

## Attention Building Departments

On March 1<sup>st</sup>, 2006 at the Business Meeting of the California Energy Commission, the California Building Performance Contractors Association's Home Energy Rating System (HERS) Providership and the HomeEnalasy's Third Party Quality Control Program were approved by a unanimous vote of all five of the Commissioners.

The following information provides a step by step process for building departments and contractors who are trained and certified as Third Party Quality Control Installers for Alterations that require field verification and diagnostic testing under the 2005 Building Energy Efficiency Standards.

**USER NOTE:** *The following text in blue indicates a hyperlink to text from the reference Title 24 document(s) located at the end of this document. There is a <return> function at the end of each hyperlinked text that will return you to the end of the original hyperlink text.*

- 1) The Contractor gets a Title 24 job with one (or more) [measure\(s\) that require field verification and diagnostic testing](#)
- 2) The Contractor/Installer fills out, on the Enalasy platform, the form CF1-RA for Change Outs (see (b) Alterations in Section 152 of the Building Energy Efficiency Standards).
- 3) The Contractor pulls a building permit. (This can be done via the intranet for participating building departments.)
- 4) The Contractor does the job using Enalasy diagnostic testing equipment and then performs a "test out" for verification of the measurements using the Enalasy tamper-proof equipment.
- 5) The Contractor/Installer uploads the test results and data to the Enalasy platform.
- 6) The measurements, chronological tracking, and other quality assurance testing is performed and, if determined to be correct, the Form CF-6R is then automatically produced by auto-filling the required fields on the CF-6R for the measures requiring testing and field verification.  
**(Note: Form CF-6R cannot be printed unless all of the testing passes the required specifications.)**
- 7) A CF-6R is printed and posted at the job site. If this CF-6R is the first of a new sample group, the Enalasy eOne Platform assigns a CBPCA HERS Rater to the sample group ([See Section 7.6 of the Res ACM Manual](#)) and sends an email alert, along with either an electronic copy of the CF-6R and/or instructions on how to access the CF-6R on the CBPCA's Registry database of Title 24 jobs. Subsequent CF-6R's of all of the remaining jobs in this group will also be sent to the HERS Rater for review and verification of compliance with the Title 24 requirements for these forms. When the last CF-6R in the sample group is completed, a copy of every CF-6R in the sample group will be emailed, faxed, or mailed, to each of the building departments that have jobs in that sample group.
- 8) The Enalasy software, upon verification of the printing of a CF-6R, then prints a CF-4R marking the check box under the HERS RATER COMPLIANCE STATEMENT "Approved as part of sample testing, but was not tested. This is allowed because the Energy Commission "approves Third Party Quality Control Programs that **serve the function of HERS raters for field verification purposes.**" ([Section 7.6 Third Party Quality Control Programs, 2005 Residential ACM Manual.](#)) The CF-4R is also posted at the job site. The the building department is then alerted by

email that the job is complete and provided with an electronic version of the CF-6R. The email also contains a hot link to the job details as recorded on the Enalasy Platform. Each building department has access on the Enalasy Platform to their own dedicated site for all jobs that are done using the Enalasy Third Party Quality Control Program. The building department can select one or more jobs. They can either choose to print, download and store the job(s) information on their database, or use their own dedicated space on the Enalasy Platform as their database.

- a. “When a Third Party Quality Control Program is used, the CF-6R shall document that data checking has indicated that the dwelling unit complies. The building official may approve compliance based on the CF-6R on the condition that if sampling indicates that re-sampling, full testing and corrective action is necessary, such work shall be completed.” ([See Section 7.7 of ACM Manual](#))

- 9) Enalasy, as the Third Party Quality Control Program, defines “the group of thirty for sampling purposes as all dwelling units where the building permit applicant has chosen to have testing and field verification completed as part of a sample for the same installing company.” This means that the group is assigned to the installing company/contractor and that the jobs in the sample group maybe in one or more building departments’ jurisdictions within the State. ([See Section 7.7 of the Res ACM](#))

- 10) A CBPCA’s HERS Rater field tests the selected one in thirty job and upon passing verifies this by marking the check box under the HERS RATER COMPLIANCE STATEMENT “The house was: Tested.” The CBPCA then notifies, by email, the building department that the tested job from the sample group has passed and to replace the CF-4R in their records listed “as part of sample testing, but was not tested” with the “The house was: tested” CF-4R. The building department can access the results of the HERS Rater’s test on the CBPCA’s database and if needed can either print out the results or download the information to be stored on their own database. The building department(s) can access information about any permitted Third Party Quality Control Program job in their jurisdiction by using the Enalasy Platform. They can either print out or download the information and store it on their own database.

