

What is HERS?

Field verification and diagnostic testing are performed by special third-party inspectors called Home Energy Rating System (HERS) Raters. The California Energy Commission has given this responsibility to the HERS Raters, who must be specially trained and certified to perform these services to address poor construction quality and equipment installation. In California's 2019 Building Energy Efficiency Standards (Title 24, Part 6 or Energy Code) technologies and systems that trigger HERS verification are considered "HERS measures." These cover a variety of features such as HVAC systems, plumbing and insulation installation for residential and nonresidential projects. In order to verify these HERS measures, certified HERS Raters perform onsite inspections and tests, to ensure proper installation per verification procedures defined by the Energy Commission (which can be found in the applicable Energy Code Reference Appendices).

Why should I care about HERS?

As a homeowner or building owner, you should expect your building features to be installed as designed and compliant with the Energy Code. The HERS verification process ensures that the proposed HERS measures are installed and meet code compliance.

As a contractor or developer, verification that the installed building features are meeting the energy performance expected by the Energy Code, assures your clients and future building owners of the building's future energy-efficiency potential.

When are HERS raters required?

A HERS rater is required when the Certificate of Compliance indicates HERS measures are required.

Residential Buildings: New homes and additions over 1,000 ft², will always require HERS measures meaning a HERS Rater will always be required. For additions 1,000 ft² or less and any alteration to an existing home, HERS verification requirements will depend on the building features being added or altered with a building permit and will be listed on the Certificate of Compliance (CF1R) form.

Nonresidential/High-Rise Multifamily/Hotel and Motel Buildings: HERS verification requirements for new buildings, additions and alterations will depend on the building features included with the permitted project and will be listed on the Certificate of Compliance (NRCC) form.

Who Hires the HERS Rater?

The building owner or the general contractor typically hires the HERS Rater. HERS Raters cannot be employees of the builder or contractor whose work they are verifying. Also HERS Raters cannot have a financial interest in the builder's or contractor's business, or advocate or recommend the use of any product or service that they are verifying.

Typically a HERS Rater should be selected at the beginning of construction so they can inform the contractor about when they need to perform inspections and testing. It is important to coordinate with the energy consultant or documentation author when assigning a Rater to the project. This allows the Rater to have access to the registered compliance documentation associated with the project.

Who Does What?

HERS Raters

have been trained and certified by a HERS Provider to verify compliance of HERS measures with California's Energy Code. They are third-party inspectors who perform field verification and diagnostic testing services for the benefit of the homeowner or building owner to ensure proper measure installation and systems operation.

HERS Providers

are organizations approved by the California Energy Commission to train and certify HERS Raters, and conduct quality assurance reviews to maintain consistency among HERS Raters. Providers also maintain a HERS registry, which contains a database of projects and related compliance documents.

Building Inspectors

perform inspections for all Building Codes (Structural, Electrical, Plumbing, etc.) throughout construction. HERS Raters are special inspectors to the Building Inspector and must demonstrate competence, to the satisfaction of the building official, for the visual inspections and diagnostic testing that they perform.

Acceptance Test Technicians (ATT)

are contractors trained via an ATTCP provider and may be able to provide verification for HERS measures associated with high-rise multifamily, hotel/motel and nonresidential buildings once the Energy Commission approves the ATTCP for HERS measure verification (as of September 2019, none have been approved).

Compliance Documents

There are several documents that the Building Department will need in order to verify code compliance. There are three types of Compliance Documents required at different stages of construction. These include:



- Certificate of Compliance (**NRCC** for nonresidential/high-rise multifamily/hotel & motel; **CF1R** for residential/low-rise multifamily): Documents the building features required to comply with the Energy Code. These features will vary depending on the particular project and the compliance approach used and are submitted to the building department as part of the building permit application.
- Certificate of Installation (**NRCI** for nonresidential/high-rise multifamily/hotel & motel; **CF2R** for residential/low-rise multifamily): Documents that the building products and features actually installed in the field match those required in the Certificates of Compliance. To be completed and signed by the installer or builder responsible for installing regulated building.
- Certificate of Verification (**NRCV** for nonresidential/high-rise multifamily/hotel & motel; **CF3R** for residential/low-rise multifamily): Documents compliance with applicable HERS measures. To be completed and signed by a HERS rater.

What to do when “registered” forms are required

Registering compliance documentation is a process designed to ensure that equipment is installed in accordance with the Energy Code requirements listed on the Certificate of Compliance.

