

FINAL ENERGY EFFICIENCY CERTIFICATION

This form must be completed by applicants that agreed to design residential units to meet the energy efficiency standards as defined in the OHFA Development Features Agreement.

*Complete Part A for single-family and multifamily buildings with three or fewer stories.
Complete Part B for multifamily buildings with four or more stories.*

PART A

Single-family and multifamily buildings with three or fewer stories (new construction or rehabilitation) must comply with all applicable codes, including the 2006 Ohio Residential Code and the 2006 International Energy Conservation Code, and also select one of the following options to assure safe, healthy, durable, efficient homes.

_____ Option I. Builder Option Package Approach – New Construction

1. Minimum Features:

Attic	R-30	(with heal truss or air barrier at perimeter)
Ext Wall:	R-13	(in contact with conditioned surface)
Floor / cold	R-19	(installed against the floor above)
Basement	R-5	(top to footer)
Crawl	R-5	(all crawls will be unvented)
Slab on grade	R-10	(2 feet if <6000 HDD / 4 feet if >6000 HDD)
Windows	U-0.48	(up to 12% win/wall)
	<U-0.40	(above 12% win/wall)
Heating unit	90 AFUE (2 pipe)	-OR- 8.0 HSPF -OR- 3.0 COP (Elec resistance permitted if design load <30k – see sizing caution above)
AC	13 SEER	
Hot water	Gas direct vent	-OR- 0.91 EF if electric

2. **Inspections:** (In each project, the 1st unit, 1 of the next 4, and 1/7 of the rest)
Inspector must be properly certified (e.g. HERS) and not affiliated with builder or agency.
Foundation – before backfill to note drain and insulation system.
AIP – before drywall to note duct connections and insulation.
Verify load calcs have been performed and that equipment is over sized by no more than 15% (exception: where equipment is the next size available) for each model built.

3. Performance tests:

Blower door for whole house air leak rate; cannot exceed 0.35 ACHnat.
(Mechanical ventilation required <0.20 ACHnat – must be hard wired, rated for continuous duty, < 1 sone, and use <= 25 watts [typ. Panasonic FV-08VF2].)
Duct testing using Delta Q or Duct Blaster; leakage rate cannot exceed 6% of the total system airflow to the outside, with deficiencies corrected and retested if necessary.

Option II. Builder Option Package Approach – Existing or Rehab Units

1. Minimum Features:

Attic	R-30	(with heal truss or air barrier at perimeter)
Ext Wall:	R-13	(in contact with conditioned surface)
Floor / cold	R-19	(installed against the floor above)
Basement	R-5	(installed a minimum of 4 feet down from top with air sealing at the edges)
Crawl	R-5	(all crawls will be unvented)
Windows	U-0.48	(up to 12% win/wall)
	<U-0.40	(above 12% win/wall)
Heating unit	90 AFUE (2 pipe) -OR- 8.0 HSPF Air Source Heat Pump -OR- 3.0 COP	(Elec resistance permitted if design load <30k – see sizing caution below)
AC	13 SEER	
Hot water	Gas direct vent OR > 0.91 EF if electric	

2. Inspections:

Verify load calcs and equipment sizing have been performed for each rehab model after energy upgrade efforts have been applied (maximum oversize is 15% or next available equipment size).

3. Performance tests:

Blower door testing for whole house air leak rate with a target of 0.35 ACHnat but with a 50% reduction as a minimum.

(Mechanical ventilation required <0.20 ACHnat – must be hard wired, rated for continuous duty, < 1 sone, and use <= 25 watts [typ. Panasonic FV-08VF2].)

Duct testing using Delta Q or Duct Blaster; leakage rate cannot exceed 6% of the total system airflow to the outside, with deficiencies corrected and retested if necessary.

Not required if all ducts are visible in conditioned space – typ of ranch on basement units.

Worst case exhaust testing for all units using open combustion appliances with flagging of backdraft potentials.

Option III. Energy Star Home ® Approach

ENERGY STAR HOME ® certification by an accredited HERS Rater that must include:

Design – A rating from plans for each model done in Ohio worst-case configuration.

Inspection – Perform a successful EPA thermal bypass checklist.

Audit – Perform all mandated air leak and duct system leak testing.

The minimum requirement in each of these approaches includes the attached Construction Guidelines and Inspections / Performance testing performed by an accredited independent third party.

Performance testing will be done on each Single Family unit; multifamily units can be tested at the One in Four rate *if the builder maintains consistent production quality, first measured by initial successful audits of 4 units*. Failures require testing two additional units for the failed item, corrective action to bring the failed unit up to standards, and may require retesting for the failed component. Three or more failures in a subdivision require full audits for that subdivision.

PART B

Multifamily buildings with four or more stories must comply with all applicable codes, including the 2006 Ohio Residential Code and the 2006 International Energy Conservation Code, and also select one of the following options to assure safe, healthy, durable, efficient homes.

Option I. New Construction

1. Minimum Energy Standard:

Buildings must be constructed that use 20% less energy than that required by the energy requirements of ASHRAE 90.1-2004 or the IECC 2006. A modeling approach based on the Performance Rating Methodology (Appendix G) of ASHRAE Standard 90.1-2004 must be used to demonstrate compliance.

2. Inspections:

Verify design plans will result in a building that uses 20% less energy than required by Code.

Verify load calcs have been performed and that equipment is over sized by no more than 15% (exception: where equipment is the next size available) for each model built.

Foundation – before backfill to note drain and insulation system.

AIP – before drywall to note duct connections and insulation, airsealing details as required by the code.

Final – verify correct HVAC, appliances, lighting, windows installed.

3. Performance tests:

Infrared scans of exterior surfaces are recommended.

HVAC efficiency and system flows; to include safety testing of combustion appliances, ventilation system flows, duct system flows, heating and A/C temperature drops are mandatory.

_____ **Option II. Rehabilitation**

1. **Minimum Energy Standard:**

Rehabilitated multifamily buildings must meet the thermal (Ua) requirements of ASHRAE 90.1-2004 or the IECC 2006 and have Energy Star® HVAC systems, appliances and lighting installed.

2. **Inspections:**

Verify design plans will result in a building that meets the Ua requirements of the appropriate compliance path.

Verify load calcs have been performed and that equipment is over sized by no more than 15% (exception: where equipment is the next size available) for each model built.

Foundation – before backfill to note drain and insulation system.

AIP – before drywall to note duct connections and insulation, airsealing details as required by the code.

Final – verify correct HVAC, appliances, lighting, windows installed.

3. **Performance tests:**

Infrared scans of exterior surfaces are recommended.

HVAC efficiency and system flows; to include safety testing of combustion appliances, ventilation system flows, duct system flows, heating and A/C temperature drops are mandatory.

CERTIFICATION:

Contractor – Authorized Representative:

Printed Name: _____ Title: _____

Signature: _____ Date: _____

Company/Firm Name: _____

Company/Firm Address: _____

Phone Number: _____ Fax Number: _____

Owner – Authorized Representative:

Printed Name: _____ Title: _____

Signature: _____ Date: _____