

2009 Residential Energy Efficiency Worksheet

2009 IRC, IECC, & PA Alternative Residential Energy Provisions

Location of Construction _____ Owner Name _____

PA UCC Energy Compliance Path (Check One)

- *PA- Alternate Residential Provisions
 IRC Chapter 11
 IECC- Compliant Software
*(86 AFUE Furnace, 8.8 HSPF Heat Pump, Geothermal, HERS Index of 85 or less, or alternative energy system needed to use Pa Alternative Provisions)

INSULATION & FENESTRATION REQUIREMENTS BY COMPONENT (PA ALTERNATIVE & IRC CHAPTER 11)

Wood Frame Walls	R-20 cavity OR R-13 cavity + R-5 insulated sheathing
Ceilings with Attic Space	R-38 (R-30 approved if not compressed over wall top plates)
Ceilings without Attic Space	R-30 where roof/ceiling assemblies do not allow R-38 LIMITED TO 500 SQ. FT. OF AREA IN IRC ONLY
Floors	R-30 (or insulation to fill framing cavity, min of R-19) R-19 permitted in basement floors per PA Alt.
Basement Walls	R-10 continuous insulation or R-13 cavity insulation R-20 if 50% or more of the basement wall is exposed
Crawl Space Walls	R-10 continuous insulation or R-13 cavity insulation
Unexcavated Foundation	R-10 to a depth of 2 feet (add R-5 if slab heated)
Mechanical System Piping	R-3 (IRC) or R-2 (PA Alt.) HVAC Piping < 55 or > 905
HVAC Duct Insulation	R-8 Supply Ducts in Attic, R-6 Other ducts No insulation required for ducts inside the building thermal envelope
Window & Door (U-Factor)	0.35 maximum (15 sq. ft. window exemption) (Opaque Door Exemptions- 24 sq. ft. (IRC), 54 sq. ft. (PA Alt.)
Thermally Isolated Sunroom	R-24 Ceilings, R-13 Walls, 0.50 Glazing U-Factor
Recessed Lights in Thermal Envelope	IC Rated and LABELED ASTM E283
Lighting Equipment	Min. of 50% high-efficacy lamps in permanent light fixtures

Air Sealing and Insulation (Check One)

Building envelope air tightness and insulation installation shall be demonstrated to comply with one of the following options
(ADDITIONS AND ALTERATIONS DEFAULT TO VISUAL OPTION)

- Testing Option-** Tested air leakage is less than 7 ACH when tested with a blower door at a pressure of 50 Pascals (0.007 PSI) in accordance with ASHRAE 119- Air Leakage Performance for Detached Single Family Residential Buildings. Testing shall occur after rough-in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation and combustion appliances. See PA304.2.1 for complete requirements. **Approved**

Testing Agency (RESNET Certified or BPI Envelope Specialist) providing evidence of blower door testing OR Contractor performing testing with Central Keystone COG Inspector must be present.

Visual Option- The items listed in Table N1102.4.2 (IRC) or Table PA304.2.2 (PA Alt.), applicable to the method of construction, are subject to inspection approval by Central Keystone COG Inspector. AIR SEALING INSPECTION WILL TAKE PLACE DURING THE FRAMING INSPECTION. INSULATION INSPECTION REQUIRED PRIOR TO DRYWALL.

Duct Sealing (Check One)

Ducts, air handlers, filter boxes and building cavities used as ducts shall be sealed. Joints and seams shall comply with the IRC Section M1601.4

Fiberglass Ducts- The closure systems used with rigid fibrous glass ducts shall comply with UL 181 A and shall be Marked "181 A-P" for pressure-sensitive tape, "181 A-M" for mastic, or "181 A-H" for heat-sensitive tape.

Flexible Air Ducts- The closure systems used with flexible air ducts and flexible air connectors shall comply with UL 181 B and shall be marked "181 B-FX" for pressure sensitive tape or "181 B-M" for mastic.

Metal to Metal Duct Joints- The closure systems used with metal to metal duct joints shall comply with one of the following: Mastics to be listed and labeled to "181 B-M". Tapes shall be listed and labeled to indicate compliance with "UL 181 B-FX".

Duct Testing (Check One)

Please choose an option for duct tightness testing or choose the exception if it applies. (DUCT TESTING APPLIES TO ADDITION AND ALTERATIONS ONLY WHEN NEW HVAC SYTEM(S) INSTALLED.) Partial system testing not permitted.

Post Construction Test Option 1A- Leakage to outdoors shall be less than or equal to 8 CFM (3.78 L/S) per 100 sq. ft. of conditioned floor area. This test requires simultaneous operation of a blower door test. ANSI/ASHRAE Standard 152-2004 to be referenced for the test protocol.

Post Construction Test Option 1B- Total leakage less than or equal to 12 CFM (5.66 L/S) per 100 sq. ft. of conditioned floor area when tested at a pressure differential of 0.1 inch w.g. (25 Pa), INCLUDING THE MANUFACTURER'S AIR HANDLER ENCLOSURE. See N1103.2.2 (IRC) or PA402.2 (PA Alt.) for complete requirements.

Rough-In Test Option 2A- Total leakage shall be less than or equal to 6 CFM (2.83 L/S) per 100 sq. ft. of conditioned floor area when tested at a pressure differential of 0.1 inch w.g. (25 Pa), INCLUDING THE MANUFACTURER'S AIR HANDLER ENCLOSURE. See N 1103.2.2 (IRC) or PA 402.2 (PA Alt.) for complete requirements.

Rough-In Test Option 2B- Total leakage shall be less than or equal to 4 CFM (1.89 L/S) per 100 sq. ft. of conditioned floor area when tested at a pressure differential of 0.1. inch w.g. (25 Pa) IF THE AIR HANDLER IS NOT INSTALLED AT THE TIME OF THE TEST.

Approved testing agency- Approved agency providing evidence of duct testing OR Contractor performing testing with Central Keystone COG Inspector present.

Exception- Duct tightness test is not required if the air handler and ALL ducts (supply and return) are located within conditioned space. DUCTS LOCATED IN EXTERIOR WALLS ARE NOT WITHIN CONDITIONED SPACE. (When ducts are installed in exterior walls, duct testing is required.)

_____ SQ. FT. of Conditioned Floor Area

Print Name: _____

Company: _____

Signature: _____

Date: _____