- Residential/low-rise multifamily: The Building Department will require a registered **CF1R** before issuing a permit if HERS measures are required (with limited exceptions pertaining to HVAC alterations).
- Nonresidential/high-rise multifamily/hotel & motel: The **NRCC** is not required to be registered for permit application, only the applicable **NRCV** form(s) are required to be registered before final inspection.

The registration process is generally initiated by the energy consultant or compliance documentation author. This process will require the owner or contractor to establish an account with the HERS Provider in order to “sign-off” (approve the documentation) before a registered **CF1R** may be printed. This is an important step in the process and should be completed to prevent delays in registration.

To establish an account with a HERS Provider, go to a provider’s website and follow their directions based on your role (home owner, contractor or architect/designer). For security purposes, this process will require you to provide personal identification. Once your account is established, you will have access to either create or “sign-off” on a project, whichever is applicable.

Once the **CF1R** has been approved and signed-off by all responsible parties, it is ready to be printed and submitted to the Building Department. The registered compliance documents will contain a unique registration number, date and time stamp, and name of HERS Provider at the bottom of each page. This tells the Building Department that the documents are registered. If any changes occur to the scope of work, the **CF1R** will need to be revised, registered, and re-submitted to the Building Department for approval.



Registration Number: thisisnotareal#	Registration Date/Time: 5/5/55 5:55	HERS Provider: HERSRUS
CA Building Energy Efficiency Standards - 2019 Residential Compliance	Report Version: CF1R-04141016-574	Report Generated at: 4/29/2020 9:35:55 PM

Residential (Single Family and Low-Rise Multifamily) Requirements

The following table reflects the HERS measures associated with single family homes and low-rise multifamily buildings for new construction, additions and alterations. Note that some HERS measures are Mandatory, some are Prescriptive and some are not required but are used only for Performance credits.

HERS Measures: Residential (based on Table RA2-1)	Mandatory 	Prescriptive 	Performance 	Reference Appendices
DUCT MEASURES				
Duct Sealing: Verify approved duct system materials are utilized, and that duct leakage passes.	§150.0(m)11	N/A	N/A	RA3.1.4.3
Return Duct Design: Confirm that the return duct design conform to the criteria per given §150.0(m)13; or Cooling System Airflow verification. Includes confirming the air filter devices conform §150.0(m)12.	§150.0(m)12 §150.0(m)13	N/A	N/A	RA3.1.4.4 RA3.1.4.5
Air Filter Device: Confirming the air filter devices conform §150.0(m)12.	§150.0(m)13	N/A	N/A	RA3.1.4.5
Zonally Controlled Central FAU (bypass ducts): Zonally controlled systems comply with the bypass duct requirements in §150.1(c)13. Performance penalty if bypass ducts used.	§150.0(m)12	Not allowed per §150.1(c)13	Res ACM 2.4.8.4	RA3.1.4.6
Ducts (Low Leakage) in Directly Conditioned Space: Duct system location must be verified. Duct sealing is also required.	N/A	HPA Option B §150.1(c)9	Res ACM 2.4.6.2 Res ACM 2.4.6.13	RA3.1.4.3.8
Duct Design / Buried Ducts / Deeply Buried Ducts: Duct system installed according to the design, including location, size and length of ducts, duct insulation R-value. For buried ducts measures. Duct Sealing and verification of insulation required.	N/A	N/A	N/A	RA3.1.4.1
HEATING & COOLING EQUIPMENT MEASURES				
Low Leakage Air-Handling Units: Verification of a factory sealed air handling unit tested by the manufacturer and certified. Duct Sealing is also required.	N/A	N/A	§150.1(b)3Biii Res ACM 2.4.6.11 Res ACM 2.4.6.12	RA3.1.4.3.9
Cooling System Airflow: System airflow greater than or equal to a specified criterion.	§150.0(m)13	Exception to §150.1(c)7Aib Exception 2 to §150.2(b)Fiia	Credit for exceeding min. Res ACM 2.4.5.2	RA3.3
Cooling System Air-Handling Fan Efficacy: Fan efficacy (W/cfm) less than or equal to a specified criterion.	§150.0(m)13	N/A	Credit for exceeding min. Res ACM 2.4.5.2	RA3.3
Refrigerant Charge/Fault Indicator Display: Air-cooled air conditioners and air-source heat pumps diagnostically tested to verify that the system has the correct refrigerant charge. Fault Indicator Display can be installed as an alternative.	N/A	§150.1(c)7A CZ 2,8-15	Credit in CZ 1,3-7,16 Res ACM 2.4.5.1	RA1.2 RA3.2 RA3.3 RA3.4.2
Energy Efficiency Ratio (EER): Compliance credit for increased >11.7 EER by installation of specific air conditioner or heat pump models.	N/A	N/A	§150.1(b)3Bii Res ACM 2.4.5.4	RA3.4.3 RA3.4.4.1
Seasonal Energy Efficiency Ratio (SEER): Compliance credit for increased >14 SEER by installation of specific air conditioner or heat pump models.	N/A	N/A	§150.1(b)3Bi Res ACM 2.4.5.5	RA3.4.3 RA3.4.4.1
◆ Heating Seasonal Performance Factor (HSPF): Compliance credit for >8.0 or 8.2 HSPF by installation of specific heat pump models.	N/A	N/A	§150.1(b)3Biv Res ACM 2.4.1.1	RA3.4.4.2
◆ Rated Heat Pump Capacity: When performance compliance uses a heat pump system, the heating capacity values at 47°F and 17°F must be field verified when not using default values.	N/A	N/A	§150.1(b)3Biv Res ACM 2.4.1.1	RA3.4.4.2
Evaporatively Cooled Condensers: Compliance credit for installation of evaporatively cooled condensers. Duct leakage and refrigerant charge is required.	N/A	N/A	Res ACM 2.4.5.6 Res ACM 2.4.5.7	RA1.2, RA3.2, RA3.3, RA3.4.2

