

Residential ACM Appendix C

RACM Appendix C – Special Features

C1 Purpose and Scope

This Appendix lists required descriptors and references to documentation for CF-1R Special Features

C2 Required Descriptors and References

Table RC-1 – Required descriptors and References for Special Features

Measure	Required Description
Housewrap/ Air -retarding wrap	This building incorporates an air retarding wrap which shall be installed to meet the requirements of Section 150 (f) of the Standards.
Multiple conditioned zones	This building uses multiple conditioned zones. The non-closable area between zones cannot exceed 40 ft ² and each zone must be controlled with a separate thermostat. In addition the air flow requirements and fan watt draw requirements in Reference Residential Appendix RA3.3 must be met.
Sunspace attached to building	This building has an attached sunspace with interzone surfaces, custom solar heat gain distribution and sunspace thermal mass elements.
Non-standard free ventilation area	Standard free ventilation area is 10% of rough-out opening of all fenestration.
All orientations	When all orientations are specified, see section 151 (c) 2 of the Standards and section RA1-3.2 in Reference Residential Appendix RA-1 .
High mass building features	High-mass building features are described in the THERMAL MASS FOR HIGH MASS DESIGN table of compliance form CF-1R.
Gas Absorption equipment	Minimum efficiency for Gas Absorption equipment is specified in Table 112-D in Subchapter 2 of the 2008 Building Energy Efficiency Standards.
Cool Roofing products installed	Cool roof products installed on this building qualifying for compliance with Sections 141(a)1.B, 143(a)1 or 149(b) 1 B,, 151(f)12, or 152(b)1H shall be rated and labeled by the Cool Roof Rating Council in accordance with Section 10-113 of the standards.
Radiant Barriers installed	The radiant barriers installed in this building shall meet eligibility and installation criteria as specified in Reference Residential Appendix RA4.2.2.
Non-standard Ventilation Height Difference	Non-standard ventilation height difference must be verified according to the rules in 2008 Residential ACM Manual Chapter 3 under Building Zone Information.

Hydronic heating system	Table R3-50 specifies default assumptions for hydronic systems for existing buildings. System details are in the SPECIAL SYSTEMS - HYDRONIC DISTRIBUTION SYSTEMS AND TERMINALS table of compliance form CF-1R.
Reduced air leakage infiltration and/or Mechanical ventilation	This building is modeled with reduced infiltration and/or mechanical ventilation. Consequently the homeowner's manual provided by the builder to the homeowner shall include operating instructions for the homeowner on how to use operable windows and/or mechanical ventilation to achieve adequate ventilation. Testing for reduced infiltration shall be performed as specified in ASTM E 779-03. This listings shall also report the target CFM50_H required for the blower door test to achieve the modeled SLA and the minimum CFM50_H (corresponding to an SLA of 1.5) allowed to avoid backdraft problems.
Metal-framed walls <construction type>	This building uses metal-framed walls that shall meet mandatory insulation requirements. In many cases sheathing insulation is used in addition to cavity insulation. Metal-framed walls shall be built according to the details in Reference Joint Appendix 4 for this construction type.
Non-NAECA large storage gas water heater	A non-NAECA large storage gas water heater is specified for this building. System specifications are shown in the SPECIAL WATER HEATER/BOILER DETAILS table of compliance form CF-1R.
Water heating system does not have a single separate water heater serving each dwelling unit	Water heating system specifications are in the SPECIAL WATER HEATER/BOILER DETAILS table of compliance form CF-1R.
Controlled-ventilation Crawlspace	Controlled-ventilation Crawlspace is to be constructed in accordance with the alternative to section 150(d) of the Standards and section 3.5.4 of the 2008 Residential ACM Manual.
Solar thermal water heating	Solar Savings Fraction (SF) for solar thermal water heating is calculated from the equations in Residential ACM Appendix RG section RG 3.4. See also section 5.13 of the 2008 Residential ACM manual
<i>for additions or alterations:</i>	
Lower energy factors are specified than the vintage defaults.	Field verification of lower energy factors is required.
Lower efficiencies are specified than the vintage defaults.	Field verification of specified efficiencies is required.
Mechanical Replacement - tested	Mechanical system has been replaced and duct testing must be field verified
Mechanical Replacement – non tested	Mechanical system has been replaced -Duct testing is not required.
Higher SHGCs are specified than the vintage defaults.	Field verification of higher SHGCs as specified is required.