Note: If the one in thirty does not pass, a second job will be randomly selected from the group of thirty and tested. If it passes, the rest of the group passes. If it does not pass, the following procedure applies.

“When re-sampling reveals a failure, builders/contractors shall offer, at no charge to building owners in occupied dwelling units in the group, to complete field verification, testing and corrective action if necessary. Building owners may decline to have field verification and testing and corrective action completed. Builders/contractors shall report the identifying location of any dwelling unit in which the building owner declines field verification and testing and corrective action to the HERS provider. Builders/contractors shall take corrective action as required in all unoccupied dwelling units in the group and in occupied dwelling units in the group where building owners have accepted field verification, testing and corrective action.” ([See Section 7.8.1 of the Res ACM Manual](#))

The CBPCA as the HERS Provider is authorized, directed, and required by Title 20 and Title 24 to maintain quality control over field verification and diagnostic testing ratings. The CBPCA and Enalasy will enforce and ensure that all of the jobs, that are a part of a failed group, are redone by the installing contractor. This is done in order to meet the condition stated in Section 7.7 of the Res ACM that states: “When a Third Party Quality Control Program is used, the CF-6R shall document that data checking has indicated that the dwelling unit complies. The building official may approve compliance based on the CF-6R on the condition that if sampling indicates that re-sampling, full testing and corrective action is necessary, such work shall be completed.”)

Please read the following article from Institute of Heating and Air Conditioning Industries, Inc.

**Title 24 Enforcement – What California Contractors Must Know  
Memorandum of Understanding Between the CEC and the CSLB  
(Excerpts)**

“A Memorandum of Understanding (MOU) between the California Energy Commission (CEC) and the California Contractors State License Board (CSLB) establishes a collaborative working relationship with the CSLB to promote common goals to improve the performance of licensed contractors (contractors) in their responsibility to comply with the Building Energy Efficiency Standards (Title 24) and addresses the Governor’s Executive Order S-20-04 (the Green Building Initiative, directive number 6) that ordered the Energy Commission to “collaborate with the building and construction industry state licensing boards to ensure building and contractor compliance with the Standards.”

The Standards require installation of energy efficiency features and measures. Special compliance credit is provided for high quality installation practices. Compliance by contractors is critical to achieving the energy, economic, public health, safety and welfare, and environmental benefits of the Standards. A commitment to compliance and attention to installation protocols by contractors is absolutely necessary.

For the 2005 Standards (effective October 1, 2005) the Energy Commission extended its emphasis on quality installation to particular alterations of existing buildings. When air conditioners are replaced, the duct systems that they are attached to must be sealed, and the refrigerant charge must be correct (or a thermostatic expansion valve must be installed).

These measures must be verified by a third party field verifier. The Standards also require efficient windows to be installed when windows are replaced, and they require low-slope commercial buildings to have “cool roofs” when roofing is replaced.

Local building officials are concerned that often contractors do not pull permits for equipment replacement even when permits are required. Building officials fear that new requirements for these alterations will lead to a larger number of contractors not pulling permits.

The CSLB has the authority to license and discipline all of the general contractors (i.e. builders) and specialty contractors (i.e. subcontractors) involved in building construction. This MOU supports CLSB’s mission which includes ensuring that construction is performed in a competent and professional manner; enforcing the laws, regulations and standards governing construction contracting in a fair and uniform manner; providing resolution to disputes that rise from construction activities; and educating consumers so that they make informed choices.”

Institute of Heating and Air Conditioning Industries, Inc. (IHACI) a California based nonprofit trade organization has taken an aggressive role in ensuring that their members are informed and properly trained in matters pertaining to Title 24 compliance.