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HERS Measures: Residential (based on Table RA2-1)	Mandatory 	Prescriptive 	Performance 	Reference Appendices
MECHANICAL VENTILATION MEASURES				
◆ Whole House Fan Ventilation Cooling: When performance compliance uses a whole house fan, the installed whole house fan airflow rate (cfm) and fan efficacy (W/cfm) shall be verified.	N/A	N/A	§150.1(b)3Bvi Res ACM 2.4.10	RA3.9
◆ Central Fan Ventilation Cooling: When performance compliance uses a central fan ventilation cooling system (CFVCS), the installed CFVCS ventilation airflow rate (cfm) and fan efficacy (W/cfm) must be verified.	N/A	N/A	§150.1(b)3Bvii Res ACM 2.4.10	RA3.3.4
Continuous or Intermittent IAQ: Measurement of whole-building mechanical ventilation. If central fan integrated system used, verification of installation and intermittent controls.	§150.0(o)	N/A	N/A	RA3.7.4.1 RA3.7.4.2
◆ Kitchen Range Hood: The verification procedure must consist of visual inspection of airflow and sound rating via certified rating data from the Home Ventilating Institute (HVI) Certified Home Ventilating Products Directory or another Energy Commission-approved directory.	§150.0(o)2B	N/A	N/A	RA3.7.4.3
BUILDING ENVELOPE MEASURES				
Building Envelope Air Leakage: Performance compliance credit can be taken for reduced building envelope air leakage.	N/A	N/A	§150.1(b)3Bviii Res ACM 2.2.5.1	RA2.2.4.1
◆ Quality Insulation Installation (QII): Prescriptive measure in all climate zones for newly constructed buildings and additions >700 ft ² , except low-rise multifamily buildings in CZ 7.	N/A	§150.1(c)1E	§150.1(b)3Bix Res ACM 2.2	RA3.5
Spray Polyurethane Foam (SPF) QII: Verify the installation of SPF insulation when R-values better than the default used for compliance credit. (Default = open cell @ 3.6 per inch / closed cell @ 5.8 per inch)	N/A	N/A	Res ACM 2.3.3	RA3.5.6
SINGLE FAMILY DOMESTIC HOT WATER				
Pipe Insulation Compliance Credit: Inspection must verify that all hot water piping in non-recirculating systems is insulated and that corners and tees are fully insulated.	N/A	N/A	Res ACM 2.9	RA3.6.3
Parallel Piping Compliance Credit: Inspection that requires that the measured length of piping between the water heater and single central manifold does not exceed five feet.	N/A	N/A	Res ACM 2.9	RA3.6.4
Compact Hot Water Distribution System Compliance Credit: Longest pipe run from the water heater to a HW fixture does not exceed a maximum length per RA3.6.5	N/A	§150.1(c)8Aiiia §150.1(c)8Aiva	Res ACM 2.9	RA3.6.5
Recirculation Pump Controls: Pipe insulation inspection required, and verification of controls specified in performance compliance documents.	N/A	N/A	Res ACM 2.9	RA3.6.1 - RA3.6.7
◆ Drain Water Heat Recovery: Inspection to verify that the DWHR unit(s) and installation configuration match the compliance document and the DWHR(s) is certified to the Commission to have met the requirements.	N/A	§150.1(c)8Aiiib §150.1(c)8Aiva §150.1(c)8Biiib	Res ACM 2.9	RA3.6.9