Higher U-factors are specified than the vintage defaults.	Field verification of U-factors as specified is required.
Hot Water Recirculation	A hot water recirculation system has been modeled. Verification of type is required.
Evaporative Cooling	An indirect or direct-indirect evaporative cooler has been installed. Verify with CF-6R that type of equipment and maximum water use rate.
Cooling System Not Installed	A cooling system has not been installed, field verification is not necessary.
Central Control DHW Systems	A Central Control DHW Systems has been modeled. Systems must be preapproved by the Commission.

Table RC-2 – Required descriptors and References for HERS Required Verification

Measure Title	Required Description
Duct Measures	
Duct Sealing	Component Packages require that space conditioning ducts be sealed. HERS field verification and diagnostic testing is required to verify that approved duct system materials are utilized, and that duct leakage meets the specified criteria
Supply Duct Location, Surface Area and R-value	Compliance credit has been taken for improved supply duct location, surface area and R-value. HERS field verification is required to verify that the duct system was installed according to the design, including location, size and length of ducts, duct insulation R-value and installation of buried ducts. ¹ The system must also meet the Adequate Airflow requirement.
Low Leakage Ducts in Conditioned Space	Compliance credit has been taken for verified duct systems that have air leakage to outside conditions equal to or less than 25 cfm when measured in accordance with Reference Residential Appendix Section RA3.1.4.3.6. HERS field Verification for ducts in conditioned space is required. Duct sealing is required.
Low Leakage Air Handlers	Compliance credit has been taken for installation of a factory sealed air handler unit tested by the manufacturer and certified to the Commission to have achieved a 2 percent or less leakage rate. HERS field verification of the air handler's model number is required. Duct Sealing is required.
Air Conditioning Measures	
Improved Refrigerant Charge	HERS field verification is required for correct refrigerant charge (see Residential ACM Manual Section 3.11.2). For the performance method, the Proposed Design is modeled with less efficiency if diagnostic testing and field verification is not performed. The system must also meet the Adequate Airflow requirement.
Installation of Charge Indicator Display	HERS field verification is required for verification of a Charge Indicator Display can be installed as an alternative to refrigerant charge testing.
Adequate Airflow	Compliance credit has been taken when airflow is higher than the criteria specified. HERS field verification and diagnostic testing is required.
Air Handler Fan Watt Draw	Compliance credit has been taken for reductions in fan power. Diagnostic testing and HERS field verification is required. The system must also meet the Adequate Airflow requirement.
High Energy Efficiency Ratio (EER)	Compliance credit has been taken for increased EER by installation of specific air conditioner or heat pump models. HERS field verification is required. ²
Maximum Cooling Capacity	HERS field verification is required to verify cooling capacity; the maximum cooling capacity credit has been taken. – Adequate Airflow, duct sealing, and EER – must be field verified and diagnostically tested.
Evaporatively Cooled Condensers	Compliance credit has been taken for installation of evaporatively cooled condensers. Duct Sealing is required. HERS field verification is required.
Ice Storage Air Conditioners	Compliance Credit has been taken for installation of distributed energy storage equipment. Duct sealing is required. HERS field verification is required
Building Envelope Measures	
Building Envelope Sealing	Compliance credit has been taken for improved building envelope sealing. HERS field verification and diagnostic testing is required to confirm reduced infiltration.
High Quality Insulation Installation	Compliance credit for quality installation of insulation has been used. HERS field verification is required.
Quality Insulation Installation for Spray Polyurethane Foam	Closed-cell spray polyurethane foam insulation must be installed pursuant to the procedures of Reference Joint Appendix JA7. If the installation pursuant to Reference Joint Appendix JA7 is certified by a HERS rater, a compliance credit can be taken.
Solar Measures	
PV Field Verification Protocol	Building is participating in the New Solar Home Partnership HERS field verification is required to measure the output of the installed system and shown to comply with the output specified on the rebate application (taking into account variables such as the solar insulation, the time, and the temperature).