All indications are that the CSLB’s Statewide Investigative Fraud Team (S.W.I.F.T) has increased its enforcement efforts resulting in disciplinary action to felony convictions. IHACI president, Michael Carson, Kahn Air Conditioning, says, “C20 contractors should take heed. It’s time that we level the playing field. We have a responsibility to comply with the law and the law must apply to all.”

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## RESOURCES FOR LINKS IN THE ABOVE DOCUMENT

### **2005 Building Energy Efficiency Standards (hyperlink version)**

[http://www.energy.ca.gov/title24/2005standards/2005-11-03\\_400-03-001F.PDF](http://www.energy.ca.gov/title24/2005standards/2005-11-03_400-03-001F.PDF)

### **Home Energy Rating Systems (Hers) Field Verification And Diagnostic Testing Regulations (Including Title 20 - California Home Energy Rating System Regulations)**

Link to the document on the CEC website:

<http://www.energy.ca.gov/2005publications/CEC-400-2005-044/CEC-400-2005-044.PDF>

### **Residential Compliance Manual**

Link to the document on the CEC website:

[http://www.energy.ca.gov/title24/2005standards/residential\\_manual.html](http://www.energy.ca.gov/title24/2005standards/residential_manual.html)

## **7. Home Energy Rating Systems (HERS) Required Field Verification and Diagnostic Testing**

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### **7.1. California Home Energy Rating Systems**

Compliance credit for particular energy efficiency measures, which the Commission specifies, requires field verification and diagnostic testing of as-constructed dwelling units (as defined in Section 7.9) by a certified HERS (Home Energy Rating System) rater. The Commission approves HERS providers, subject to the Commission's HERS regulations, which appear in the California Code of Regulations, Title 20, Division 2, Chapter 4, Article 8, Sections 1670-1675. Approved HERS providers are authorized to certify HERS raters and maintain quality control over field verification and diagnostic testing ratings.

When compliance documentation indicates field verification and diagnostic testing of specific energy efficiency measures as a condition for complying with Title 24, Part 6, an approved HERS provider and certified HERS rater shall be used to conduct the field verification and diagnostic testing. HERS providers and raters shall be considered special inspectors by building departments, and shall demonstrate competence, to the satisfaction of the building official, for the visual inspections and diagnostic testing. The HERS provider and rater shall be independent entities from the builder or subcontractor installer of the energy efficiency improvements being tested and verified, and shall have no financial interest in the installation of the improvements. Third Party Quality Control Programs approved by the Commission may serve the function of HERS raters for field verification purposes as specified in Section 7.6. [<return to link>](#)

### **7.2. Measures Required Field Verification and Diagnostic Testing**

Table R7-1 describes the measures that require installer certification and HERS rater field verification and diagnostic testing, and identifies the protocol or test procedure in the appendices that shall be used for completing installer and HERS rater diagnostic testing and HERS rater field verification.

See the next page for Table R7-1.

Table R7-1 – Summary of Measures Requiring Field Verification and Diagnostic Testing