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HERS Measures: Residential (based on Table RA2-1)	Mandatory 	Prescriptive 	Performance 	Reference Appendices
MULTIFAMILY DOMESTIC HOT WATER				
Multiple Recirculation Loop Design and Controls: Performance credit for HERS inspection that a central DHW system serving a building with more than 8 dwelling units has at least 2 recirculation loops, each serving roughly the same number of dwelling units.	N/A	N/A	Res ACM Appendix B	RA3.6.8
◆ Drain Water Heat Recovery: Inspection to verify that the DWHR unit(s) and installation configuration match the compliance document and the DWHR(s) is certified to the Commission to have met the requirements.	N/A	§150.1(c)8Biii	Res ACM 2.9	RA3.6.9
PRE-EXISTING VERIFIED MEASURES				
Performance compliance credit for improving an existing building feature beyond “default” per Table 150.2-C, verified by visual inspection before building permit is pulled.	N/A	N/A	Res ACM 2.10.4	Res ACM Appendix G

Nonresidential, High-Rise Multifamily and Hotel/Motel Requirements

The following table reflects the HERS measures associated with nonresidential, high-rise multifamily and hotel/motel buildings for new construction, additions and alterations.

HERS Measures: Nonresidential (based on Table NA1-1)	Mandatory 	Prescriptive 	Performance 	Reference Appendices
DUCT MEASURES				
Duct Sealing: Field verification and diagnostic testing is required to verify that approved duct system materials are utilized, and that duct leakage meets the specified criteria for constant volume single zone system(s) serving less than 5,000 ft ² when more than 25% of the ducting is outside the conditioned space.	N/A	§140.4(l)	NR ACM 5.7.3.6	NA2.1.4.2
MULTIFAMILY DOMESTIC HOT WATER				
Multiple Recirculation Loop Design and Controls: Performance credit for HERS inspection that a central DHW system serving a building with more than eight dwelling units has at least two recirculation loops, each serving roughly the same number of dwelling units.	N/A	N/A	High-Rise: NR ACM 5.9.1.3 Res ACM Appendix B	RA3.6.8
◆ Drain Water Heat Recovery: Inspection to verify that the DWHR unit(s) and installation configuration match the compliance document and the DWHR(s) is certified to the Commission to have met the requirements.	N/A	§150.1(c)8Biii	Res ACM 2.9	RA3.6.9
MULTIFAMILY MECHANICAL VENTILATION MEASURES				
◆ Continuous or Intermittent IAQ: Measurement of whole-building mechanical ventilation per ASHRAE 62.2. If central fan integrated system used, verification of installation and intermittent controls.	§120.1(b)2Aivb	N/A	N/A	NA2.2.4.1 NA2.2.4.1.3
◆ Building Envelope Air Leakage: Measure the air leakage rate through a high-rise residential dwelling unit enclosures measured in cubic feet per minute when intermittent IAQ used.	§120.1(b)2Aivb2	N/A	N/A	NA2.3
◆ Kitchen Range Hood: The verification procedure shall consist of visual inspection of airflow and sound rating via certified rating data from the Home Ventilating Institute (HVI) Certified Home Ventilating Products Directory or another Energy Commission-approved directory.	§120.1(b)2Avi	N/A	N/A	RA3.7.4.3

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For More Information

Find A...

- HERS Rater:
www.calcerts.com
www.cheers.org
- Certified Energy Analyst:
cabec.org/find/cea-current/

California Energy Commission Information & Services

- Energy Code Hotline: 1-800-772-3300 (Free) or Title24@energy.ca.gov
- Online Resource Center:
www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/online-resource-center
 - The Energy Commission’s main web portal for Energy Code, including information, documents, and historical information
- Home Energy Rating System (HERS) Program Sub-site:
energy.ca.gov/HERS/
- What is Your Home Energy Rating booklet:
www.energy.ca.gov/HERS/booklet.html
- California Building Climate Zone Map:
caenergy.maps.arcgis.com/apps/webappviewer/index.html?id=4831772c00eb4f729924167244bbca22

Additional Resources

- Energy Code Ace:
EnergyCodeAce.com
 - An online “one-stop-shop” providing free resources and training to help appliance and building industry professionals decode and comply with Title 24, Part 6 and Title 20. The site is administered by California’s investor-owned utilities.

Of special interest:

- Forms Ace:
EnergyCodeAce.com/content/forms-ace/
 - An interactive tool designed to help you determine which Title 24, Part 6 Forms are applicable to your specific project

Please register with the site and select an industry role for your profile in order to receive messages about all our free offerings!



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