, or ceiling using caulk, foam, mastic tape or paste
- No sharp bends or kinks in ductwork, also no excessive coiled or looped flex-duct
- Kitchen exhaust fan (ducted to exterior) with minimum 100 CFM required (to be tested by Rater)
- Bath Fan with minimum 50 CFM (full baths only) (to be tested by the Rater)
- MERV 6 or higher furnace filter
- Automatic Mechanical ventilation is now REQUIRED

Michigan is divided into **TWO climate zones** for the IECC, below is a map which shows where the line is drawn between Zone 5 and Zone 6. It is important to remember that your home is being compared to a reference home which has insulation levels EQUAL to those prescribed in the IECC so while there is a trade-off allowance for insulation levels in ceilings, walls, floors, and slabs, the overall UA (U-factor overall) is being compared to the home which has these higher R-values.



Source: IECC 2009 TABLE 402.1.1

INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT

CLIMATE ZONE	FENESTRATION U-FACTOR[b]	SKYLIGHT U-FACTOR[b]	FENESTRATION SHGC[b,e]	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE[i]	FLOOR R-VALUE	BASEMENT WALL R-VALUE[c]	SLAB R-VALUE & DEPTH[d]	CRAWL SPACE WALL R-VALUE[c]
1	1.2	0.75	0.4	30	13	3	13	0	0	0
2	0.65[j]	0.75	0.4	30	13	4	13	0	0	0
3	0.5[j]	0.65	0.4	30	13	5	19	5 / 13[f]	0	5 / 13
4 except Marine	0.35	0.6	NR	38	13	5	19	10 / 13	10, 2 ft.	10 / 13
5 and Marine 4	0.35	0.6	NR	38	20 or 13+5[h]	13	30[g]	10 / 13	10, 2 ft.	10 / 13
6	0.35	0.6	NR	49	20 or 13+5[h]	15	30[g]	15 / 19	10, 4 ft.	10 / 13
7 and 8	0.35	0.6	NR	49	21	19	38[g]	15 / 19	10, 4 ft.	10 / 13

a. R-values are minimums. U-factors and SHGC are maximums. R-19 batts compressed into a normal 2x6 framing cavity such that the R-value is reduced by R-1 or more shall be marked with the compressed batt R-value in addition to the full thickness R-value.

b. Fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration.

c. "15/19" means R-15 continuous insulated sheathing on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. "15/19" shall be permitted to be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continous insulated sheathing on the interior or exterior of the home. "10/13" means R-10 continous insulated sheathing on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.

d. 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 Zone 1 through 3 for heated slabs.

e. There are no SHGC requirements in the Marine Zone.

f. Basement wall insulation is not required in warm-humid locations as defind by Figure 301.1 and Table 301.1

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

h. "13+5" means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25 percent of exterior, stuctural sheathing shall be supplemented with insulation sheathing of at least R-2.

i. The second R-value applies when more than half of the insulation is on the interior of the mass wall.

j. For impact reated fenestration complying with Section R301.2.1.2 of the International Residential Code or Section 1608.1.2 of the International Building Code, the maximum U-factor shall be 0.75 in Zone 2 and 0.65 in Zone 3.