Measure Title	Description	Protocol or Test Procedure
<b>Duct Measures</b>		
Duct Sealing	Package D requires that space conditioning ducts be sealed. If sealed and tested ducts are claimed in the proposed design ACM calculation, diagnostic testing is required to verify that leakage is less than the specified criteria.	ACM Appendix RC-2005
Supply Duct Location, Surface Area and R-factor	If compliance credit is claimed for improved supply duct location, surface area and R-value, field verification is required to verify that duct system was installed according to the design, including location, size and length of ducts, duct insulation R-value and installation of buried ducts. <sup>1</sup>	ACM Appendix RC-2005
<b>Air Conditioner Measures</b>		
Improved Refrigerant Charge	Package D requires in some climate zones that split system air conditioners and heat pumps be diagnostically tested in the field to verify that they have the correct refrigerant charge (see Section 4.7.3). The Proposed Design is modeled with less efficiency if diagnostic testing and field verification is not performed.	ACM Appendix RD-2005
Installation of Thermostatic Expansion Valve (TXV)	A TXV may be installed as an alternative to refrigerant charge testing. The existence of a TXV has the same calculated benefit as refrigerant charge testing and requires field verification.	ACM Appendix RI-2005
Adequate Air Flow	Air conditioner efficiency requires adequate airflow across the evaporator coil. Compliance credit may be taken when airflow is higher than the criteria specified	ACM Appendix RE-2005
Air Handler Fan Watt Draw	If compliance credit is taken for reductions in fan power, the installed fan power shall be diagnostically tested and verified in the field.	ACM Appendix RE-2005
High Energy Efficiency Ratio (EER)	Compliance credit may be taken for increases in EER by installation of specific air conditioner or heat pump models, but only if the installation of that high EER model is field verified.	ACM Appendix RI-2005
Maximum Cooling Capacity	An additional compliance credit may be taken when the requirements for the combination of adequate air flow, duct sealing and Improved refrigerant charge are met and air conditioners are sized according to the ACM calculations. Field verification is required.	ACM Appendix RF-2005
<b>Building Envelope Measures</b>		
Building Envelope Sealing	The default building envelope specific leakage area (SLA) is specified in Section 4.5.1. Compliance credit may be taken for improved building envelope sealing, but only if lower SLA values are field verified through diagnostic testing.	ASTM E779-03
High Quality Insulation Installation	ACMs recognize Standard and improved envelope construction. Compliance credit for improved envelope construction requires field verification.	ACM Appendix RH-2005

1. Note: Compliance credit for increased duct insulation R-value (not buried ducts) may be taken without field verification if the R-value is the same throughout the building, and for supply ducts located in crawlspaces and garages where all supply registers are either in the floor or within 2 feet of the floor. These two credits may be taken subject only to building department inspection.

2. Note: The requirement for verification of a high EER does not apply to equipment rated only with an EER.

All features that require verification and/or testing shall be listed in the *Field Verification and Diagnostic Testing* section of on the *Certificate of Compliance* (CF-1R). The listing shall include "eligibility and installation criteria" for such features. Field verified and diagnostically tested features shall be described in the *Compliance Supplement*. Installers shall certify that the requirements for compliance have been met on

the *Installation Certificate* (CF-6R). Field Verification and diagnostic testing shall be performed by a HERS rater and documented on the *Certificate of Field Verification and Diagnostic Testing* (CF-6R).

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## 7.6 Third Party Quality Control Programs

The Commission may approve Third Party Quality Control Programs that serve the function of HERS raters for field verification purposes. Third Party Quality Control Programs shall provide training to installers regarding compliance requirements for measures for which diagnostic testing and field verification is required. Third Party Quality Control Programs shall collect data from participating installers for each installation completed for compliance credit, complete data checking analysis to evaluate the validity and accuracy of the data to independently determine whether compliance has been achieved, provide direction to the installer to retest and correct problems when data checking determines that compliance has not been achieved, require resubmission of data when retesting and correction is directed, and maintain a database of all data submitted by installers in a format that is acceptable to the Commission and available to the Commission upon request. The data that is collected by the Third Party Quality Control Program shall be more detailed than the data required for showing compliance with the Standards, shall provide an independent check on the validity and accuracy of the installer's claim that compliance has been achieved, and shall not be alterable by the installer to indicate that compliance has been achieved when in fact compliance has not been achieved.

The Third Party Quality Control Program shall also obtain the services of a HERS rater to conduct independent field verifications, completing all of the responsibilities of a HERS rater as specified in this Chapter with the exception that sampling shall be completed for a group of up to thirty dwelling units with a minimum sample of one out of every thirty sequentially completed dwelling units from the group. The HERS rater shall be an independent entity from the Third Party Quality Control Program. Re-sampling, Full Testing and Corrective Action shall be completed as specified in section 7.5.3 with the exception that re-sampling shall be completed for a minimum of one out of every thirty dwelling units from the group.

The Third Party Quality Control Program shall meet all of the requirements of a HERS rater specified in the Commission's HERS Program regulations (California Code of Regulations, Title 20, Division 2, Chapter 4, Article 8, Sections 1670 -1675), including the requirement to be an independent entity from the builder and the HERS rater that provides independent field verifications, subcontractor installer as specified by section 1673(i). A Third Party Quality Control Program may have business relationships with installers participating in the Program to advocate or promote the Program and an installer's participation in the Program, and to advocate or promote products that the Third Party Quality Control Program sells to installers as part of the Program.

Prior to approval by the Commission, the Third Party Quality Control Program shall provide a detailed explanation to the Commission of 1) the data that is to be collected from the installers, 2) the data checking process that will be used to evaluate the validity and accuracy of the data, 3) the justification for why this data checking process will provide strong assurance that the installation actually complies, and 4) the format for the database that will be maintained and provided to the Commission upon request. The Third Party Quality Control Program may apply for a confidential designation of this information as specified in the Commission's Administrative Regulations (California Code of Regulations, Title 20, Division 2, Chapter 7, Article 2, Section 2505). The Third Party Quality Control Program shall also provide a detailed explanation of the training that will be provided to installers, and the procedures that it will follow to complete independent field verifications.

The Third Party Quality Control Program shall be considered for approval as part of the rating system of a HERS Provider, which is certified as specified in the Commission's HERS Program regulations, Section 1674. A Third Party Quality Control Program can be added to the rating system through the recertification of a certified HERS Provider as specified by Section 1674(d). [<return to link>](#) [<2<sup>nd</sup> return to link>](#)

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## **7.7 Sampling for Additions or Alterations**

When compliance for an addition or alteration requires diagnostic testing and field verification, the building owner may choose for the testing and field verification to be completed for the dwelling unit alone or as part of a sample of dwelling units for which the same installing company has completed work that requires testing and field verification for compliance. The building owner or agent of the building owner shall complete the applicable portions of a Certificate of Compliance (CF-1R). The HERS provider shall define the group for sampling purposes as all dwelling units where the building permit applicant has chosen to have testing and field verification completed as part of a sample for the same installing company. The group shall be no larger than seven. The installing company may request a smaller group for sampling. Whenever the HERS rater for the group is changed, a new group will be established. Initial Field Verification and Testing shall be completed for the first dwelling unit in each group. Re-sampling, Full Testing and Corrective Action shall be completed if necessary as specified by section 7.5.3.

Field verification may be completed by an approved Third Party Quality Control Program as specified in section 7.6. The group for sampling purposes shall be no larger than thirty when a Third Party Quality Control Program is used. The Third Party Quality Control Program may define the group instead of the Provider. When a Third Party Quality Control Program is used, the CF-6R shall document that data checking has indicated that the dwelling unit complies. The building official may approve compliance based on the CF-6R on the condition that if sampling indicates that re-sampling, full testing and corrective action is necessary, such work shall be completed. [<return to link>](#) [<2<sup>nd</sup> return to link>](#)

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## **7.8 Summary of Responsibilities**

This section summarizes responsibilities described previously in this chapter and organizes them by the responsible party.

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### **7.8.1 Builder**

The builder shall make arrangements for the services of a certified HERS rater prior to installation of the measures, so that once the installation is complete the HERS rater has ample time to complete the field verification and diagnostic testing without delaying final approval of occupancy by the building department. Builder employees or subcontractors responsible for completing either diagnostic testing, visual inspection or verification as specified in Section 7.4 shall certify the diagnostic testing results and that the work meets the requirements for compliance credit on the CF-6R.

The builder shall provide the HERS rater with the identifying location of the group of dwelling units to be included in the sample for field verification and diagnostic testing. The builder shall provide the HERS provider a copy of the CF-6R signed by the builder employees or sub-contractors certifying that diagnostic testing and installation meet the requirements for compliance credit.

The builder shall provide a *Certificate of Field Verification and Diagnostic Testing* (CF-4R) signed and dated by the HERS rater to the building official in conjunction with requests for final inspection for each dwelling unit.

When re-sampling reveals a failure, builders shall offer, at no charge to building owners in occupied dwelling units in the group, to complete field verification, testing and corrective action if necessary. Building owners may decline to have field verification and testing and corrective action completed. Builders shall report the identifying location of any dwelling unit in which the building owner declines field verification and testing and corrective action to the HERS provider. Builders shall take corrective action as required in all unoccupied dwelling units in the group and in occupied dwelling units in the group where building owners have accepted field verification, testing and corrective action. [<return to link>](#)